

BLADEN + COLUMBUS + ROBESON COUNTIES | NC



REGIONAL

# HAZARD MITIGATION

PLAN



DRAFT | JULY 2025

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## SECTION 1: INTRODUCTION

Section 1 introduces the Bladen-Columbus-Robeson Regional Hazard Mitigation Plan. It consists of the following subsections:

- ◆ 1.1 Background
- ◆ 1.2 Purpose and Need
- ◆ 1.3 Scope
- ◆ 1.4 Authority
- ◆ 1.5 Plan Update
- ◆ 1.6 Organization of the Plan

### 1.1 Background

Each year in the United States, natural disasters take the lives of hundreds of people and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters, because additional expenses incurred by insurance companies and non-governmental organizations are not reimbursed by tax dollars. Many natural disasters are predictable, and much of the damage caused by these events can be reduced or even eliminated.

In an effort to reduce the Nation's mounting natural disaster losses, the U.S. Congress passed the Disaster Mitigation Act of 2000 (DMA 2000) to invoke new and revitalized approaches to mitigation planning. Section 322 of DMA 2000 emphasizes the need for state and local government entities to closely coordinate on mitigation planning activities and makes the development of a hazard mitigation plan a specific eligibility requirement for any local government applying for federal mitigation grant funds. These funds include the Hazard Mitigation Grant Program (HMGP) and the Flood Mitigation Assistance (FMA) Program, both are administered by the Federal Emergency Management Agency (FEMA) under the Department of Homeland Security.

Communities with an adopted and federally approved hazard mitigation plan thereby become pre-positioned and more apt to receive available mitigation funds before and after the next disaster strikes.

This Plan was prepared in coordination with FEMA Region 4 and North Carolina Emergency Management (NCEM) to ensure that it meets all applicable DMA 2000 planning requirements. A Local Mitigation Plan Review Tool, found in Appendix B, provides a summary of FEMA's current minimum standards of acceptability and notes the location within the Plan where each planning requirement is met.

### 1.2 Purpose and Need

As defined by FEMA, "hazard mitigation" means any sustained action taken to reduce or eliminate the long-term risk to life and property from a hazard event. Hazard mitigation planning is the process through which hazards are identified, likely impacts determined, mitigation goals set, and appropriate mitigation strategies determined, prioritized, and implemented.

The purpose of this plan is to identify, assess and mitigate risk in order to better protect the

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people and property of The Bladen-Columbus-Robeson Region from the effects of natural and man-made hazards. This plan documents the hazard mitigation planning process and identifies relevant hazards and strategies the participating communities will use to decrease vulnerability and increase resiliency and sustainability. This plan demonstrates the participating communities' commitment to reducing risks from identified hazards and serves as a tool to help decision-makers direct mitigation activities and resources. This plan will ensure the involved communities' continued eligibility for federal disaster assistance, including the HMGP and FMA programs.

### 1.3 Scope

This document comprises a Hazard Mitigation Plan Update for Bladen, Columbus and Robeson Counties in North Carolina.

The jurisdictions participating in this plan are the Unincorporated Areas of Bladen County: Towns of Bladenboro, Clarkton, Dublin, East Arcadia, Elizabethtown, Tar Heel, White Lake; Unincorporated Areas of Columbus County: Towns of Boardman, Bolton, Brunswick, Cerro Gordo, Chadbourn, Fair Bluff, Lake Waccamaw, Sandyfield and cities of Tabor City and Whiteville; Unincorporated Areas of Robeson County;; the City of Lumberton; and the Towns of Fairmont, Lumber Bridge, Marietta, Maxton, McDonald, Orrum, Parkton, Pembroke, Proctorville, Raynham, Red Springs, Rennert, Rowland, and St. Pauls.

| <u>Bladen County</u> | <u>Columbus County</u> | <u>Robeson County</u> |
|----------------------|------------------------|-----------------------|
| Bladenboro           | Boardman               | Lumberton             |
| Clarkton             | Bolton                 | Fairmont              |
| Dublin               | Brunswick              | Lumber Bridge         |
| East Arcadia         | Cerro Gordo            | Marietta              |
| Elizabethtown        | Chadbourn              | Maxton                |
| Tar Heel             | Fair Bluff             | McDonald              |
| White Lake           | Lake Waccamaw          | Orrum                 |
|                      | Sandyfield             | Parkton               |
|                      | Tabor City             | Pembroke              |
|                      | Whiteville             | Proctorville          |
|                      |                        | Raynham               |
|                      |                        | Red Springs           |
|                      |                        | Rennert               |
|                      |                        | Rowland               |
|                      |                        | St. Pauls             |

### 1.4 Authority

This Hazard Mitigation Plan Update will be adopted by Bladen, Columbus and Robeson Counties in accordance with the authority and police powers granted to counties as defined by the State of North Carolina (N.C.G.S., Chapter 153A). This Hazard Mitigation Plan will be adopted by the participating municipalities under the authority granted to cities and towns as defined by the State of North Carolina (N.C.G.S., Chapter 160A).

This Plan was developed in accordance with current state and federal rules and regulations governing local hazard mitigation plans. The Plan shall be monitored and updated on a routine basis to maintain compliance with the following legislation:



- Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000 (P.L. 106-390) and by FEMA’s Interim Final Rule published in the Federal Register on February 26, 2002, at 44 CFR Part 201;
- National Flood Insurance Act of 1968, as amended 42 U.S.C. 4001 et seq; and
- North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act, as amended by Senate Bill 300: An Act to Amend the Laws Regarding Emergency Management as Recommended by the Legislative Disaster Response and Recovery Commission (2001).
- Also utilized the Local Mitigation Planning Handbook, 2025. The Handbook was used together with the Local Mitigation Planning Policy Guide , April 2025. The handbook offers practical approaches and examples for how communities can engage in effective planning to reduce long-term risk from natural hazards and disasters.

## 1.5 Plan Update

### CFR Subchapter D §201.6(d)(3)

A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding.

The previous Bladen-Columbus and Robeson County Hazard Mitigation Plans contained risk assessments of identified hazards for the jurisdictions and mitigation strategies to address the risks and vulnerabilities from these hazards. Since that time, progress has been made by all participating jurisdictions on implementation of the mitigation strategies. This section includes an overview of the approach to updating the plan and identifies new analyses and information included in this plan update.

### 1.5.1 What’s New in the Plan

The plan update involved a comprehensive review and update of each section of the previous plans and an assessment of the success of the participating jurisdictions in evaluating, monitoring and implementing the mitigation strategy outlined in their existing plans. The decision was made to create one regional mitigation plan (Bladen-Columbus-Robeson Regional Plan) in order to accomplish the following planning goals:

- Continue to support a more holistic regional planning effort, considering shared concerns and shareable resources;
- Conform to NCEM’s preference for regional hazard mitigation planning in the state; and
- Leverage available funding and resources for mitigation planning.

Although this is not the first version of the regional hazard mitigation plan, it builds on the foundation established during the previous planning cycle, which was the first to combine separate plans for Bladen, Columbus, and Robeson Counties into a single regional document. This 2025 update reflects a continued commitment to regional coordination and includes comprehensive revisions that address changes in local development, updated hazard data, and evolving mitigation priorities.

Key Elements from previously approved county-level plans, such as mitigation actions and capability assessments remain integrated throughout the plan. However, all sections have been

reviewed and updated to incorporate the most current information available. Risk assessment components were revised using recent hazard and vulnerability data and were standardized across the regional planning area. Regional goals and mitigation strategies have also been re-evaluated to ensure alignment with current conditions and community priorities.

The Capability Assessment reflects updated capabilities for all participating jurisdictions, and the Mitigation Action Plan provides status updates for previously identified actions while introducing new actions based on this cycle’s findings. The result is a fully updated regional plan that continues to meet the requirements of the Disaster Mitigation Act of 2000 and FEMA’s current planning guidance.

- Consider changes in vulnerability due to action implementation;
- Document success stories where mitigation efforts have proven effective;
- Document areas where mitigation actions were not effective;
- Document any new hazards that may arise or were previously overlooked;
- Incorporate new data or studies on hazards and risks;
- Incorporate new capabilities or changes in capabilities;
- Incorporate growth and development-related changes to inventories; and
- Incorporate new action recommendations or changes in action prioritization.

Table 1-1 provides a comparison of the hazards addressed in the 2023 State of North Carolina HMP as well as the existing plans for Bladen, Columbus and Robeson Counties. A final decision was made by the Mitigation Action Committee (MAC) as to which hazards should be included in the combined plan as noted in the table below.

**Table 1-1: Comparison of Hazards for Plan Update**

| State of North Carolina HMP    | Hazards Included in Previous Plans       |                                          |                         | Final MAC Decision – Include in Bladen Columbus Robeson Plan? |
|--------------------------------|------------------------------------------|------------------------------------------|-------------------------|---------------------------------------------------------------|
|                                | Bladen County HMP                        | Columbus County HMP                      | Robeson County HMP      |                                                               |
| Flooding                       | Flooding                                 | Flooding                                 | Flooding                | Yes                                                           |
| Earthquake                     | Earthquakes                              | Earthquakes                              | Earthquakes             | Yes                                                           |
| Hurricanes and Coastal Hazards | Hurricanes                               | Hurricanes                               | Hurricanes              | Yes                                                           |
| Severe Winter Weather          | Severe Winter Storms                     | Severe Winter Storms                     | Severe Winter Storms    | Yes                                                           |
| Wildfire                       | Wildfire                                 | Wildfire                                 | Wildfire                | Yes                                                           |
| Dam Failures                   | Dam/Levee Failure                        | Dam/Levee Failure                        | Dam/Levee Failure       | Yes                                                           |
| Drought                        | heat waves                               | Drought/heatwaves                        | Droughts/heat waves     | Yes                                                           |
| Geological                     | N/A                                      | N/A                                      | N/A                     | Yes                                                           |
| Tornadoes/ Thunderstorms       | Tornadoes; Thunderstorms/ lightning/hail | Tornadoes; Thunderstorms/ lightning/hail | Tornadoes Thunderstorms | Yes                                                           |

For the 2025 update, the Mitigation Action Committee decided to add new hazards to the plan. These include Excessive Heat, Cyber and Infectious Disease (each of these are also included in the State of North Carolina Hazard Mitigation Plan).

In addition to the specific changes in hazard analyses identified above, the following items were also addressed in the plan update:

- GIS was used, to the extent data allowed, to analyze the priority hazards as part of the vulnerability assessment. This involved utilizing mapped hazard data combined with local parcel data.
- Assets at risk to identified hazards were identified by property type and values of properties based on tax assessment data from the Region.
- A discussion on climate change and its projected effect on specific hazards was included in Chapter 5 Hazard Profiles.
- The discussion on growth and development trends was enhanced utilizing current Census data.
- Enhanced public outreach and agency coordination efforts were conducted throughout the plan update process in order to meet the more rigorous requirements of the 2013 CRS Coordinator's Manual, in addition to DMA requirements.

### 1.5.2 Past Goals Update

Table 1-2 provides a summary of updates to the goals from the Regional Plan as decided by the MAC. The revised goals for the Plan Update can be found in Section 8 – Mitigation Strategy.

**Table 1-2: Summary of Updates to Existing Goals**

| Existing Goals                                                                                                                                                                         | Counties | Carried Forward | Revised | Deleted | Plan Update Notes                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------|---------|---------|---------------------------------------------------------------|
| <b>Goal 1</b><br>Promote the public health, safety, and general welfare of residents and minimize public and private losses due to natural hazards.                                    | Bladen   | X               |         |         | Replaced with revised Goal #1                                 |
|                                                                                                                                                                                        | Columbus | X               |         |         |                                                               |
|                                                                                                                                                                                        | Robeson  |                 | X       |         |                                                               |
| <b>Goal 2</b><br>Reduce the risk and impact of future natural disasters by regulating development in known high hazard areas.                                                          | Bladen   | X               |         |         | Deemed to still be applicable and relevant to the plan update |
|                                                                                                                                                                                        | Columbus | X               |         |         |                                                               |
|                                                                                                                                                                                        | Robeson  | X               |         |         |                                                               |
| <b>Goal 3</b><br>Pursue funds to reduce the risk of natural hazards to existing developments where such hazards are clearly identified, and the mitigation efforts are cost-effective. | Bladen   | X               |         |         | Deemed to still be applicable to the plan update              |
|                                                                                                                                                                                        | Columbus | X               |         |         |                                                               |
|                                                                                                                                                                                        | Robeson  | X               |         |         |                                                               |
| <b>Goal 4</b><br>Effectively expedite post-disaster reconstruction.                                                                                                                    | Bladen   | X               |         |         | Replaced with new goal #4                                     |
|                                                                                                                                                                                        | Columbus | X               |         |         |                                                               |
|                                                                                                                                                                                        | Robeson  |                 |         | X       |                                                               |

| Existing Goals                                                                                                                    | Counties | Carried Forward | Revised | Deleted | Plan Update Notes                                             |
|-----------------------------------------------------------------------------------------------------------------------------------|----------|-----------------|---------|---------|---------------------------------------------------------------|
| <b>Goal 5</b><br>Provide education to citizens that empower them to protect themselves and their families from natural hazards.   | Bladen   | X               |         |         | Deemed to still be applicable and relevant to the plan update |
|                                                                                                                                   | Columbus | X               |         |         |                                                               |
|                                                                                                                                   | Robeson  | X               |         |         |                                                               |
| <b>Goal 6</b><br>Protect fragile natural and scenic areas of the county, particularly those that protect drinking water supplies. | Bladen   | X               |         |         | Replaced with revised Goal #6                                 |
|                                                                                                                                   | Columbus | X               |         |         |                                                               |
|                                                                                                                                   | Robeson  |                 | X       |         |                                                               |

### 1.5.3 Past Mitigation Strategy Update

Details on mitigation projects carried forward from the previous plans into this plan update as well as new projects, can be found in Section 9 – Mitigation Action Plan.

## 1.6 Organization of the Plan

The Regional Hazard Mitigation Plan is organized as follows:

- Section 1 – Introduction
- Section 2 – Planning Process
- Section 3 – Community Profile
- Section 4 – Hazard Identification
- Section 5 – Hazard Profiles
- Section 6 – Vulnerability Assessment
- Section 7 – Capability Assessment
- Section 8 – Mitigation Strategy
- Section 9 – Mitigation Action Plan
- Section 10 – Plan Maintenance
- Appendix A – Adoptions
- Appendix B – Local Mitigation Plan Review Tool
- Appendix C – Approval Letters
- Appendix D – Public Outreach
- Appendix E – Project Information Fact Sheet
- Appendix F - Public Survey
- Appendix G - Meeting Files
- Appendix H – CWPPs (Community Wildfire Protection Plans)



## SECTION 2: PLANNING PROCESS

This section describes the planning process undertaken to develop the 2025 update of the Bladen Columbus Robeson Regional Hazard Mitigation Plan. Copies of the 2020 plan can be obtained by contacting each county emergency management office or NCEM's Hazard Mitigation Planning Section.

This section consists of the following eight subsections:

- ◆ 2.1 Overview of Hazard Mitigation Planning
- ◆ 2.2 History of Hazard Mitigation Planning in the Bladen Columbus Robeson Region
- ◆ 2.3 Updating the Plan in 2025
- ◆ 2.4 Bladen Columbus Robeson Regional Mitigation Action Committee
- ◆ 2.5 Community Meetings and Workshops
- ◆ 2.6 Involving the Public
- ◆ 2.7 Involving the Stakeholders
- ◆ 2.8 Documentation of Plan Progress

### 44 CFR Requirement

**44 CFR Part 201.6(c)(1):** The plan shall include documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process and how the public was involved.

## 2.1 OVERVIEW OF HAZARD MITIGATION PLANNING

Local hazard mitigation planning is the process of organizing community resources, identifying and assessing hazard risks, and then determining how to best minimize or manage those risks. This process informs the development of the hazard mitigation plan, and more specifically, identifies specific mitigation actions to effectively address existing and evolving risks. Each mitigation action is designed to achieve both short-term goals and a long-term vision for the community.

To ensure the functionality of a hazard mitigation plan, responsibility is assigned for each proposed mitigation action to a specific individual, department, or agency along with a schedule or target completion date for its implementation (see Section 10: *Plan Maintenance*). Plan maintenance procedures are established for the routine monitoring of implementation progress, as well as the evaluation and enhancement of the mitigation plan itself. These plan maintenance procedures ensure that the plan remains a current, dynamic, and effective planning document over time that becomes integrated into the routine local decision-making process.

Communities that participate in hazard mitigation planning have the potential to accomplish many benefits, including:

- ◆ Saving lives and property,
- ◆ Saving money,
- ◆ Speeding recovery following disasters,
- ◆ Reducing future vulnerability through wise development and post-disaster recovery and reconstruction,

- ◆ Expediting the receipt of pre-disaster and post-disaster grant funding, and
- ◆ Demonstrating a firm commitment to improving community health and safety.

Mitigation planning is intended to create long-term and ongoing benefits by breaking the cycle of disaster-related losses. A fundamental belief in hazard mitigation is that investments made before a disaster occurs can significantly reduce the need for post-disaster assistance by decreasing the demand for emergency response, repairs, recovery, and reconstruction. Additionally, effective mitigation practices enable residents, businesses, and industries to recover more quickly after a disaster, allowing the community's economy to get back on track sooner and with fewer interruptions.

The advantages of mitigation planning extend beyond merely reducing vulnerability to hazards. Measures such as acquiring or regulating land in high-risk areas can help achieve multiple community objectives (commonly referred to as co-benefits), including preserving open spaces, maintaining environmental health, and enhancing recreational opportunities. Therefore, it is crucial that any local mitigation planning process is integrated with other ongoing local planning efforts. Proposed mitigation strategies must also consider existing community goals and initiatives that could either support or impede their future implementation.

## **2.2 HISTORY OF HAZARD MITIGATION PLANNING IN THE BLADEN COLUMBUS ROBESON REGION**

Prior to the development of the Bladen Columbus Robeson Regional Hazard Mitigation Plan in 2014, each of the three counties and jurisdictions participating in the regional plan had previously adopted separate county-level hazard mitigation plans. Each of the county-level plans was developed using the multi-jurisdictional planning process recommended by FEMA.

In 2014, all participating jurisdictions collaborated to create a regional plan. No new jurisdictions joined the process, and all those involved in previous planning efforts contributed to the development of the 2014 regional plan. This approach aimed to streamline planning for the jurisdictions in the Bladen Columbus Robeson Region, allowing resources to be shared among participants and reducing the administrative burdens on smaller, lower capacity communities.

The 2014 plan marked an important and successful beginning for regional hazard mitigation planning, and that success has continued into the 2025 update. For the development of the 2025 plan, all the jurisdictions that participated in the development of the 2020 plan participated in this plan's development.

## **2.3 UPDATING THE PLAN IN 2025**

FEMA requires hazard mitigation plans to be updated every five years to maintain eligibility for federal mitigation and public assistance funding. AECOM, Insight Planning and Development and ESP Associates, Inc. were contracted by North Carolina Emergency Management to provide professional mitigation planning services to develop the 2025 Bladen Columbus Robeson Regional Hazard Mitigation Plan.

According to the scope of work, the consultant team adhered to the mitigation planning process recommended by FEMA (Publication Series 386 and the Local Mitigation Plan Review Guide) as well as

guidelines from North Carolina Emergency Management (NCEM) mitigation planning staff. Notable changes in the 2025 update include increased emphasis on equity and inclusions, integration with climate resilience, enhanced community engagement, and inclusion of substantial damage estimates.

The 2025 update incorporated requirements from the FEMA Community Rating System (CRS) and the Community Wildfire Protection Plan (CWPP). **Tables 2.1** and **2.2** below provide an overview of how the Community Rating System and Community Wildfire Protection Plan requirements were integrated into the updated plan.

**TABLE 2.1 FEMA HAZARD MITIGATION PLANNING REQUIREMENTS AND THE CRS 10-STEP PLANNING PROCESS REFERENCE TABLE**

| FEMA Disaster Mitigation Act Requirement | CRS Activity 510 Planning Requirement            |
|------------------------------------------|--------------------------------------------------|
| <b>Phase I – Planning Process</b>        |                                                  |
| §201.6(c)(1)                             | Step 1: Organize to Prepare the Plan             |
| §201.6(b)(1)                             | Step 2: Involve the Public                       |
| §201.6(b)(2) & (3)                       | Step 3: Coordinate                               |
| <b>Phase II – Risk Assessment</b>        |                                                  |
| §201.6(c)(2)(i)                          | Step 4: Assess the Hazard                        |
| §201.6(c)(2)(ii) & (iii)                 | Step 5: Assess the Problem                       |
| <b>Phase III – Mitigation Strategy</b>   |                                                  |
| §201.6(c)(3)(i)                          | Step 6: Set Goals                                |
| §201.6(c)(3)(ii)                         | Step 7: Review Possible Activities               |
| §201.6(c)(3)(iii)                        | Step 8: Draft an Action Plan                     |
| <b>Phase IV – Plan Maintenance</b>       |                                                  |
| §201.6(c)(5)                             | Step 9: Adopt the Plan                           |
| §201.6(c)(4)                             | Step 10: Implement, Evaluate and Revise the Plan |

**TABLE 2.2 COMMUNITY WILDFIRE PROTECTION PLAN PROCESS INTEGRATION REFERENCE TABLE**

| CWPP Process                                                                                                  | Hazard Mitigation Plan Integration Reference                                                                                 |
|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Step 1: Convene Decisionmakers                                                                                | Section 2: Planning Process                                                                                                  |
| Step 2: Involve Federal Agencies                                                                              | Section 2: Involving Stakeholders                                                                                            |
| Step 3: Engage Interested Parties                                                                             | Section 2: Planning Process                                                                                                  |
| Step 4: Establish a Community Base Map                                                                        | Section 3: Community Profile                                                                                                 |
| Step 5: Develop a Community Risk Assessment                                                                   | Sections 4, 5 and 6: Hazard Identification, Hazard Profiles and Vulnerability Assessment<br>Section 7: Capability Assessment |
| Step 6: Establish Community Hazard Reduction Priorities and Recommendations to Reduce Structural Ignitability | Section 8: Mitigation Strategy                                                                                               |
| Step 7: Develop an Action Plan and Assessment Strategy                                                        | Section 9: Mitigation Action Plans<br>Section 10: Plan Maintenance                                                           |
| Step 8: Finalize the CWPP                                                                                     | Appendix A: Plan Adoption                                                                                                    |

Source: *Preparing a Community Wildfire Protection Plan – A Handbook for Wildland-Urban Interface Communities*

The Local Mitigation Plan Review Tool provides a detailed summary of FEMA’s current minimum standards of acceptability for compliance with DMA 2000 and notes the location where each requirement is met within this plan. These standards are based upon FEMA’s Final Rule as published in the Federal Register in Part 201 of the Code of Federal Regulations (CFR). The planning team used FEMA’s Local Mitigation Planning Policy Guide (2022) and Local Mitigation Planning Handbook (2023) for reference as they completed the plan update.

The process used to prepare this plan included twelve major steps that were completed over the course of approximately eleven months beginning in January 2024. Each of these planning steps (illustrated in **Figure 2.1**) resulted in critical work products and outcomes that collectively make up the Plan. Specific plan sections are further described in Section 1: *Introduction*

**FIGURE 2.1: MITIGATION PLANNING PROCESS FOR THE CABARRUS STANLY UNION REGION**



## 2.4 THE REGIONAL MITIGATION ACTION COMMITTEE

To facilitate the initial development of the regional plan and its subsequent update, the participating jurisdictions established the Bladen Columbus Robeson Regional Hazard Mitigation Action Committee. This committee serves as a community-based planning team composed of representatives from various county departments, municipalities, and other essential stakeholders identified as critical partners in the planning process.

Starting in July 2024, the members of the Regional Hazard Mitigation Action Committee engaged in regular discussions, local meetings, and planning workshops to address and complete tasks related to the preparation of the Plan. This collaborative group coordinated all aspects of plan development and provided invaluable input throughout the process. In addition to their regular meetings, committee members maintained ongoing communication and were kept informed via an email distribution list.

Specifically, the tasks assigned to the Regional Hazard Mitigation Action Committee members included:

- ◆ Participate in Regional Hazard Mitigation Action Committee meetings and workshops,
- ◆ Provide best available data as required for the risk assessment portion of the plan,
- ◆ Provide information that will help complete the Capability Assessment section of the plan,
- ◆ Provide copies of any mitigation or hazard-related documents for review and incorporation into the plan,
- ◆ Support the development and update of the Mitigation Strategy, including the design and adoption of regional goal statements,
- ◆ Help design and propose appropriate mitigation actions for their department/agency for incorporation into the Mitigation Action Plan,
- ◆ Review and provide timely comments on all study findings and draft plan deliverables, and
- ◆ Support the adoption of the 2025 Bladen Columbus Robeson Regional Hazard Mitigation Plan.

**Table 2.3** lists the members of the Regional Hazard Mitigation Action Committee who were responsible for participating in the development of the plan.

**TABLE 2.3: MEMBERS OF THE BLADEN COLUMBUS ROBESON REGIONAL MITIGATION ACTION COMMITTEE**

| NAME                                      | DEPARTMENT / AGENCY / TITLE                                                       | Attended Stakeholder Kickoff Meeting 10/24/24 | Attended HIRA Meeting 4/17/25 | Attended HIRA Mitigation Meeting 5/29/25 |
|-------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------|------------------------------------------|
| <b>Bladen County and Municipalities</b>   |                                                                                   |                                               |                               |                                          |
| Babson, Renee                             | Bladen County, Emergency Management Administrative Assistant                      | X                                             | X                             | X                                        |
| Coleman, Joey                             | Bladen County, Emergency Management                                               | X                                             | X                             | X                                        |
| Elkins, Greg                              | Bladen County, Planning Director                                                  |                                               | X                             |                                          |
| Martin, Sean                              | Town of White Lake, Town Administrator                                            |                                               | X                             |                                          |
| <b>Columbus County and Municipalities</b> |                                                                                   |                                               |                               |                                          |
| Bray, Claudia                             | Town of Sandyfield, Town Clerk/Finance Officer                                    |                                               | X                             |                                          |
| Crosby, RaMonda                           | Town of Chadbourn, Finance Director                                               | X                                             |                               |                                          |
| Faircloth, Bobbie                         | Town of Fair Bluff, Project Manager                                               | X                                             |                               |                                          |
| Hall, Dwella                              | Columbus County, Program Manager Child Welfare, Adult Services, Program Integrity | X                                             |                               |                                          |
| Livingston, Nancy                         | Town of Brunswick, Town Clerk                                                     |                                               |                               | X                                        |



| NAME                                     | DEPARTMENT / AGENCY / TITLE                                       | Attended Stakeholder Kickoff Meeting 10/24/24 | Attended HIRA Meeting 4/17/25 | Attended HIRA Mitigation Meeting 5/29/25 |
|------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------|-------------------------------|------------------------------------------|
| Robinson, Jason                          | Town of Chadbourn, Town Manager                                   |                                               |                               | X                                        |
| Smith, Teresa                            | Columbus County, Emergency Services Deputy Director               |                                               | X                             | X                                        |
| Viles, Nola                              | Columbus County                                                   | X                                             |                               |                                          |
| Ward, Josh                               | Town of Tabor City, Town Manager; Town of Brunswick, Town Planner | X                                             | X                             | X                                        |
| <b>Robeson County and Municipalities</b> |                                                                   |                                               |                               |                                          |
| Carter, Victoria                         | Town of Pembroke, Stormwater and Special Projects Program Manager | X                                             |                               | X                                        |
| Dollinger, Stephanie                     | Town of St. Paul's, Town Administrator                            | X                                             |                               |                                          |
| Edwards, James                           | Town of Marietta                                                  | X                                             |                               |                                          |
| Hunt, Justin                             | Robeson County, Emergency Management Director                     | X                                             | X                             | X                                        |
| McDougald, Robert                        | Town of Rowland, Mayor                                            | X                                             |                               |                                          |
| McKell, Tammy                            | City of Lumberton, Emergency Management                           | X                                             |                               |                                          |
| Owens, Michael                           | Town of St. Paul's, Police Department                             | X                                             |                               |                                          |
| Pitchford, Angela                        | Town of Maxton, Town Manager                                      | X                                             | X                             | X                                        |
| Powell, Walter                           | Town of Marietta, Town Council                                    | X                                             |                               |                                          |
| Rogers, Benton                           | Town of St. Paul's, Assistant Public Works Director               | X                                             |                               |                                          |
| Underwood, Doris                         | Town of Parkton, Mayor                                            |                                               | X                             |                                          |
| <b>Other Stakeholders</b>                |                                                                   |                                               |                               |                                          |
| Baker, Carl                              | NCEM, Mitigation Plans Manager                                    | X                                             | X                             | X                                        |
| Barefoot, Ashli                          | Insight Planning & Development, Director of Planning & Land Use   |                                               |                               | X                                        |
| Brinkley, Austin                         | Insight Planning & Development, Senior Planner                    | X                                             |                               |                                          |
| Campbell, Peyton                         | AECOM, Hazard Mitigation Planner                                  |                                               | X                             |                                          |
| Cox, Ryan                                | Insight Planning & Development, CEO                               |                                               | X                             | X                                        |
| Graham, Melissa                          | Insight Planning & Development                                    |                                               | X                             |                                          |
| Keefe, Kelly                             | AECOM, Hazard Mitigation Planner                                  |                                               | X                             | X                                        |
| Mello, John                              | NCEM, Hazard Mitigation Planner                                   | X                                             | X                             |                                          |
| Norris, Darren                           | Columbus Regional Healthcare System, Emergency Manager            |                                               | X                             | X                                        |
| Slaughter, Nathan                        | ESP Associates, Project Manager                                   |                                               | X                             | X                                        |
| Taliaferro, Danielle                     | Insight Planning & Development, Administrative Manager            | X                                             | X                             | X                                        |

**Table 2.4** lists points of contact for several of the jurisdictions who elected to designate their respective

county officials to represent their jurisdiction on the planning team, generally because they did not have the time or staff to be able to attend on their own. Although these members designated county officials to represent them at in-person meetings, each was still contacted throughout the planning process and participated by providing suggestions and comments on the plan, updates to mitigation actions and the capability assessment via email and phone conversations.

**TABLE 2.4: MEMBERS DESIGNATING REPRESENTATIVES TO BLADEN COLUMBUS ROBESON REGIONAL HAZARD MITIGATION ACTION COMMITTEE**

| JURISDICTION  | NAME                | DEPARTMENT / AGENCY / TITLE |
|---------------|---------------------|-----------------------------|
| Bladenboro    | Maynor, Jay         | Town Administrator          |
| Boardman      | Williamson, Eric    | Town Mayor                  |
| Bolton        | Maynor, Shawn       | Town Mayor                  |
| Cerro Gordo   | White, David        | Town Mayor                  |
| Clarkton      | Myers, Jerome       | Town Mayor                  |
| Dublin        | Cullip, Darren      | Town Mayor                  |
| East Arcadia  | Andrews, Travis     | Town Mayor                  |
| Elizabethtown | Rideout, Dane       | Town Manager                |
| Fairmont      | Chestnut, Jerome    | Town Manager                |
| Lake Waccamaw | Kempski, Damon      | Town Manager                |
| Lumber Bridge | Davis, William      | Town Mayor                  |
| McDonald      | Taylor, James       | Town Mayor                  |
| Orrum         | Blue, Kellie        | Robeson County Manager      |
| Proctorville  | Sealy, Michael      | Town Mayor                  |
| Raynham       | Arnette, Debra      | Town Mayor                  |
| Red Springs   | Harris, Shanelle    | Town Manager                |
| Rennert       | Locklear, Elizabeth | Town Mayor                  |
| Tar Heel      | Allen, Sam          | Town Mayor                  |
| Whiteville    | Currie, Darren      | City Manager                |

Additional participation and input from other identified stakeholders and the public was sought by the participating counties during the planning process through phone calls and the distribution of emails, advertisements, and public notices aimed at informing people on the status of the Hazard Mitigation Plan (public and stakeholder involvement is further discussed later in this section).

### 2.4.1 Multi-Jurisdictional Participation

The Bladen Columbus Robeson Regional Multi-Jurisdictional Hazard Mitigation Plan includes three counties, and thirty (30) incorporated municipalities. To satisfy multi-jurisdictional participation requirements, each county and its participating jurisdictions were required to perform the following tasks:

- ◆ Participate in mitigation planning workshops,
- ◆ Provide implementation status updates on previously identified mitigation actions,
- ◆ Identify completed mitigation projects (if applicable); and

- ◆ Develop and adopt (or update) their local mitigation action plan.

Each participating jurisdiction has developed a local mitigation action plan unique to their jurisdiction. This provides the means for jurisdictions to implement, monitor and track progress, and update their mitigation actions on a regular basis.

## 2.5 COMMUNITY MEETINGS AND WORKSHOPS

The preparation of the plan involved a series of meetings and workshops designed to facilitate discussion, build consensus, and initiate data collection efforts with local government staff, community officials, and other identified stakeholders. Importantly, these meetings and workshops encouraged ongoing input and feedback from relevant participants throughout the drafting stages of the plan. Below is a summary of the key meetings conducted during the plan update process. Meeting minutes were recorded and are documented.

**Table 2.5** summarizes key meetings and workshops held by the HMPC during the development of the plan. In many cases, routine discussions and additional meetings were held by local staff to accomplish planning tasks specific to their department or agency. For example, seeking approval of specific mitigation actions for their department or agency to undertake and include in their mitigation action plan. These meetings were informal and are not documented here. Public involvement is summarized in the subsequent section.

**TABLE 2.5: BLADEN COLUMBUS ROBESON REGIONAL HAZARD MITIGATION ACTION COMMITTEE  
MEETING SUMMARY**

| MEETING                          | MEETING TOPIC                                                                                                                                                                         | DATE     | LOCATION                                |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------------|
| HMPC Mtg #1 - Project Kick-Off   | <ol style="list-style-type: none"> <li>1. Introduction to DMA requirements and the planning process</li> <li>2. Review HMPC responsibilities and project schedule</li> </ol>          | 10/14/24 | 38 Legend Rd.<br>Lumberton, NC<br>28358 |
| HMPC Mtg #2 – HIRA Meeting       | <ol style="list-style-type: none"> <li>1. Review Draft Hazard Identification and Risk Assessment (HIRA)</li> <li>2. Review asset inventory and discuss critical facilities</li> </ol> | 4/17/25  | Virtual<br>Microsoft Teams              |
| HMPC Mtg #2 – Mitigation Meeting | <ol style="list-style-type: none"> <li>1. Review Capability Assessment and Mitigation Strategies</li> <li>2. Solicit comments and feedback</li> </ol>                                 | 5/29/25  | Virtual<br>Microsoft Teams              |

## 2.6 INVOLVING THE PUBLIC

### 44 CFR Requirement

**44 CFR Part 201.6(b)(1):** The planning process shall include an opportunity for the public to comment on the plan during the drafting stage and prior to plan approval.

An important component of the mitigation planning process involved public participation. Individual resident and community-based input provides a better understanding of local concerns, increases community buy-in and support, and heightens likelihood of mitigation action implementation. As

residents become more involved in decisions that affect their safety, they are more likely to gain a greater awareness of the hazards present in their community and take the steps necessary to reduce their impact. Public awareness is a key component of any community's overall mitigation strategy aimed at making a home, neighborhood, school, business or entire planning area safer from the potential effects of hazards.

Public involvement in the development of the Bladen Columbus Robeson Regional Hazard Mitigation Plan was sought using several methods:

- ◆ Conducting open public meetings (virtual),
- ◆ Developing a project website to share project status and relevant resources,
- ◆ Providing online notices,
- ◆ Sharing the public participation survey online and in-person, and
- ◆ Making the draft plan available online for public review.

The public was provided multiple opportunities to be involved in the development of the regional plan at three distinct periods during the planning process: (1) during the drafting stage of the plan, (2) upon completion of a draft plan, but prior to official plan approval and adoption, and (3) just prior to plan adoption. **Table 2.6** summarizes public involvement efforts employed during the plan update process. Documentation of these efforts is provided in the appendices.

**TABLE 2.6: BLADEN COLUMBUS ROBESON REGIONAL HAZARD MITIGATION PLAN UPDATE PUBLIC ENGAGEMENT OPPORTUNITIES AND MEASURES**

| OUTREACH TYPE   | OUTREACH DESCRIPTION                                                                                                                                                                                                                                                                                           | DATE | LOCATION                  |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------------|
| Public Survey   | <ul style="list-style-type: none"> <li>• Shared online via municipal and county websites</li> <li>• Shared in-person at government and community facilities</li> <li>• Respondents could complete anonymously or provide name/email</li> <li>• Input used to inform potential mitigation strategies</li> </ul> | -    | Online Survey Monkey      |
| Project Website | <ul style="list-style-type: none"> <li>• Provides general overview of mitigation and planning process</li> <li>• Summarizes project-specific timeline and tasks</li> <li>• Links to valuable resources including HMPC meeting minutes and presentations</li> </ul>                                             | -    | Online GoDaddy Website    |
| Public Notices  | <ul style="list-style-type: none"> <li>• Project updates shared on municipal and county websites</li> <li>• Links provided to existing plan and draft plan</li> </ul>                                                                                                                                          | -    | Online Municipal Websites |

| OUTREACH TYPE     | OUTREACH DESCRIPTION                                                                                                                                                                                                                                                        | DATE     | LOCATION                |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------|
| Public Meeting #1 | <ul style="list-style-type: none"> <li>• Introduction to DMA, CRS, and FMA requirements and planning process</li> <li>• Review of identified hazards and potential mitigation strategies</li> </ul>                                                                         | 12/11/24 | Virtual Microsoft Teams |
| Public Meeting #2 | <ul style="list-style-type: none"> <li>• Review Draft Hazard Mitigation Plan and collect public comment</li> <li>• Discuss public comment integrated into Final Hazard Mitigation Plan</li> <li>• Review approval and adoption process to ensure timely adoption</li> </ul> | 6/26/25  | Virtual Microsoft Teams |

Furthermore, in addition to the previously mentioned opportunities for public involvement, each participating jurisdiction will hold public meetings before the final plan is officially adopted by local governing bodies. These meetings will take place at different times once FEMA grants conditional approval of the plan. Adoption resolutions will be included in the appendices.

### 2.6.1 Public Participation Survey

The Regional Hazard Mitigation Committee successfully engaged residents in the mitigation planning process through the Public Participation Survey. This survey was specifically designed to gather data and insights from residents of Bladen, Columbus, and Robeson Counties.

Copies of the Public Participation Survey were distributed to the Regional Hazard Mitigation Committee, ensuring they were available for residents to complete at local public offices. Additionally, a link to an electronic version of the survey was posted on county and municipal websites as well as the designated project website. In total, 114 survey responses were received, providing valuable input for the Committee to consider updating the plan. Selected survey results are presented below. Full results can be found in appendices.

- ◆ Approximately 80 percent of survey respondents had been impacted by a disaster.
- ◆ Respondents ranked all identified hazards from no risk to high risk. Hurricanes were ranked as the highest threat, followed by Severe Weather then Flood.
- ◆ Approximately 45 percent of respondents have taken actions to make their homes more resistant to hazards.
- ◆ 61 percent of respondents do not know what office to contact regarding reducing their risks to hazards.
- ◆ Prevention and Property Protection were ranked as the most important activities for communities to pursue in reducing risks.

## 2.7 INVOLVING THE STAKEHOLDERS

### 44 CFR Requirement

**44 CFR Part 201.6(b)(2):** The planning process shall include an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other non-profit interests to be involved in the planning process.

At the outset of the planning process, the project consultant collaborated with the emergency management leaders from each county to initiate stakeholder outreach. At this time, a list was distributed of recommended stakeholders derived from FEMA Publication 386-1, titled *Getting Started: Building Support for Mitigation Planning*, which highlights the diverse range of stakeholders considered for participation in plan development. County emergency management leaders referenced this list while inviting stakeholders from their respective counties to engage in the planning process. Additionally, FEMA's *Local Mitigation Planning Policy Guide* (2023) and *Local Mitigation Planning Handbook* (2023) were reviewed to ensure all elements for participation were addressed.

The participating jurisdictions invited representatives from the health departments, social services departments, and planning departments to advocate for and provide insight on underserved and socially vulnerable populations in the region. In addition to staff representatives of each participating jurisdiction, the HMPC included a variety of stakeholders. The Regional Hazard Mitigation Committee actively promoted open and widespread participation in the mitigation planning process. The region also excelled in local outreach efforts by designing and distributing the Public Participation Survey. This initiative allowed local officials, residents, businesses, academics, and other private interests in the Bladen Columbus Robeson Region to engage and provide input throughout the local mitigation planning process.

## 2.8 DOCUMENTATION OF PLAN PROGRESS

This plan update documents the progress made in hazard mitigation planning for the participating jurisdictions in the Bladen Columbus Robeson Region. Since the initial hazard mitigation plans were developed in the late 1990s and early 2000s, numerous mitigation actions have been completed and implemented across these jurisdictions. These actions are designed to reduce the overall risk posed by natural hazards to the people and properties in the region. A detailed account of these completed actions can be found in the appendices.

Further details on the progress of plan implementation are provided in the capability assessment. Community capabilities have continued to improve in each participating jurisdiction through the adoption of new plans, policies, and programs that promote hazard mitigation at the local level. The status of local capabilities for these jurisdictions is outlined in *Section 7: Capability Assessment*. The participating jurisdictions demonstrate their ongoing commitment to hazard mitigation by reconvening every five years to update the plan and actively involving the public in the planning process.



## SECTION 3 COMMUNITY PROFILE

This section of the plan provides a general overview of the Bladen Columbus Robeson Region. It consists of the following four subsections:

- ◆ 3.1 Geography and the Environment
- ◆ 3.2 Population and Demographics
- ◆ 3.3 Housing, Infrastructure, and Land Use
- ◆ 3.4 Employment and Industry

### 3.1 GEOGRAPHY AND THE ENVIRONMENT

The Bladen, Columbus, and Robeson Region is situated in the Coastal Plain region of eastern North Carolina. Robeson County is part of the Lumberton Micropolitan Statistical Area (MiSa).<sup>1</sup> The planning area includes both incorporated and unincorporated Bladen, Columbus, and Robeson counties along with 30 participating municipalities (*see Section 1: Introduction*). The region comprises a total land area of nearly 2,800 square miles. The total land area reported for each participating county is presented in **Table 3.1**.

**TABLE 3.1: TOTAL LAND AREAS OF PARTICIPATING COUNTIES**

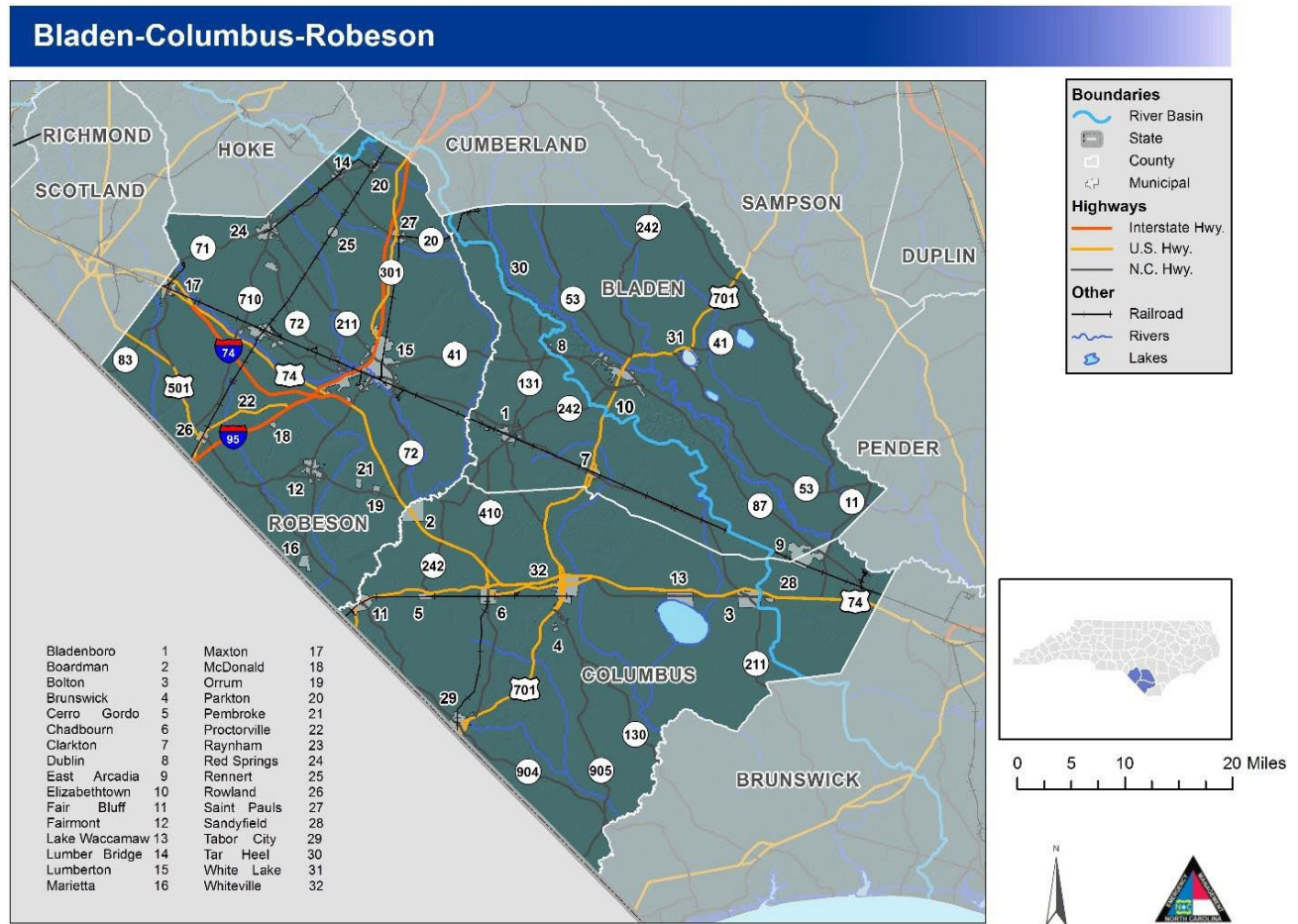
| County              | Land Area (Sq. Mi.)    | Water Area (Sq. Mi.) | Total Area (Sq. Mi.)   |
|---------------------|------------------------|----------------------|------------------------|
| Bladen County       | 875.03 sq. mi.         | 12.75 sq. mi.        | 887.78 sq. mi.         |
| Columbus County     | 938.12 sq. mi.         | 16.88 sq. mi.        | 955.00 sq. mi.         |
| Robeson County      | 947.30 sq. mi.         | 1.96 sq. mi.         | 949.26 sq. mi.         |
| <b>Region Total</b> | <b>2760.45 sq. mi.</b> | <b>31.59 sq. mi.</b> | <b>2792.04 sq. mi.</b> |

Source: United States Census Bureau

The region features predominantly flat terrain with surfaces ranging from level to gently undulating. Robeson County is characterized by a landscape of sandhills and coastal dunes, with elevations spanning from approximately 60 feet above mean sea level in the southeastern corner to around 250 feet in the northern part of the county. In swampy areas, the underlying sediments are slowly permeable, which impacts internal drainage speed.

The region is abundant in natural recreational sites, featuring four rivers, notably the Cape Fear and Lumber Rivers, and numerous natural lakes with the largest being Lake Waccamaw. These natural features support a variety of outdoor activities such as water sports, camping, fishing, and hunting. An orientation map can be found in **Figure 3.1**.

<sup>1</sup> A micropolitan statistical area (MiSa) is a smaller region centered around an urban area with a population between 10,000 and 50,000 people; essentially, a micropolitan area is a smaller, less populated version of a metropolitan area.

**FIGURE 3.1: BLADEN COLUMBUS ROBESON REGION ORIENTATION MAP**

According to the Köppen climate classification system, the Bladen Columbus Robeson Region is categorized as a humid subtropical climate like much of the eastern United States. This climate zone is characterized by mild winters and hot humid summers with significant precipitation even during the driest month. Based on the National Centers for Environmental Information (NCEI) data, the average temperatures and precipitation of each of the participating counties is presented in **Table 3.2**.

**TABLE 3.2: ANNUAL AVERAGE TEMPERATURES AND PRECIPITATION  
OF PARTICIPATING COUNTIES**

| County                | 12-Month<br>Avg Temp<br>(2014-2024) | January<br>Annual Avg<br>Min Temp<br>(2014-2024) | January<br>Annual Avg<br>Max Temp<br>(2014-2024) | June<br>Annual Avg<br>Min Temp<br>(2014-2024) | June<br>Annual Avg<br>Max Temp<br>(2014-2024) | 12-Month<br>Avg. Rainfall<br>(2014-2024) |
|-----------------------|-------------------------------------|--------------------------------------------------|--------------------------------------------------|-----------------------------------------------|-----------------------------------------------|------------------------------------------|
| Bladen County         | 58.2°F                              | 33.6°F                                           | 55.7°F                                           | 67.0°F                                        | 87.8°F                                        | 27.3in                                   |
| Columbus County       | 58.8°F                              | 34.4°F                                           | 56.8°F                                           | 67.6°F                                        | 87.6°F                                        | 27.9in                                   |
| Robeson County        | 58.6°F                              | 33.9°F                                           | 55.6°F                                           | 67.4°F                                        | 89.0°F                                        | 26.0in                                   |
| <b>Region Average</b> | <b>58.5°F</b>                       | <b>34.0°F</b>                                    | <b>56.0°F</b>                                    | <b>67.3°F</b>                                 | <b>88.1°F</b>                                 | <b>27.1°F</b>                            |

Source: National Centers for Environmental Information: Climate at a Glance (Time Series)

Over the last ten years, the region has exhibited a temperate climate with an average annual temperature of 58.5°F. In January, the region experiences an average minimum temperature of 34.0°F and an average maximum temperature of 56.0°F, respectively. These values indicate a moderate winter climate, which suggests that the region experiences conditions that can lead to freezing events and potential winter storms.

During the month of June, the region experiences a significant increase in temperatures. Average minimum temperatures rise to approximately 67.3°F and average maximum temperatures reach 88.1°F, indicating a shift to a warm and humid summer. This not only affects human health, potentially increasing the incidence of heat-related illnesses, but also heightens the risk of wildfires and heatwaves.

Regarding precipitation, the region averages about 27.1 inches of annual rainfall, with Bladen County receiving the highest at approximately 27.3 inches. The relatively moderate average suggests a balance between periods of heavy rain, often linked to tropical storms or hurricanes, and drier spells, making the region prone to both flooding and drought conditions depending on seasonal weather fluctuations. Overall, the precipitation patterns are shaped by the interplay of coastal influences, terrain, and weather systems that define this southeastern North Carolina region.

### 3.1.1 Natural Features

The Bladen, Columbus, and Robeson region is primarily encompassed by several key subbasins within two major river basins: the Lumber River Basin and the Cape Fear River Basin. Most of the area falls within the Waccamaw, Lumber, and Little Pee Dee Subbasins of the Lumber River Basin, as well as the Lower Cape Fear and Black Subbasins of the Cape Fear River Basin. These subbasins are smaller watershed units that collectively influence water flow, quality, and ecosystem health across the region.

Being part of these interconnected subbasins means that any changes in land use, agriculture, or development within the region can impact water quantity and quality downstream, affecting aquatic habitats, water supplies, and flood management. The division into multiple subbasins also indicates a diversity of hydrological characteristics, from streams and wetlands to floodplains, which support different ecosystems and regional economies.

In Bladen and Columbus Counties, soil near drainageways tend to be well-drained to moderately well-drained. Conversely, soils toward the center of the interstream divides are often somewhat poorly to very poorly drained. Robeson County's soils are primarily derived from unconsolidated deposits of sand, silt, and clay laid down by water. These soils are generally nearly level to gently sloping and are highly suitable for agriculture. Well-drained soils are typically found along broad outer rims of the interstream divided adjacent to drainageways, while poorly drained soils, located farther from streams, are found on floodplains and within Carolina bays.

Robeson County's main waterway is the Lumber River, which meanders from north to south through the approximate center of the county. Major tributaries include Big Swamp, which forms the eastern boundary of the county; Big Marsh Swamp; Raft Swamp; Richland Swamp; Back Swamp; Hog Swamp; and Ashpole Swamp. Additionally, Shoe Heel Creek drains the western tip of Robeson County.

### 3.1.2 Parks, Preserves, and Conservation

The region is home to several state parks including Jones Lake State Park, Singletary Lake State Park, Bladen Lakes State Forest, Lake Waccamaw State Park, and Lumber River State Park. These parks help conserve vital natural habitats, including lakes, forests, and riverine ecosystems, contributing to biodiversity preservation and environmental health. These parks also support local economies by attracting tourism, outdoor recreation, and related businesses, which generate revenue and create jobs. Additionally, the parks serve as natural buffers against flooding and erosion by maintaining wetlands and forested floodplains, thereby aiding in hazard mitigation.

### 3.1.3 Threatened and Endangered Species

The U.S. Fish and Wildlife Service maintains a regular listing of threatened species, endangered species, species of concern, and candidate species for counties across the United States. As of 2025 records, the Bladen Columbus Robeson Region has 25 species that are listed with the U.S. Fish and Wildlife Services as threatened, endangered, proposed endangered, proposed threatened, species of concern, or under review. **Table 3.3** summarizes these identified species below.

**TABLE 3.3: THREATENED AND ENDANGERED SPECIES OF PARTICIPATING COUNTIES**

| Group            | Common Name              | Scientific Name            | Federal Status                        | Counties |
|------------------|--------------------------|----------------------------|---------------------------------------|----------|
| Birds            | Red-Cockaded Woodpecker  | Dryobates Borealis         | Threatened                            | B, C, R  |
| Reptiles         | American Alligator       | Alligator Mississippiensis | Similarity of Appearance (Threatened) | B, C, R  |
| Clams            | Atlantic Pigtoe          | Fusconaia Masoni           | Threatened                            | B        |
| Birds            | Piping Plover            | Charadrius Melodus         | Threatened                            | B, C     |
| Mammals          | Little Brown Bat         | Myotis Lucifugus           | Under Review                          | B, C, R  |
| Reptiles         | Kemp's Ridley Sea Turtle | Lepidochelys Kempii        | Endangered                            | B, C     |
| Flowering Plants | Rough-Leaved Loosestrife | Lysimachia Asperulaefolia  | Endangered                            | B, C, R  |
| Mammals          | Northern Long-Eared Bat  | Myotis Septentrionalis     | Endangered                            | B, C     |
| Flowering Plants | Pondberry                | Lindera Melissifolia       | Endangered                            | B, R     |
| Insects          | Monarch Butterfly        | Danaus Plexippus           | Proposed Threatened                   | B, C, R  |
| Flower Plants    | Michaux's Sumac          | Rhus Michauxii             | Endangered                            | B, C, R  |
| Reptiles         | Green Sea Turtle         | Chelonia Mydas             | Threatened                            | B, C     |
| Birds            | Wood Stork               | Mycteria Americana         | Threatened                            | B, C, R  |
| Mammals          | Tricolored Bat           | Perimyotis Subflavus       | Proposed Endangered                   | B, C, R  |
| Birds            | Rufa Red Knot            | Calidris Canutus Rufa      | Threatened                            | B, C     |
| Fish             | Shortnose Sturgeon       | Acipenser Brevirostrum     | Endangered                            | B, C, R  |

| Group            | Common Name          | Scientific Name        | Federal Status     | Counties |
|------------------|----------------------|------------------------|--------------------|----------|
| Flowering Plants | American Chaffseed   | Schwalbea Americana    | Endangered         | B, C, R  |
| Fish             | Waccamaw Silverside  | Menidia Extensa        | Threatened         | C        |
| Clams            | Waccamaw Spike       | Elliptio Waccamawensis | Species of Concern | C        |
| Fish             | Waccamaw Darter      | Etheostoma Perlongum   | Resolved Taxon     | C        |
| Snails           | Magnificent Ramshorn | Planorbella Magnifica  | Endangered         | C        |
| Flowering Plants | Cooley's Meadowrue   | Thalictrum Cooleyi     | Endangered         | C        |
| Clams            | Waccamaw Fatmucket   | Lampsilis Fullerkati   | Status Undefined   | C        |
| Fish             | Waccamaw Killifish   | Fundulus Waccamensis   | Species of Concern | C        |
| Flower Plants    | Canby's Dropwort     | Oxypolis Canbyi        | Endangered         | R        |

Source: US Fish & Wildlife Service, Environmental Conservation Online System (ECOS)

## 3.2 POPULATION AND DEMOGRAPHICS

According to Census data, the Bladen Columbus Robeson Region experienced a 0.07 percent population increase between 2020 (the last plan update) and 2023. From 2000 to 2023, the region's population declined by about 6.5 percent, with Bladen and Columbus Counties experiencing declines of roughly 8 percent. Robeson County has remained relatively stable since 2020, with a slight increase. These trends suggest a shrinking or aging population. Population counts from the US Census Bureau for 2000, 2010, 2020, and 2023 for each of the participating counties are presented in **Table 3.4**.

**TABLE 3.4: POPULATION COUNTS FOR PARTICIPATING COUNTIES**

| Jurisdiction        | 2000 Census Population | 2010 Census Population | 2020 Census Population | 2023 ACS Population | % Change 2020-2023 | % Change 2000-2023 |
|---------------------|------------------------|------------------------|------------------------|---------------------|--------------------|--------------------|
| Bladen County       | 32,278                 | 35,190                 | 29,606                 | 29,591              | -0.05%             | -8.39%             |
| Columbus County     | 54,749                 | 58,098                 | 50,623                 | 50,453              | -0.34%             | -7.83%             |
| Robeson County      | 123,339                | 134,168                | 116,530                | 116,858             | +0.29%             | -5.07%             |
| <b>Region Total</b> | <b>210,366</b>         | <b>227,456</b>         | <b>196,759</b>         | <b>196,902</b>      | <b>+0.07%</b>      | <b>-6.45%</b>      |

Source: United States Census Bureau

According to 2023 American Community Survey 5-Year Estimates, the median age in the Bladen Columbus Robeson Region was 41 years old. Of the population aged 25 years and over, 84.7 percent have a high school degree or higher and 16.8 percent have a bachelor's degree or higher. The racial characteristics of the participating jurisdictions are presented in **Table 3.5**.

**TABLE 3.5: DEMOGRAPHICS OF PARTICIPATING COUNTIES**

| Jurisdiction          | White, %     | Black, %     | Other Race, % | Asian, Percent | Persons of Hispanic Origin, %* | Two or More Races, % |
|-----------------------|--------------|--------------|---------------|----------------|--------------------------------|----------------------|
| Bladen County         | 54.9%        | 33.6%        | 8.8%          | 0.2%           | 9%                             | 2.5%                 |
| Columbus County       | 60.2%        | 28.7%        | 6.2%          | 0.4%           | 5.5%                           | 4.5%                 |
| Robeson County        | 24.8%        | 23.3%        | 47.4%         | 0.8%           | 10.5%                          | 3.6%                 |
| <b>Region Average</b> | <b>46.6%</b> | <b>28.5%</b> | <b>20.8%</b>  | <b>0.5%</b>    | <b>8.3%</b>                    | <b>3.5%</b>          |

\*Hispanics may be of any race, so also are included in applicable race categories

Source: United States Census Bureau

Bladen County has a diverse population, with approximately 55 percent identifying as White and about 34 percent as Black. A smaller proportion, around 9 percent, identify as Hispanic or of other racial backgrounds, while Asian residents make up less than 1 percent. The county also has a small percentage (2.5 percent) of residents identifying with two or more races.

Columbus County exhibits similar patterns, with a higher White population at approximately 60 percent, and a Black population of about 29 percent. Hispanic or other racial groups make up roughly 5.5 percent, and Asian residents are less than half a percent. The two or more races category stands at around 4.5 percent.

Robeson County shows a notably different demographic profile, with about 25 percent White residents and a substantial 47 percent identifying as Other Race, indicating a higher racial diversity. This can likely be attributed to a large population of native-American Indians (Lumbee) in the County. The Black population is approximately 23 percent, and Hispanic or of other origins make up roughly 10.5 percent. Asian representation remains minimal, under 1 percent, while the two or more races group accounts for around 3.6 percent.

The regional averages across these counties suggest that, overall, the population is predominantly White (around 47 percent) with a significant Black community (approximately 29 percent). Racial diversity is evident, with about 21 percent identifying as Other Race. Hispanic or residents of Hispanic origin constitute roughly 8 percent, and about 3.5 percent identify with two or more races.

The variations in racial and ethnic compositions across these counties highlight the importance of tailored approaches in hazard mitigation strategies that respect and address the unique cultural and social dynamics of each community. Overall, these demographics underscore the necessity for inclusive planning that engages all segments of the population to enhance resilience and preparedness in the face of potential hazards.

## 3.3 HOUSING, INFRASTRUCTURE, AND LAND USE

### 3.3.1 Housing

According to the US Census Bureau, there were 87,806 housing units in the Bladen Columbus Robeson Region in 2023. Most of these housing units are owner-occupied. Housing information for the three participating counties is presented in **Table 3.6**.



**TABLE 3.6: HOUSING CHARACTERISTICS OF PARTICIPATING COUNTIES**

| Jurisdiction    | Housing Units (2023) | Occupied Units (2023) | Owner-Occupied Housing Units (2023) | Renter-Occupied Housing Units (2023) | Median Home Value Owner-Occupied (2019-2023) |
|-----------------|----------------------|-----------------------|-------------------------------------|--------------------------------------|----------------------------------------------|
| Bladen County   | 15,272               | 11,635                | 8,127                               | 2,687                                | \$125,800                                    |
| Columbus County | 23,560               | 19,227                | 13,893                              | 4,133                                | \$128,300                                    |
| Robeson County  | 48,974               | 42,744                | 28,049                              | 12,617                               | \$88,600                                     |
| <b>Region</b>   | <b>87,806</b>        | <b>73,606</b>         | <b>50,069</b>                       | <b>19,437</b>                        | <b>\$114,233</b>                             |

Source: United States Census Bureau

The region's housing landscape is characterized by a substantial number of housing units, with Robeson County leading at 48,974 units, followed by Columbus County with 23,560 units, and Bladen County with 15,272 units. The majority of these units are occupied, totaling 73,606 across all three counties, with Robeson County accounting for the largest share at 42,744 occupied units.

Ownership remains predominant in the region. Bladen County has approximately 69.8 percent of its occupied units owner-occupied, equating to about 8,127 owner-occupied homes. Columbus County's owner-occupancy rate is slightly higher at around 72.2 percent, with 13,893 owner-occupied units. Robeson County, while slightly lower, still exhibits a majority of owner-occupied homes at approximately 65.6 percent, totaling 28,049 homes. Renter-occupied units account for roughly 23 percent to 29 percent of occupied housing across the counties, indicating a relatively stable homeownership environment.

In terms of housing values, the median home price for owner-occupied homes varies across the counties. Bladen County's median owner-occupied home value is approximately \$125,800, while Columbus County's median is slightly higher at around \$128,300. Robeson County's median value is lower, at about \$88,600. Overall, the median owner-occupied home value for the region is approximately \$114,233, reflecting regional affordability and economic differences among the counties.

Overall, the region features a predominantly owner-occupied housing market with a sizable number of homes and relatively affordable median values, especially in Robeson County, supporting stable communities with accessible homeownership opportunities.

### 3.3.2 Infrastructure

#### Transportation

Major highways are essential to hazard mitigation and community resilience, serving as critical routes for evacuation and emergency response during disasters. They enable timely access for first responders and facilitate the movement of supplies and assistance when needed most. Additionally, these transportation networks support economic stability by allowing businesses to operate efficiently, even amid disruptions. There are several major highways that cross the Bladen Columbus Robeson Region. These highways are summarized below:

- ◆ Major highways in Bladen County include US 701, NC 211, NC 201, NC 131, and NC 41. US 701 and NC 211 are major north-south routes, while NC 20 and NC 210 run east-west. Additionally, NC 131 and NC 41 also traverse the county.

- ◆ Major highways serving Columbus County are US 74/76, US 701, NC 410, NC 214, and NC 130. US 74/76 runs east-west through the northern part of the county, US 701 runs north-south, and NC 410 runs north-south through the western part of the county. NC 214 is primarily located in Columbus County and intersects with US 74/76.
- ◆ Major highways located in Robeson County include I-95 and I-74. I-95 runs north-south, while I-74 runs east-west. The two interstates intersect southwest of Lumberton. US 74, US 301, and US 501 are also important routes.

Public transportation is offered throughout the Bladen Columbus Robeson Region, which promotes social equity by connecting underserved populations to essential resources, including healthcare, education, and employment. By fostering a more interconnected and resilient community, public transportation enhances the overall quality of life for residents. As the region continues to face evolving challenges, investing in and expanding public transportation systems will be vital for building a safer and more sustainable future. Public transportation in the region is briefly summarized below:

- ◆ Bladen County provides public transportation primarily through the Bladen Area Rural Transportation System (BARTS). BARTS offers a variety of services, including general transportation for local employment, medical appointments, and disability services.
- ◆ The Columbus County Transit System offers public transportation services to its residents. This system includes both general transportation (e.g. such as grocery stores and shopping centers) and medical transportation to doctor's offices and hospitals.
- ◆ Public transportation in Robeson County is mostly provided by the South East Area Transit System (SEATS). SEATS offers human service agency transportation and general public transportation, providing rides for any purpose and to all people.

Wilmington International Airport (ILM) is the closest major airport for residents of Bladen and Columbus Counties, located approximately 60 miles from Bladenboro. It offers a range of domestic flights and serves as a convenient gateway for travelers in these areas. For residents of Robeson County, the nearest major airport is Charlotte Douglas International Airport, which is approximately a two-hour drive away and provides extensive flight options both domestically and internationally.

Within the region, smaller airports such as Fayetteville Regional Airport offer limited flight services and are a more regional option for travelers. Additionally, Raleigh-Durham International Airport is another viable alternative, providing broader flight connectivity for those willing to travel a bit further.

### **Utilities**

Bladen, Columbus and Robeson counties are interconnected not only through shared geography, but also through the essential utility services that sustain their communities. Electrical power in the region is primarily provided by Duke Energy Progress, along with contributions from Energy United and Union Energy, ensuring that residents and businesses have reliable access to electricity. Similarly, water and sewer services are managed by a combination of county authorities and local municipalities, each playing a vital role in maintaining public health and infrastructure.

Electrical power in the Bladen Columbus Robeson Region is supplied by multiple public utilities. Utility provider information is summarized below:

- ◆ In Bladen County, the primary electric utility providers are Duke Energy Progress and Four County Electric Member Corporation. Duke Energy Progress serves the southwest corner of the county, while Four County Electric serves the rest.
- ◆ In Columbus County, the primary electric providers are Duke Energy Progress and Brunswick Electric Membership Corporation (BEMC). Some areas are also served by Four County Electric. For natural gas, Dominion Energy North Carolina (Enbridge Gas) is a provider.
- ◆ In Robeson County, Duke Energy and Lumbee River Electric Membership Corporation (LREMC) are the primary electric utility providers. The City of Lumberton provides electric service within city limits and South River Electric Membership Corporation serves some areas within the county as well.

Water and sewer services in the region are managed by various counties and towns. Water and sewer service provider information is summarized below:

- ◆ In Bladen County, water and sewer services are provided by a combination of public and private entities, including the Bladen County Water District, the Town of Bladenboro, the Lower Cape Fear Water and Sewer Authority, and Carolina Water Service.
- ◆ In Columbus County, Columbus County Public Utilities is the primary water and sewer provider. Additionally, the Lower Cape Fear Water and Sewer Authority provides wholesale raw water to the county and surrounding areas.
- ◆ In Robeson County, the Robeson County Water Department handles water treatment and distribution for the county. The City of Lumberton Public Works Department provides these services within city limits. Additionally, Carolina Water Service of North Carolina is a private utility that serves areas within the county.

### **Critical Facilities**

There are a considerable number of critical facilities located throughout the Bladen Columbus Robeson Region. According to the data collected for *Section 6: Vulnerability Assessment*, there are 112 fire/EMS stations, 31 police stations, and 217 medical care facilities within the study area. There are three hospitals located in the Bladen Columbus Robeson Region. The Southeastern Regional Medical Center, located in Lumberton, is the largest of the three facilities, with nearly 300 hospital beds, 115 nursing home beds, and eight operating rooms.

### **3.3.3 Land Use**

Bladen, Columbus, and Robeson counties in North Carolina each possess diverse land use profiles that are highly relevant to hazard mitigation planning. Bladen County's economy is rooted in agriculture, with a mix of farming, residential, and conservation areas, all managed through zoning regulations. Its diversified crop production enhances economic stability but also necessitates mitigation strategies for agricultural-specific hazards such as floods, droughts, or pests. Similarly, Columbus County's land use includes substantial agricultural and forestry areas alongside residential, commercial, and industrial

zones, guided by a comprehensive land use plan aimed at promoting community safety and growth management. Robeson County, the largest in the state, has a landscape dominated by agriculture and timber. Its strategic location along major highways like I-95 and Highway 74 makes it a transportation hub, increasing its vulnerability to transportation-related hazards, such as accidents or infrastructure failure.

### **3.4 EMPLOYMENT AND INDUSTRY**

The region has a diverse economy with employment in various industries. Agriculture, business, and industry contribute to the economic growth of the region.

According to the US Census American Community Survey (2019-2023), Bladen County had a labor force of 11,886 with the top five employers including Smithfield Foods Inc., Gildan Farms LLC., Bladen County Schools, Bladen County, and CR England Inc. The annual unemployment rate was 4.3.

As of 2023 Columbus County had a labor force of 20,565 and the top five employers were Columbus County Board of Education, Columbus Regional Healthcare System, NC Department of Adult Corrections, Columbus County, and International Paper Company. The average annual unemployment rate was 4.7.

Robeson County had a labor force of 45,740 and the top five employers were Mountaire Farms Inc., Public Schools of Robeson County, Southeastern Regional Medical Center, Robeson County, and UNC Pembroke. The average unemployment rate was 6.3.

## SECTION 4: HAZARD IDENTIFICATION

### 44 CFR Subsection D §201.6(c)(2)

[The plan shall include] A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

The following section describes the Risk Assessment process for the development of the Regional Hazard Mitigation Plan. It describes how the Hazard Mitigation Planning Committee (HMPC) met the following requirements from the 10-step planning process:

- ◆ Planning Step 4: Assess the Hazard
- ◆ Planning Step 5: Assess the Problem

As defined by FEMA, risk is a combination of hazard, vulnerability, and exposure. *“It is the impact that a hazard would have on people, services, facilities, and structures in a community and refers to the likelihood of a hazard event resulting in an adverse condition that causes injury or damage.”*

This risk assessment covers the entire geographical area of the Bladen-Columbus-Robeson (BCR) Region within the State of North Carolina. The risk assessment process identifies and profiles relevant hazards and assesses the exposure of lives, property, and infrastructure to these hazards. The process allows for a better understanding of a jurisdiction’s potential risk to natural hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events. This risk assessment followed the methodology described in the FEMA publication *Understanding Your Risks—Identifying Hazards and Estimating Losses* (FEMA 386-2, 2002), which breaks the assessment down to a four-step process:



Data collected through this process has been incorporated into the following sections of this plan:

- **Section 4: Hazard Identification** identifies the natural and man-made hazards that threaten the planning area.
- **Section 5: Hazard Profiles** discusses the threat to the planning area and describes previous occurrences of hazard events and the likelihood of future occurrences.
- **Section 6: Vulnerability Assessment** assesses the planning area’s exposure to the hazards; considering assets at risk, critical facilities, and future development trends.
- **Section 7: Capability Assessment** inventories existing mitigation activities and policies, regulations, and plans that pertain to mitigation and can affect net vulnerability.

The HMPC conducted a hazard identification process to determine the natural and man-made hazards that threaten the region. Existing hazard data from NCEM, FEMA, the National Oceanic and Atmospheric Administration (NOAA), and other authoritative sources were examined to assess the significance of these hazards to the planning area. Significance was measured in general terms and focused on key criteria such as frequency and resulting damage, which includes deaths and injuries, as well as property and economic damage.

To further focus on the list of identified hazards for this plan update, the HMPC researched past events that resulted in a federal disaster declaration for each county. **Table 4-1** presents a list of all major disaster declarations that have occurred in the region since 1953. This table presents the foundation for identifying which hazards pose the greatest risk to the region.

**Table 4-1: Major Regional Disaster Declarations (1953-2024)**

| Declaration #         | Date       | Event Details                         |
|-----------------------|------------|---------------------------------------|
| <b>Robeson County</b> |            |                                       |
| DR-699                | 03/30/1984 | Severe Storms, Tornadoes              |
| DR-1134               | 09/06/1996 | Hurricane Fran                        |
| DR-1200               | 01/15/1998 | Flooding                              |
| DR-1240               | 08/27/1998 | Hurricane Bonnie                      |
| DR-1292               | 09/16/1999 | Hurricane Floyd & Irene               |
| DR-1490               | 09/18/2003 | Hurricane Isabel                      |
| DR-1546               | 09/10/2004 | Tropical Storm Frances                |
| DR-1969               | 04/19/2011 | Severe Storms, Tornadoes and Flooding |
| DR-4285               | 10/10/2016 | Hurricane Matthew                     |
| DR-4393               | 09/04/2018 | Hurricane Florence                    |
| DR-4465               | 10/04/2019 | Hurricane Dorian                      |
| DR-4487               | 03/25/2020 | COVID-19 Pandemic                     |
| DR-4588               | 03/03/2021 | Tropical Storm Eta                    |
| <b>Bladen County</b>  |            |                                       |
| DR-724                | 09/11/1984 | Hurricane Diana                       |
| DR-1127               | 07/18/1996 | Hurricane Bertha                      |
| DR-1134               | 09/06/1996 | Hurricane Fran                        |
| DR-1240               | 08/27/1998 | Hurricane Bonnie                      |
| DR-1292               | 09/16/1999 | Hurricane Floyd & Irene               |
| DR-1490               | 09/18/2003 | Hurricane Isabel                      |
| DR-1546               | 09/10/2004 | Tropical Storm Frances                |
| DR-1969               | 04/19/2011 | Severe Storms, Tornadoes and Flooding |
| DR-4019               | 08/31/2011 | Hurricane Irene                       |
| DR-4285               | 10/10/2016 | Hurricane Matthew                     |
| DR-4393               | 09/04/2018 | Hurricane Florence                    |
| DR-4465               | 10/04/2019 | Hurricane Dorian                      |
| DR-4487               | 03/25/2020 | COVID-19 Pandemic                     |



| Declaration #          | Date       | Event Details           |
|------------------------|------------|-------------------------|
| <b>Columbus County</b> |            |                         |
| DR-724                 | 09/11/1984 | Hurricane Diana         |
| DR-1127                | 07/18/1996 | Hurricane Bertha        |
| DR-1134                | 09/06/1996 | Hurricane Fran          |
| DR-1240                | 08/27/1998 | Hurricane Bonnie        |
| DR-1292                | 09/16/1999 | Hurricane Floyd & Irene |
| DR-1490                | 09/18/2003 | Hurricane Isabel        |
| DR-1546                | 09/10/2004 | Tropical Storm Frances  |
| DR-4019                | 08/31/2011 | Hurricane Irene         |
| DR-4285                | 10/10/2016 | Hurricane Matthew       |
| DR-4393                | 09/04/2018 | Hurricane Florence      |
| DR-4465                | 10/04/2019 | Hurricane Dorian        |
| DR-4487                | 03/25/2020 | COVID-19 Pandemic       |
| DR-4568                | 10/14/2020 | Hurricane Isaias        |

Source: FEMA

**Table 4-2** documents the decisions made by the HMPC as it relates to those hazards that were to be identified, analyzed, and addressed through the development of this plan. This table lists whether the hazard was included in the 2023 State of North Carolina Hazard Mitigation Plan and the 2020 Bladen-Columbus-Robeson Regional Hazard Mitigation Plan published after the latest update cycle. This table summarizes those hazards identified for inclusion in this plan as well as those that were not included. An explanation of excluded hazards is provided below.

**Table 4-2: Hazard Evaluation**

| Hazard                                                                            | Included in State Plan? | Included in 2020 Bladen-Columbus-Robeson Plan? | Identified as a significant hazard to be included in the Plan? |
|-----------------------------------------------------------------------------------|-------------------------|------------------------------------------------|----------------------------------------------------------------|
| Coastal Hazards (Coastal Flooding, Coastal Erosion, Storm Surge & Sea Level Rise) | Yes                     | No                                             | No                                                             |
| Dam/Levee Failure                                                                 | Yes                     | Yes                                            | Yes                                                            |
| Drought                                                                           | Yes                     | Yes                                            | Yes                                                            |
| Earthquake                                                                        | Yes                     | Yes                                            | Yes                                                            |
| Erosion                                                                           | No                      | No                                             | No                                                             |
| Excessive Heat                                                                    | Yes                     | No                                             | Yes                                                            |
| Hurricane/Tropical Storm                                                          | Yes                     | Yes                                            | Yes                                                            |
| Inland Flooding: 100-/500-year                                                    | Yes                     | Yes                                            | Yes                                                            |
| Severe Weather (Thunderstorm Wind, Lightning, & Hail)                             | Yes                     | Yes                                            | Yes                                                            |

## Hazard Identification

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| Hazard                             | Included in State Plan? | Included in 2020 Bladen-Columbus-Robeson Plan? | Identified as a significant hazard to be included in the Plan? |
|------------------------------------|-------------------------|------------------------------------------------|----------------------------------------------------------------|
| Tornado                            | Yes                     | Yes                                            | Yes                                                            |
| Wildfire                           | Yes                     | Yes                                            | Yes                                                            |
| Severe Winter Weather              | Yes                     | Yes                                            | Yes                                                            |
| Geological (Landslides, Sinkholes) | Yes                     | No                                             | No                                                             |
| Infectious Disease                 | Yes                     | No                                             | Yes                                                            |
| Hazardous Substances               | Yes                     | No                                             | No                                                             |
| Radiological Emergency             | Yes                     | No                                             | No                                                             |
| Cybersecurity                      | Yes                     | No                                             | Yes                                                            |
| Terrorism                          | Yes                     | No                                             | No                                                             |
| Civil Disturbance                  | Yes                     | No                                             | No                                                             |
| Electromagnetic Pulse              | Yes                     | No                                             | No                                                             |
| Food Emergency                     | Yes                     | No                                             | No                                                             |

The hazards excluded from this plan were omitted because they are either more appropriately managed by local or regional emergency services, deemed irrelevant to the Region, and/or sufficiently covered by the State of North Carolina Hazard Mitigation Plan.

## SECTION 5: HAZARD PROFILES

### 44 CFR Subsection D §201.6(c)(2)(i)

[The risk assessment shall include a] description of the type, location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

The hazards identified in **Chapter 4 – Hazard Identification**, are profiled individually in this chapter. It consists of the following subsections:

- ◆ 5.1 Cybersecurity
- ◆ 5.2 Dam/Levee Failure
- ◆ 5.3 Drought
- ◆ 5.4 Earthquake
- ◆ 5.5 Excessive Heat
- ◆ 5.6 Hurricane/Tropical Storm
- ◆ 5.7 Infectious Disease
- ◆ 5.8 Inland Flooding
- ◆ 5.9 Severe Weather
- ◆ 5.10 Tornado
- ◆ 5.11 Wildfire
- ◆ 5.12 Winter Storm
- ◆ 5.13 Hazard Profile Summary

Information provided by members of the Mitigation Action Committee (MAC) has been integrated into this chapter with information from other data sources.

Each hazard is profiled according to a specific methodology format as detailed below.

### Hazard Profile Methodology

#### Hazard Description

This section provides a description of the hazard followed by details specific to the regional planning area.

#### Location and Spatial Extent

This section includes information on the hazard extent, seasonal patterns, speed of onset/duration, magnitude and any secondary effects.

#### Past Occurrences

This section contains information on historical events, including the extent or location of the hazard within or near the regional planning area.

#### Probability of Future Occurrence

This section gauges the likelihood of future occurrences based on past events and existing data. The likelihood of future flood occurrences, for example, is categorized into one of the classifications:

- *Example:* Probability Definitions for Future Flood Hazards
  - **Unlikely:** Less than 1% annual probability of flooding hazard (100 or 500-year event)

- **Possible:** Between 1% and 10% annual probability of flooding hazard (100 or 500-year event)
- **Likely:** Between 10% and 100% annual probability of flooding hazard (100 or 500-year event)
- **Highly Likely:** 100% annual probability of flooding hazard (100 or 500-year event)

### Consequence and Impact Analysis (Vulnerability Problem Statements)

This section examines effects and impacts of the hazard on people, first responders, continuity of operations, built environment, economy and natural environment.

Those hazards determined to be of high or medium significance were characterized as priority hazards that required further evaluation in Chapter 6 Vulnerability Assessment. Significance was determined by frequency of the hazard and resulting damage, including deaths/injuries and property, crops, and economic damage. Hazards occurring infrequently or having little to no impact on the planning area were determined to be of low significance and not considered a priority hazard. These criteria allow the HMPC to prioritize hazards of greatest significance and focus resources where they are most needed.

### Study Area

The Bladen-Columbus-Robeson Region (referred to hereafter as “Region”) includes 35 participating jurisdictions, encompassing 3 counties and 32 municipalities as listed below. **Figure 5-1** on the following page provides a base map, for reference, of the Region and the participating municipalities.

### Participating Jurisdictions

#### Bladen County

- Town of Bladenboro
- Town of Clarkton
- Town of Dublin
- Town of East Arcadia
- Town of Elizabethtown
- Town of Tar Heel
- Town of White Lake

#### Columbus County

- Town of Boardman
- Town of Bolton
- Town of Brunswick
- Town of Cerro Gordo
- Town of Chadbourn
- Town of Fair Bluff
- Town of Lake Waccamaw
- Town of Sandyfield
- Town of Tabor City
- Town of Whiteville

#### Robeson County

- City of Lumberton
- Town of Fairmont
- Town of Lumber Bridge
- Town of Marietta
- Town of Maxton
- Town of McDonald
- Town of Orrum
- Town of Parkton
- Town of Pembroke
- Town of Proctorville
- Town of Raynham
- Town of Red Springs
- Town of Rennert
- Town of Rowland
- Town of St. Pauls

# Bladen-Columbus-Robeson

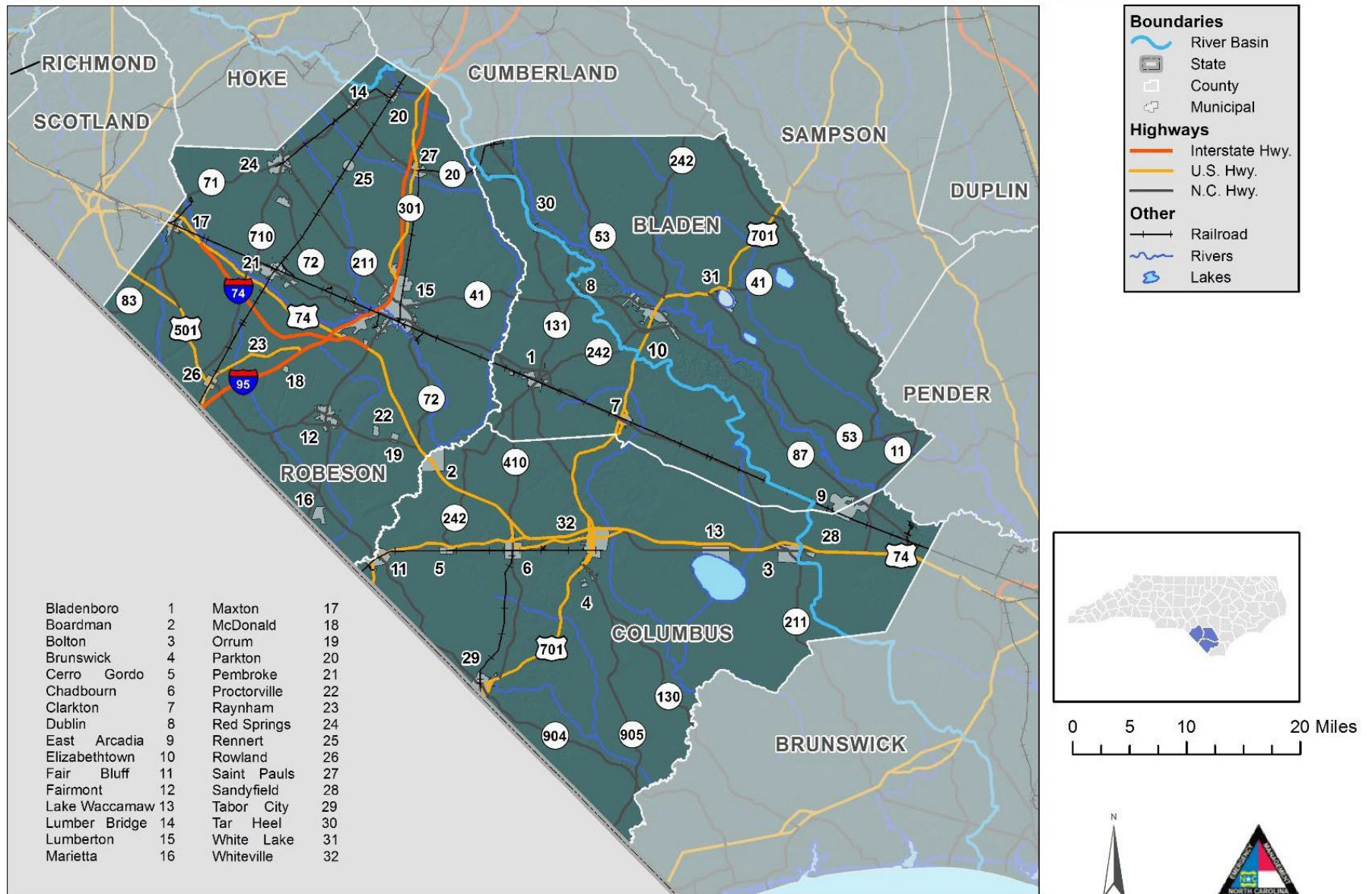


Figure 5-1: Bladen Columbus Robeson Regional Map

## Past Significant Weather Events

NOAA's National Centers for Environmental Information (NCEI) [formerly known as the National Climatic Data Center (NCDC)], has been tracking severe weather since 1950. Their Storm Events Database contains an archive of destructive storm or weather data and information which includes local, intense and damaging events. NCEI receives storm data from the National Weather Service (NWS). The NWS receives their information from a variety of sources, which include but are not limited to: county, state and federal emergency management officials, local law enforcement officials, Sky Warn spotters, NWS damage surveys, newspaper clipping services, the insurance industry and the general public, among others. This database contains 1,850 severe weather events that occurred in the Region between January 1, 1950, and December 31, 2024. **Table 5-1** summarizes these events.

**Table 5-1: NCEI Regional Storm Events (January 1950 – December 2024)**

| Type                   | # of Events | Property Damage     | Crop Damage         | Deaths (Direct) | Injuries (Direct) |
|------------------------|-------------|---------------------|---------------------|-----------------|-------------------|
| <b>Bladen County</b>   |             |                     |                     |                 |                   |
| Cold/Wind Chill        | 0           | \$0                 | \$0                 | 0               | 0                 |
| Flash Flood            | 47          | \$15,219,000        | \$0                 | 2               | 0                 |
| Flood                  | 10          | \$20,000            | \$0                 | 0               | 0                 |
| Hail                   | 162         | \$50,200            | \$0                 | 0               | 0                 |
| Heat                   | 4           | \$0                 | \$0                 | 0               | 0                 |
| Heavy Rain             | 8           | \$10,000            | \$0                 | 0               | 0                 |
| High Wind              | 9           | \$20,620,000        | \$25,000,000        | 1               | 0                 |
| Hurricane (Typhoon)    | 1           | \$100,000           | \$0                 | 0               | 3                 |
| Lightning              | 13          | \$136,000           | \$500,000           | 0               | 1                 |
| Strong Wind            | 12          | \$66,000            | \$1,000             | 0               | 0                 |
| Thunderstorm Wind      | 276         | \$2,034,000         | \$17,500            | 0               | 6                 |
| Tornado                | 27          | \$30,531,000        | \$13,000            | 5               | 8                 |
| Tropical Storm         | 4           | \$0                 | \$0                 | 2               | 0                 |
| Winter Storm           | 7           | \$0                 | \$0                 | 0               | 0                 |
| Winter Weather         | 6           | \$30,000            | \$0                 | 0               | 0                 |
| <b>Total:</b>          | <b>586</b>  | <b>\$68,816,200</b> | <b>\$25,531,500</b> | <b>10</b>       | <b>18</b>         |
| <b>Columbus County</b> |             |                     |                     |                 |                   |
| Cold/Wind Chill        | 0           | \$0                 | \$0                 | 0               | 0                 |
| Flash Flood            | 40          | \$32,765,000        | \$10,200,000        | 1               | 1                 |
| Flood                  | 14          | \$26,000            | \$0                 | 0               | 0                 |
| Hail                   | 175         | \$189,750           | \$5,000,000         | 0               | 0                 |
| Heat                   | 5           | \$0                 | \$0                 | 1               | 15                |
| Heavy Rain             | 11          | \$170,000           | \$0                 | 0               | 1                 |
| High Wind              | 7           | \$18,605,000        | \$38,000,000        | 1               | 11                |
| Hurricane (Typhoon)    | 1           | \$150,000           | \$0                 | 0               | 0                 |
| Lightning              | 16          | \$398,000           | \$0                 | 2               | 4                 |
| Strong Wind            | 2           | \$22,000            | \$0                 | 0               | 0                 |
| Thunderstorm Wind      | 259         | \$6,085,000         | \$9,500             | 0               | 7                 |

## Hazard Profiles

| Type                   | # of Events  | Property Damage      | Crop Damage          | Deaths (Direct) | Injuries (Direct) |
|------------------------|--------------|----------------------|----------------------|-----------------|-------------------|
| Tornado                | 33           | \$6,625,000          | \$50,000             | 8               | 40                |
| Tropical Storm         | 10           | \$91,001,000         | \$2,900,000          | 1               | 0                 |
| Winter Storm           | 5            | \$0                  | \$0                  | 0               | 0                 |
| Winter Weather         | 5            | \$0                  | \$0                  | 0               | 0                 |
| <b>Total:</b>          | <b>583</b>   | <b>\$156,036,750</b> | <b>\$56,105,500</b>  | <b>14</b>       | <b>78</b>         |
| <b>Robeson County</b>  |              |                      |                      |                 |                   |
| Cold/Wind Chill        | 0            | \$0                  | \$0                  | 0               | 0                 |
| Flash Flood            | 30           | \$4,936,000          | \$0                  | 2               | 0                 |
| Flood                  | 9            | \$7,000              | \$0                  | 0               | 0                 |
| Hail                   | 171          | \$117,150            | \$50,000             | 0               | 1                 |
| Heat                   | 5            | \$0                  | \$0                  | 1               | 0                 |
| Heavy Rain             | 10           | \$0                  | \$0                  | 0               | 0                 |
| High Wind              | 7            | \$24,120,000         | \$33,000,000         | 0               | 6                 |
| Hurricane (Typhoon)    | 0            | \$0                  | \$0                  | 0               | 0                 |
| Lightning              | 8            | \$506,500            | \$0                  | 0               | 2                 |
| Strong Wind            | 10           | \$26,000             | \$0                  | 0               | 0                 |
| Thunderstorm Wind      | 360          | \$4,393,000          | \$110,000            | 0               | 8                 |
| Tornado                | 49           | \$9,566,000          | \$0                  | 6               | 334               |
| Tropical Storm         | 7            | \$71,000             | \$0                  | 0               | 0                 |
| Winter Storm           | 10           | \$20,000             | \$0                  | 0               | 0                 |
| Winter Weather         | 5            | \$30,000             | \$0                  | 0               | 0                 |
| <b>Total:</b>          | <b>681</b>   | <b>\$43,792,650</b>  | <b>\$33,160,000</b>  | <b>9</b>        | <b>351</b>        |
| <b>Regional Total:</b> | <b>1,850</b> | <b>\$268,645,600</b> | <b>\$114,797,000</b> | <b>33</b>       | <b>447</b>        |

Source: NCEI Storm Events Database, February 2025

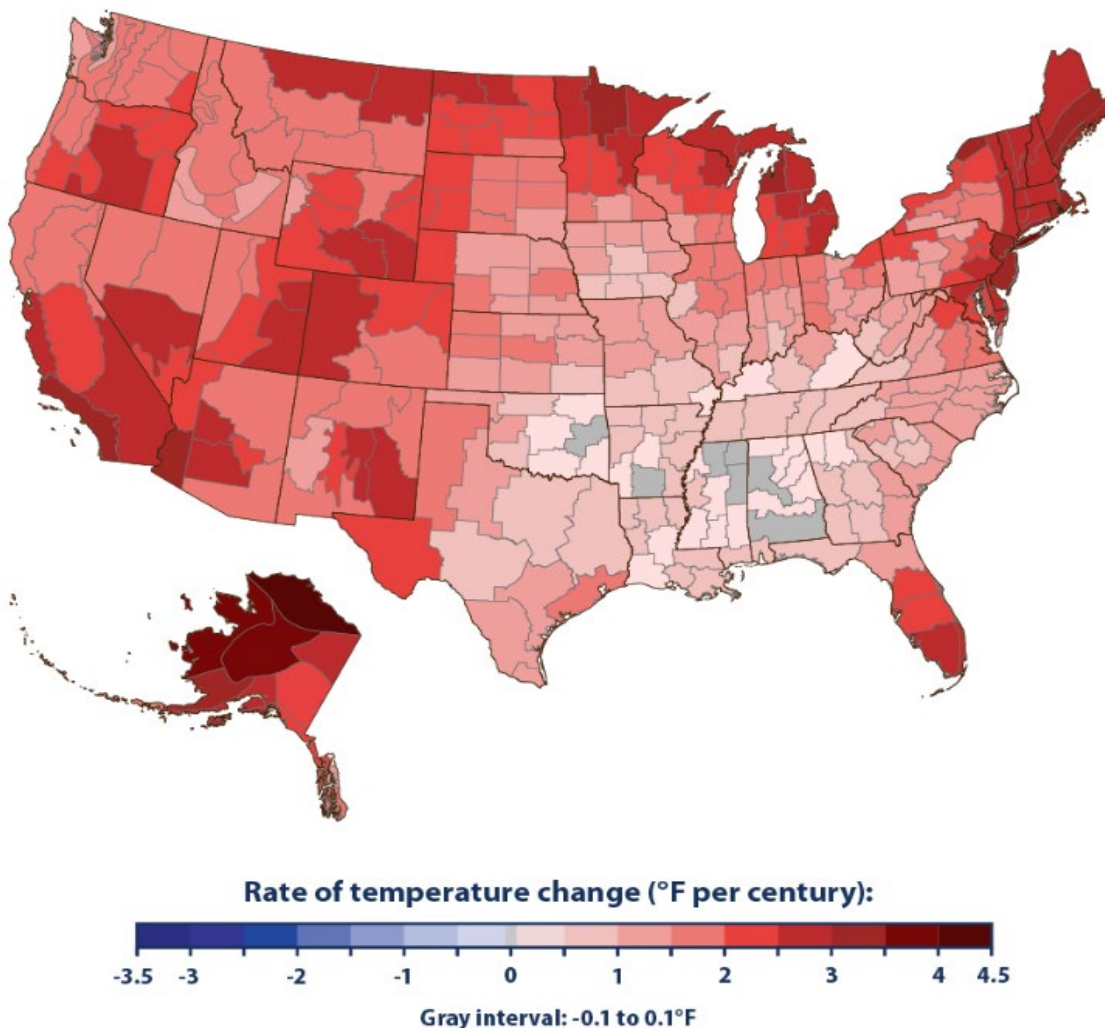
Note: Losses reflect totals for all impacted areas within a county.



## Climate Change

Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing such as modulations of the solar cycles, volcanic eruptions, and persistent anthropogenic changes in the composition of the atmosphere or in land use. Climate change is a natural occurrence in which the earth has warmed and cooled periodically over geologic time. The recent and rapid warming of the earth over the past century has been cause for concern, as this warming is very likely due to the accumulation of human-caused greenhouse gases, such as carbon dioxide (CO<sub>2</sub>), in the atmosphere. This warming is occurring almost everywhere in the world which suggests a global cause rather than changes in localized weather patterns.

**Rate of Temperature Change in the United States, 1901–2023**



Alaska data start in 1925.

Data source: NOAA (National Oceanic and Atmospheric Administration). (2024). *Climate at a glance*. Retrieved March 25, 2024, from [www.ncei.noaa.gov/access/monitoring/climate-at-a-glance](https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance)

For more information, visit U.S. EPA's "Climate Change Indicators in the United States" at [www.epa.gov/climate-indicators](https://www.epa.gov/climate-indicators).

Since 1901, the average surface temperature across the contiguous 48 states has risen at an average rate of 0.17°F per decade. Average temperatures have risen more quickly since the late 1970s (0.32 to 0.51°F per decade). Nine of the top 10 warmest years on record for the contiguous 48 states have occurred since 1998, and 2012 and 2016 were the warmest years on record. The figure below, based on data from NOAA and prepared by the EPA, shows how annual average air temperatures have changed in different parts of the United States since 1901. According to recent iterations of the U.S. National Climate Assessment, the Region is projected to experience an additional 20-30 days annually with temperatures above 95°F, drastically increasing the number of extreme heat days. Furthermore, the average temperature in the Southeast United States is expected to increase by four to eight degrees Fahrenheit by 2100.

The U.S. National Climate Assessment identifies the following climate risks projected to impact the Southeast U.S., including the Region: rising temperatures and more frequent extreme heat events; increasing frequency and intensity of severe weather events; more heavy rain events and flooding; and more frequent and prolonged drought<sup>1</sup>. A discussion of the effect of these compounding risks on the individual hazards profiled below may be included in the Probability of Future Occurrence subsection for each hazard as applicable.

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<sup>1</sup> U.S. National Climate Assessment series. U.S. Global Change Research Program.  
[https://repository.library.noaa.gov/gsearch?ref=docDetails&related\\_series=U.S.%20National%20Climate%20Assessment](https://repository.library.noaa.gov/gsearch?ref=docDetails&related_series=U.S.%20National%20Climate%20Assessment)

## 5.1 Cybersecurity

### 5.1.1 Hazard Description

Cyberattacks are deliberate attacks on information technology systems in an attempt to gain illegal access to a computer, or purposely cause damage. As the world and the Region become more technologically advanced and dependent upon computer systems, the threat of cyberattacks is becoming increasingly prevalent. Also known as computer network attacks, cyberattacks are difficult to recognize and typically use malicious code to alter computer data or steal information.

Mitigating and preparing for cyberattacks is challenging because of how diverse and complex attacks can be. The FBI is the lead federal agency for investigating cyberattacks by criminals, overseas adversaries, and terrorists. In North Carolina, the Department of Information Technology is the lead agency that maintains Cybersecurity and Risk Management resources.

Cyberattacks can happen in both the public and private sector. They may be carried out by a specific individual, or by groups from afar. Many attacks attempt to steal money or to disturb normal operations. According to the 2023 Verizon Report of Data Breaching, 83% of breaches involved external actors, with the majority of them being financially motivated.

There are many types of cyberattack incident patterns, which include:

- **Web App Attacks**: Incidents in which web applications were attacked, which can include exploiting code-level vulnerabilities in the application
- **Point-of-Sale Intrusions**: Remote attacks against environments where card-present retail transactions are conducted
- **Insider and Privilege Misuse**: Unapproved or malicious use of organizational resources.
- **Miscellaneous Errors**: Incidents in which unintentional actions directly compromise an attribute of a security asset
- **Physical Theft and Loss**: Incidents where an information asset went missing
- **Crimeware**: Instances involving malware that do not fit into a more specific pattern
- **Payment Card Skimmers**: Incidents involving skimming devices physically implanted on an asset that reads magnetic stripe data from payment cards
- **Cyber-espionage**: Unauthorized network or system access linked to state-affiliated actors
- **Denial-of-Service Attacks**: Any attack intended to compromise the availability of networks and systems that are designed to overwhelm systems, resulting in performance degradation or interruption of service

### 5.1.2 Location and Spatial Extent

Cyberattacks happen all over the world and are not restricted to a certain geographic boundary. They tend to affect the public sector rather than private sectors. Computer infrastructure across the Region may be vulnerable to this hazard.

### 5.1.3 Past Occurrences

In North Carolina and the Bladen Columbus Robeson Region, the North Carolina Department of Information Technology (NCDIT) specializes in cybersecurity and risk management. Within the department, the NC Information Sharing and Analysis Center gathers information on cyberattack threats within the State to raise cybersecurity preparedness. The North Carolina Joint Cybersecurity Task Force (JCTF) is also authorized to provide incident response and recovery efforts.

In 2023, North Carolina reported the highest number of cybercrimes in the “personal data breach” sector, which can be seen in the table below.

**Table 5-2: North Carolina Cybercrimes and Victim Counts (2023)**

| Crime Type by Victim Count    |              |                                 |              |
|-------------------------------|--------------|---------------------------------|--------------|
| Crime Type                    | Victim Count | Crime Type                      | Victim Count |
| Advanced Fee                  | 211          | Lottery/Sweepstakes/Inheritance | 119          |
| BEC                           | 596          | Malware                         | 20           |
| Botnet                        | 13           | No Lead Value                   | 1,122        |
| Confidence/Romance            | 453          | Non-payment/Non-Delivery        | 1,295        |
| Credit Card/Check Fraud       | 337          | Other                           | 186          |
| Crimes Against Children       | 46           | Overpayment                     | 115          |
| Data Breach                   | 93           | Personal Data Breach            | 1,571        |
| Employment                    | 402          | Phishing/Spoofing               | 150          |
| Extortion                     | 1,269        | Ransomware                      | 59           |
| Government Impersonation      | 410          | Real Estate                     | 242          |
| Harassment/Stalking           | 284          | SIM Swap                        | 18           |
| IPR/Copyright and Counterfeit | 33           | Tech Support                    | 1,032        |
| Identity Theft                | 454          | Threats of Violence             | 44           |
| Investment                    | 692          |                                 |              |
| Descriptors*                  |              |                                 |              |
| Cryptocurrency                | 996          | Cryptocurrency Wallet           | 480          |

Source: FBI Internet Crime Complaint Center (IC3), 2023

All counties in the Region have reported occurrences of a cyberattack within the last 5 years. Bladen County network systems were affected by a major cyberattack in November 2023. Columbus County has reported multiple cyberattacks across several years (e.g., October 2019, November 2020, May 2023). Robeson County was recently affected by a cyberattack in April 2024 as well.

#### 5.1.4 Probability of Future Occurrence

As the world’s dependency on technology grows in addition to severe past occurrences observed locally across the Region, the possibility of experiencing cyberattacks rises as well. The probability of future cybersecurity events is shown in the table below, by jurisdiction.

##### Definitions for Descriptors Used for Probability of Future Hazard Occurrences

- Unlikely: Less than 1% annual probability of hazard
- Possible: Between 1% and 10% annual probability of hazard
- Likely: Between 10% and 100% annual probability of hazard
- Highly Likely: 100% annual probability of hazard

| Jurisdiction                          | Probability of Future Occurrence |
|---------------------------------------|----------------------------------|
| Bladen County (Unincorporated Area)   | Likely                           |
| Columbus County (Unincorporated Area) | Likely                           |
| Robeson County (Unincorporated Area)  | Likely                           |
| City of Lumberton                     | Likely                           |
| City of Whiteville                    | Likely                           |
| Town of Bladenboro                    | Likely                           |
| Town of Boardman                      | Likely                           |

| Jurisdiction          | Probability of Future Occurrence |
|-----------------------|----------------------------------|
| Town of Bolton        | Likely                           |
| Town of Brunswick     | Likely                           |
| Town of Cerro Gordo   | Likely                           |
| Town of Chadbourn     | Likely                           |
| Town of Clarkton      | Likely                           |
| Town of Dublin        | Likely                           |
| Town of East Arcadia  | Likely                           |
| Town of Elizabethtown | Likely                           |
| Town of Fair Bluff    | Likely                           |
| Town of Fairmont      | Likely                           |
| Town of Lake Waccamaw | Likely                           |
| Town of Lumber Bridge | Likely                           |
| Town of Marietta      | Likely                           |
| Town of Maxton        | Likely                           |
| Town of McDonald      | Likely                           |
| Town of Orrum         | Likely                           |
| Town of Parkton       | Likely                           |
| Town of Pembroke      | Likely                           |
| Town of Proctorville  | Likely                           |
| Town of Raynham       | Likely                           |
| Town of Red Springs   | Likely                           |
| Town of Rennert       | Likely                           |
| Town of Rowland       | Likely                           |
| Town of Saint Pauls   | Likely                           |
| Town of Sandyfield    | Likely                           |
| Town of Tabor City    | Likely                           |
| Town of Tar Heel      | Likely                           |
| Town of White Lake    | Likely                           |

Source: Plan risk assessment

### 5.1.5 Consequence and Impact Analysis (Vulnerability)

#### Changing Future Conditions

Unlike other hazards discussed in this plan, changing climatic patterns are unlikely to affect the occurrence or frequency of future cyberattack incidents. Ongoing preparedness and training efforts will remain especially important as global data usage trends and cyberattack threats evolve in future years.

### **People**

Cyberattacks may affect individuals or groups of people financially, socially, or emotionally, depending on the type of event and underlying motive.

### **First Responders**

First responders can be impacted in the same way as the general public. Critical communications systems and other responder networks may be significantly impacted in the event of a cyberattack.

### **Continuity of Operations**

Cyberattacks can result in utility issues, loss of internet connection, loss of account access, and/or communication disruptions which may impact operations.

### **Built Environment**

Although this has historically been a minor concern, cyberattacks could cause increasing damage to the built environment as more jurisdictions adopt newer technologies designed to connect various building systems to the internet.

### **Economy**

Potential economic damages include business losses, customer losses, software crashes, ransom payments, and other impacts.

### **Natural Environment**

Although this has historically been a minor concern, cyberattacks could cause increasing damage to the natural environment if natural resource management control systems and infrastructure are targeted.

## 5.2 Dam/Levee Failure

### 5.2.1 Hazard Description

A dam is a barrier constructed across a watercourse that stores, controls, or diverts water. Dams are usually constructed of earth, rock, or concrete. The water impounded behind a dam is referred to as the reservoir and is measured in acre-feet. One acre-foot is the volume of water that covers one acre of land to a depth of one foot. Dams can benefit farmland, provide recreation areas, generate electrical power, and help control erosion and flooding issues.

A dam failure is the collapse or breach of a dam that causes downstream flooding. Dam failures may be caused by natural events, human-caused events, or a combination. Due to the lack of advance warning, failures resulting from natural events, such as hurricanes, earthquakes, or landslides, may be particularly severe. Prolonged rainfall and subsequent flooding is the most common cause of dam failure.

Dam failures usually occur when the spillway capacity is inadequate, and water overtops the dam or when internal erosion in dam foundation occurs (also known as piping). If internal erosion or overtopping cause a full structural breach, a high-velocity, debris-laden wall of water is released downstream, damaging or destroying anything in its path. Overtopping is the primary cause of earthen dam failure in the U.S.

Dam failures can result from any one or a combination of the following:

- Prolonged periods of rainfall and flooding;
- Inadequate spillway capacity, resulting in excess overtopping flows;
- Internal erosion caused by embankment or foundation leakage or piping;
- Improper maintenance, including failure to remove trees, repair internal seepage problems, replace lost material from the cross-section of the dam and abutments, or maintain gates, valves, and other operational components;
- Improper design, including the use of improper construction materials and practices;
- Negligent operation, including the failure to remove or open gates or valves during high flow periods;
- Failure of upstream dams on the same waterway; and
- High winds, which can cause significant wave action and result in substantial erosion.

Water released by a failed dam generates tremendous energy and can cause a flood that is catastrophic to life and property. A catastrophic dam failure could challenge local response capabilities and require evacuations to save lives. Impacts to life safety will depend on the warning time and the resources available to notify and evacuate the public. Major casualties and loss of life could result, as well as water quality and health issues. Potentially catastrophic effects to roads, bridges, and homes are also of major concern. Associated water quality and health concerns could also be issues. Factors that influence the potential severity of a full or partial dam failure are the amount of water impounded; the density, type, and value of development and infrastructure located downstream; and the speed of failure.

Each state has definitions and methods to determine the Hazard Potential of a dam. The North Carolina Department of Environmental Quality (NCDEQ) oversees the statewide Dam Safety Program. In North Carolina, dams are regulated by the state if they are 25 feet or more in height and impound 50 acre-feet or more. Impoundments smaller than that may fall under state regulation if it is determined that failure of the dam could result in loss of human life or significant damage to property. The height of a dam is from the highest point on the crest of the dam to the lowest point on the downstream toe, and the storage capacity is the volume impounded at the elevation of the highest point on the crest of the dam.

Dam safety engineers determine the "hazard potential" of a dam, meaning the probable damage that would occur if the structure failed, in terms of loss of human life and economic loss or environmental



damage. Dams are assigned one of three classes based on the nature of their hazard potential:

1. Class A (Low Hazard) includes dams located where failure may damage uninhabited low value non- residential buildings, agricultural land, or low volume roads.
2. Class B (Intermediate Hazard) includes dams located where failure may damage highways or secondary railroads, cause interruption of use or service of public utilities, cause minor damage to isolated homes, or cause minor damage to commercial and industrial buildings. Damage to these structures will be considered minor only when they are located in backwater areas not subjected to the direct path of the breach flood wave; and they will experience no more than 1.5 feet of flood rise due to breaching above the lowest ground elevation adjacent to the outside foundation walls or no more than 1.5 feet of flood rise due to breaching above the lowest floor elevation of the structure.
3. Class C (High Hazard) includes dams located where failure will likely cause loss of life or serious damage to homes, industrial and commercial buildings, important public utilities, primary highways, or major railroads.

**Table 5-3: Dam Hazard Classifications**

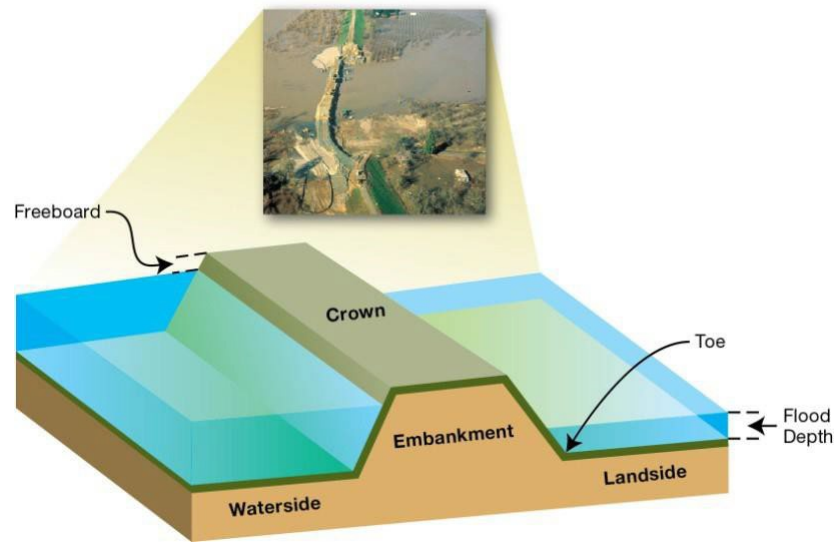
| Hazard Classification | Description                                                                               | Quantitative Guidelines                |
|-----------------------|-------------------------------------------------------------------------------------------|----------------------------------------|
| <b>Low</b>            | Interruption of road service, low volume roads                                            | Less than 25 vehicles per day          |
|                       | Economic damage                                                                           | Less than \$30,000                     |
| <b>Intermediate</b>   | Damage to highways, interruption of service                                               | 25 to less than 250 vehicles per day   |
|                       | Economic damage                                                                           | \$30,000 to less than \$200,000        |
|                       | Loss of human life*                                                                       | Probable loss of 1 or more human lives |
| <b>High</b>           | <b>Economic damage</b>                                                                    | More than \$200,000                    |
|                       | <b>*Probable loss of human life due to breached roadway or bridge on or below the dam</b> | 250 or more vehicles per day           |

Source: NCDEQ

### Levee Failure

FEMA defines a levee as “a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water in order to reduce the risk from temporary flooding.” Levee systems consist of levees, floodwalls, and associated structures, such as closure and drainage devices, which are constructed and operated in accordance with sound engineering practices. Levees often have “interior drainage” systems that work in conjunction with the levees to take water from the landward side to the water side. An interior drainage system may include culverts, canals, ditches, storm sewers, and/or pumps.

Levees and floodwalls are constructed from the earth, compacted soil or artificial materials, such as concrete or steel. To protect against erosion and scouring, earthen levees can be covered with grass and gravel or hard surfaces like stone, asphalt, or concrete. Levees and floodwalls are typically built parallel to a waterway, most often a river, in order to reduce the risk of flooding to the area behind it. **Figure 5-2** on the following page shows the components of a typical levee.



Source: FEMA, What is a Levee Fact Sheet, August 2011

**Figure 5-2: Components of a Typical Levee**

Levees provide strong flood protection, but they are not failsafe. Levees are designed to protect against a specific flood level and could be overtopped during severe weather events. Levees reduce, not eliminate, the risk to individuals and structures behind them. A levee system failure or overtopping can create severe flooding and highwater velocities. It is important to remember that no levee provides protection from events for which it was not designed, and proper operation and maintenance are necessary to reduce the probability of failure.

### 5.2.2 Location and Spatial Extent

The tables and figures below show counts and locations of high and intermediate hazard dams in each participating jurisdiction.

**Table 5-4: Counts of High, Intermediate, and Low Hazard Dams by Jurisdiction**

| Jurisdiction                          | High     | Intermediate | Low       |
|---------------------------------------|----------|--------------|-----------|
| <b>Bladen</b>                         |          |              |           |
| Bladen County (Unincorporated Area)   | 2        | 1            | 14        |
| Town of Elizabethtown                 | 1        | 0            | 0         |
| Town of Tar Heel                      | 0        | 2            | 0         |
| <b>Subtotal Bladen</b>                | <b>3</b> | <b>3</b>     | <b>14</b> |
| <b>Columbus</b>                       |          |              |           |
| Columbus County (Unincorporated Area) | 3        | 0            | 5         |
| Town of Tabor City                    | 1        | 0            | 0         |
| <b>Subtotal Columbus</b>              | <b>4</b> | <b>0</b>     | <b>5</b>  |
| <b>Robeson</b>                        |          |              |           |
| Robeson County (Unincorporated Area)  | 1        | 0            | 8         |
| City of Lumberton                     | 3        | 0            | 0         |

| Jurisdiction     | High | Intermediate | Low |
|------------------|------|--------------|-----|
| Subtotal Robeson | 4    | 0            | 8   |
| Regional Total   | 11   | 3            | 27  |

Source: North Carolina Dam Inventory, 2025

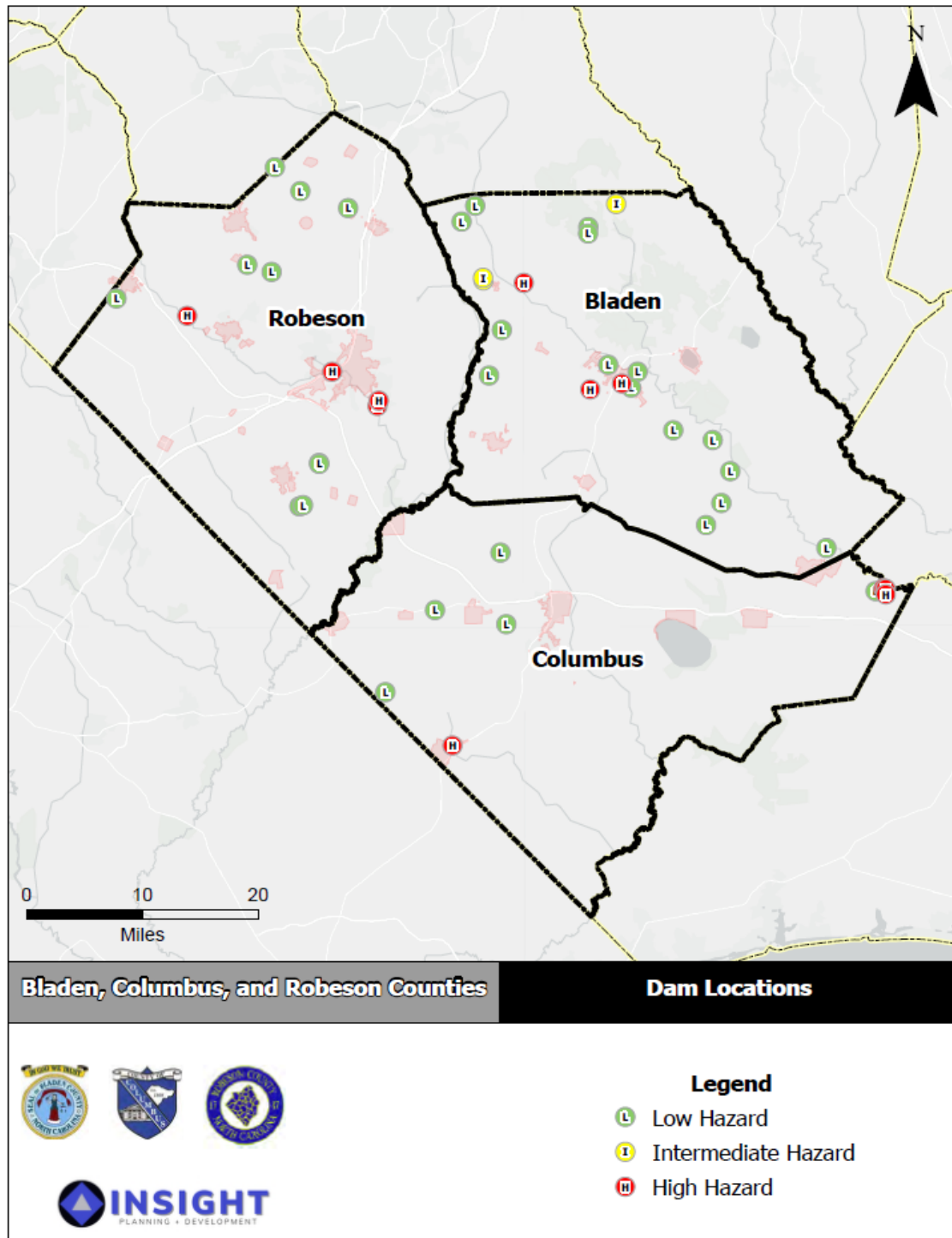
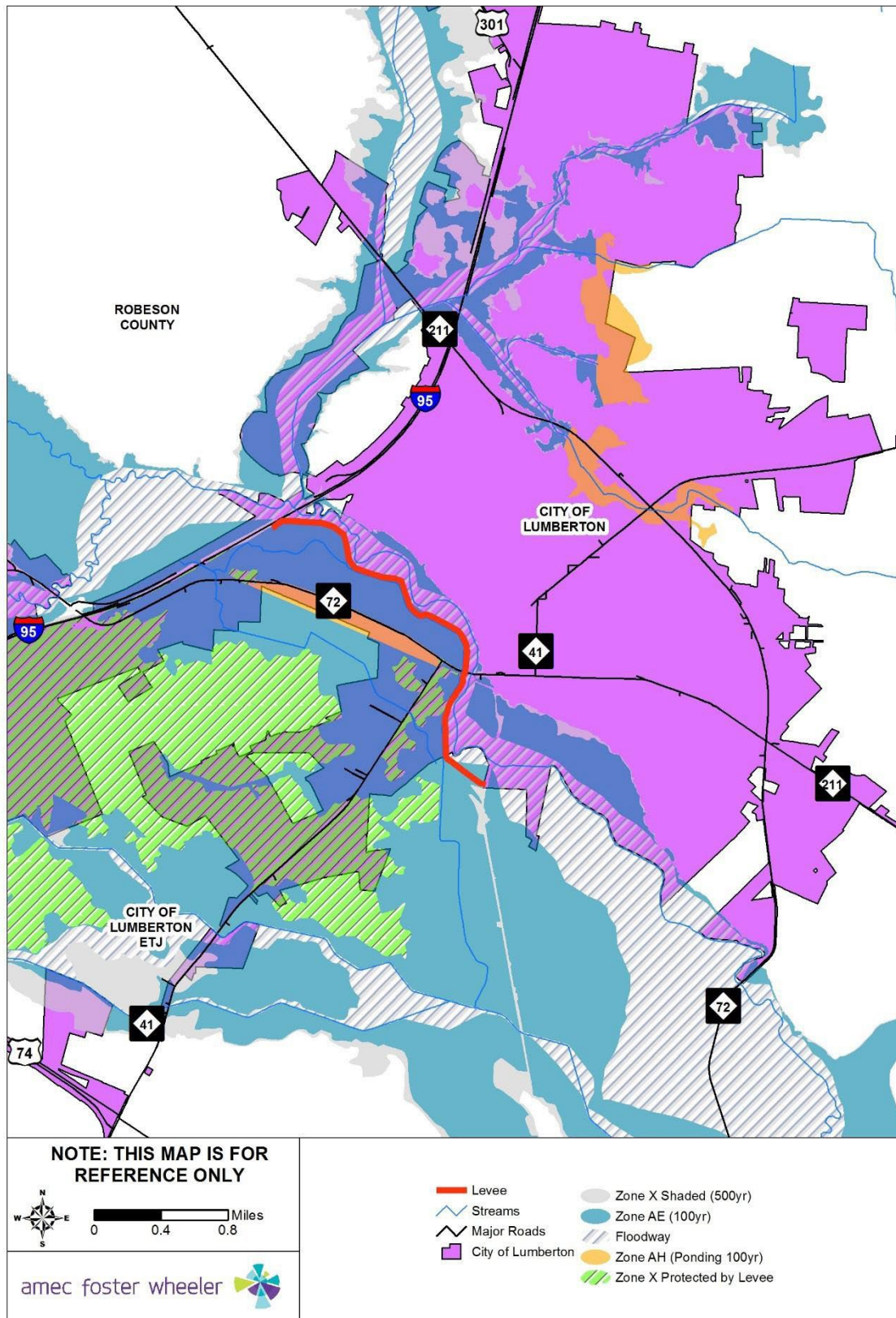


Figure 5-3: Dam Locations



**Figure 5-4: Levee Location**

## Levees

There is one levee located in the Region within Robeson County in the City of Lumberton. A levee

construction and channel improvement project was completed by the U.S. Soil Conservation Service (SCS) in the Jacob Swamp watershed during the 1960s. The project included improvements to the existing Jacob Swamp, Little Jacob Swamp, Gum Branch, and Cotton Mill Branch channels in order to increase their ability to remove flood water from the area. The project also included a levee along the Lumber River to prevent flooding from the Lumber River. This project was designed to prevent damage predicted by the 1% (100- year) annual chance flood, as determined using data available at that time. In order to provide this level of protection, the existing channels needed to be enlarged, and a levee needed to be installed along the Lumber River. This levee consisted of a combination of the I-95 embankment and a constructed levee from I-95 to Alamac Road. **Figure 5-4** shows the location of the levee within the City of Lumberton.

Two factors influence the potential severity of a dam failure: the amount of water impounded, and the density, type, and value of development and infrastructure located downstream. The potential extent of dam failure may be classified according to their “hazard potential,” meaning the probable damage that would occur if the structure failed, in terms of loss of human life and economic loss or environmental damage. The State of North Carolina classifies dam structures under its regulations according to hazard potential. It is important to note that these classifications are not based on the adequacy or structural integrity of existing dam structures. There were no reported dam failures in the Region and all its jurisdictions. Mitigation strategy regarding dam identification and mapping will be considered in future mitigation actions for the Region.

### 5.2.3 Past Occurrences

Floodwaters circumvented the Lumberton Levee during the October 2016 Hurricane Matthew event. The White Oak Dike also experienced failure days after catastrophic rainfall from Hurricane Florence (September 2018).

### 5.2.4 Probability of Future Occurrence

Based on the analyses performed in the North Carolina Emergency Management (NCEM) Risk Management Tool (RMT) in addition to findings of the updated plan risk assessment process, the probability of future dam failure events is shown in the table below, by jurisdiction.

#### Definitions for Descriptors Used for Probability of Future Hazard Occurrences

- Unlikely: Less than 1% annual probability of hazard
- Possible: Between 1% and 10% annual probability of hazard
- Likely: Between 10% and 100% annual probability of hazard
- Highly Likely: 100% annual probability of hazard

| Jurisdiction                          | Probability of Future Occurrence |
|---------------------------------------|----------------------------------|
| Bladen County (Unincorporated Area)   | Unlikely                         |
| Columbus County (Unincorporated Area) | Unlikely                         |
| Robeson County (Unincorporated Area)  | Unlikely                         |
| City of Lumberton                     | Unlikely                         |
| City of Whiteville                    | Unlikely                         |
| Town of Bladenboro                    | Unlikely                         |
| Town of Boardman                      | Unlikely                         |



| Jurisdiction          | Probability of Future Occurrence |
|-----------------------|----------------------------------|
| Town of Bolton        | Unlikely                         |
| Town of Brunswick     | Unlikely                         |
| Town of Cerro Gordo   | Unlikely                         |
| Town of Chadbourn     | Unlikely                         |
| Town of Clarkton      | Unlikely                         |
| Town of Dublin        | Unlikely                         |
| Town of East Arcadia  | Unlikely                         |
| Town of Elizabethtown | Unlikely                         |
| Town of Fair Bluff    | Unlikely                         |
| Town of Fairmont      | Unlikely                         |
| Town of Lake Waccamaw | Unlikely                         |
| Town of Lumber Bridge | Unlikely                         |
| Town of Marietta      | Unlikely                         |
| Town of Maxton        | Unlikely                         |
| Town of McDonald      | Unlikely                         |
| Town of Orrum         | Unlikely                         |
| Town of Parkton       | Unlikely                         |
| Town of Pembroke      | Unlikely                         |
| Town of Proctorville  | Unlikely                         |
| Town of Raynham       | Unlikely                         |
| Town of Red Springs   | Unlikely                         |
| Town of Rennert       | Unlikely                         |
| Town of Rowland       | Unlikely                         |
| Town of Saint Pauls   | Unlikely                         |
| Town of Sandyfield    | Unlikely                         |
| Town of Tabor City    | Unlikely                         |
| Town of Tar Heel      | Unlikely                         |
| Town of White Lake    | Unlikely                         |

Source: NCEM RMT & plan risk assessment

### 5.2.5 Consequence and Impact Analysis (Vulnerability)

#### Changing Future Conditions

Changing climatic patterns may not affect dams as directly when compared to other hazards. However, a significant projected increase in future extreme weather could affect dams negatively in the form of higher flooding levels, altered streamflow, structural damage, and other key risk factors. Dam failures present recurring dangers of widespread flooding, which would greatly impact the Region in a breach scenario.

### People

A person's immediate vulnerability to a dam failure is directly associated with the person's distance downstream of the dam as well as proximity to the stream carrying the floodwater from the failure. For dams that have an Emergency Action Plan (EAP), the vulnerability of loss of life for people in their homes or on their property may be mitigated by following the EAP evacuation procedures; however, the displaced persons may still incur sheltering costs. For people located on the river (e.g. for recreation) the vulnerability of loss of life is significant. As for the case of the Lumberton dam breach during both Matthew (2016) and Florence (2018), the West Lumberton Elementary School and public housing in the City of Lumberton were permanently closed because of structural damage and families that were forced to move away as a result.

The dams in the Region do not provide drinking water supply. As a result, the Region is not at risk of major public health threats posed by the disruption of drinking water supply from dam failure. However, the Region's population is vulnerable to minor impacts including the loss of the aesthetic or recreational use of the lakes upstream of dams following failure.

### First Responders

For dams that fail slowly, first responders will be impacted similarly to other events that have advance warning. For dams that fail without warning, the impact is rapid and severe, requiring rapid response to the impacts. Although the response is generally restricted to the stream below the dam, the location of impact moves rapidly downstream requiring multiple response locations.

### Continuity of Operations

Unless critical infrastructure or facilities essential to the operation of government are in the impact area of the inundation area downstream of the dam, continuity of operations will likely not be disrupted. Emergency response, emergency management, and law enforcement officials may have stretched resources or become overwhelmed in the failure of a large dam.

### Built Environment

Vulnerability to the built environment includes damage to the dam itself and any man-made feature located within the inundation area caused by the dam failure. More than 2,000 structures across the City of Lumberton were damaged after Hurricane Matthew in 2016. Downstream of the dam, vulnerability includes potential damage to homes, personal property, commercial buildings and property, and government owned buildings and property; destruction of bridge or culvert crossings; weakening of bridge supports through scour; and damage or destruction of public or private infrastructure that crosses the stream such as water and sewer lines, gas lines and power lines. Water dependent structures on the lake upstream of the dam, such as docks/piers, floating structures or water intake structures, may be damaged by the rapid reduction in water level during the failure.

### Economy

Economic impact from small dams is generally small and impact is often limited to dam owner and the cost of first responder activities. Large failures can disrupt the economy through displacement of workers, damage to commercial employment centers or destruction of infrastructure that impacts commercial activities or access to other economic drivers. Breach of the White Oak Dike resulted in costly cleanup efforts in Bladen County (in Kelly) after Hurricane Florence (2018), resulting in a significant redirection of funds on behalf of the Region.



### **Natural Environment**

Aquatic species within the lake will either be displaced or destroyed. The velocity of the flood wave will likely destroy riparian and instream vegetation and destroy wetland function. The flood wave will like cause erosion within and adjacent to the stream. Deposition of eroded deposits may choke instream habitat or disrupt riparian areas. Sediments within the lake bottom and any low oxygen water from within the lake will be dispersed, potentially causing fish kills or releasing heavy metals found in the lake sediment layers.

### 5.3 Drought

#### 5.3.1 Hazard Description

Drought is a normal part of virtually all climatic regions, including areas with high and low average rainfall. Drought is the consequence of a natural reduction in the amount of precipitation expected over an extended period, usually a season or more in length. High temperatures, high winds, and low humidity can exacerbate drought conditions. In addition, human actions and demands for water resources can hasten drought-related impacts.

Droughts are typically classified into one of four types: 1) meteorological, 2) hydrologic, 3) agricultural, or 4) socioeconomic. **Table 5-5** presents definitions for these types of drought.

**Table 5-5: Drought Classification Definitions**

|                        |                                                                                                                                                         |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Meteorological Drought | The degree of dryness or departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales. |
| Hydrologic Drought     | The effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.                                                    |
| Agricultural Drought   | Soil moisture deficiencies relative to water demands of plant life, usually crops.                                                                      |
| Socioeconomic Drought  | The effect of demands for water exceeding the supply as a result of a weather-related supply shortfall.                                                 |

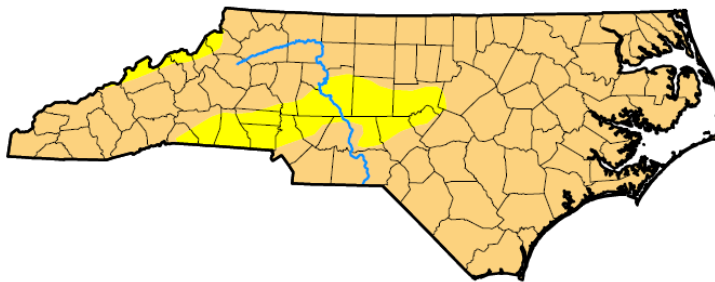
Source: Multi-Hazard Identification and Risk Assessment: A Cornerstone of the National Mitigation Strategy, FEMA

Droughts are slow-onset hazards, but, over time, can have very damaging effects to crops, municipal water supplies, recreational uses, and wildlife. If drought conditions extend over several years, the direct and indirect economic impact can be significant.

The Palmer Drought Severity Index (PDSI) is based on observed drought conditions and range from -0.5 (incipient dry spell) to -4.0 (extreme drought). Evident in **Figure 5-5**, the Palmer Drought Severity Index Summary Map for the United States, drought affects most areas of the United States but is less severe in the Eastern United States.

## U.S. Drought Monitor North Carolina

**December 3, 2024**  
(Released Thursday, Dec. 5, 2024)  
Valid 7 a.m. EST



Drought Conditions (Percent Area)

|                                             | None   | D0-D4  | D1-D4 | D2-D4 | D3-D4 | D4   |
|---------------------------------------------|--------|--------|-------|-------|-------|------|
| <b>Current</b>                              | 0.00   | 100.00 | 87.99 | 0.00  | 0.00  | 0.00 |
| <b>Last Week</b><br>11-26-2024              | 0.00   | 100.00 | 33.27 | 0.00  | 0.00  | 0.00 |
| <b>3 Months Ago</b><br>09-03-2024           | 84.97  | 15.03  | 5.24  | 0.00  | 0.00  | 0.00 |
| <b>Start of Calendar Year</b><br>01-02-2024 | 53.95  | 46.05  | 13.26 | 3.54  | 0.00  | 0.00 |
| <b>Start of Water Year</b><br>10-01-2024    | 100.00 | 0.00   | 0.00  | 0.00  | 0.00  | 0.00 |
| <b>One Year Ago</b><br>12-05-2023           | 20.04  | 79.96  | 57.96 | 31.11 | 8.84  | 0.00 |

Intensity:

|                     |                        |
|---------------------|------------------------|
| None                | D2 Severe Drought      |
| D0 Abnormally Dry   | D3 Extreme Drought     |
| D1 Moderate Drought | D4 Exceptional Drought |

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

David Simeral  
Western Regional Climate Center



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

Source: National Drought Mitigation Center

**Figure 5-5: Palmer Drought Severity Index Summary Map for the United States**

The wide variety of disciplines affected by drought, its diverse geographical and temporal distribution, and the many scales drought operates on make it difficult to develop both a definition to describe drought and an index to measure it. Many quantitative measures of drought have been developed in the United States, depending on the discipline affected, the region being considered, and the particular application. Several indices developed by Wayne Palmer, as well as the Standardized Precipitation Index, are useful for describing the many scales of drought.

The U.S. Drought Monitor provides a summary of drought conditions across the United States and Puerto Rico. Often described as a blend of art and science, the map is updated weekly by combining a variety of data-based drought indices and indicators and local expert input into a single composite drought indicator.

The Standardized Precipitation Index (SPI) is a way of measuring drought that is different from the Palmer Drought Index (PDI). Like the PDI, this index is negative for drought, and positive for wet conditions. But the SPI is a probability index that considers only precipitation, while Palmer's indices are water balance indices that consider water supply (precipitation), demand (evapotranspiration) and loss (runoff).

The Palmer Drought Severity Index (PDSI) devised in 1965, was the first drought indicator to assess moisture status comprehensively. It uses temperature and precipitation data to calculate water supply

and demand, incorporates soil moisture, and is considered the most effective for unirrigated cropland. It primarily reflects long-term drought and has been used extensively to initiate drought relief. It is more complex than the SPI and the Drought Monitor.

### 5.3.2 Location and Spatial Extent

Drought typically covers a large area and cannot be confined to any geographic or political boundaries. According to the Palmer Drought Severity Index (PDSI), eastern North Carolina has a relatively low risk for drought hazard. However, local areas may experience much more severe and/or frequent drought events than what is represented on the Palmer Drought Severity Index map. Furthermore, it is assumed that the Region would be uniformly exposed to drought, making the spatial extent potentially widespread. It is also notable that drought conditions typically do not cause significant damage to the built environment.

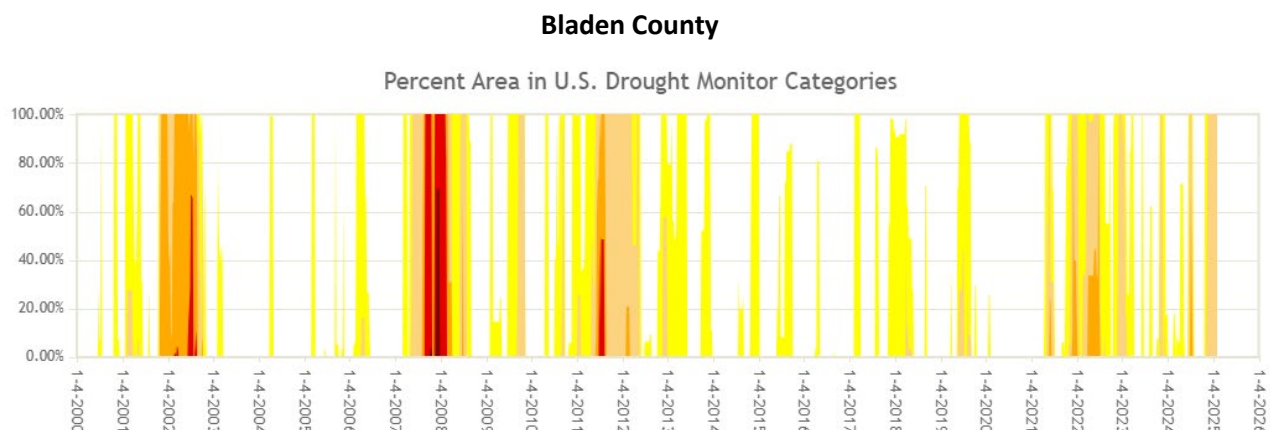
Data from the North Carolina Drought Management Advisory Council and National Centers for Environmental Information (NCEI) were used to ascertain historical drought events in the Region. The North Carolina Drought Management Advisory Council reports data on North Carolina drought conditions from 2000 to 2024 through the North Carolina Drought Monitor. It classifies drought conditions by county on a scale of D0 to D4 (which are depicted below):

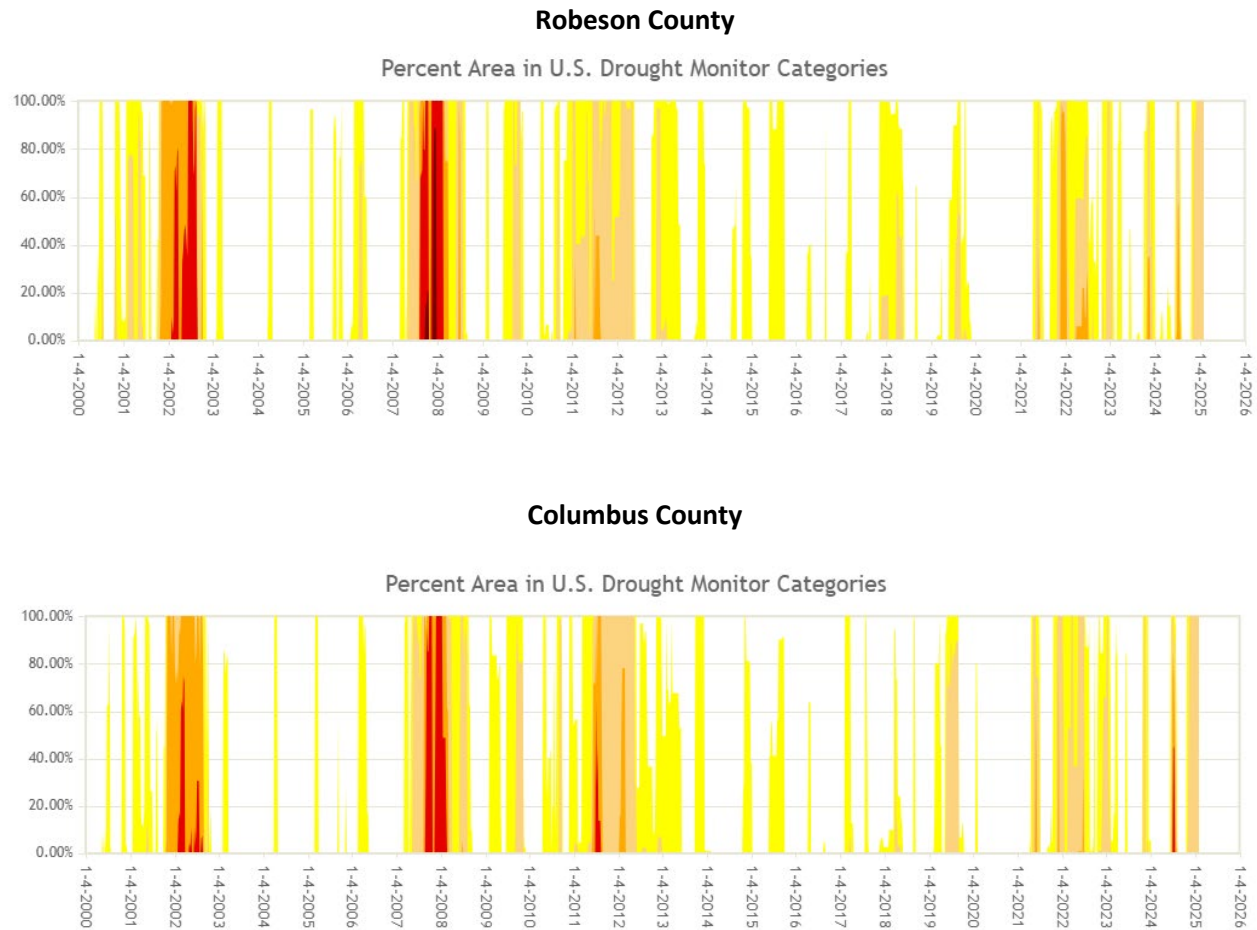
- D0: Abnormally Dry
- D1: Moderate Drought
- D2: Severe Drought
- D3: Extreme Drought
- D4: Exceptional Drought

### 5.3.3 Past Occurrences

According to the North Carolina Drought Monitor, all three counties and all jurisdictions in the planning area in the Region had drought occurrences (including abnormally dry) in the last 24 years (2000-2024) (**Figure 5-6**) It should be noted that the North Carolina Drought Monitor also estimates what percentage of the county is in each classification of drought severity. For example, the most severe classification reported may be exceptional, but most of the county may be in a less severe condition.

According to the North Carolina Drought Monitor, the Region has experienced drought conditions every year since 2000. **Figure 5-6** shows the most severe classification for each year by county.





**Figure 5-6: Historical Drought Occurrences**

### 5.3.4 Probability of Future Occurrence

The probability of future drought events is shown in the table below, by jurisdiction.

#### Definitions for Descriptors Used for Probability of Future Hazard Occurrences

- Unlikely: Less than 1% annual probability of hazard
- Possible: Between 1% and 10% annual probability of hazard
- Likely: Between 10% and 100% annual probability of hazard
- Highly Likely: 100% annual probability of hazard

| Jurisdiction                          | Probability of Future Occurrence |
|---------------------------------------|----------------------------------|
| Bladen County (Unincorporated Area)   | Highly Likely                    |
| Columbus County (Unincorporated Area) | Highly Likely                    |
| Robeson County (Unincorporated Area)  | Highly Likely                    |
| City of Lumberton                     | Highly Likely                    |
| City of Whiteville                    | Highly Likely                    |
| Town of Bladenboro                    | Highly Likely                    |

| Jurisdiction          | Probability of Future Occurrence |
|-----------------------|----------------------------------|
| Town of Boardman      | Highly Likely                    |
| Town of Bolton        | Highly Likely                    |
| Town of Brunswick     | Highly Likely                    |
| Town of Cerro Gordo   | Highly Likely                    |
| Town of Chadbourn     | Highly Likely                    |
| Town of Clarkton      | Highly Likely                    |
| Town of Dublin        | Highly Likely                    |
| Town of East Arcadia  | Highly Likely                    |
| Town of Elizabethtown | Highly Likely                    |
| Town of Fair Bluff    | Highly Likely                    |
| Town of Fairmont      | Highly Likely                    |
| Town of Lake Waccamaw | Highly Likely                    |
| Town of Lumber Bridge | Highly Likely                    |
| Town of Marietta      | Highly Likely                    |
| Town of Maxton        | Highly Likely                    |
| Town of McDonald      | Highly Likely                    |
| Town of Orrum         | Highly Likely                    |
| Town of Parkton       | Highly Likely                    |
| Town of Pembroke      | Highly Likely                    |
| Town of Proctorville  | Highly Likely                    |
| Town of Raynham       | Highly Likely                    |
| Town of Red Springs   | Highly Likely                    |
| Town of Rennert       | Highly Likely                    |
| Town of Rowland       | Highly Likely                    |
| Town of Saint Pauls   | Highly Likely                    |
| Town of Sandyfield    | Highly Likely                    |
| Town of Tabor City    | Highly Likely                    |
| Town of Tar Heel      | Highly Likely                    |
| Town of White Lake    | Highly Likely                    |

Source: NCEM RMT & plan risk assessment

### 5.3.5 Consequence and Impact Analysis (Vulnerability)

#### Changing Future Conditions

According to findings from the 2020 North Carolina Climate Science Report, it is very likely that average temperatures and the number of very warm nights will both continue to increase throughout North



Carolina<sup>2</sup>. The frequency, duration, and intensity of droughts are likely to continue to increase in tandem with higher average temperatures and a higher rate of evapotranspiration.

### People

Drought can affect people's health and safety. Examples of drought impacts on society include anxiety or depression about economic losses, conflicts when there is not enough water, reduced incomes, fewer recreational activities, higher incidents of heat stroke, and even loss of human life.

### First Responders

The overall effect on first responders would be relatively limited when compared to other hazards. Exceptional drought conditions may have severe impacts on the amount of water immediately available to respond to wildfires.

### Continuity of Operations

Drought would have minimal impacts on continuity of operations due to the relatively long warning time that would allow for plans to be made to maintain continuity of operations. Both Columbus and Bladen counties experienced mild water shortages and voluntary water shortage mandates during a 2019 drought.

### Built Environment

Drought has the potential to affect water supply for residential, commercial, institutional, industrial, and government-owned areas. Drought can reduce water supply in wells and reservoirs. When drought conditions persist with no relief, local or state governments must often institute water restrictions.

### Economy

Examples of economic impacts include farmers who lose money because drought destroyed their crops or who may have to spend more money to feed and water their animals. Droughts in 2019 caused half of Columbus County (including the towns of Bolton, Brunswick, Waccamaw, Sandyfield, and Tabor) and the southeast corner of Bladen County (including the Town of East Arcadia) to experience severe damage to crops and pastures, negatively impacting local economies. Businesses that depend on farming, like companies that make tractors and food, may lose business when drought damages crops or livestock. Extreme drought also has the potential to impact local businesses such as landscaping, recreation and tourism, and public utilities. Businesses that sell boats and fishing equipment may not be able to sell some of their goods because drought has dried up lakes and other water sources.

### Natural Environment

Plants and animals depend on water, just as people do. Drought can shrink their food supplies and damage their habitats. Sometimes this damage is only temporary, and other times it is irreversible.

Drought conditions can also provide a substantial increase in wildfire risk. As plants and trees wither and die from a lack of precipitation, increased insect infestations, and diseases—all of which are associated with drought—they become fuel for wildfires. Long periods of drought can equate to more wildfires and more intense wildfires, which affect the economy, the environment, and society in many ways such as by destroying neighborhoods, crops, and habitats.

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<sup>2</sup> 2020 North Carolina Climate Science Report (<https://ncics.org/programs/nccsr/>)

## 5.4 Earthquake

### 5.4.1 Hazard Description

An earthquake is a movement or shaking of the ground. Most earthquakes are caused by the release of stress accumulated as a result of the rupture of rocks along opposing fault planes in the Earth's outer crust. These fault planes are typically found along borders of the Earth's 10 tectonic plates. The areas of greatest tectonic instability occur at the perimeters of the slowly moving plates, as these locations are subjected to the greatest strains from plates traveling in opposite directions and at different speeds.

Deformation along plate boundaries causes strain in the rock and the consequent buildup of stored energy. When the built-up stress exceeds the rocks' strength a rupture occurs. The rock on both sides of the fracture is snapped, releasing the stored energy and producing seismic waves, generating an earthquake.

Earthquakes are measured in terms of their magnitude and intensity. Magnitude is measured using the Richter Scale, an open-ended logarithmic scale that describes the energy release of an earthquake through a measure of shock wave amplitude. A detailed description of the Richter Scale is given in **Table 5-6**. Alternatively, a detailed description of the Modified Mercalli Intensity (MMI) Scale is given in **Table 5-7**.

**Table 5-6: Richter Scale**

| Richter Magnitudes | Earthquake Effects                                                                                                           |
|--------------------|------------------------------------------------------------------------------------------------------------------------------|
| Less than 3.5      | Generally, not felt, but recorded.                                                                                           |
| 3.5-5.4            | Often felt but rarely causes damage.                                                                                         |
| Under 6.0          | At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions. |
| 6.1-6.9            | Can be destructive in areas up to about 100 kilometers across where people live.                                             |
| 7.0-7.9            | Major earthquake. Can cause serious damage over larger areas.                                                                |
| 8 or greater       | Great earthquake. Can cause serious damage in areas several hundred kilometers across.                                       |

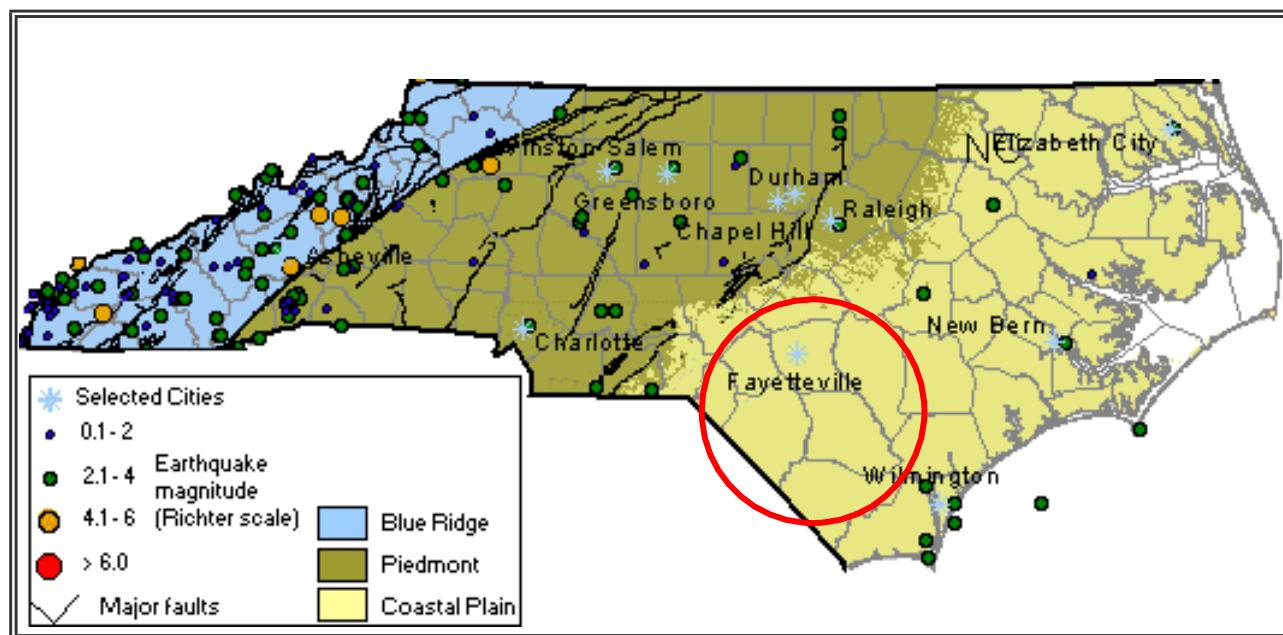
**Table 5-7: Modified Mercalli Intensity Scale for Earthquakes**

| Scale | Intensity       | Description of Effects                                                              | Corresponding Richter Scale Magnitude |
|-------|-----------------|-------------------------------------------------------------------------------------|---------------------------------------|
| I     | Instrumental    | Detected only on seismographs                                                       |                                       |
| II    | Feeble          | Some people feel it                                                                 | <4.2                                  |
| III   | Slight          | Felt by people resting; like a truck rumbling by                                    |                                       |
| IV    | Moderate        | Felt by people walking                                                              |                                       |
| V     | Slightly Strong | Sleepers awake; church bells ring                                                   | <4.8                                  |
| VI    | Strong          | Trees sway; suspended objects swing, objects fall off shelves                       | <5.4                                  |
| VII   | Very Strong     | Mild Alarm; walls crack; plaster falls                                              | <6.1                                  |
| VIII  | Destructive     | Moving cars uncontrollable; masonry fractures, poorly constructed buildings damaged |                                       |

| Scale | Intensity       | Description of Effects                                                                                                | Corresponding Richter Scale Magnitude |
|-------|-----------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| IX    | Ruinous         | Some houses collapse; ground cracks; pipes break open                                                                 | <6.9                                  |
| X     | Disastrous      | Ground cracks profusely; many buildings destroyed; liquefaction and landslides widespread                             | <7.3                                  |
| XI    | Very Disastrous | Most buildings and bridges collapse; roads, railways, pipes and cables destroyed; general triggering of other hazards | <8.1                                  |
| XII   | Catastrophic    | Total destruction; trees fall; ground rises and falls in waves                                                        | >8.1                                  |

#### 5.4.2 Location and Spatial Extent

Approximately two-thirds of North Carolina is subject to earthquakes, with the western and southeast regions most vulnerable to a very damaging earthquake. The state is affected by both the Charleston Fault in South Carolina and New Madrid Fault in Tennessee. Both faults have generated earthquakes measuring greater than 8.0 on the Richter Scale during the last 200 years. In addition, there are several smaller fault lines throughout North Carolina.

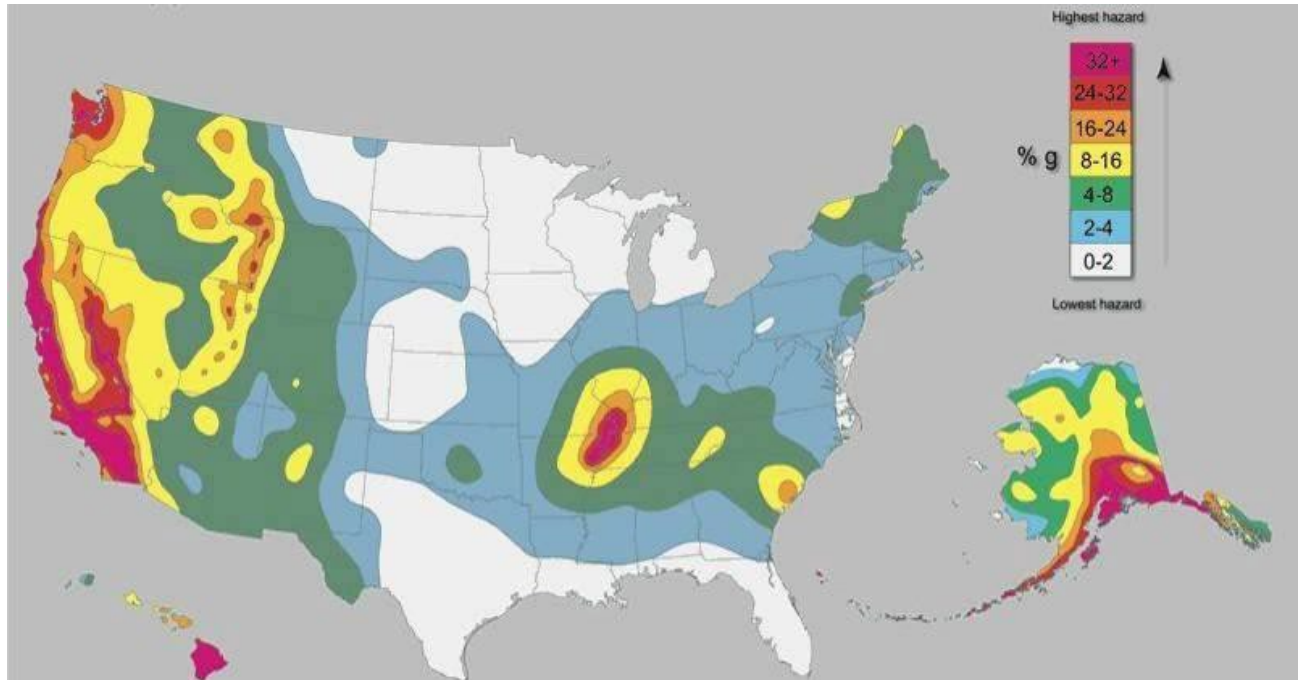


**Figure 5-7: Statewide Historic Earthquake Magnitudes**

**Figure 5-8** depicts the intensity level for North Carolina based on the national USGS map of peak acceleration with 2 percent probability of exceedance in 50 years. It is the probability that ground motion will reach a certain level during an earthquake. The data shows peak horizontal ground acceleration (the fastest measured change in speed, for a particle at ground level that is moving horizontally due to an earthquake) with a 2 percent probability of exceedance in 50 years. According to this map, the Region lies within an approximate zone level between 6 and 14% ground acceleration. This indicates that the Region exists within an area of moderate seismic risk.

Earthquake extent can be measured by the Richter Scale and the Modified Mercalli Intensity (MMI) scale. The most severe earthquake felt in the Region since the mid-1800s was a six (VI) on the Modified

Mercalli Intensity Scale. This event occurred in 1886, and the effects of this magnitude earthquake typically include trees swaying, suspended objects swinging, and objects falling off of shelves. Earthquakes of greater magnitude may be possible within the Region; however, this is known to be the greatest severity currently on record.



Source: United States Geological Survey

**Figure 5-8: Seismic Hazard Information for North Carolina**

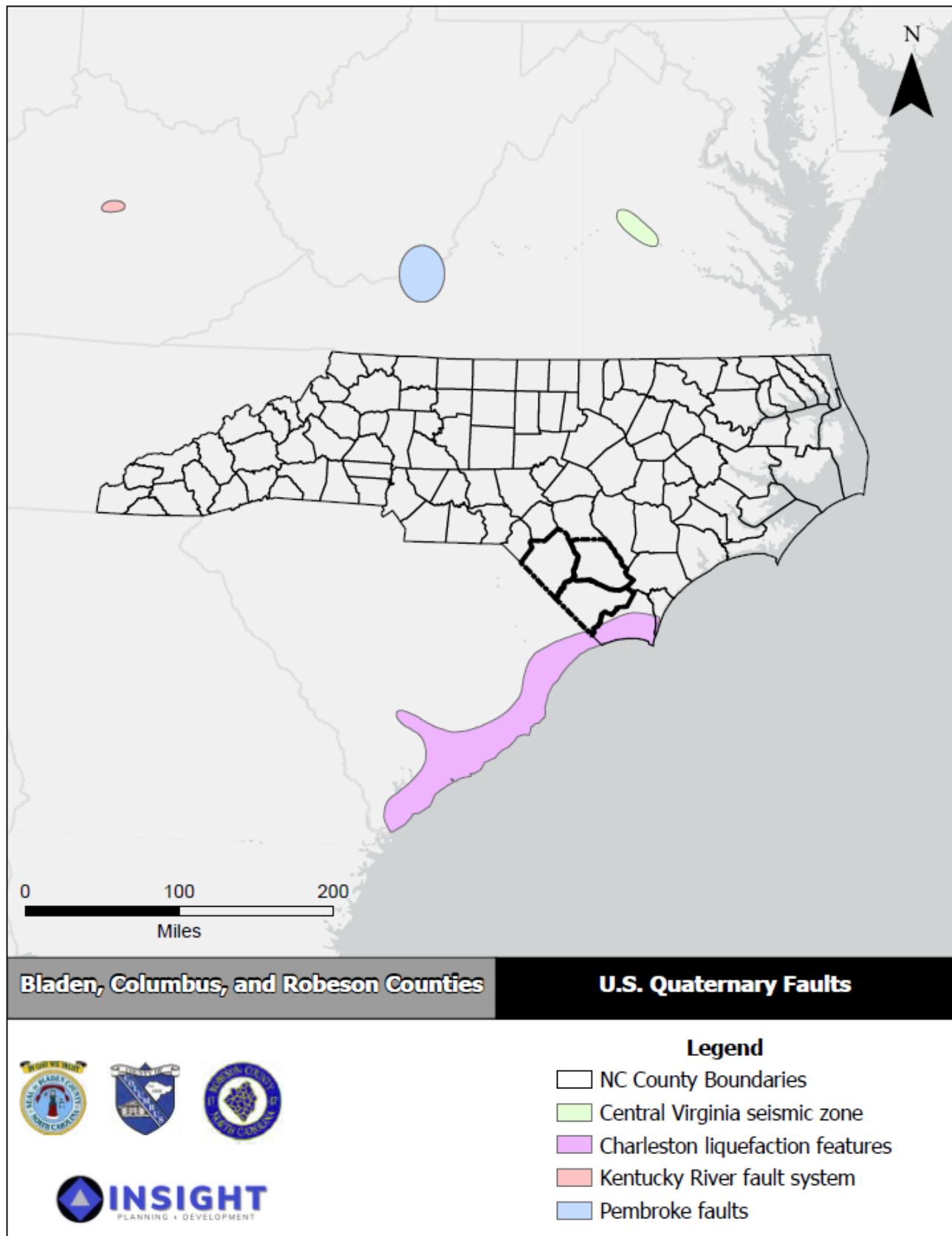


Figure 5-9: U.S. Quaternary Faults

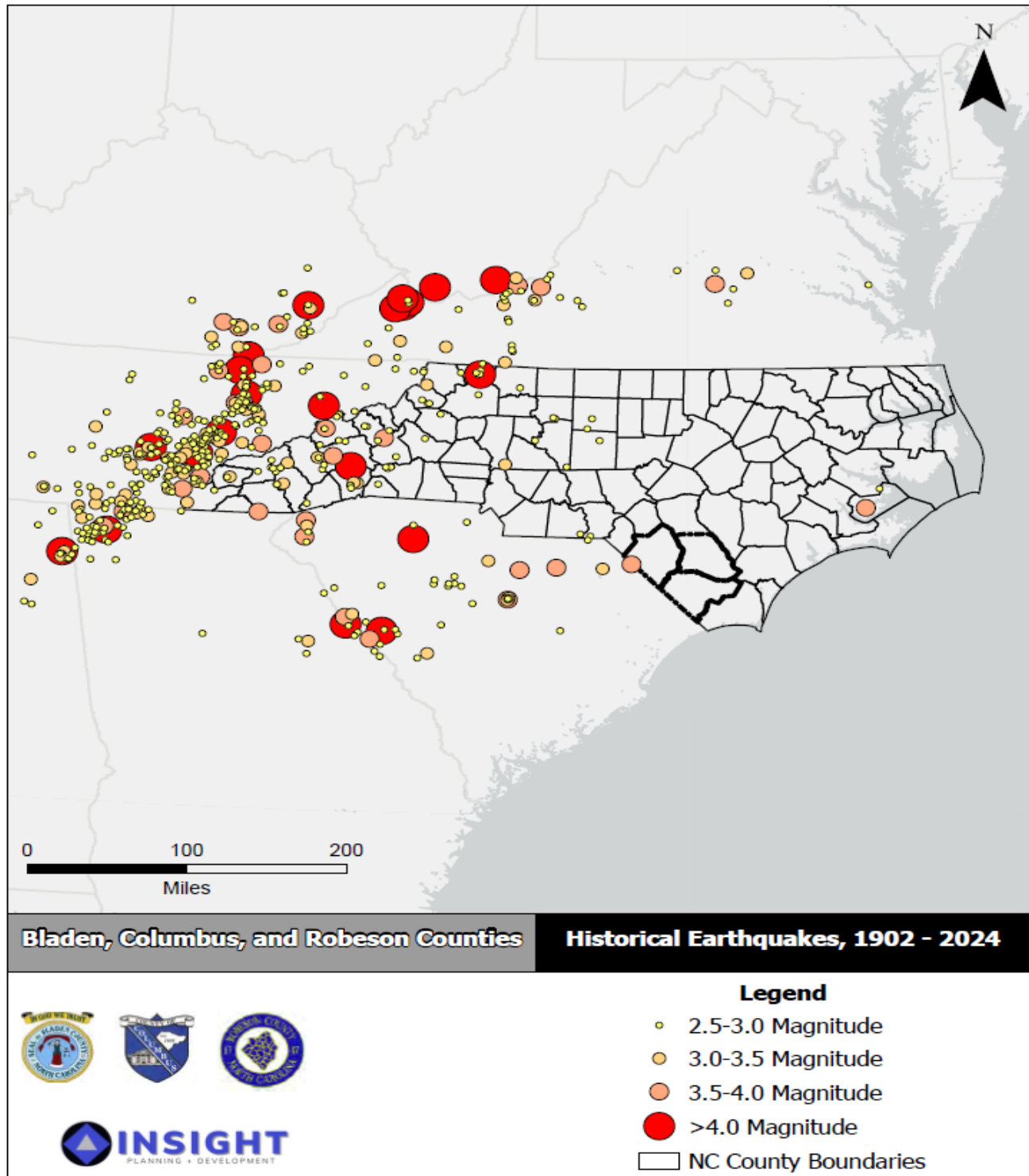


Figure 5-10: North Carolina Historical Earthquakes(1902-2024)



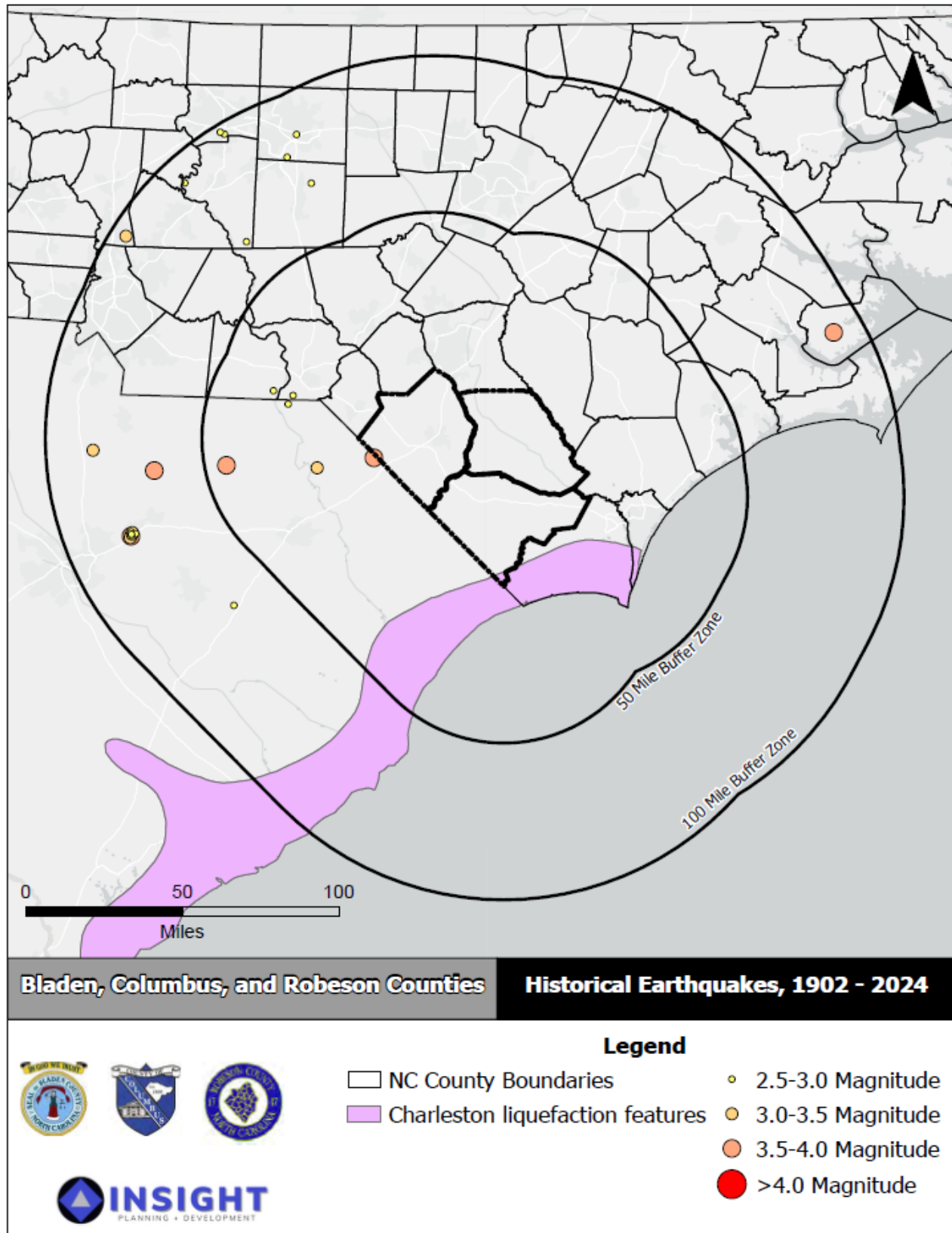


Figure 5-11: Historical Regional Earthquakes (1902-2024)



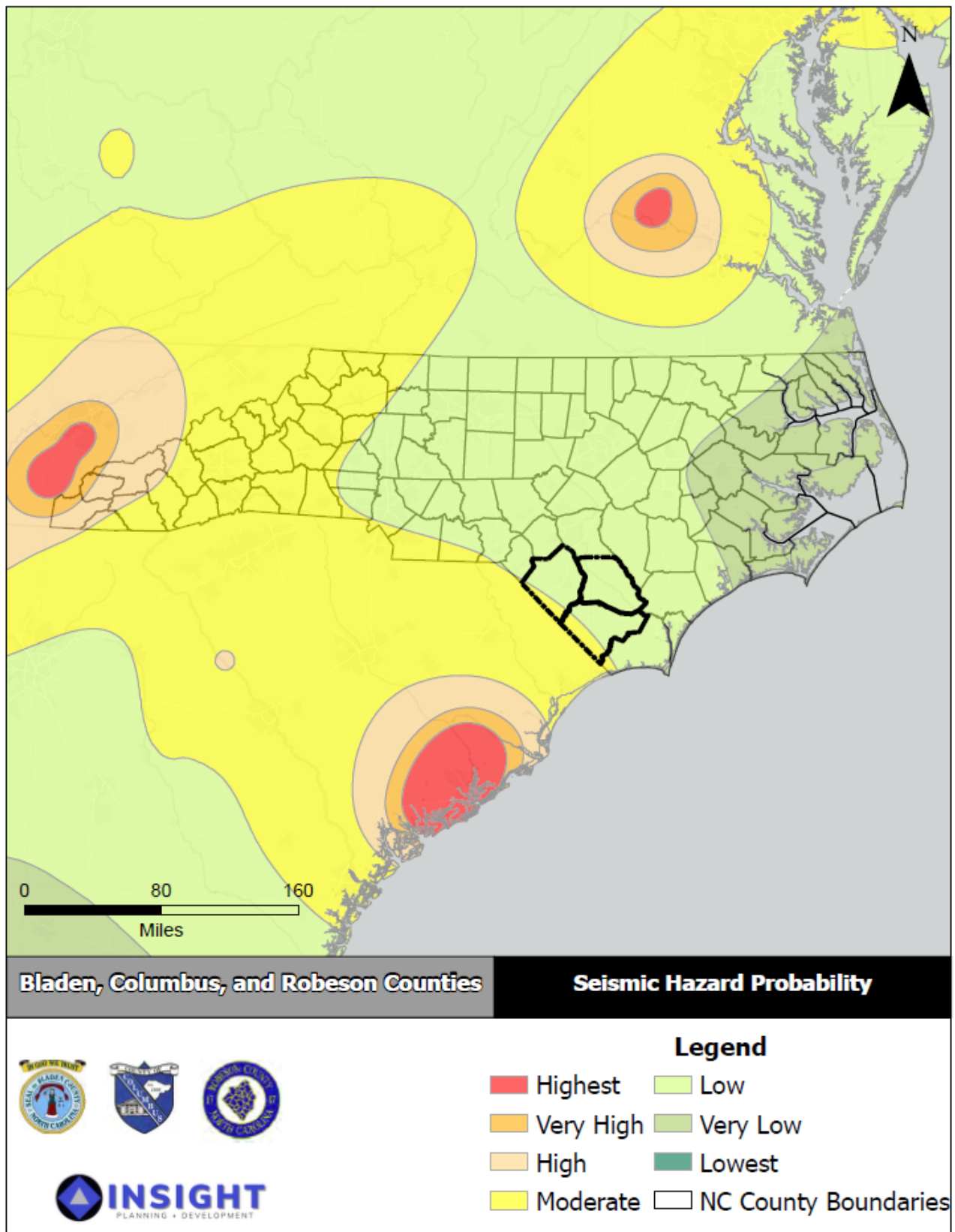


Figure 5-12: North Carolina Seismic Hazard Probability

### 5.4.3 Past Occurrences

Historical seismicity is an indicator of where earthquakes have happened. Paleo seismicity (the study of earthquake-induced ground failures during prehistoric times) provides further evidence as to the size and frequency of earthquakes. Since 1735, North Carolina has experienced 21 earthquakes, each of which caused at least architectural damage. From historical data, scientists from the U.S. Geological Survey (USGS) and several university research centers have produced maps that project the expected ground motion for various return periods. The last recorded damaging earthquake in which the epicenter was in North Carolina occurred in the vicinity of the Town of Hendersonville in 1981. The epicenter for the last recorded damaging event that affected the state was in Mineral Springs, Virginia in 2011. A list of earthquakes that have caused damage in North Carolina is presented below in **Table 5-8**.

**Table 5-8: Earthquakes Affecting North Carolina**

| Date                                           | Location             | Richter Scale |
|------------------------------------------------|----------------------|---------------|
| 12/16/1811                                     | NE Arkansas          | 8.5           |
| 12/16/1811                                     | NE Arkansas          | 8.0           |
| 12/16/1811                                     | NE Arkansas          | 8.0           |
| 01/23/1812                                     | New Madrid, MO       | 8.4           |
| 02/07/1812                                     | New Madrid, MO       | 8.7           |
| 04/29/1852                                     | Wytheville, VA       | 5.0           |
| 08/31/1861                                     | Wilkesboro, NC       | 5.1           |
| 12/23/1875                                     | Central Virginia     | 5.0           |
| 08/31/1886                                     | Charleston, SC       | 7.3           |
| 05/31/1897                                     | Giles County, VA     | 5.8           |
| 01/01/1913                                     | Union County, SC     | 4.8           |
| 02/21/1916                                     | Asheville, NC        | 5.5           |
| 07/08/1926                                     | Mitchell County, NC  | 5.2           |
| 11/03/1928                                     | Newport, TN          | 4.5           |
| 05/13/1957                                     | McDowell County, NC  | 4.1           |
| 07/02/1957                                     | Buncombe County, NC  | 3.7           |
| 11/24/1957                                     | Jackson County, NC   | 4.0           |
| 10/27/1959                                     | Chesterfield, SC     | 4.0           |
| 07/13/1971                                     | Newry, SC            | 3.8           |
| 11/30/1973                                     | Alcoa, TN            | 4.6           |
| 09/13/1976                                     | Southwest Virginia   | 4.1           |
| 05/05/1981                                     | Henderson County, NC | 3.5           |
| 8/23/2011<br>Mineral Springs,<br>VA 5.8 VIII V | Mineral Bluff, VA    | 5.8           |
| 8/9/2020                                       | Sparta, NC           | 5.1           |

| Date       | Location               | Richter Scale |
|------------|------------------------|---------------|
| 2/3/2021   | VA/NC Border           | 2.6           |
| 2/8/2021   | VA/NC Border           | 1.8           |
| 2/21/2021  | TN/NC Border           | 2.4           |
| 2/25/2021  | VA/NC Border           | 2.2           |
| 2/26/2021  | Western NC Border      | 1.6           |
| 3/04/2021  | VA/NC Border           | 2             |
| 3/7/2021   | Western NC Border      | 1.6           |
| 4/7/2021   | TN/NC Border           | 1.6           |
| 4/17/2021  | Western NC             | 2.0           |
| 4/20/2021  | VA/NC Border           | 1.7           |
| 4/21/2021  | VA/NC Border           | 2.3           |
| 4/28/2021  | VA/NC Border           | 1.9           |
| 6/9/2021   | VA/NC Border           | 1.9           |
| 6/21/2021  | VA/NC Border           | 1.8           |
| 7/27/2021  | Western NC Border      | 2.7           |
| 7/30/2021  | VA/NC Border           | 1.7           |
| 8/17/2021  | Western NC             | 2.7           |
| 8/23/2021  | VA/NC Border           | 1.8           |
| 8/23/2021  | VA/NC Border           | 1.5           |
| 8/24/2021  | Western NC             | 2.1           |
| 9/25/2021  | Western North Carolina | 2.5           |
| 11/5/2021  | VA/NC Border           | 2.0           |
| 11/21/2021 | Western NC             | 2.4           |
| 11/24/2021 | Western NC             | 2.0           |
| 12/5/2021  | Western NC             | 2.3           |

Source: North Carolina State Hazard Mitigation Plan 2023; Southeast US Seismic Network, USGS

At least 14 earthquakes are known to have affected the Region since 1811. The strongest of these measured a VI on the Modified Mercalli Intensity (MMI) scale. **Table 5-9** provides a summary of earthquake events reported by the National Geophysical Data Center (formerly NGDC; now merged into NOAA NCEI) between 1811 and 2023.

Bladen County, NC has a very low earthquake risk, with a total of 2 earthquakes since 1811. The USGS database shows that there is a 0.36% chance of a major earthquake within 50 miles of Bladen County, NC within the next 50 years.

Columbus County, NC has a very low earthquake risk, with a total of 10 earthquakes since 1811. The USGS database shows that there is a 0.53% chance of a major earthquake within 50 miles of Columbus

County, NC within the next 50 years.

Robeson County, NC has a very low earthquake risk, with a total of 2 earthquakes since 1811. The USGS database shows that there is a 0.61% chance of a major earthquake within 50 miles of Robeson County, NC within the next 50 years.

**Table 5-9: Summary of Seismic Activity in the Region**

| Location               | Number of Occurrences | Greatest MMI Reported | Richter Scale Equivalent |
|------------------------|-----------------------|-----------------------|--------------------------|
| <b>Bladen County</b>   | <b>2</b>              | <b>II</b>             | <b>--</b>                |
| Bladenboro             | 0                     | 0                     | 0                        |
| Clarkton               | 0                     | 0                     | 0                        |
| Dublin                 | 0                     | 0                     | 0                        |
| East Acardia           | 0                     | 0                     | 0                        |
| Elizabethtown          | 2                     | II                    | 0                        |
| Tarheel                | 0                     | 0                     | 0                        |
| White Lake             | 0                     | 0                     | 0                        |
| Unincorporated Area    | 0                     | 0                     | 0                        |
| <b>Columbus County</b> | <b>10</b>             | <b>VI</b>             | <b>--</b>                |
| Boardman               | 0                     | 0                     | 0                        |
| Bolton                 | 4                     | III                   | --                       |
| Brunswick              | 1                     | IV                    | 4.7                      |
| Cerro Gordo            | 1                     | IV                    | 4.5                      |
| Chadbourn              | 0                     | 0                     | 0                        |
| Fair Bluff             | 2                     | VI                    | 0                        |
| Lake Waccamaw          | 1                     | IV                    | 4.7                      |
| Sandyfield             | 0                     | 0                     | 0                        |
| Tabor                  | 0                     | 0                     | 0                        |
| Whiteville             | 1                     | IV                    | 4.5                      |
| Unincorporated Area    | 0                     | 0                     | 0                        |
| <b>Robeson County</b>  | <b>2</b>              | <b>III</b>            | <b>4.5</b>               |
| Fairmount              | 0                     | 0                     | 0                        |
| Lumberton              | 0                     | 0                     | 0                        |
| Lumberbridge           | 0                     | 0                     | 0                        |
| Marietta               | 0                     | 0                     | 0                        |
| Maxton                 | 0                     | 0                     | 0                        |
| McDonald               | 0                     | 0                     | 0                        |

| Location            | Number of Occurrences | Greatest MMI Reported | Richter Scale Equivalent |
|---------------------|-----------------------|-----------------------|--------------------------|
| Orrum               | 0                     | 0                     | 0                        |
| Parkton             | 0                     | 0                     | 0                        |
| Pembroke            | 0                     | 0                     | 0                        |
| Proctorville        | 0                     | 0                     | 0                        |
| Raynham             | 0                     | 0                     | 0                        |
| Red Spring          | 1                     | III                   | --                       |
| Rennert             | 0                     | 0                     | 0                        |
| Rowland             | 1                     | III                   | 4.5                      |
| St. Pauls           | 0                     | 0                     | 0                        |
| Unincorporated Area | 0                     | 0                     | 0                        |
| <b>Total</b>        | <b>14</b>             | <b>VI</b>             | <b>5.0 to 5.9</b>        |

#### 5.4.4 Probability of Future Occurrence

The probability of future earthquakes is shown in the table below, by jurisdiction.

##### Definitions for Descriptors Used for Probability of Future Hazard Occurrences

- Unlikely: Less than 1% annual probability of hazard
- Possible: Between 1% and 10% annual probability of hazard
- Likely: Between 10% and 100% annual probability of hazard
- Highly Likely: 100% annual probability of hazard

| Jurisdiction                          | Probability of Future Occurrence |
|---------------------------------------|----------------------------------|
| Bladen County (Unincorporated Area)   | Possible                         |
| Columbus County (Unincorporated Area) | Possible                         |
| Robeson County (Unincorporated Area)  | Possible                         |
| City of Lumberton                     | Possible                         |
| City of Whiteville                    | Possible                         |
| Town of Bladenboro                    | Possible                         |
| Town of Boardman                      | Possible                         |
| Town of Bolton                        | Possible                         |
| Town of Brunswick                     | Possible                         |
| Town of Cerro Gordo                   | Possible                         |
| Town of Chadbourne                    | Possible                         |
| Town of Clarkton                      | Possible                         |
| Town of Dublin                        | Possible                         |

| Jurisdiction          | Probability of Future Occurrence |
|-----------------------|----------------------------------|
| Town of East Arcadia  | Possible                         |
| Town of Elizabethtown | Possible                         |
| Town of Fair Bluff    | Possible                         |
| Town of Fairmont      | Possible                         |
| Town of Lake Waccamaw | Possible                         |
| Town of Lumber Bridge | Possible                         |
| Town of Marietta      | Possible                         |
| Town of Maxton        | Possible                         |
| Town of McDonald      | Possible                         |
| Town of Orrum         | Possible                         |
| Town of Parkton       | Possible                         |
| Town of Pembroke      | Possible                         |
| Town of Proctorville  | Possible                         |
| Town of Raynham       | Possible                         |
| Town of Red Springs   | Possible                         |
| Town of Rennert       | Possible                         |
| Town of Rowland       | Possible                         |
| Town of Saint Pauls   | Possible                         |
| Town of Sandyfield    | Possible                         |
| Town of Tabor City    | Possible                         |
| Town of Tar Heel      | Possible                         |
| Town of White Lake    | Possible                         |

Source: NCEM RMT & plan risk assessment

#### 5.4.5 Consequence and Impact Analysis (Vulnerability)

##### Changing Future Conditions

According to the North Carolina Department of Environmental Quality (NCDEQ), despite infrequent occurrences of severe seismic events and no active fault zones in the state, North Carolina is bordered by the Middleton Place-Summerville Seismic Zone (near Charleston, SC) to the south, East Tennessee Seismic Zone to the west, and Central Virginia Seismic Zone to the north<sup>3</sup>. Although strong earthquakes are rare in North Carolina, there have still been several notable events recorded across susceptible regions of the state within the last 100 years alone. A single event of magnitude 5 or greater can easily cut off critical infrastructure and cause residual structural damage over a large area. Current building and development design practices may account for this hazard, but significant portions of existing development, especially in more rural or older areas, will remain vulnerable to earthquakes without any new structural interventions.

<sup>3</sup> NCDEQ Earthquakes (<https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/north-carolina-geological-survey/geologic-hazards/earthquakes-north-carolina>)

### **People**

Earthquakes in the Region generally are not high impact events that cause injury or death. The public may typically experience some shaking in these events and the greatest threat to health and well-being is often from objects falling from shelves.

### **First Responders**

A moderate earthquake is unlikely to damage infrastructure such as roads, bridges, or gas/power/water lines. Therefore, there would be little impact to first responders in the event of a moderate earthquake in the Region.

### **Continuity of Operations**

There would likely be little disruption to services or operations due to a moderate earthquake.

### **Built Environment**

Buildings can be damaged by the shaking itself or by the ground beneath them settling to a different level than it was before the earthquake (subsidence). Buildings can even sink into the ground if soil liquefaction occurs. If a structure (a building, road, etc.) is built across a fault, the ground displacement during an earthquake could seriously damage that structure. An earthquake can also break dams or levees along a river. The water from the river or the reservoir would then flood the area, damaging buildings and possibly drowning people. Finally, fires can be started by broken gas lines and power lines. Fires can be a serious problem, especially if the water lines that feed the fire hydrants have been damaged as well. Historically, the Region has not been impacted by an earthquake with more than a moderate intensity so damage to the built environment is unlikely.

### **Economy**

Economic losses associated with an earthquake include property damage, business interruption costs, and costs to repair damaged utilities and infrastructure. Historically, there have been no economic losses associated with earthquakes in the Region.

### **Natural Environment**

A moderate earthquake is unlikely to cause substantial impacts to the natural environment in the Region. Impacts on the built environment (e.g. ruptured gas line) could damage the surrounding environment. However, this type of damage is unlikely based on historical occurrences.



## 5.5 Excessive Heat

### 5.5.1 Hazard Description

Excessive heat, like drought, poses little risk to property. However, excessive heat can have devastating effects on health. Excessive heat is often referred to as “extreme heat” or a “heat wave.” According to the National Oceanic and Atmospheric Administration (NOAA), there is no universal definition for extreme heat because “the definition of “extreme” can vary depending on the location and typical climate<sup>4</sup>.” In most areas of the country, the National Weather Service generally issues alerts “when the heat index is expected to exceed 105°F-110°F for at least two consecutive days,” but they also work with local partners to determine the most appropriate conditions for a specific geography<sup>5, 6</sup>. Each National Weather Service forecast office considers their own community’s vulnerabilities, local guidelines and thresholds, forecast confidence, heat intensity and duration, occurrences during summer holidays or outdoor events, and other factors. They use this information to decide when and whether to issue a heat watch, warning, or advisory.

The State of North Carolina defines extreme heat regionally using heat index thresholds. The regional thresholds recognize that an area’s typical climate conditions and relevant local factors, such as the proportion of the population engaged in outdoor work, can impact how heat affects the local population. At heat indices higher than established thresholds, negative health impacts begin to occur. The North Carolina Department of Health and Human Services (NCDHHS) uses these regional temperature thresholds to activate its Heat Health Alert System. NCDHHS sends heat alerts to county health departments and Heat Health Alert System subscribers when the daily maximum heat index is forecasted to meet or exceed the heat index threshold for their region. In the Bladen-Columbus-Robeson Region, that threshold is between 102 and 103°F.

Extreme heat can lead to heat-related illness and death. The number of extreme heat days has been increasing on average each year, putting residents at a higher risk of health impacts. In 2023, more people in the United States died of heat-related illness than any other year on record<sup>7</sup>. **Table 5-10** shows the dangers associated with different heat index temperatures. Some populations, such as the elderly, the young, and people with pre-existing health conditions, are more susceptible to heat danger than other segments of the population. However, everyone is at risk of health impacts from exposure to extreme heat.

**Table 5-10: Heat Disorders Associated with Heat Index Temperature**

| Heat Index Temperature (°F) | Description of Risks                                                                                            |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------|
| 80° - 90°                   | Fatigue possible with prolonged exposure and/or physical activity                                               |
| 90° - 105°                  | Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and/or physical activity           |
| 105° - 130°                 | Heatstroke/sunstroke, heat cramps, and heat exhaustion likely, with prolonged exposure and/or physical activity |

<sup>4</sup> 2024-2030 National Heat Strategy ([https://cpo.noaa.gov/wp-content/uploads/2024/07/National\\_Heat\\_Strategy-2024-2030.pdf](https://cpo.noaa.gov/wp-content/uploads/2024/07/National_Heat_Strategy-2024-2030.pdf))

<sup>5</sup> NWS Heat Forecast Tools (<https://www.weather.gov/safety/heat-index>)

<sup>6</sup> NWS Heat Safety (<https://www.weather.gov/safety/heat-ww>)

<sup>7</sup> Associated Press Climate (<https://apnews.com/article/record-heat-deadly-climate-change-humidity-south-11de21a526e1cbe7e306c47c2f12438d>)

|                |                                                               |
|----------------|---------------------------------------------------------------|
| 130° or higher | Heatstroke/sunstroke is highly likely with continued exposure |
|----------------|---------------------------------------------------------------|

Source: National Weather Service, NOAA

In addition to the direct impact excessive heat has on health, heat waves can cause air pollution levels to spike. Stagnant atmospheric conditions trap pollutants. Heat accelerates the production of ground-level ozone. Excessive heat can lead to droughts, which subsequently increases wildfire risk. These compounding impacts can add unhealthy air to excessively hot temperatures. In addition, the urban heat island effect, which occurs anywhere with development – not just in large urban areas, can produce significantly higher nighttime temperatures because asphalt and concrete (which store heat longer) gradually release heat at night.

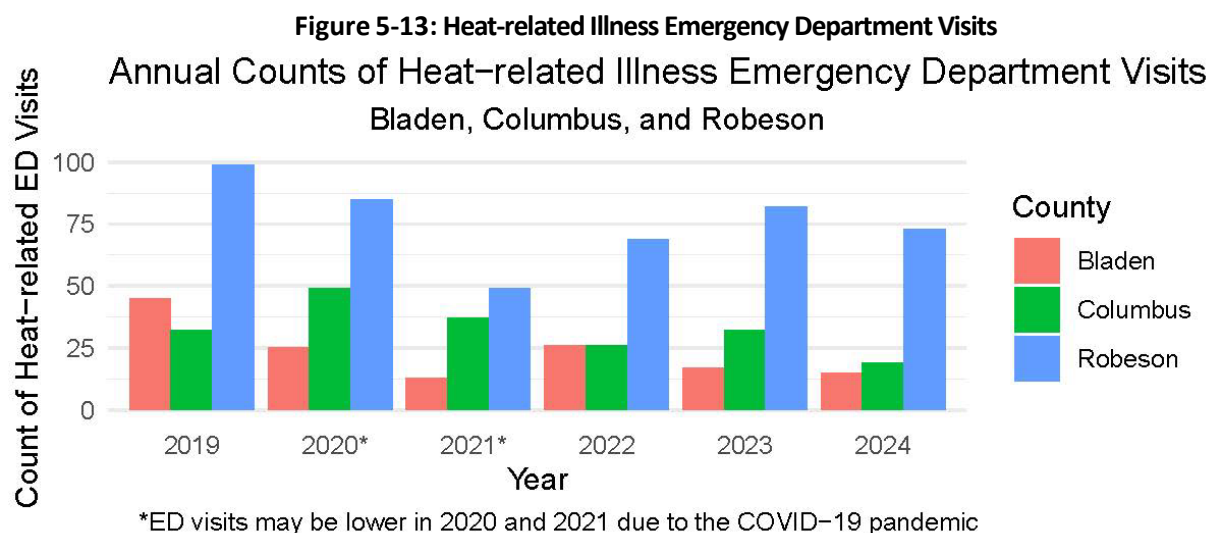
### 5.5.2 Location and Spatial Extent

Excessive heat typically impacts a large area and cannot be confined to any geographic or political boundaries. The entire Region is susceptible to extreme heat conditions.

### 5.5.3 Past Occurrences

Data from the National Centers for Environmental Information (NCEI) was used to determine historical excessive heat and heat wave events in the Bladen-Columbus-Robeson Region. Between all three counties, there have been 14 recorded heat events resulting in at least 2 deaths and 15 injuries since 1950.

Residents of the Region also experience heat-related illnesses during excessive heat events. **Figure 5-13** shows the annual count of emergency department visits for heat-related illness in the Region, using public health syndromic surveillance system data from the North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT). The annual count of emergency department visits for heat-related illness in Bladen County ranged from 13 visits in 2021 to 45 visits in 2019. The annual count of emergency department visits for heat-related illness in Columbus County ranged from 19 visits in 2024 to 49 visits in 2020. The annual count of emergency department visits for heat related illness in Robeson County ranged from 49 visits in 2021 to 99 visits in 2019.



In addition, information from the State Climate Office of North Carolina was reviewed to obtain

historical maximum temperatures in the region. Temperature information was reported in Bladen County since 1910 with a maximum reading of 105°F recorded in Elizabethtown (August 11, 2007). Temperature information was reported in Columbus County since 1954 with a maximum reading of 105°F recorded in Whiteville (June 27, 1954). Temperature information was reported in Robeson County since 1901 with a maximum reading of 108°F recorded in Lumberton (July 21, 1926).

#### 5.5.4 Probability of Future Occurrence

The probability of future excessive heat events is shown in the table below, by jurisdiction.

##### Definitions for Descriptors Used for Probability of Future Hazard Occurrences

- Unlikely: Less than 1% annual probability of hazard
- Possible: Between 1% and 10% annual probability of hazard
- Likely: Between 10% and 100% annual probability of hazard
- Highly Likely: 100% annual probability of hazard

| Jurisdiction                          | Probability of Future Occurrence |
|---------------------------------------|----------------------------------|
| Bladen County (Unincorporated Area)   | Likely                           |
| Columbus County (Unincorporated Area) | Likely                           |
| Robeson County (Unincorporated Area)  | Likely                           |
| City of Lumberton                     | Likely                           |
| City of Whiteville                    | Likely                           |
| Town of Bladenboro                    | Likely                           |
| Town of Boardman                      | Likely                           |
| Town of Bolton                        | Likely                           |
| Town of Brunswick                     | Likely                           |
| Town of Cerro Gordo                   | Likely                           |
| Town of Chadbourn                     | Likely                           |
| Town of Clarkton                      | Likely                           |
| Town of Dublin                        | Likely                           |
| Town of East Arcadia                  | Likely                           |
| Town of Elizabethtown                 | Likely                           |
| Town of Fair Bluff                    | Likely                           |
| Town of Fairmont                      | Likely                           |
| Town of Lake Waccamaw                 | Likely                           |
| Town of Lumber Bridge                 | Likely                           |
| Town of Marietta                      | Likely                           |
| Town of Maxton                        | Likely                           |
| Town of McDonald                      | Likely                           |
| Town of Orrum                         | Likely                           |

| Jurisdiction         | Probability of Future Occurrence |
|----------------------|----------------------------------|
| Town of Parkton      | Likely                           |
| Town of Pembroke     | Likely                           |
| Town of Proctorville | Likely                           |
| Town of Raynham      | Likely                           |
| Town of Red Springs  | Likely                           |
| Town of Rennert      | Likely                           |
| Town of Rowland      | Likely                           |
| Town of Saint Pauls  | Likely                           |
| Town of Sandyfield   | Likely                           |
| Town of Tabor City   | Likely                           |
| Town of Tar Heel     | Likely                           |
| Town of White Lake   | Likely                           |

Source: NCEM RMT & plan risk assessment

### 5.5.5 Consequence and Impact Analysis (Vulnerability)

#### Changing Future Conditions

According to 2022 climate summary data from the NOAA National Centers for Environmental Information, temperatures recorded since the middle of the century have steadily increased and been marked above the average consistently beyond the late 1990s. Recent summer average temperatures were also logged as the warmest reported on record for the last 16 years (2005-2020). Furthermore, the last 11 years (2010-2020) indicated the greatest number of very warm nights recorded despite no significant increase in the frequency of very hot days<sup>8</sup>.

The State Climate Office of North Carolina provides county-specific climate projections hosted on the North Carolina Resilience Exchange<sup>9</sup>. These projections, which are based on the Fifth National Climate Assessment, anticipate that the number of days above 90°F in all three counties will increase significantly by the 2060s. The number of days above 95°F are anticipated to increase substantially by the 2060s – as much as several times greater than the amount that Bladen County, Columbus County, and Robeson County currently experience.

Hotter nights are also anticipated to increase substantially in the coming years. Nights that do not go below 70°F make it increasingly difficult for the human body to recover from hot days. This continuous exposure to heat can make health problems worse, especially for residents that live in homes without adequate air conditioning and among other vulnerable populations.

#### People

Extreme heat can lead to serious health issues such as heat exhaustion, heat rash, heat stroke, and in severe cases, even death. People suffer heat-related illness when their bodies are unable to properly cool themselves. Older adults, young children, and people with chronic medical conditions are at high

<sup>8</sup> NOAA NCEI 2022 State Climate Summaries (<https://statesummaries.ncics.org/chapter/nc/>)

<sup>9</sup> NC Resilience Exchange (<https://www.resilienceexchange.nc.gov/understand-your-vulnerabilities>)

risk for heat-related illnesses.

### **First Responders**

Heat strains power grids and damages infrastructure, which may affect responder assistance in various ways. Aside from these direct effects, prolonged exposure to excessive heat can lead to exhaustion or even life-threatening events for the responders, like heat stroke.

### **Continuity of Operations**

Extreme heat can have significant effects for the continuation of operations, especially in terms of critical facilities and assets. Intense heat exposure can damage equipment and machinery thereby reducing their performance and lifespan. Indirectly, it also raises the risk of heat-related illnesses for staff, especially those working outdoors.

### **Built Environment**

Excessive heat may harm the built environment by causing or expediting the breakdown of materials and structures. Prolonged high temperatures can cause asphalt to soften, or concrete to crack owing to thermal expansion, thereby jeopardizing structural integrity of important infrastructure. The urban heat island effect intensifies the heat in cities, raising ambient temperatures. Furthermore, high temperatures can strain water infrastructure, causing pipes to rupture and affect water quality. These consequences endanger the safety, functioning, and durability of urban infrastructure. The heat may also have the potential to impact local businesses such as landscaping, recreation and tourism, and public utilities.

### **Economy**

Because of the increased demand for cooling, high temperatures result in higher energy use, which might put a strain on electrical infrastructure and cause expensive outages. The disruption of transportation and commerce due to infrastructure damage, such as distorted rail lines and deteriorated construction materials, necessitates pricey repairs. Labor productivity also decreases in outdoor and non-air-conditioned settings, lowering production in industries such as manufacturing, agriculture, and construction.

### **Natural Environment**

High temperatures for an extended period can lead to drought, which dries out the soil and puts stress on plants, increasing the risk of wildfires and biodiversity loss. As water bodies get higher in temperature, aquatic ecosystems are negatively impacted due to lower oxygen levels. Additionally, heat promotes the spread of invasive species and pests, which may overpower indigenous species and disrupt ecosystems.

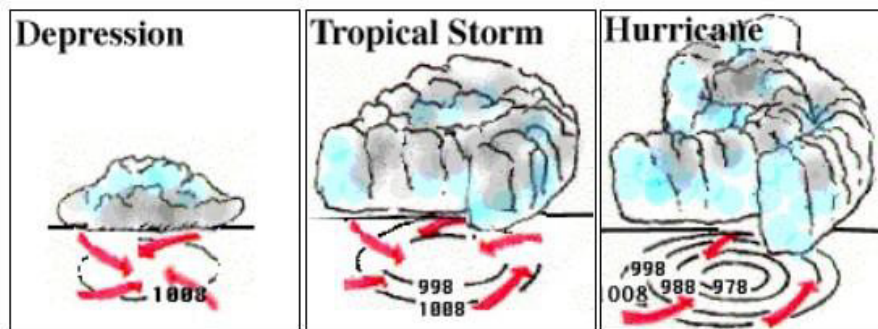
## 5.6 Hurricane/Tropical Storm

### 5.6.1 Hazard Description

A hurricane is a type of tropical cyclone or severe tropical storm that forms in the southern Atlantic Ocean, Caribbean Sea, Gulf of Mexico, and in the eastern Pacific Ocean. All Atlantic and Gulf of Mexico coastal areas are subject to hurricanes. The Atlantic hurricane season lasts from June 1 to November 30, with the peak season from mid-August to late October.

While hurricanes pose the greatest threat to life and property, tropical storms and depressions also can be devastating. A tropical disturbance can grow to a more intense stage through an increase in sustained wind speeds. The progression of a tropical disturbance is described below and shown in **Figure 5-14**.

- **Tropical Depression:** A tropical cyclone with maximum sustained winds of 38 mph (33 knots) or less.
- **Tropical Storm:** A tropical cyclone with maximum sustained winds of 39 to 73 mph (34 to 63 knots).
- **Hurricane:** A tropical cyclone with maximum sustained winds of 74 mph (64 knots) or higher. In the western North Pacific, hurricanes are called typhoons; similar storms in the Indian Ocean and South Pacific Ocean are called cyclones.
- **Major Hurricane:** A tropical cyclone with maximum sustained winds of 111 mph (96 knots) or higher, corresponding to a Category 3, 4 or 5 on the Saffir-Simpson Hurricane Wind Scale.



Source: Department of Atmospheric Sciences at the University of Illinois at Urbana-Champaign

**Figure 5-14: Life Cycle of a Hurricane**

Hurricanes and tropical storms are classified as cyclones and defined as any closed circulation developing around a low-pressure center in which the winds rotate counterclockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and whose diameter averages 10 to 30 miles across. A tropical cyclone refers to any such circulation that develops over tropical waters. Tropical cyclones act as a “safety-valve,” limiting the continued build-up of heat and energy in tropical regions by maintaining the atmospheric heat and moisture balance between the tropics and the pole-ward latitudes. The primary damaging forces associated with these storms are high-level sustained winds, heavy precipitation, and tornadoes.

The key energy source for a tropical cyclone is the release of latent heat from the condensation of warm water. Their formation requires a low-pressure disturbance, warm sea surface temperature, rotational force from the spinning of the earth, and the absence of wind shear in the lowest 50,000 feet of the atmosphere. Most hurricanes and tropical storms form in the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico during the official Atlantic hurricane season, which encompasses the months of June through

November. The peak of the Atlantic hurricane season is in early to mid-September and the average number of storms that reach hurricane intensity per year in the Atlantic basin is about six.

As an incipient hurricane develops, barometric pressure (measured in millibars or inches) at its center falls and winds increase. If the atmospheric and oceanic conditions are favorable, it can intensify into a tropical depression. When maximum sustained winds reach or exceed 39 miles per hour, the system is designated a tropical storm, given a name, and is closely monitored by the National Hurricane Center in Miami, Florida. When sustained winds reach or exceed 74 miles per hour the storm is deemed a hurricane. Hurricane intensity is further classified by the Saffir-Simpson Scale which rates hurricane intensity on a scale of 1 to 5, with 5 being the most intense.

The Saffir-Simpson Hurricane Wind Scale classifies hurricanes by intensity into one of five categories as shown in **Table 5-11**. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous, however, and require preventative measures.

**Table 5-11: Saffir-Simpson Scale**

| Category | Maximum Sustained Wind Speed (MPH) | Minimum Surface Pressure (Millibars) |
|----------|------------------------------------|--------------------------------------|
| 1        | 74–95                              | Greater than 980                     |
| 2        | 96–110                             | 979–965                              |
| 3        | 111–129                            | 964–945                              |
| 4        | 130–156                            | 944–920                              |
| 5        | 157 +                              | Less than 920                        |

Source: National Hurricane Center (2012)

The Saffir-Simpson Scale categorizes hurricane intensity linearly based upon maximum sustained winds and barometric pressure, which are combined to estimate potential damage. Categories 3, 4, and 5 are classified as “major” hurricanes and, while hurricanes within this range comprise only 20 percent of total tropical cyclone landfalls, they account for over 70 percent of the damage in the United States. **Table 5-12** describes the damage that could be expected for each category of hurricane. Damage during hurricanes may also result from spawned tornadoes, storm surge, and inland flooding associated with heavy rainfall that usually accompanies these storms.

**Table 5-12: Hurricane Damage Classifications**

| Storm Category | Damage Level | Description of Damages                                                                                                                                                                         | Photo Example                                                                         |
|----------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1              | MINIMAL      | No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal flooding and minor pier damage.                                   |                                                                                       |
| 2              | MODERATE     | Some roofing material, door, and window damage. Considerable damage to vegetation, mobile homes, etc. Flooding damages piers and small craft in unprotected moorings may break their moorings. |  |



## Hazard Profiles

|   |              |                                                                                                                                                                                                                                                                                                 |                                                                                     |
|---|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 3 | EXTENSIVE    | Some structural damage to small residences and utility buildings, with a minor amount of curtainwall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures, with larger structures damaged by floating debris. Terrain may be flooded well inland.          |  |
| 4 | EXTREME      | More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Terrain may be flooded well inland.                                                                                                                            |  |
| 5 | CATASTROPHIC | Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Flooding causes major damage to lower floors of all structures near the shoreline. Massive evacuation of residential areas may be required. |  |

Source: National Hurricane Center; Federal Emergency Management Agency

Wind speed is the determining factor in the scale, as storm surge values are highly dependent on the slope of the continental shelf and the shape of the coastline in the landfall region. The following describes the characteristics of each category storm from the Saffir-Simpson Hurricane Wind Scale Extended Table:

### **Category 1 Hurricane - Winds 74 – 95 mph. Very dangerous winds will produce some damage.**

People, livestock, and pets struck by flying or falling debris could be injured or killed. Older (mainly pre-1994 construction) mobile homes could be destroyed, especially if they are not anchored properly as they tend to shift or roll off their foundations. Newer mobile homes that are anchored properly can sustain damage involving the removal of shingle or metal roof coverings, and loss of vinyl siding, as well as damage to carports, sunrooms, or lanais. Some poorly constructed frame homes can experience major damage, involving loss of the roof covering and damage to gable ends as well as the removal of porch coverings and awnings. Unprotected windows may break if struck by flying debris. Masonry chimneys can be toppled. Well-constructed frame homes could have damage to roof shingles, vinyl siding, soffit panels, and gutters. Failure of aluminum, screened-in, swimming pool enclosures can occur. Some apartment and shopping center roof coverings could be partially removed. Industrial buildings can lose roofing and siding especially from windward corners, rakes, and eaves. Failures to overhead doors and unprotected windows will be common. Windows in high-rise buildings can be broken by flying debris. Falling and broken glass will pose a significant danger even after the storm. There will be occasional damage to commercial signage, fences, and canopies. Large branches of trees will snap, and shallow rooted trees can be toppled. Extensive damage to power lines and poles will likely result in power outages that could last a few to several days.

### **Category 2 Hurricane - Winds 96-110 mph. Extremely dangerous winds will cause extensive damage.**

There is a substantial risk of injury or death to people, livestock, and pets due to flying and falling debris. Older (mainly pre-1994 construction) mobile homes have a very high chance of being destroyed and the flying debris generated can shred nearby mobile homes. Newer mobile homes can also be destroyed. Poorly constructed frame homes have a high chance of having their roof structures removed especially if they are not anchored properly. Unprotected windows will have a high probability of being broken by flying debris. Well-constructed frame homes could sustain major roof and siding damage. Failure of aluminum, screened-in, swimming pool enclosures will be common. There will be a substantial percentage of roof and siding damage to apartment buildings and industrial buildings. Unreinforced masonry walls can collapse. Windows in high-rise buildings can be broken by flying debris. Falling and

broken glass will pose a significant danger even after the storm. Commercial signage, fences, and canopies will be damaged and often destroyed. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks. Potable water could become scarce as filtration systems begin to fail.

### **Category 3 Hurricane - Winds 111-129 mph. Devastating damage will occur.**

There is a high risk of injury or death to people, livestock, and pets due to flying and falling debris. Nearly all older (pre-1994) mobile homes will be destroyed. Most post-1994 mobile homes will sustain severe damage with potential for complete roof failure and wall collapse. Poorly constructed frame homes can be destroyed by the removal of the roof and exterior walls. Unprotected windows will be broken by flying debris. Well-built frame homes can experience major damage involving the removal of roof decking and gable ends. There will be a high percentage of roof covering and siding damage to apartment buildings and industrial buildings. Isolated structural damage to wood or steel framing can occur. Complete failure of older metal buildings is possible, and older unreinforced masonry buildings can collapse. Numerous windows will be blown out of high-rise buildings resulting in falling glass, which will pose a threat for days to weeks after the storm. Most commercial signage, fences, and canopies will be destroyed. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to a few weeks after the storm passes.

### **Category 4 Hurricane - Winds 130 to 156 mph. Catastrophic damage will occur.**

There is a very high risk of injury or death to people, livestock, and pets due to flying and falling debris. Nearly all older (pre-1994) mobile homes will be destroyed. A high percentage of newer mobile homes also will be destroyed. Poorly constructed homes can sustain complete collapse of all walls as well as the loss of the roof structure. Well-built homes also can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Extensive damage to roof coverings, windows, and doors will occur. Large amounts of windborne debris will be lofted into the air. Windborne debris damage will break most unprotected windows and penetrate some protected windows. There will be a high percentage of structural damage to the top floors of apartment buildings. Steel frames in older industrial buildings can collapse. There will be a high percentage of collapse to older unreinforced masonry buildings. Most windows will be blown out of high-rise buildings resulting in falling glass, which will pose a threat for days to weeks after the storm. Nearly all commercial signage, fences, and canopies will be destroyed. Most trees will be snapped or uprooted, and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Long-term water shortages will increase human suffering. Most of the area will be uninhabitable for weeks or months.

### **Category 5 Hurricane - Winds 157 mph or higher. Catastrophic damage will occur.**

People, livestock, and pets are at very high risk of injury or death from flying or falling debris, even if indoors in mobile homes or framed homes. Almost complete destruction of all mobile homes will occur, regardless of age or construction. A high percentage of frame homes will be destroyed, with total roof failure and wall collapse. Extensive damage to roof covers, windows, and doors will occur. Large amounts of windborne debris will be lofted into the air. Windborne debris damage will occur to nearly all unprotected windows and many protected windows. Significant damage to wood roof commercial buildings will occur due to loss of roof sheathing. Complete collapse of many older metal buildings can occur. Most unreinforced masonry walls will fail which can lead to the collapse of the buildings. A high percentage of industrial buildings and low-rise apartment buildings will be destroyed. Nearly all windows will be blown out of high-rise buildings resulting in falling glass, which will pose a threat for days to weeks after the storm. Nearly all commercial signage, fences, and canopies will be destroyed.

Nearly all trees will be snapped or uprooted, and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Long-term water shortages will increase human suffering. Most of the area will be uninhabitable for weeks or months.

### 5.6.2 Location and Spatial Extent

All Atlantic and Gulf of Mexico coastal areas are subject to hurricanes. While coastal areas are most directly exposed to land falling hurricanes and tropical storms, their impact can be felt hundreds of miles inland. The entire Region is equally susceptible to hurricanes and tropical storms, but areas closer to the Atlantic coast may experience a greater frequency of events. The maps below show all past hurricane paths through the Region.

Hurricane extent is defined by the Saffir-Simpson Scale which classifies hurricanes into Category 1 through Category 5. The greatest classification of hurricanes to traverse directly through the Region was a category 1 hurricane in Robeson County which carried tropical force winds of 70 knots upon arrival in the Region. The following list is the greatest extent of hurricane winds to pass through the area, though it should be noted that stronger storms could impact the Region without a direct hit:

- Bladen County (including jurisdictions): Tropical Storm (53 knots)
- Columbus County (including jurisdictions): Tropical Storm (62 knots)
- Robeson County (including jurisdictions): Hurricane Matthew (70 knots)

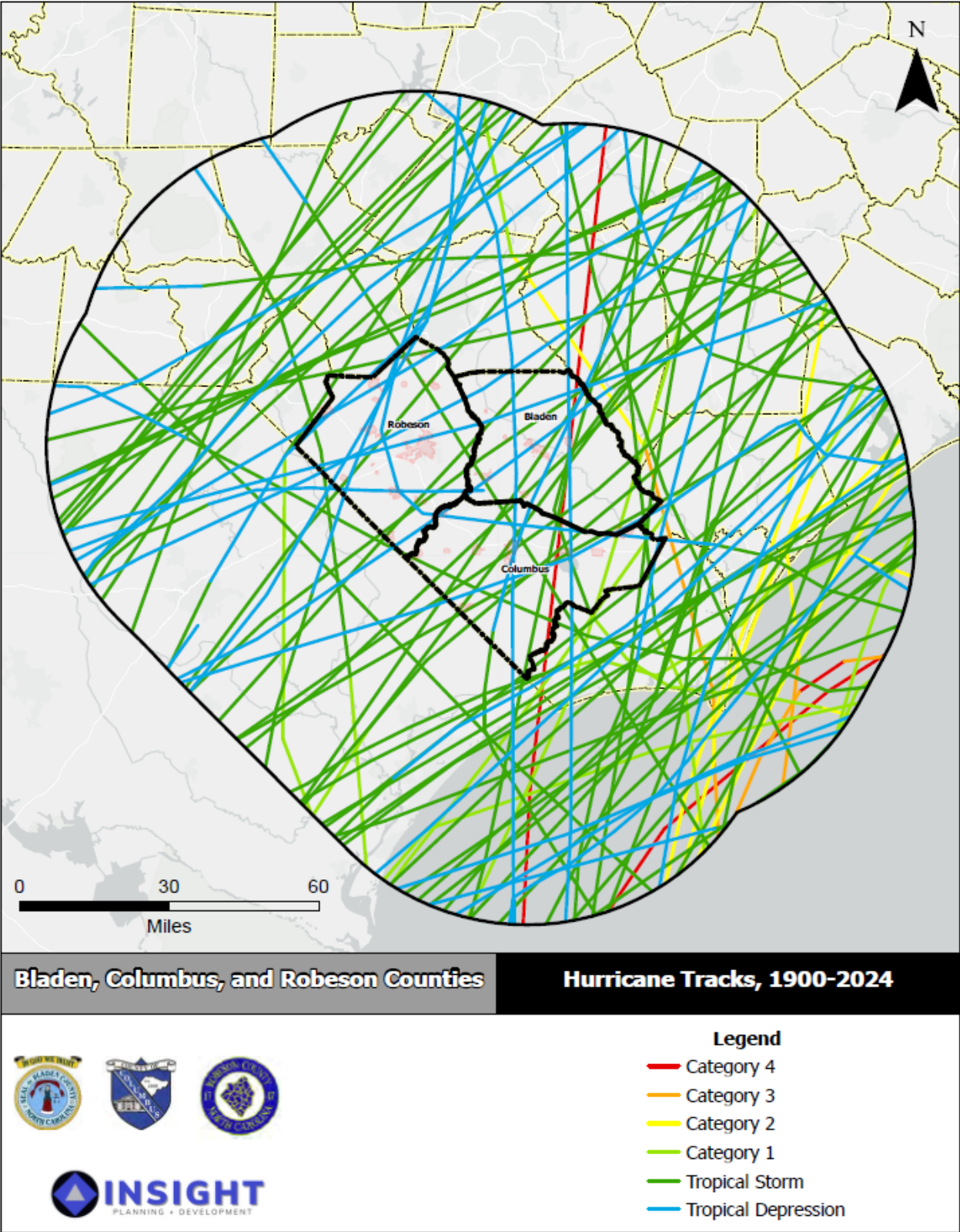


Figure 5-15: Regional Hurricane Tracks (1900-2024)



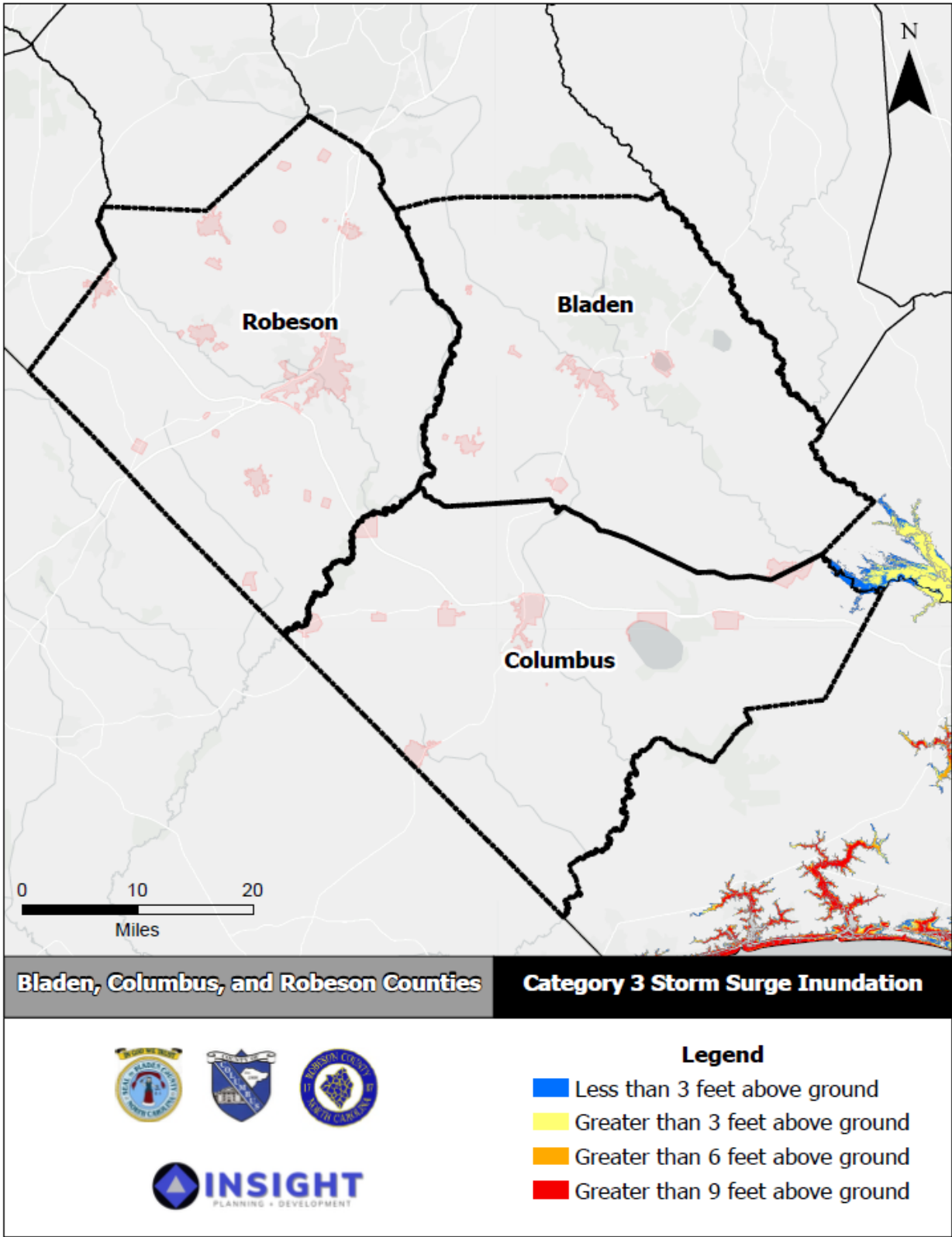


Figure 5-16: Regional Category 3 Storm Surge Inundation

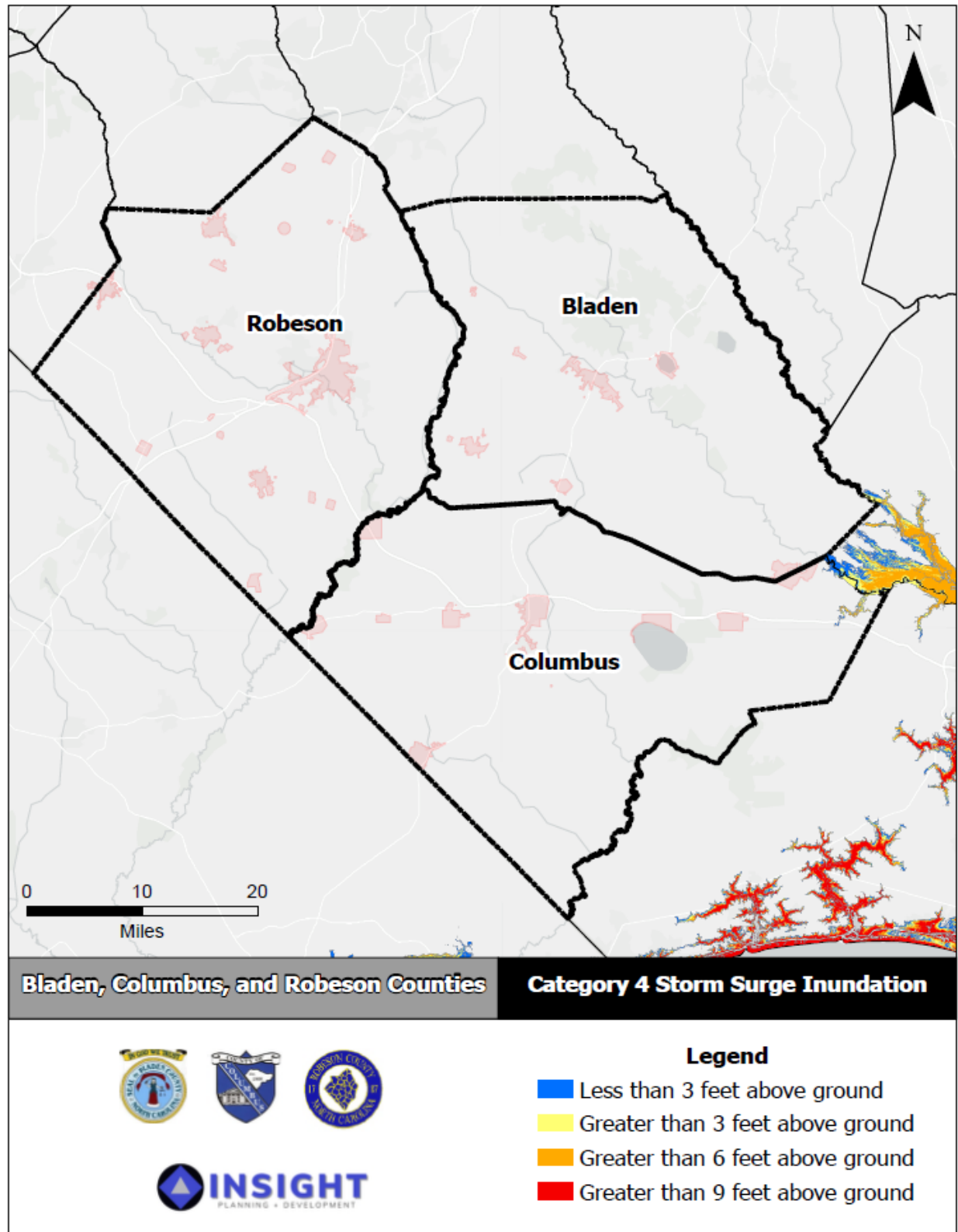


Figure 5-17: Regional Category 4 Storm Surge Inundation

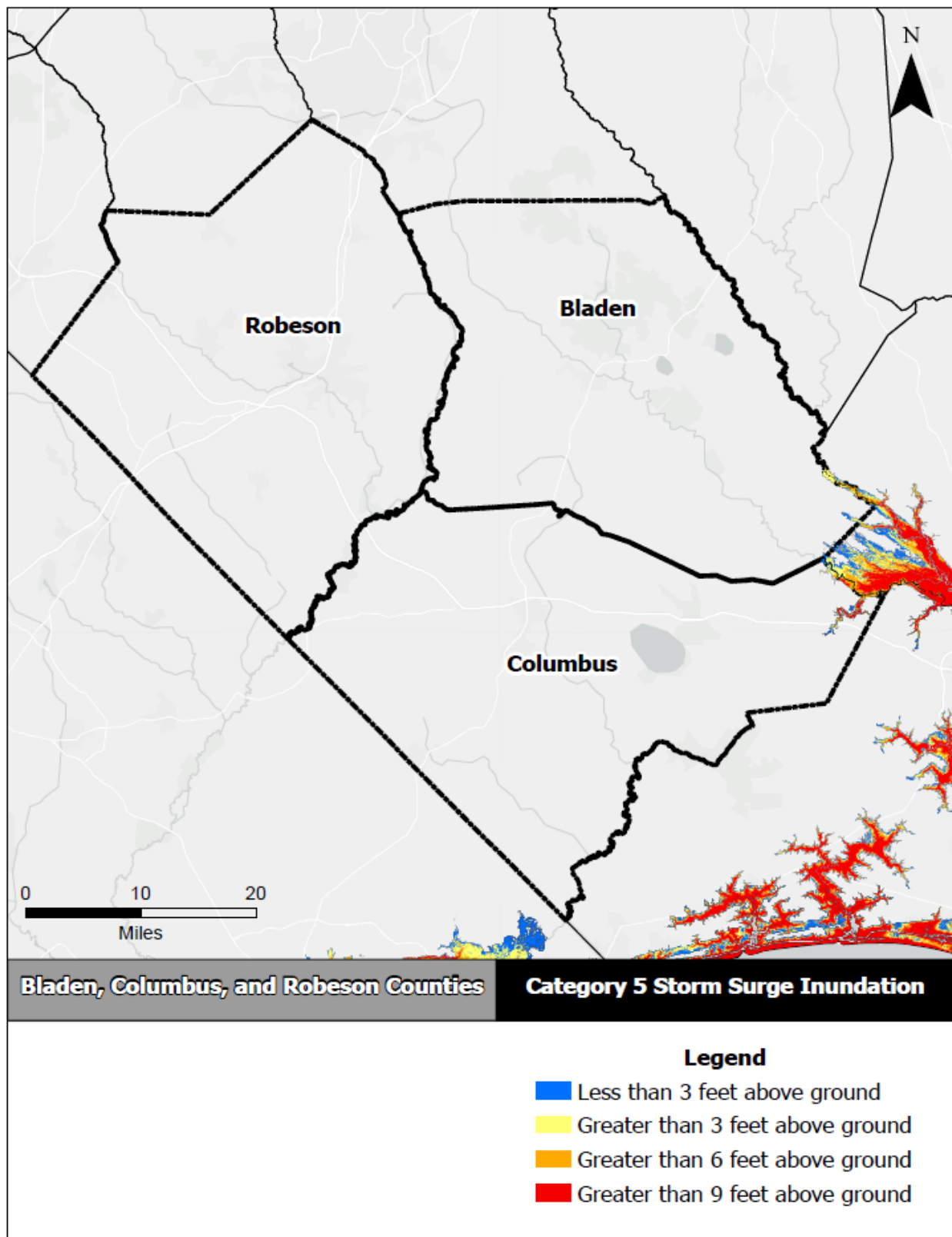


Figure 5-18: Regional Category 5 Storm Surge Inundation



### 5.6.3 Past Occurrences

The following provides details on significant hurricane and tropical storm events recorded in the NOAA NCEI database:

- **August 29, 2004** – Tropical Storm Gaston made landfall in Charleston County, SC and moved north toward the Region, weakening to a tropical depression by the time it reached the county. Despite lower wind speeds, precipitation levels were high. the Region received from five to seven inches of rain, causing long-lasting street flooding and river flooding. The Lumber River in Lumberton experienced record flooding, with a crest nearly eight feet above flood stage.
  - **September 2, 2016** – Hurricane Hermine made landfall as a minimal category 1 hurricane near the Florida Panhandle the night of September 1st. The hurricane weakened to a tropical storm as it moved up the eastern seaboard. The storm entered southeast NC on September 2nd and moved rapidly northeast. The storm produced very heavy rainfall with flash flooding, as well as some scattered reports of wind damage impacting the Region's business and agriculture sectors. Rainfall amounts averaged around six inches, with isolated amounts around ten inches. The highest wind gusts were around 65 mph.
  - **October 8, 2016** – Hurricane Matthew, a category 1, moved up the eastern seaboard, bringing very heavy rain and strong winds. Rainfall over 12 inches occurred in multiple areas of the county. Wind gusts were surprisingly high, with a gust of 67 mph at Lumberton Airport. Tropical storm force winds and flooded ground caused widespread trees and power line damage. The river gauge at the Lumber River at Lumberton failed, however the high watermark data from the U.S. Geological Survey indicated the water level may have reached over 25 feet. This exceeded the previous record by over 4 feet. This level bypassed the levee that protects parts of Lumberton from the river due to water passing under I-95 via VFR road. One elderly male died in his home on West Fifth Street on 10/9. The man had a heart condition and when power was lost, he was without oxygen. The family believes he may have died of a heart attack and then fell into flood waters which had overtaken his home from the Lumber River. The Lumber River also exceeded record levels at Boardman by about 2.5 feet. This resulted in the closure of U. S. Route 74, the main route between Wilmington and Lumberton. Numerous water rescues were required along and near the Lumber River. Many homes were flooded in Pembroke. This was one of the hardest hit counties due to the historic river flooding. The offices of the Robesonian Newspaper were flooded.
- September 14, 2018** – Hurricane Florence began as a tropical storm September 1<sup>st</sup> over the Cape Verde islands off the coast of West Africa. It peaked as a Category 4 hurricane with sustained winds of 140 mph. It made landfall as a Category 1 hurricane on Friday, September 14 over Wrightsville Beach, North Carolina. Florence produced extensive wind damage along the North Carolina coast from Cape Lookout, across Carteret, Onslow, Pender, and New Hanover Counties. Thousands of downed trees caused widespread power outages to nearly all of eastern North Carolina. The historic legacy of Hurricane Florence will be record-breaking storm surge of 9 to 14 feet devastating rainfall of 20 to 30 inches, which produced catastrophic and life- threatening flooding.
- **October 11, 2018** – Michael originated as a Category 5 hurricane that came up the Gulf of Mexico and first hit land around the Florida/Georgia border. Tropical storm Michael gradually weakened as it tracked from the South Carolina Midlands through portions of the South Carolina and North Carolina Piedmont throughout the 11th. Gusty winds increased during the daylight hours on the east side of the storm track, with numerous trees blown, especially across the Piedmont. Flooding continued east for days after the storm hit. Davidson and Randolph counties were included in the Presidential Disaster Declaration. Hurricane Michael caused multiple flash

flooding events and multiple power outages in the region due to high winds.

- **August 3, 2020** – Isaias was a Category 1 hurricane that made landfall at Ocean Isle Beach with maximum sustained winds of 85 mph. Isaias began as a tropical wave off the coast of Africa on July 23<sup>rd</sup>, 2020. A damaging storm surge occurred along the coasts of South Carolina and North Carolina. Isaias established new records for the downtown Wilmington River (Cape Fear River) gauge at 9.03 feet which broke the record set by Hurricane Florence. Peak winds of 51 mph were experienced at Elizabethtown Airport.
- **September 30, 2022** – Hurricane Ian was a unique and challenging storm that brought widespread impacts to eastern North Carolina. Impacts to eastern NC included a prolonged period of strong NE winds beginning later in the day on Wednesday, September 28th and continuing through Friday, September 30th. These strong northeast winds created elevated tide levels and strong northeast swell, which combined with the developing strong southerly swell from the winds. The core of Ian brought extensive overwash along Hatteras Island, Ocracoke Island, and Core Banks.

NOAA's Office for Coastal Management (OCM) keeps records of all historical hurricane tracks. **Table 5-13** lists 76 hurricanes and tropical storms that have passed within 50 miles of the region as of January 2020. This is not an exhaustive list of all hurricanes that have affected the region, as storms of large magnitude can have long reaching impacts on surrounding areas.

Despite its incomplete scope, by enumerating the hurricanes that have passed close to the region, this list does provide some indication of the probability that the region will be affected by a future hurricane.

**Table 5-13: Historical Hurricane Tracks in the Region**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 10/30/1854         | NOT NAMED  | 35                         | Tropical Storm      |
| 9/15/1859          | NOT NAMED  | 35                         | Tropical Storm      |
| 9/2/1867           | NOT NAMED  | 0                          | Tropical Depression |
| 9/26/1877          | NOT NAMED  | 48                         | Tropical Storm      |
| 9/1/1878           | NOT NAMED  | 44                         | Tropical Storm      |
| 11/18/1885         | NOT NAMED  | 35                         | Tropical Storm      |
| 9/15/1886          | NOT NAMED  | 35                         | Tropical Storm      |
| 9/16/1886          | NOT NAMED  | 31                         | Tropical Depression |
| 10/9/1887          | NOT NAMED  | 0                          | Tropical Depression |
| 9/8/1888           | NOT NAMED  | 31                         | Tropical Depression |
| 9/12/1889          | NOT NAMED  | 35                         | Tropical Storm      |
| 7/25/1891          | NOT NAMED  | 35                         | Tropical Storm      |
| 9/27/1893          | NOT NAMED  | 35                         | Tropical Storm      |
| 9/22/1896          | NOT NAMED  | 62                         | Tropical Storm      |
| 7/4/1901           | NOT NAMED  | 26                         | Tropical Depression |
| 9/28/1901          | NOT NAMED  | 0                          | Tropical Depression |

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 6/12/1902          | NOT NAMED  | 31                         | Tropical Depression |
| 10/7/1902          | NOT NAMED  | 31                         | Tropical Depression |
| 9/13/1904          | NOT NAMED  | 53                         | Tropical Storm      |
| 10/5/1905          | NOT NAMED  | 0                          | Tropical Depression |
| 9/21/1907          | NOT NAMED  | 31                         | Tropical Depression |
| 8/26/1911          | NOT NAMED  | 22                         | Tropical Depression |
| 6/7/1912           | NOT NAMED  | 31                         | Tropical Depression |
| 8/30/1913          | NOT NAMED  | 26                         | Tropical Depression |
| 7/31/1915          | NOT NAMED  | 31                         | Tropical Depression |
| 9/19/1920          | NOT NAMED  | 31                         | Tropical Depression |
| 10/1/1927          | NOT NAMED  | 44                         | Tropical Storm      |
| 8/3/1928           | NOT NAMED  | 26                         | Tropical Depression |
| 10/3/1929          | NOT NAMED  | 35                         | Tropical Storm      |
| 9/3/1935           | NOT NAMED  | 48                         | Tropical Storm      |
| 8/11/1940          | NOT NAMED  | 62                         | Tropical Storm      |
| 9/12/1945          | NOT NAMED  | 35                         | Tropical Storm      |
| 10/14/1946         | NOT NAMED  | 26                         | Tropical Depression |
| 9/20/1947          | NOT NAMED  | 53                         | Tropical Storm      |
| 8/23/1949          | NOT NAMED  | 35                         | Tropical Storm      |
| 8/19/1952          | NOT NAMED  | 35                         | Tropical Storm      |
| 7/5/1959           | CINDY      | 26                         | Tropical Depression |
| 9/20/1959          | GRACIE     | 53                         | Tropical Storm      |
| 8/20/1964          | CLEO       | 22                         | Tropical Depression |
| 6/11/1965          | UNNAMED    | 35                         | Tropical Storm      |
| 7/18/1968          | CELESTE    | 31                         | Tropical Depression |
| 5/24/1970          | ALMA       | 22                         | Tropical Depression |
| 9/16/1976          | SUBTROP 3  | 53                         | Tropical Storm      |
| 9/3/1977           | BABE       | 40                         | Tropical Storm      |
| 8/25/1979          | DAVID      | 40                         | Tropical Storm      |
| 7/25/1985          | BOB        | 40                         | Tropical Storm      |
| 8/20/1985          | ONE-C      | 22                         | Tropical Depression |
| 9/22/1989          | HUGO       | 48                         | Tropical Storm      |
| 5/19/1990          | NOT NAMED  | 35                         | Tropical Storm      |
| 7/20/1994          | NOT NAMED  | 31                         | Tropical Depression |

## Hazard Profiles

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 6/3/1995           | ALLISON    | 40                         | Tropical Depression |
| 7/5/1996           | BERTHA     | 90                         | Tropical Depression |
| 8/23/1996          | FRAN       | 65                         | Hurricane           |
| 10/4/1996          | JOSEPHINE  | 45                         | Tropical Depression |
| 7/16/1997          | DANNY      | 30                         | Tropical Depression |
| 8/19/1998          | BONNIE     | 95                         | Hurricane           |
| 8/31/1998          | EARL       | 50                         | Tropical Depression |
| 9/7/1999           | FLOYD      | 90                         | Hurricane           |
| 9/14/2000          | GORDON     | 20                         | Tropical Depression |
| 9/15/2000          | HELENE     | 25                         | Tropical Depression |
| 6/5/2001           | ALLISON    | 25                         | Tropical Storm      |
| 9/20/2002          | KYLE       | 30                         | Tropical Storm      |
| 8/3/2004           | BONNIE     | 25                         | Tropical Storm      |
| 8/9/2004           | CHARLEY    | 60                         | Tropical Depression |
| 8/27/2004          | GASTON     | 30                         | Tropical Storm      |
| 6/10/2006          | ALBERTO    | 35                         | Tropical Storm      |
| 8/24/2006          | ERNESTO    | 50                         | Tropical Storm      |
| 5/31/2007          | BARRY      | 40                         | Tropical Storm      |
| 8/28/2008          | HANNA      | 60                         | Tropical Storm      |
| 5/25/2012          | BERYL      | 40                         | Tropical Storm      |
| 6/5/2013           | ANDREA     | 40                         | Tropical Storm      |
| 5/6/2015           | ANA        | 30                         | Tropical Depression |
| 8/28/2016          | HERMINE    | 55                         | Tropical Storm      |
| 10/8/2016          | MATTHEW    | 60                         | Tropical Storm      |
| 9/14/2018          | FLORENCE   | 80                         | Hurricane           |
| 10/8/2018          | MICHAEL    | 50                         | Tropical Storm      |
| 10/20/2019         | NESTOR     | 40                         | Tropical Storm      |
| 7/8/2020           | FAY        | 25                         | Tropical Depression |
| 8/4/2020           | ISAIAS     | 80                         | Hurricane           |
| 6/21/2021          | CLAUDETTE  | 40                         | Tropical Storm      |
| 7/8/2021           | ELSA       | 45                         | Tropical Storm      |
| 7/2-7/3/2022       | COLIN      | 35                         | Tropical Storm      |
| 9/30/-10/1/2022    | IAN        | 70                         | Hurricane           |

Source: NOAA OCM/NCEI

### 5.6.4 Probability of Future Occurrence

The probability of future hurricane winds is shown in the table below, by jurisdiction.

#### Definitions for Descriptors Used for Probability of Future Hazard Occurrences

- Unlikely: Less than 1% annual probability of hazard 50-year event
- Possible: Between 1% and 10% annual probability of hazard 50-year event
- Likely: Between 10% and 100% annual probability of hazard 50-year event
- Highly Likely: 100% annual probability of hazard 50-year event

| Jurisdiction                          | Probability of Future Occurrence |
|---------------------------------------|----------------------------------|
| Bladen County (Unincorporated Area)   | Likely                           |
| Columbus County (Unincorporated Area) | Likely                           |
| Robeson County (Unincorporated Area)  | Likely                           |
| City of Lumberton                     | Likely                           |
| City of Whiteville                    | Likely                           |
| Town of Bladenboro                    | Likely                           |
| Town of Boardman                      | Likely                           |
| Town of Bolton                        | Likely                           |
| Town of Brunswick                     | Likely                           |
| Town of Cerro Gordo                   | Likely                           |
| Town of Chadbourn                     | Likely                           |
| Town of Clarkton                      | Likely                           |
| Town of Dublin                        | Likely                           |
| Town of East Arcadia                  | Likely                           |
| Town of Elizabethtown                 | Likely                           |
| Town of Fair Bluff                    | Likely                           |
| Town of Fairmont                      | Likely                           |
| Town of Lake Waccamaw                 | Likely                           |
| Town of Lumber Bridge                 | Likely                           |
| Town of Marietta                      | Likely                           |
| Town of Maxton                        | Likely                           |
| Town of McDonald                      | Likely                           |
| Town of Orrum                         | Likely                           |
| Town of Parkton                       | Likely                           |
| Town of Pembroke                      | Likely                           |
| Town of Proctorville                  | Likely                           |
| Town of Raynham                       | Likely                           |

| Jurisdiction        | Probability of Future Occurrence |
|---------------------|----------------------------------|
| Town of Red Springs | Likely                           |
| Town of Rennert     | Likely                           |
| Town of Rowland     | Likely                           |
| Town of Saint Pauls | Likely                           |
| Town of Sandyfield  | Likely                           |
| Town of Tabor City  | Likely                           |
| Town of Tar Heel    | Likely                           |
| Town of White Lake  | Likely                           |

Source: NCEM RMT & plan risk assessment

### 5.6.5 Consequence and Impact Analysis (Vulnerability)

#### Changing Future Conditions

North Carolina is vulnerable to the hazards of tropical storms and hurricanes due to its location along the Atlantic Coast. This inherently creates the greatest risk near low-lying coastal areas of the state, although inland areas of the western regions may still face significant impacts over time. According to 2022 climate summary data from the NOAA National Centers for Environmental Information, a storm at hurricane-level intensity makes landfall in the state roughly once every 3 years. Several periods since the late 1990s were notably active in terms of hurricane formation and local damage, including Hurricanes Dennis, Floyd, Frances, Ivan, Matthew, and Florence. Future climate models project that hurricane-associated storm intensity and rainfall rates will both increase in the future despite some annual variability in the number of landfalling hurricanes in North Carolina<sup>10</sup>.

#### People

Hurricanes may affect human beings in several ways including causing deaths, causing injury, loss of property, outbreak of diseases, mental trauma and destroying livelihoods. During a hurricane, residential, commercial, and public buildings, as well as critical infrastructure such as transportation, water, energy, and communication systems may be damaged or destroyed by several of the impacts associated with hurricanes. The wind and flooding hazards associated with hurricanes can be tremendously destructive and deadly. Power outages and flooding are likely to displace people from their homes. Furthermore, water can become polluted, making it undrinkable, and if consumed, diseases and infection can be easily spread.

#### First Responders

First responders responding to the impacts of a tropical storm or hurricane face many risks to their health and life safety. Responders face risk of injury or death during a storm event by flooding and high winds. Personnel or families of personnel may be harmed which would limit their response capability. Downed trees, power lines and flood waters may prevent access to areas in need which prolongs response time. Furthermore, hurricanes typically impact a large area which amplifies the number of emergency responses required.

#### Continuity of Operations

<sup>10</sup> NOAA NCEI 2022 State Climate Summaries (<https://statesummaries.ncics.org/chapter/nc/>)

Continuity of operations may be affected if a hurricane event damages a critical facility or causes a loss of power. Hurricane events typically have ample lead time to prepare for and maintain continuity of operations.

### **Built Environment**

Depending on the strength of a tropical storm or hurricane, structural damage to buildings may occur. A weak tropical storm may cause no damage whatsoever. The most likely impact from a category 1 or greater hurricane is the loss of glass windows and doors by high winds and debris. Loss of roof coverings, partial wall collapses, and other damage requiring significant repairs are possible in a major (category 3 to 5) hurricane. The level of damage is commensurate with the strength of the storm, as explained by the Saffir-Simpson Hurricane Wind Scale.

Loss of electric power, potable water, telecommunications, wastewater and other critical utilities is very possible during a hurricane. Some damage can be so severe that it may take days to weeks to restore.

Additionally, flooding as a result of hurricanes and tropical storms can cause severe damage to the built environment. The Town of Bolton in Columbus County experienced a 77 percent<sup>1</sup> loss in its treated water system after water distribution pipes were compromised by Hurricane Florence (2018).

### **Economy**

Economic damage includes property damage from wind, rain and floods, and also include intangibles such as business interruption and additional living expenses. Damage to infrastructure utilities include roads, water and power, and municipal buildings.

### **Natural Environment**

Hurricanes can devastate wooded ecosystems and remove all the foliage from forest canopies, and they can change habitats so drastically that the indigenous animal populations suffer as a result. Specific foods can be taken away as high winds will often strip fruits, seeds and berries from bushes and trees.

Secondary impacts may occur as well. For example, high winds and debris may result in damage to an above-ground fuel tank, resulting in a significant chemical spill.



## 5.7 Infectious Disease

### 5.7.1 Hazard Description

For the purposes of this plan, this section will assess infectious diseases, vector-borne diseases, and foreign animal diseases within the Region.

#### *Infectious Disease*

Communicable, or infectious, diseases are conditions that result in clinically evident illnesses which are transmissible directly from one person to another or indirectly through vectors such as insects, air, water, blood, or other objects. The impact of communicable disease can range from the mild effects of the common cold to the extreme lethality of pneumonic plague or anthrax. The public health system in the United States was developed in large part as a response to the often urgent need to respond to or prevent outbreaks of communicable diseases. Through public health methods of disease reporting, vaccinations, vector control, and effective treatments, most communicable diseases are well controlled in the United States and across the Region. However, control systems can fail and when people come together from locations outside of the state, outbreaks can occur, even in the most modern of communities. In this section, some of the more significant potential communicable disease concerns are described.

The threats discussed in this section usually do not occur on a regular basis, though some are more frequent. The diseases described herein do not originate from intentional exposure (such as through terrorist actions) but do present significant issues and concerns for the public health community. There are numerous infectious diseases that rarely, if ever, occur in the State of North Carolina, such as botulism or bubonic plague. Some highly dangerous diseases which could potentially be used as biological weapons, such as anthrax, pneumonic plague, and smallpox, are safely housed and controlled in laboratory settings such as at the Center for Disease Control and Prevention (CDC). Other diseases have not (yet) mutated into a form that can infect humans or otherwise lie dormant in nature.

There have been several significant viral outbreaks from emerging diseases in recent years of both national and international importance. The Zika virus and West Nile virus are viruses that are typically passed to humans or animals by mosquitoes and have made major news as emergent disease threats. Meanwhile, diseases that are spread directly between human beings such as Severe Acute Respiratory Syndrome (SARS) and Ebola have also been identified as serious threats. While each of these conditions caused a great deal of public health concern when they were first identified, SARS has virtually disappeared, West Nile virus occurs with low frequency and causes serious disease in only a very small percentage of cases, Ebola has been contained and a vaccine is in development, and many people infected with Zika will not experience symptoms from the disease.

Other communicable diseases pose a much more frequent threat to the citizens of the region. Some of the infectious diseases of greatest concern include coronavirus, influenza, particularly in a pandemic form, as well as norovirus, and multiple antibiotic-resistant superbugs. Even in one of its normal year-to-year variants, influenza (commonly referred to as “flu”) can result in serious illness and even death in young children, the elderly and immune-compromised persons. But there is always the potential risk of the emergence of influenza in one of the pandemic H1N1 forms, such as in the “Spanish Flu” outbreak of 1918-19, which killed over 50 million people worldwide. Every year, North Carolina sees hundreds of cases of influenza, leading to hundreds of hours of lost productivity in businesses due to sick employees. Of note, a vaccine for influenza is produced every year and, according to the CDC, is highly effective in preventing the disease.

Norovirus is recognized as the leading cause of foodborne-disease outbreaks in the United States. The virus can cause diarrhea, vomiting, and stomach pain, and is easily spread from person to person through contaminated food or water and by surface-to-surface contact. Especially vulnerable populations to this virus include those living or staying in nursing homes and assisted living facilities and other healthcare facilities such as hospitals. Norovirus could also be a threat in the event of large public gatherings such as sporting events, concerts, festivals, and so forth. North Carolina often experiences norovirus outbreaks on an annual basis. No vaccine or treatment exists for the Norovirus, making it especially dangerous for the public in the event of an outbreak.

Additionally, the recent and ongoing global pandemic caused by the SARS-related coronavirus, COVID-19 (Severe Acute Respiratory Syndrome Coronavirus 2 or SARS-CoV-2), has persisted for multiple years resulting in over 774 million reported cases and over 7 million deaths worldwide as of 2024 according to the World Health Organization. The disease spread rapidly following its initial discovery in 2019, eventually leading to the broader COVID-19 pandemic on a global scale. The contagious virus spreads between people through contaminated respiratory droplets and other airborne particles. Its evolving nature and high transmission rates continue to pose a significant threat.

### *Vector-Borne Diseases*

Bacterial, viral, and parasitic diseases that are transmitted by mosquitoes, ticks and fleas are collectively called "vector-borne diseases" (the insects and arthropods are the "vectors" that carry the diseases). Although the term "vector" can also apply to other carriers of disease — such as mammals that can transmit rabies or rodents that can transmit hantavirus — those diseases are generally called zoonotic (animal-borne) diseases.

The most common vector-borne diseases found in North Carolina and the Bladen-Columbus-Robeson Region by extension are carried by ticks and mosquitoes. The tick-borne illnesses most often seen in the state are Rocky Mountain Spotted Fever, ehrlichiosis, Lyme disease and Southern Tick-Associated Rash Illness (STARI). The most frequent mosquito-borne illnesses, or "arboviruses," in North Carolina include La Crosse encephalitis, West Nile virus and Eastern equine encephalitis. An outbreak of the West Nile Virus began showing up in the United States in 1999, with North Carolina reporting 63 cases from that time through the end of 2016.

### *Foreign Animal Diseases (FADs)*

As defined in the 2023 North Carolina State Hazard Mitigation Plan, Foreign Animal Disease (FAD) is recognized as an animal disease or pest not known to exist in a country of interest (e.g., United States) or any of its associated territories. A FAD in the United States, and specifically North Carolina, could prove to be extremely detrimental to agricultural producers and broader public health if it manages to spread over a large area. The North Carolina Department of Agriculture and Consumer Services (NCDACS) is designated to lead a statewide response in the event of a potential FAD outbreak. There are several diseases of future clinical significance in North Carolina: African swine fever, Dourine, contagious bovine pleuropneumonia (CBPP), foot and mouth disease (FMD), highly pathogenic avian influenza (HPAI), and Glanders among other emerging pathogens.

Public health threats can occur at any time and can have varying impacts. Discussions between public health professionals, planning officials, and first response agencies are essential to facilitate safe, effective, and collaborative efforts toward outbreaks.

### 5.7.2 Location and Spatial Extent

Extent is difficult to measure for an infectious disease event as the extent is largely dependent on the type of disease and on the effect that it has on the population (discussed above). Extent can be somewhat defined by the number of people impacted, which depends on the type of disease and could easily number in the tens of thousands across the state.

### 5.7.3 Past Occurrences

#### *Infectious Disease*

Influenza is historically the most common infectious disease that has occurred in the Bladen-Columbus-Region. Cases of the flu tend to occur in the late fall and early winter months. In recent years, substantial cases of influenza and influenza-like illnesses have been reported in hospitals. According to the North Carolina Department of Health and Human Services (NCDHHS), there were over 30,000 positive tests and 319 influenza-associated deaths during the 2023-2024 influenza season<sup>11</sup>. The Bladen-Columbus-Robeson Region is part of both Flu Surveillance Region 3 (Robeson County and Bladen County) and Region 4 (Columbus County). For more information about these regions, see the regional maps included in the NCDHHS annual influenza surveillance summaries. Region 3 also reported the highest seasonal percentage of ED visits for influenza-like illness (ILI) at 8% in December 2023. The primary respiratory viruses treated during the 2023-2024 season included influenza subtype A(H1N1)pdm09.

A COVID-19 Pandemic disaster declaration was declared for North Carolina on March 25, 2020, with an incident period of over 3 years. Between March 7, 2020, and May 10, 2023, NCDHHS reported 3,501,404 total cases and 29,059 total deaths due to COVID-19 statewide. This included over 12,161 total cases and 150 total deaths in Bladen County, 19,329 total cases and 300 total deaths in Columbus County, and 52,675 total cases and 605 total deaths in Robeson County.

#### *Vector-Borne Diseases*

In 2016, North Carolina state health officials encouraged citizens to take preventative measures against mosquito bites to avoid contracting the Zika virus. Over \$477,500 was allocated from the Governor's yearly budget to develop an infrastructure to detect, prevent, control, and respond to the Zika virus and other vector-borne illnesses<sup>12</sup>. More recently, state officials have encouraged citizens to "Fight the Bite" against both mosquito and tick bites to avoid serious vector-borne diseases after nearly 700 cases were reported in 2022<sup>13</sup>.

#### *Foreign Animal Diseases (FADs)*

No significant cases have been reported in the region.

### 5.7.4 Probability of Future Occurrence

The probability of future infectious disease events is shown in the table below, by jurisdiction.

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<sup>11</sup> NCDHHS Respiratory Disease Surveillance Summaries (<https://flu.ncdhhs.gov/data.htm>)

<sup>12</sup> NCDHHS Press Release, August 2016 (<https://www.ncdhhs.gov/news/press-releases/nc-prepared-zika-virus-risk-local-virus-carrying-mosquitoes-low>)

<sup>13</sup> NCDHHS Press Release, March 2023 (<https://www.ncdhhs.gov/news/press-releases/2023/03/30/ncdhhs-urges-north-carolinians-fight-bite-insect-repellant-and-other-prevention-tools-avoid-tick-and>)

**Definitions for Descriptors Used for Probability of Future Hazard Occurrences**

- Unlikely: Less than 1% annual probability of hazard
- Possible: Between 1% and 10% annual probability of hazard
- Likely: Between 10% and 100% annual probability of hazard
- Highly Likely: 100% annual probability of hazard

| Jurisdiction                          | Probability of Future Occurrence |
|---------------------------------------|----------------------------------|
| Bladen County (Unincorporated Area)   | Possible                         |
| Columbus County (Unincorporated Area) | Possible                         |
| Robeson County (Unincorporated Area)  | Possible                         |
| City of Lumberton                     | Possible                         |
| City of Whiteville                    | Possible                         |
| Town of Bladenboro                    | Possible                         |
| Town of Boardman                      | Possible                         |
| Town of Bolton                        | Possible                         |
| Town of Brunswick                     | Possible                         |
| Town of Cerro Gordo                   | Possible                         |
| Town of Chadbourn                     | Possible                         |
| Town of Clarkton                      | Possible                         |
| Town of Dublin                        | Possible                         |
| Town of East Arcadia                  | Possible                         |
| Town of Elizabethtown                 | Possible                         |
| Town of Fair Bluff                    | Possible                         |
| Town of Fairmont                      | Possible                         |
| Town of Lake Waccamaw                 | Possible                         |
| Town of Lumber Bridge                 | Possible                         |
| Town of Marietta                      | Possible                         |
| Town of Maxton                        | Possible                         |
| Town of McDonald                      | Possible                         |
| Town of Orrum                         | Possible                         |
| Town of Parkton                       | Possible                         |
| Town of Pembroke                      | Possible                         |
| Town of Proctorville                  | Possible                         |
| Town of Raynham                       | Possible                         |
| Town of Red Springs                   | Possible                         |
| Town of Rennert                       | Possible                         |

| Jurisdiction        | Probability of Future Occurrence |
|---------------------|----------------------------------|
| Town of Rowland     | Possible                         |
| Town of Saint Pauls | Possible                         |
| Town of Sandyfield  | Possible                         |
| Town of Tabor City  | Possible                         |
| Town of Tar Heel    | Possible                         |
| Town of White Lake  | Possible                         |

Source: NCEM RMT & plan risk assessment

### 5.7.5 Consequence and Impact Analysis (Vulnerability)

#### Changing Future Conditions

According to the Centers for Disease Control and Prevention (CDC), changing climatic patterns of milder winters, warmer summers, and fewer days of frost may be making it easier for infectious diseases and vector diseases to expand to new geographic regions and infect greater numbers of people. Between 2004 and 2018, the number of reported illnesses from mosquito, tick, and flea bites more than doubled, with more than 760,000 cases reported in the United States. Additionally, nine new germs spread by mosquitoes and ticks were discovered or introduced into the United States during this time. In 2012, a mild winter, early spring, and a hot summer also set the stage for an outbreak of West Nile Virus disease in the United States, resulting in more than 5,600 illnesses and 286 deaths<sup>14</sup>.

#### People

Infectious illnesses can spread quickly through communities, resulting in broad health consequences, particularly for vulnerable groups like the elderly, children, and people with underlying health issues. The spectrum of health issues can vary from minor rashes to extended fever and potentially more severe conditions. This might overload hospitals and clinics, making it harder to get prompt treatment and raising the possibility of severe consequences. Additionally, quarantine and isolation procedures can cause psychological and social anguish.

#### First Responders

As first responders are in close contact with infected people in uncontrolled settings, these people are at a higher risk of exposure. This might make them vulnerable to increased infection rates, illness, or even fatalities, which would reduce the number of available workers at crisis moments.

#### Continuity of Operations

Widespread infectious diseases disrupt vital functions due to workforce absenteeism. In critical positions, staff availability may be significantly impacted by illness, quarantine, and caregiving duties, while regional outbreaks can cause delays in the delivery of emergency goods and services.

#### Built Environment

The rapid spread of diseases necessitates speedy adaptation, which might put a strain on the existing infrastructure. To aid in isolation or quarantine measures, facilities like schools, hospitals, and public structures may get overburdened. Repurposing structures that were not initially intended for medical use can put strain on the layouts and hygiene. In extreme scenarios, public spaces may

<sup>14</sup> CDC National Center for Emerging and Zoonotic Infectious Disease (NCEZID) (<https://www.cdc.gov/ncezid/index.html>)

also need to be redesigned to facilitate social distance, touchless technology, etc.

### **Economy**

If the situation is severe, the outbreaks can result in a reduced workforce, lower consumer spending, and temporary disruptions in production and supply chains, all of which stifle economic activity. Service industries and small enterprises are especially susceptible to closure or large revenue losses. Public budgets might be strained if funds are allocated to emergency response and healthcare.

### **Natural Environment**

As these diseases are often contagious, the increased use of single-use products (mask, PPE etc.) to prevent spreading may put a strain on waste management systems and cause pollution, resulting in soil and water contamination. Although quarantine and lockdown procedures can provide a brief respite from pollution and human activity, giving ecosystems a chance to recover, these benefits are often fleeting.

## 5.8 Inland Flooding

### 5.8.1 Hazard Description

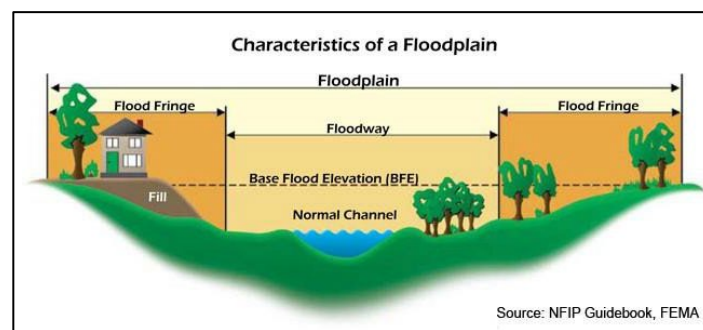
Flooding is defined as the rising and overflowing of a body of water onto normally dry land. As defined by FEMA, a flood is a general and temporary condition of partial or complete inundation of 2 or more acres of normally dry land area or of 2 or more properties. Flooding can result from an overflow of inland waters or an unusual accumulation or runoff of surface waters from any source.

#### Sources and Types of Flooding

Flooding within the Region can be attributed to two sources: 1) flash flooding resulting from heavy rainfall that overburdens the drainage system within the community; and 2) riverine flooding resulting from heavy and prolonged rainfall over a given watershed which causes the capacity of the main channel to be exceeded. Flooding on the larger streams results primarily from hurricanes, tropical storms and other major weather fronts, while flooding on the smaller streams is due mainly to localized thunderstorms.

- Riverine Flooding:** The Region has numerous streams and tributaries running throughout its jurisdiction that are susceptible to overflowing their banks during and following excessive precipitation events. While flash flooding caused by surface water runoff is not uncommon in the region, riverine flood events (such as the “100-year flood”) will cause significantly more damage and economic disruption for the area.
- Flash or Rapid Flooding:** Flash flooding is the result of heavy, localized rainfall, possibly from slow- moving intense thunderstorms that cause small streams and drainage systems to overflow. Flash flood hazards caused by surface water runoff are most common in urbanized cities, where greater population density generally increases the amount of impervious surface (e.g., pavement and buildings) which increases the amount of surface water generated. Flooding can occur when the capacity of the stormwater system is exceeded or if conveyance is obstructed by debris, sediment and other materials that limit the volume of drainage.

#### Flooding and Floodplains



**Figure 5-19: Characteristics of a Floodplain**

The area adjacent to a channel is the floodplain, as shown in **Figure 5-19**. A floodplain is flat or nearly flat land adjacent to a stream or river that experiences occasional or periodic flooding. It includes the floodway, which consists of the stream channel and adjacent areas that carry flood flows, and the flood fringe, which are areas covered by the flood, but which do not experience a strong current. Floodplains are made when floodwater exceeds the capacity of the main channel or escape the channel by eroding



its banks. When this occurs, sediments (including rocks and debris) are deposited that gradually build up over time to create the floor of the floodplain. Floodplains generally contain unconsolidated sediments, often extending below the bed of the stream.

In its common usage, the floodplain most often refers to that area that is inundated by the 100-year flood, the flood that has a 1% chance in any given year of being equaled or exceeded. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the NFIP. The 500-year flood is the flood that has a 0.2 percent chance of being equaled or exceeded in any given year. The potential for flooding can change and increase through various land use changes and changes to land surface, which result in a change to the floodplain. A change in environment can create localized flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. These changes are most often created by human activity.

The 100-year flood, which is the minimum standard used by most federal and state agencies, is used by the NFIP as the standard for floodplain management and to determine the need for flood insurance. Participation in the NFIP requires adoption and enforcement of a local floodplain management ordinance which is intended to prevent unsafe development in the floodplain, thereby reducing future flood damage. Participation in the NFIP allows the federal government to make flood insurance available within the community as a financial protection against flood losses. Since floods have an annual probability of occurrence, have a known magnitude, depth and velocity for each event, and in most cases, have a map indicating where they will occur, they are in many ways often the most predictable and manageable hazard.

### 5.8.2 Location and Spatial Extent

Regulated floodplains are illustrated on inundation maps called Flood Insurance Rate Maps (FIRMs). It is the official map for a community on which FEMA has delineated both the SFHAs and the risk premium zones applicable to the community. SFHAs represent the areas subject to inundation by the 100-year flood event. Structures located within the SFHA have a 26-percent chance of flooding during the life of a standard 30-year mortgage. Flood prone areas were identified using the most current FIS and associated FIRMs developed by FEMA. **Table 5-14** summarizes the flood insurance zones identified by the DFIRMs.

**Table 5-14: Mapped Flood Insurance Zones within the Region**

| Flood Zone | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AE</b>  | AE Zones, also within the 100-year flood limits, are defined with BFEs that reflect the combined influence of stillwater flood elevations and wave effects less than 3 feet. The AE Zone generally extends from the landward VE zone limit to the limits of the 100-year flood from coastal sources, or until it reaches the confluence with riverine flood sources. The AE Zones also depict the SFHA due to riverine flood sources, but instead of being subdivided into separate zones of differing BFEs with possible wave effects added, they represent the flood profile determined by hydrologic and hydraulic investigations and have no wave effects. |
| <b>A</b>   | Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.                                                                                                                                                                                                                                                                                                                |

| Zone                                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AH</b>                                 | Zone AH is the flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot Base Flood Elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.                                                                                                                                                    |
| <b>0.2% Annual Chance (Zone X Shaded)</b> | Moderate risk areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by a levee. No BFEs or base flood depths are shown within these zones. Zone X Shaded is used on new and revised maps in place of Zone B. |
| <b>Zone X (unshaded)</b>                  | Minimal risk areas outside the 1-percent and .2-percent-annual-chance floodplains. No BFEs or base flood depths are shown within these zones. Zone X (unshaded) is used on new and revised maps in place of Zone C.                                                                                                                                                                                                                                                      |

There are areas in the Region that are susceptible to flood events. Special flood hazard areas in the Region were mapped using Geographic Information System (GIS) and FEMA Digital Flood Insurance Rate Maps (DFIRM). This includes Zone AE (1-percent annual chance floodplain with elevation) and Zone X500 (0.2-percent annual chance floodplain). The figures below reflect the mapped flood zones for the Region. Note that there is no Special Flood Hazard Area for Brunswick, Dublin, East Arcadia, Raynham, Tar Heel, and White Lake so no maps have been provided for these communities.

## Flood Hazard Areas - Regional

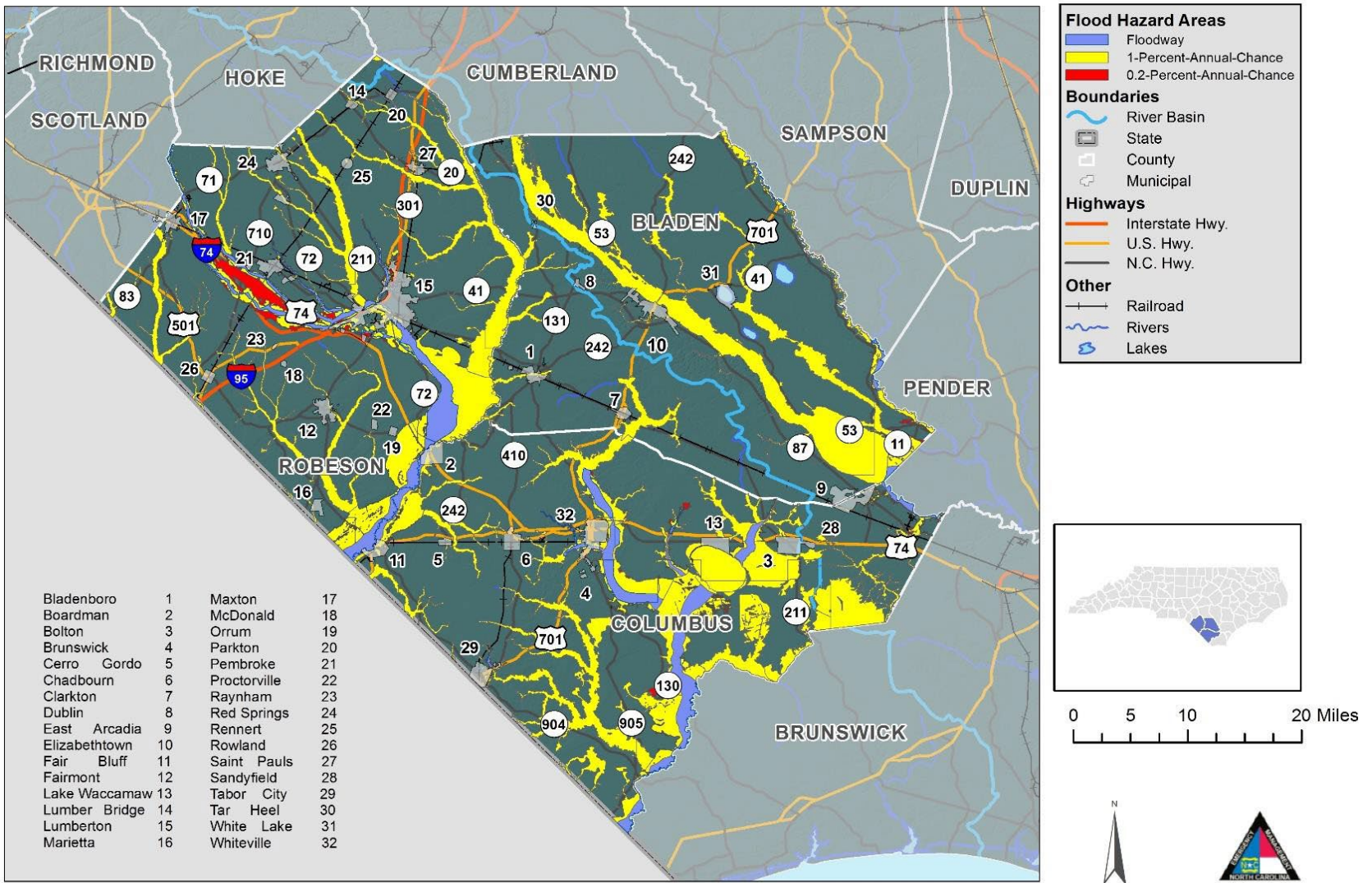


Figure 5-20: Flood Hazard Areas - Regional



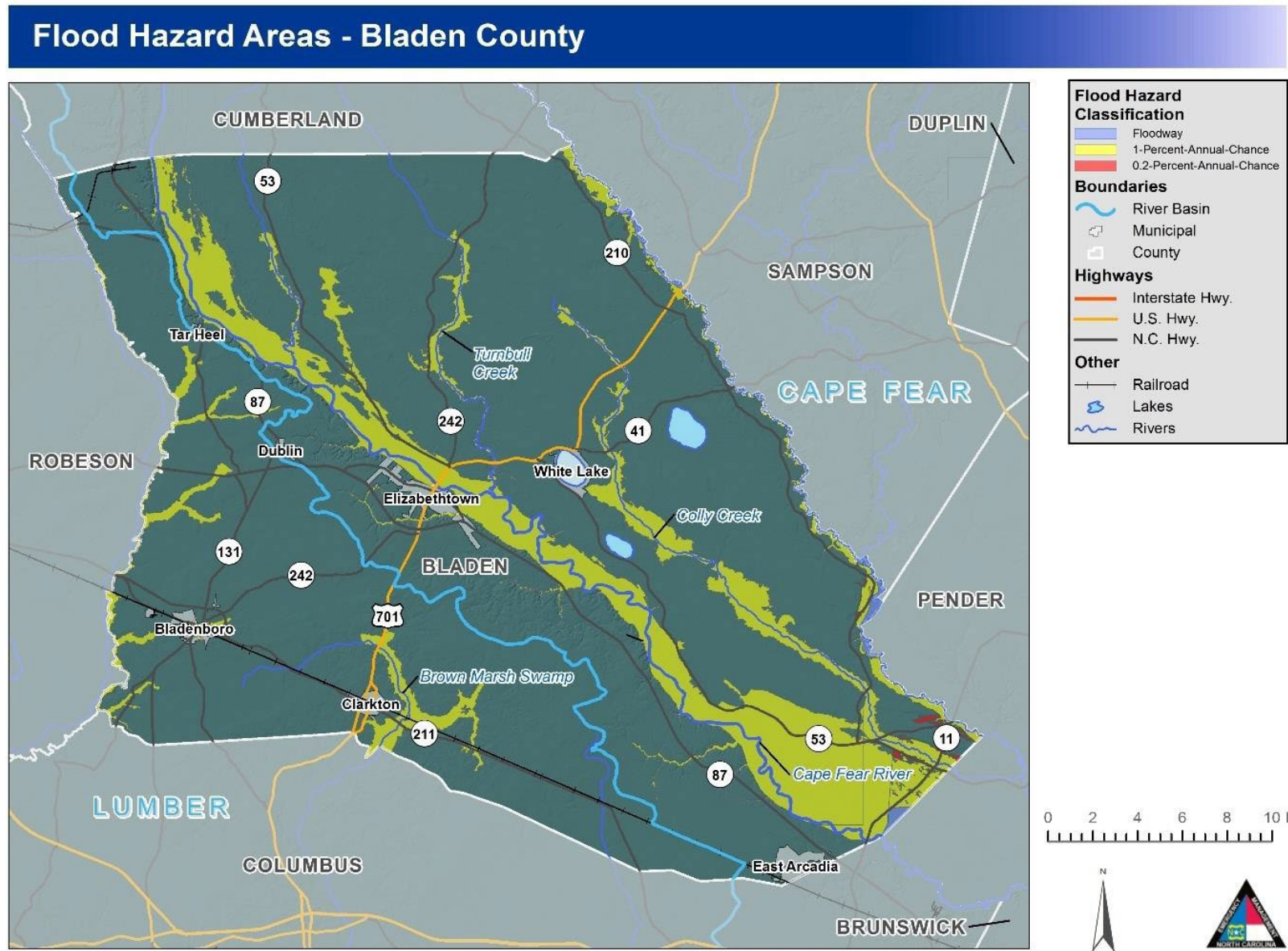


Figure 5-21: Flood Hazard Areas – Bladen County

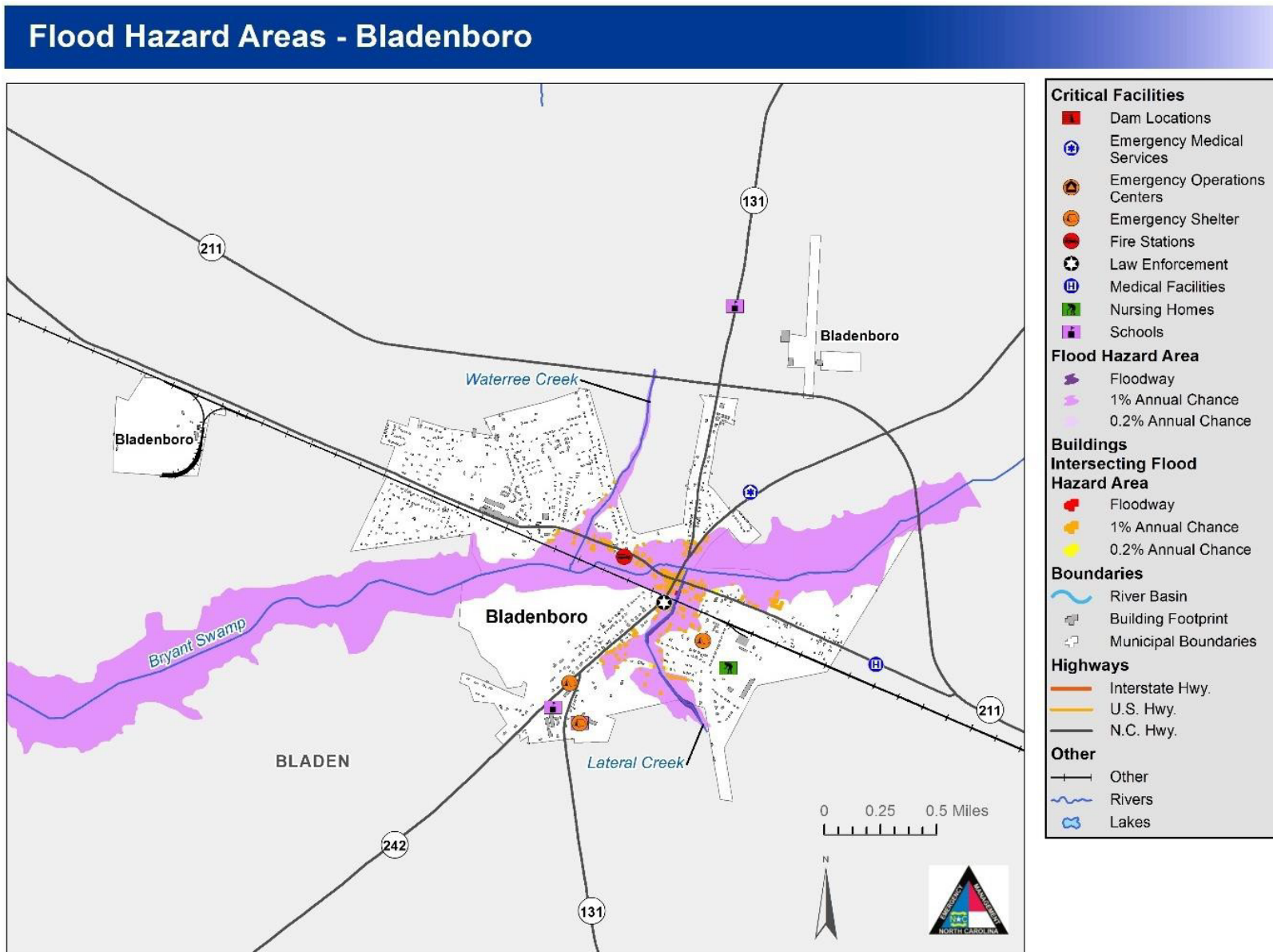
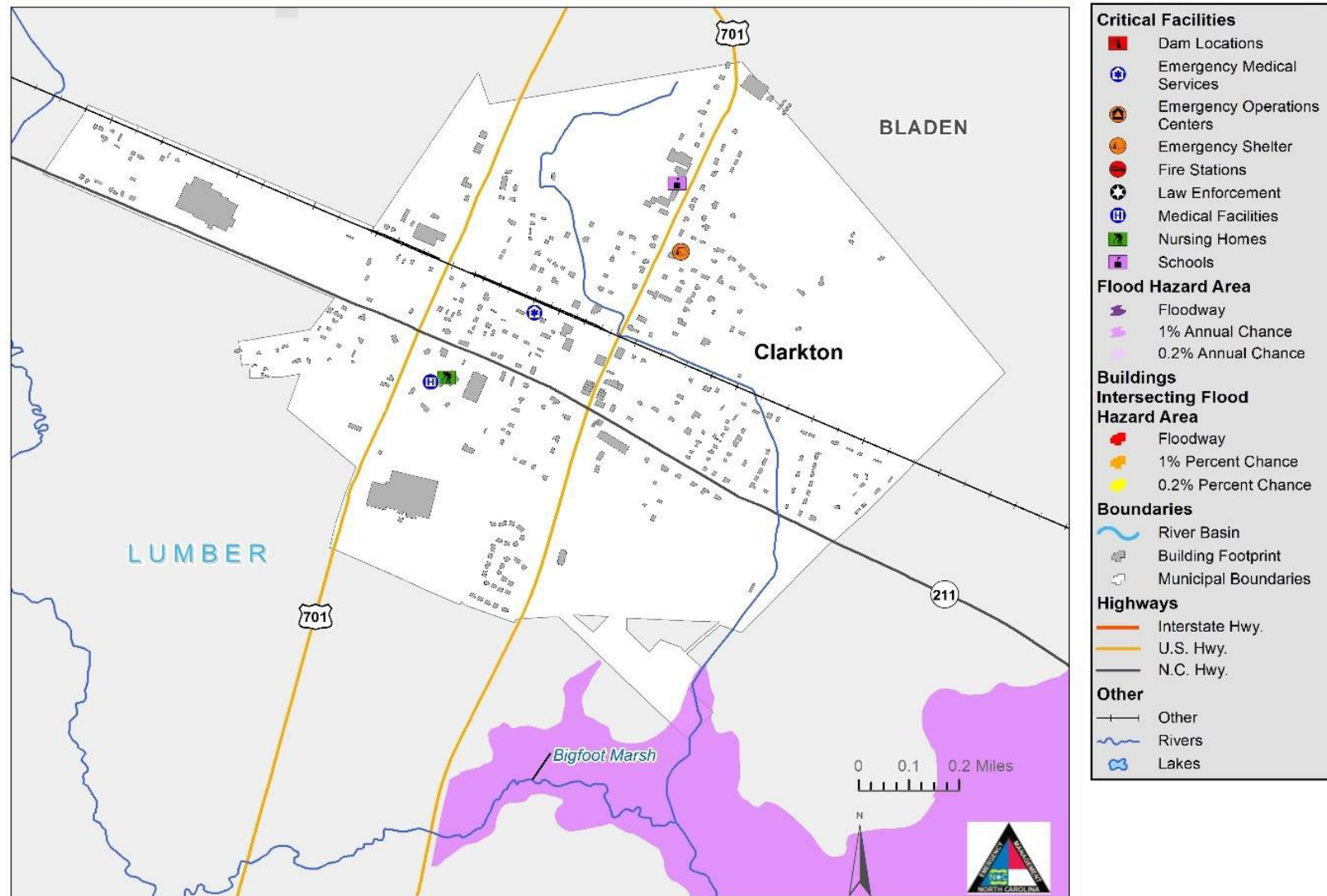


Figure 5-22: Flood Hazard Areas – Bladenboro

## Flood Hazard Areas - Clarkton





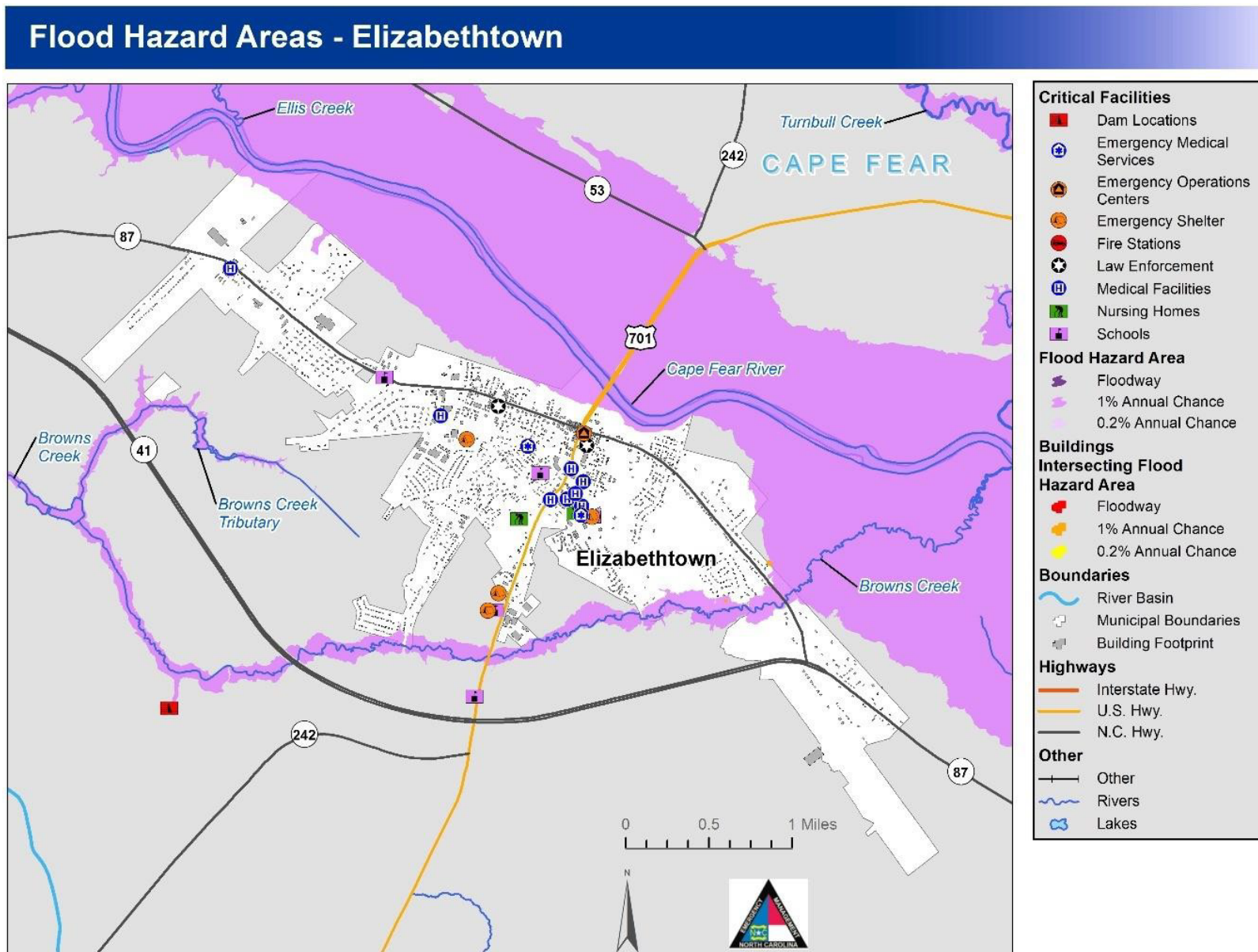


Figure 5-24: Flood Hazard Areas - Elizabethtown



## Flood Hazard Areas - Columbus County

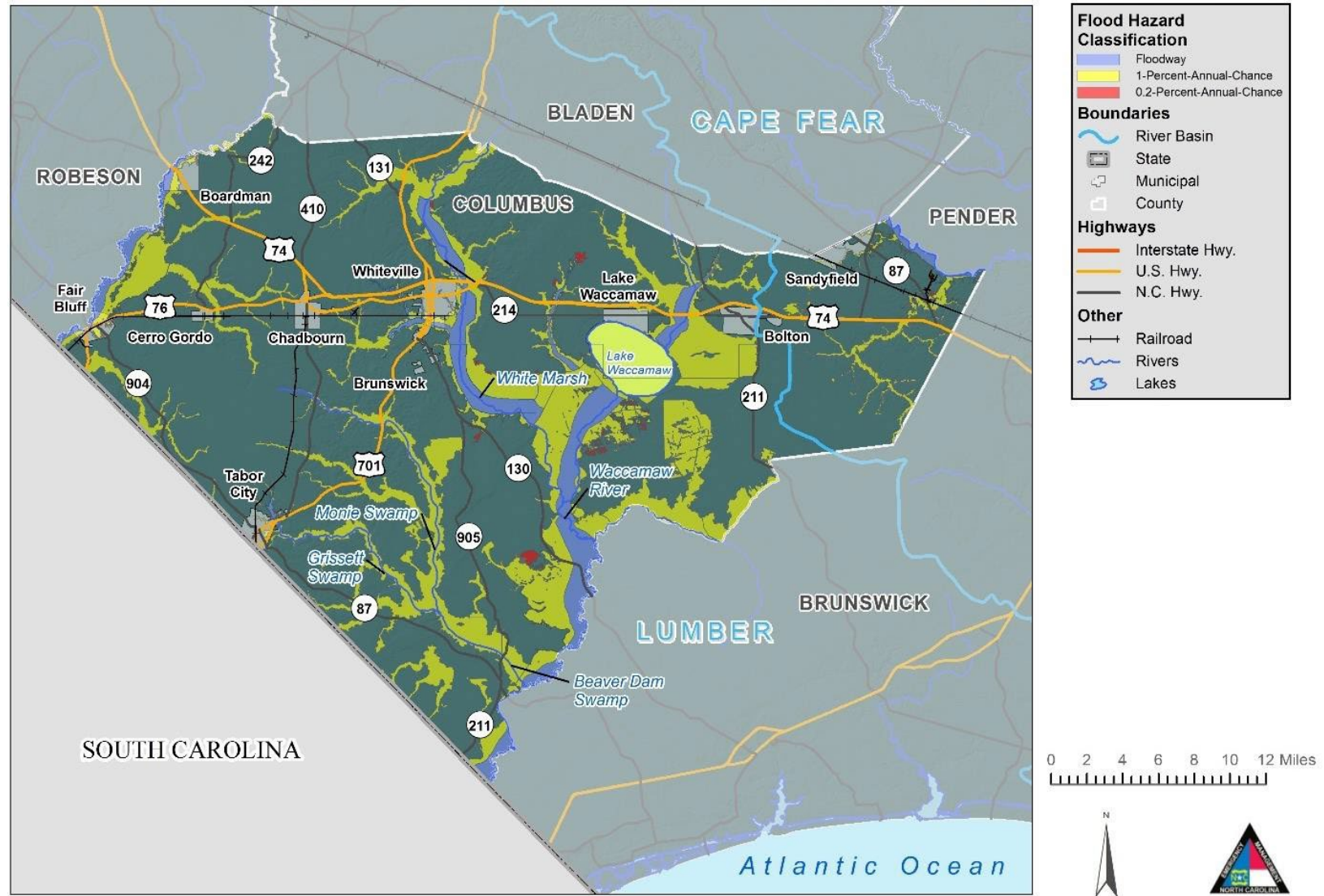


Figure 5-25: Flood Hazard Areas – Columbus County

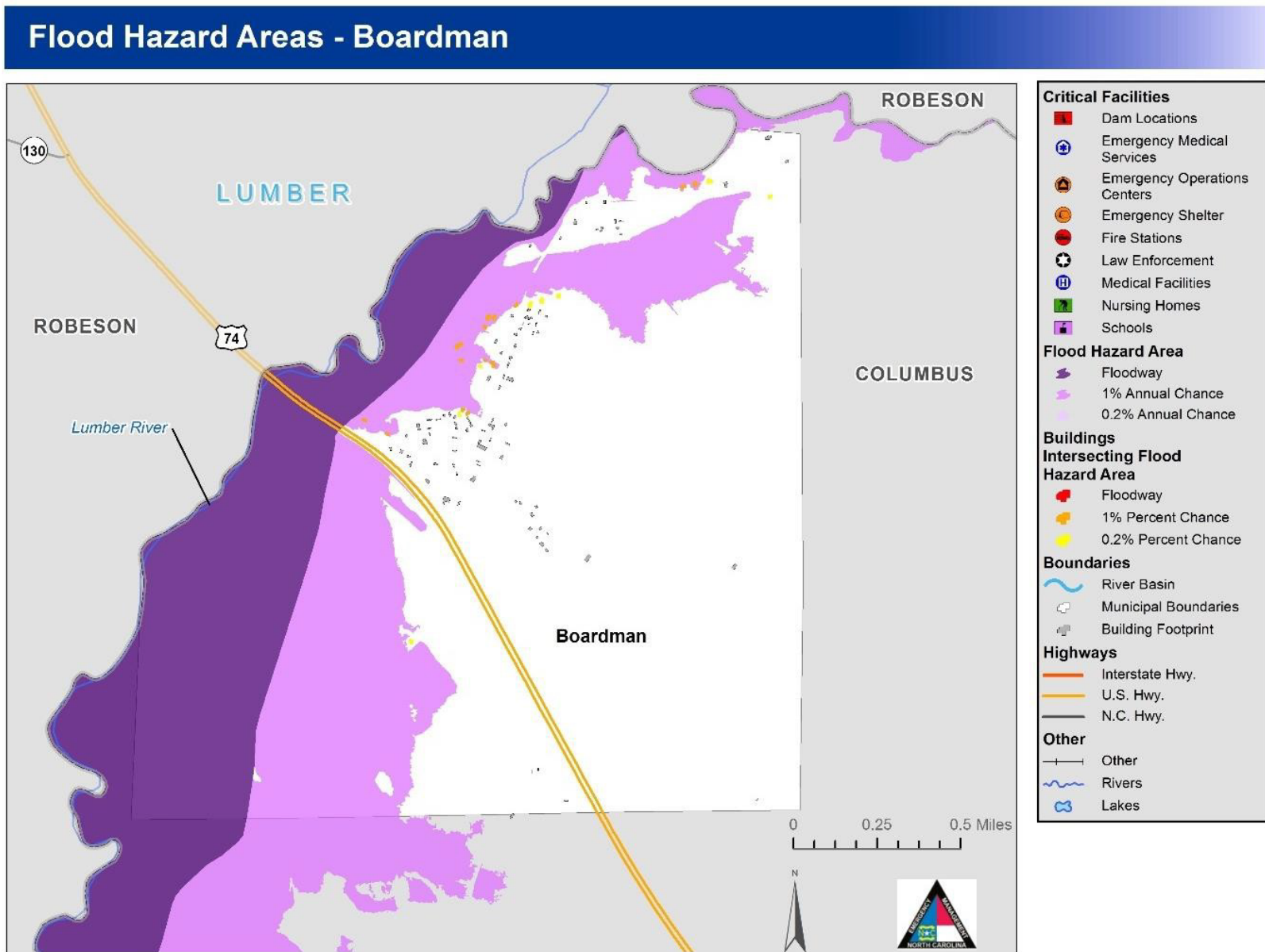


Figure 5-26: Flood Hazard Areas - Boardman

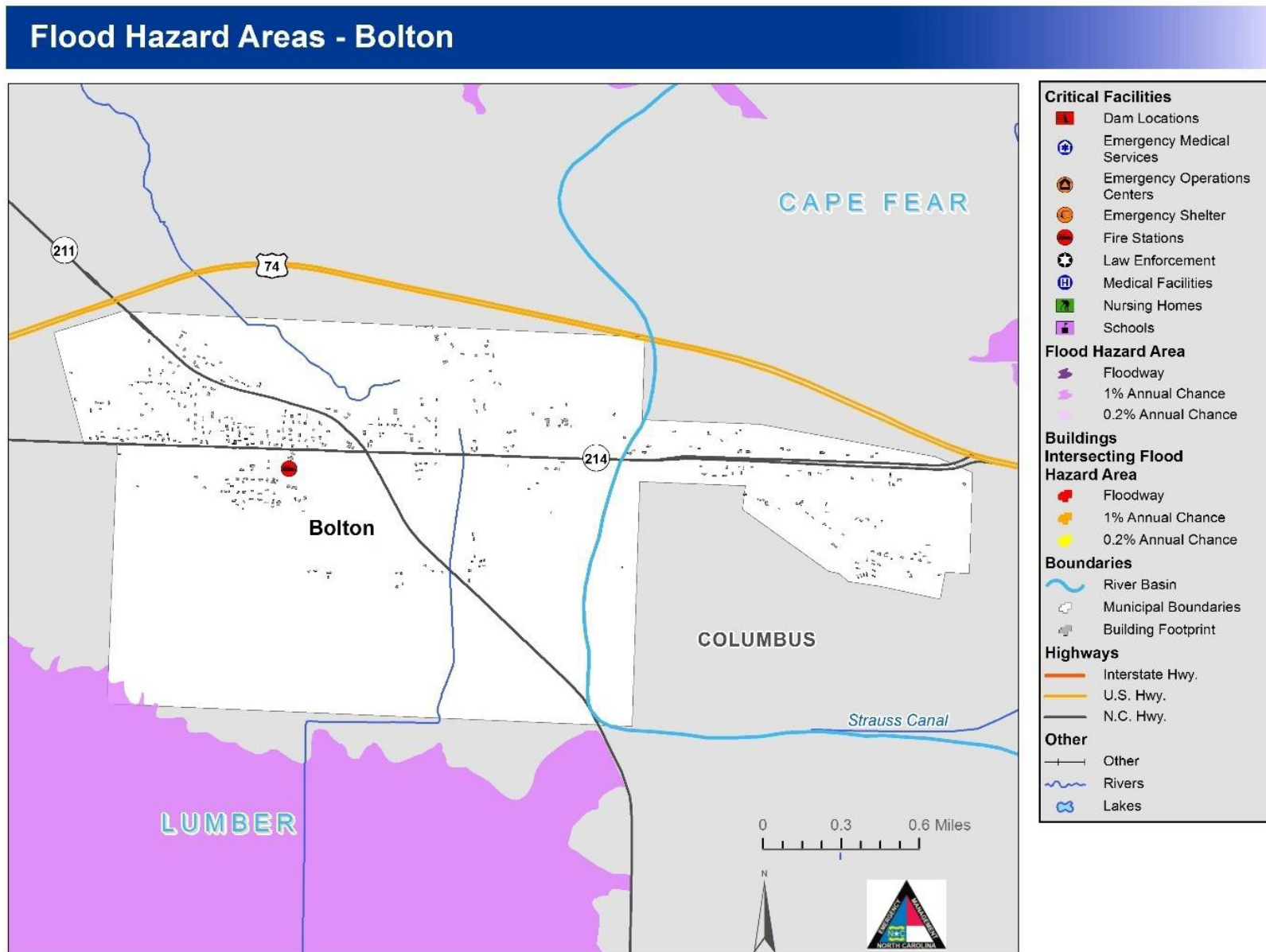


Figure 5-27: Flood Hazard Areas - Bolton

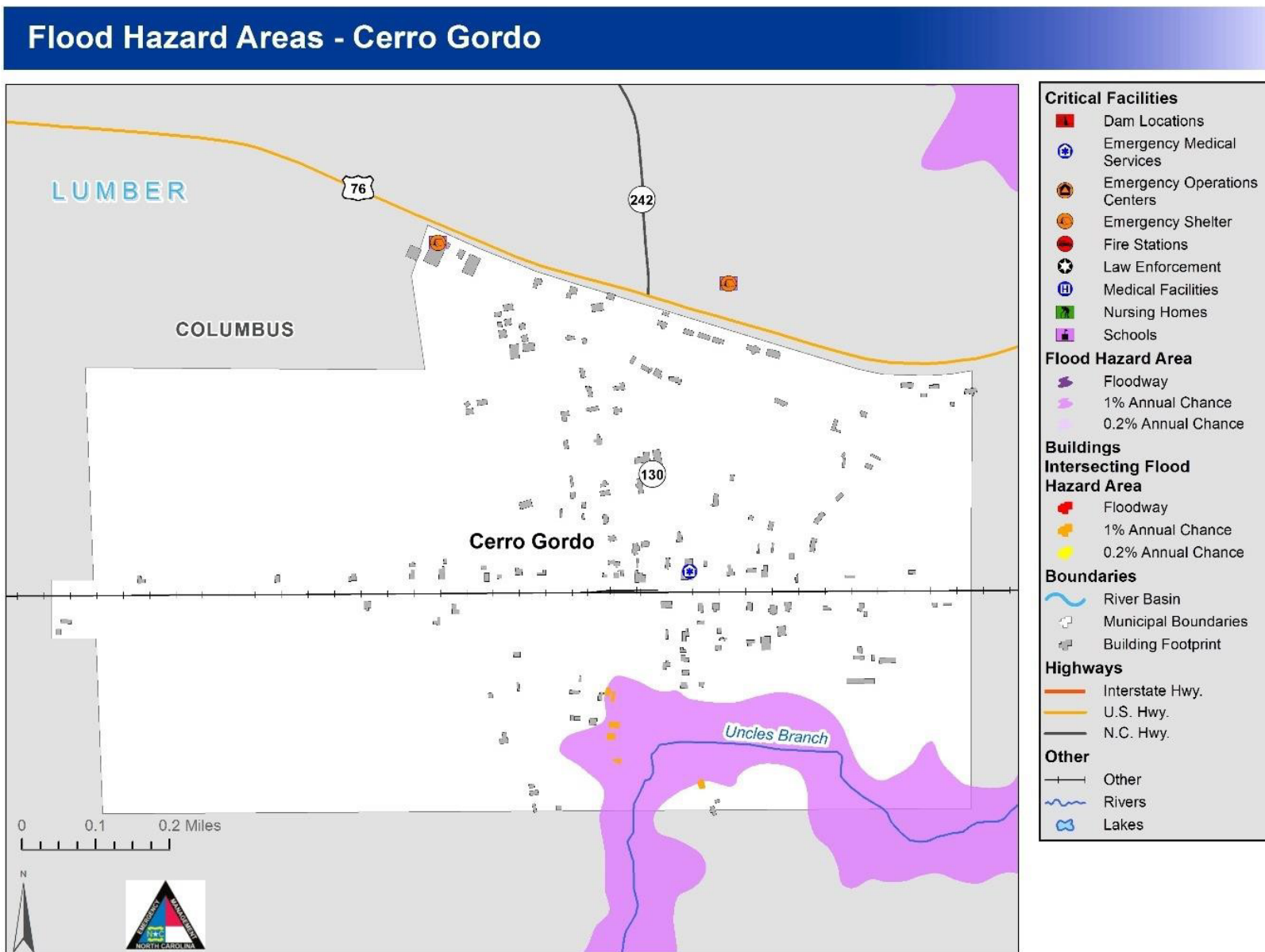


Figure 5-28: Flood Hazard Areas – Cerro Gordo



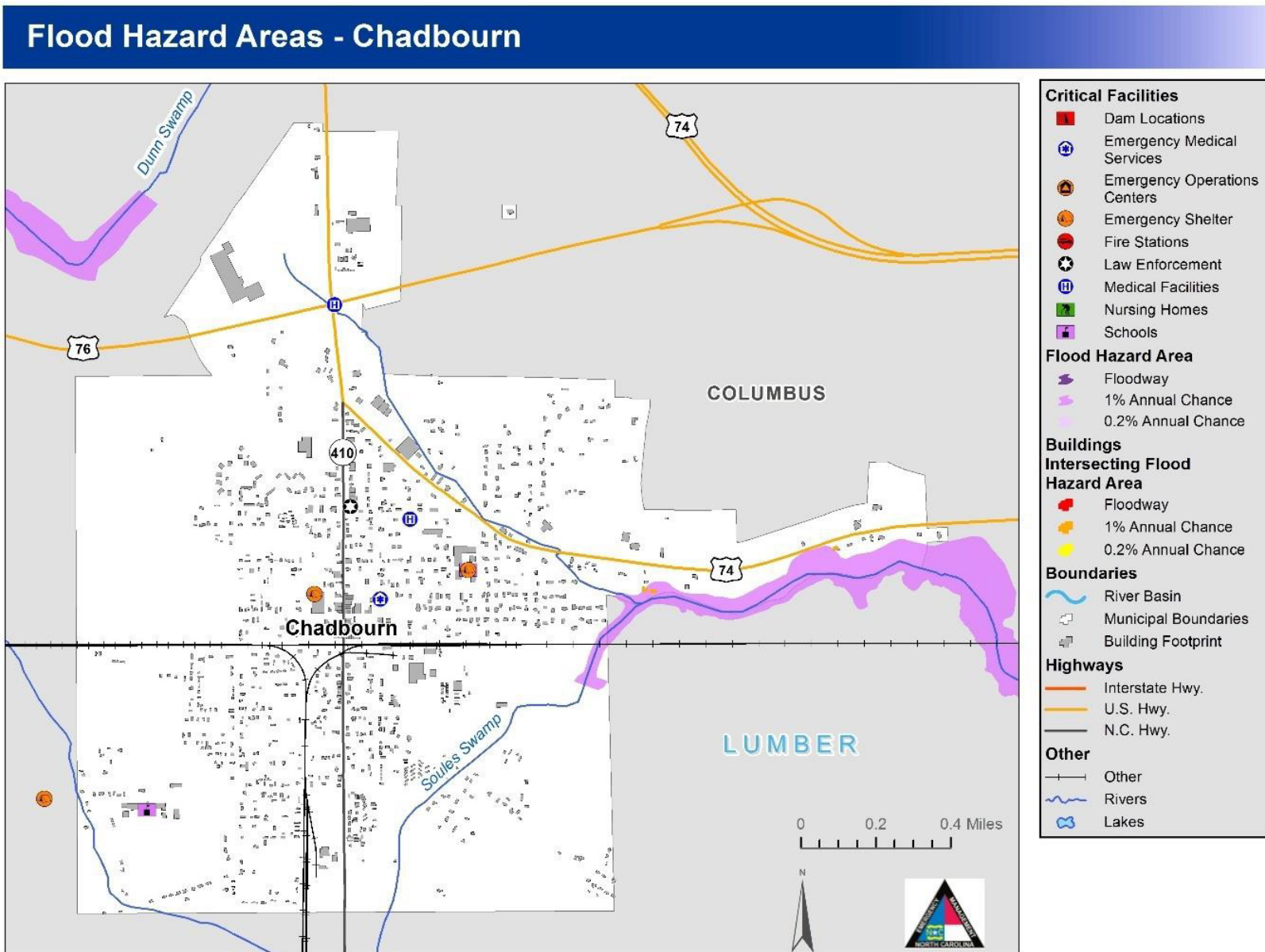


Figure 5-29: Flood Hazard Areas - Chadbourn

## Flood Hazard Areas - Fair Bluff

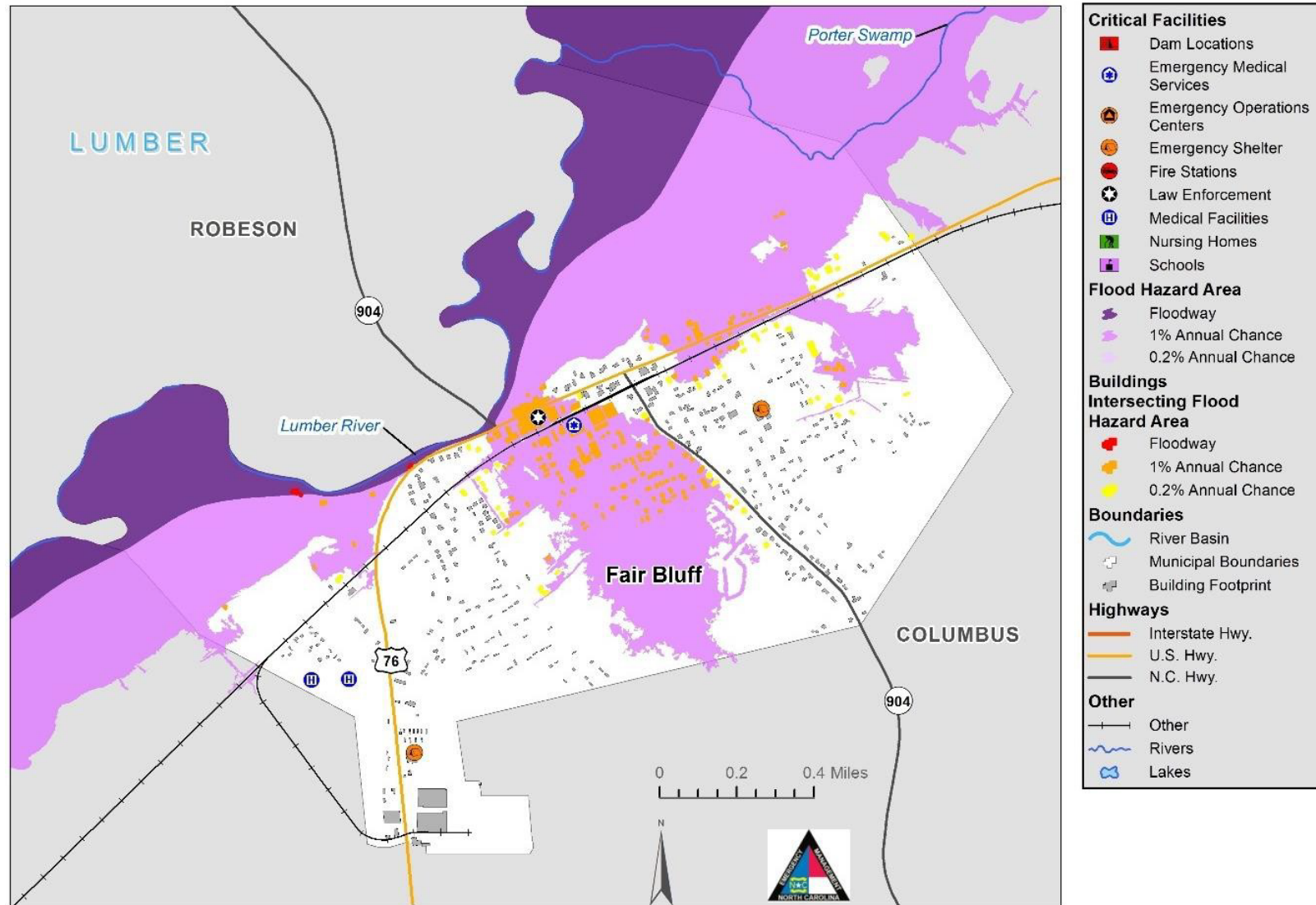


Figure 5-30: Flood Hazard Areas – Fair Bluff



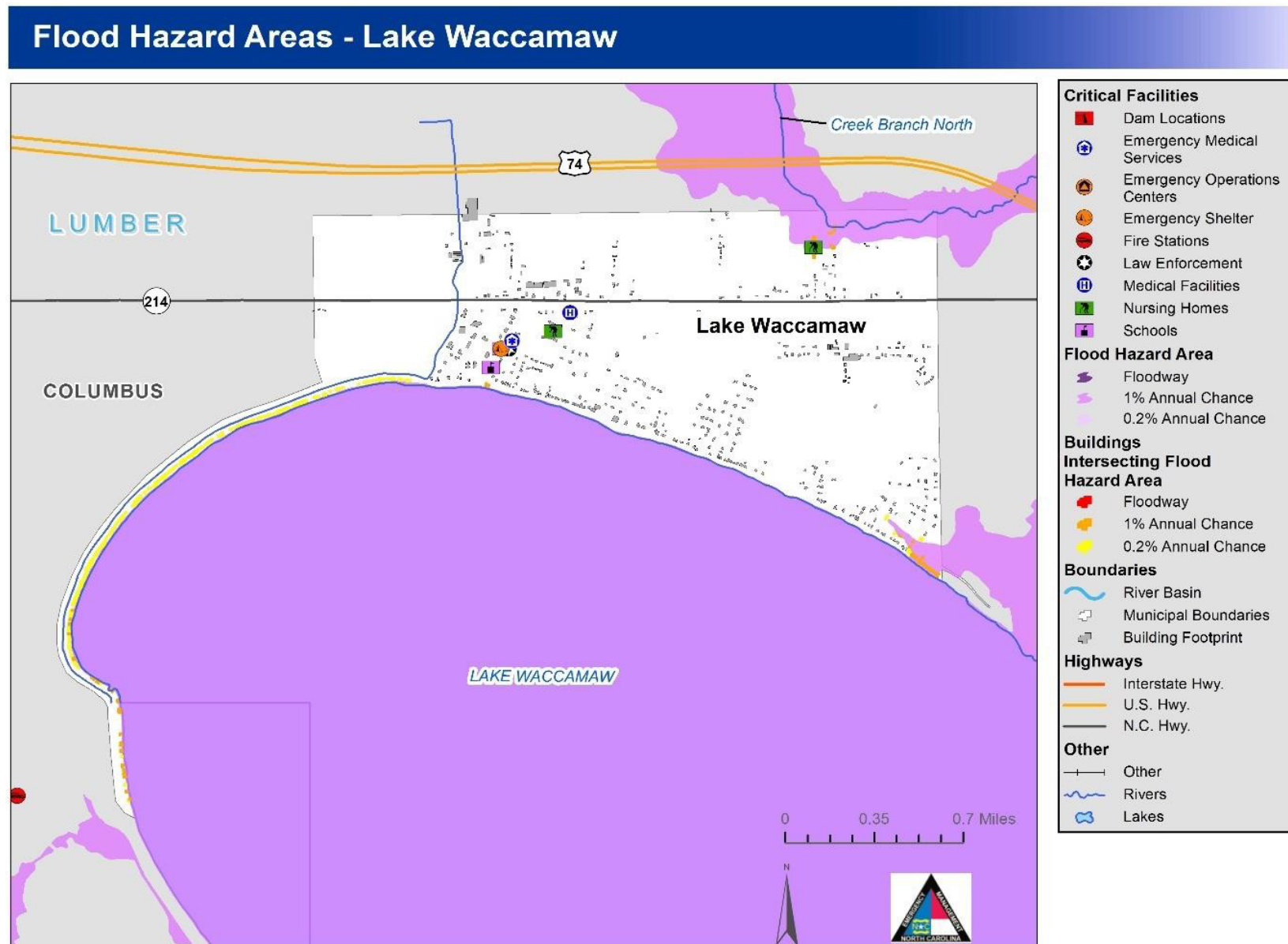


Figure 5-31: Flood Hazard Areas – Lake Waccamaw

## Flood Hazard Areas - Sandyfield

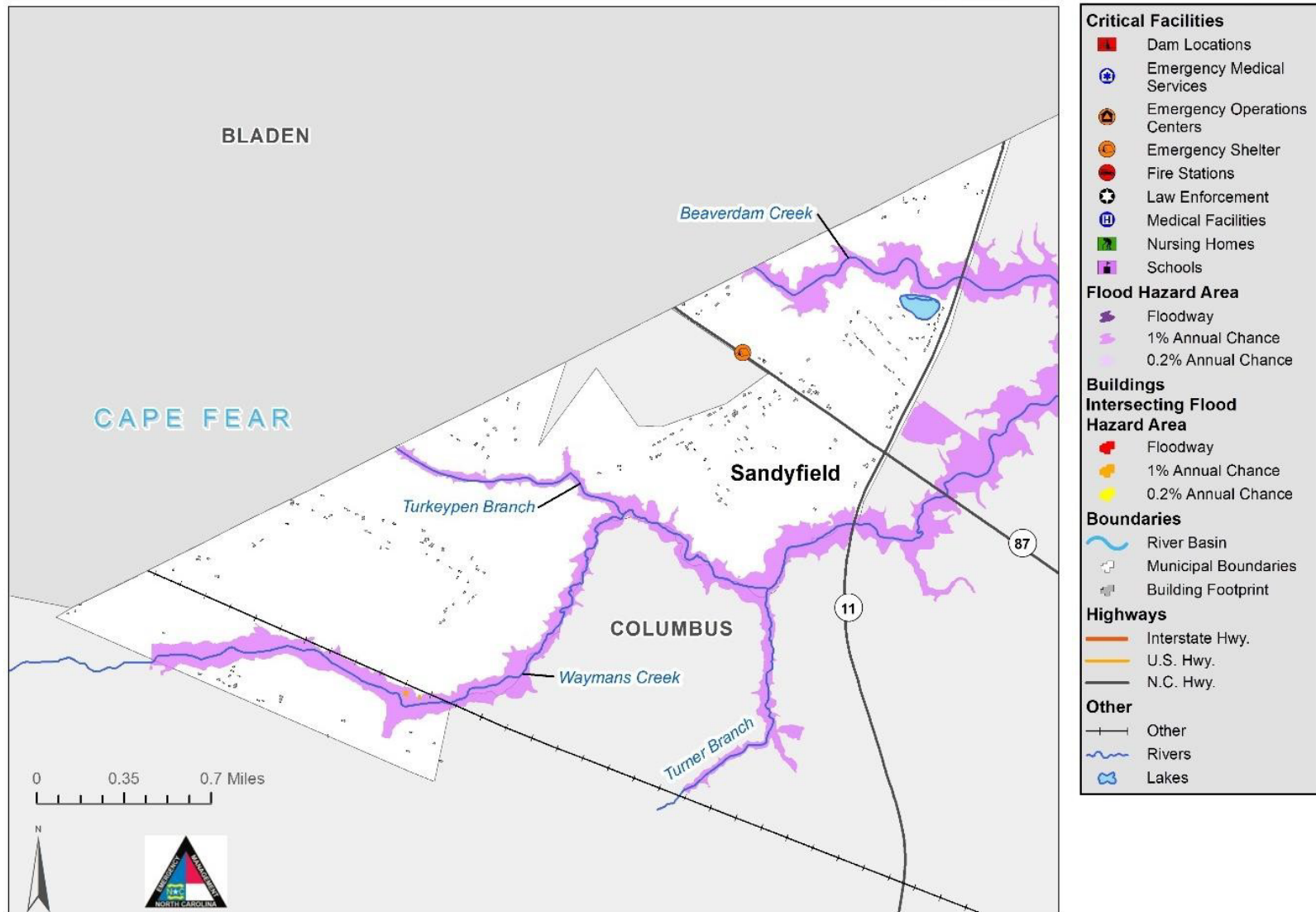


Figure 5-32: Flood Hazard Areas – Sandyfield

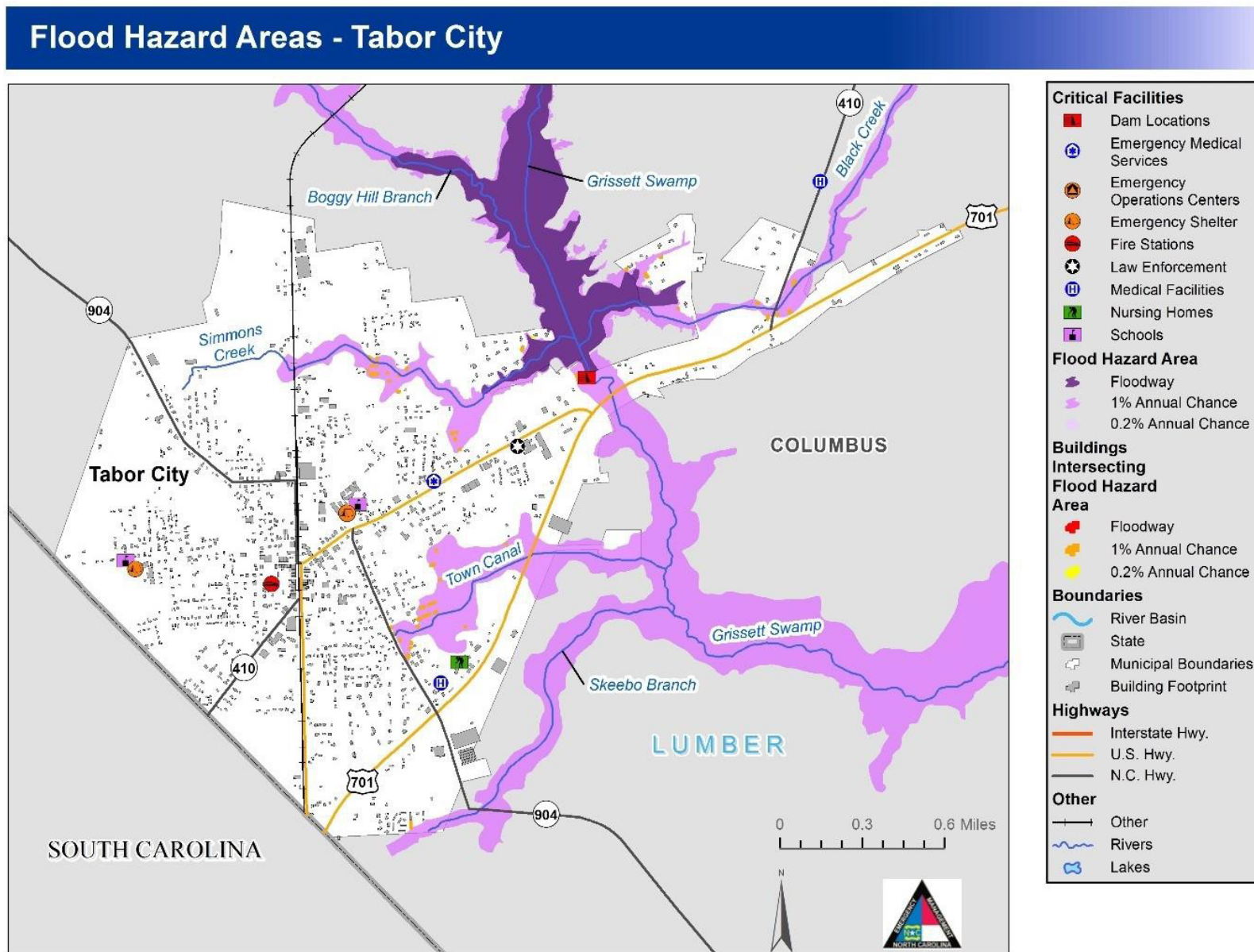


Figure 5-33: Flood Hazard Areas – Tabor City



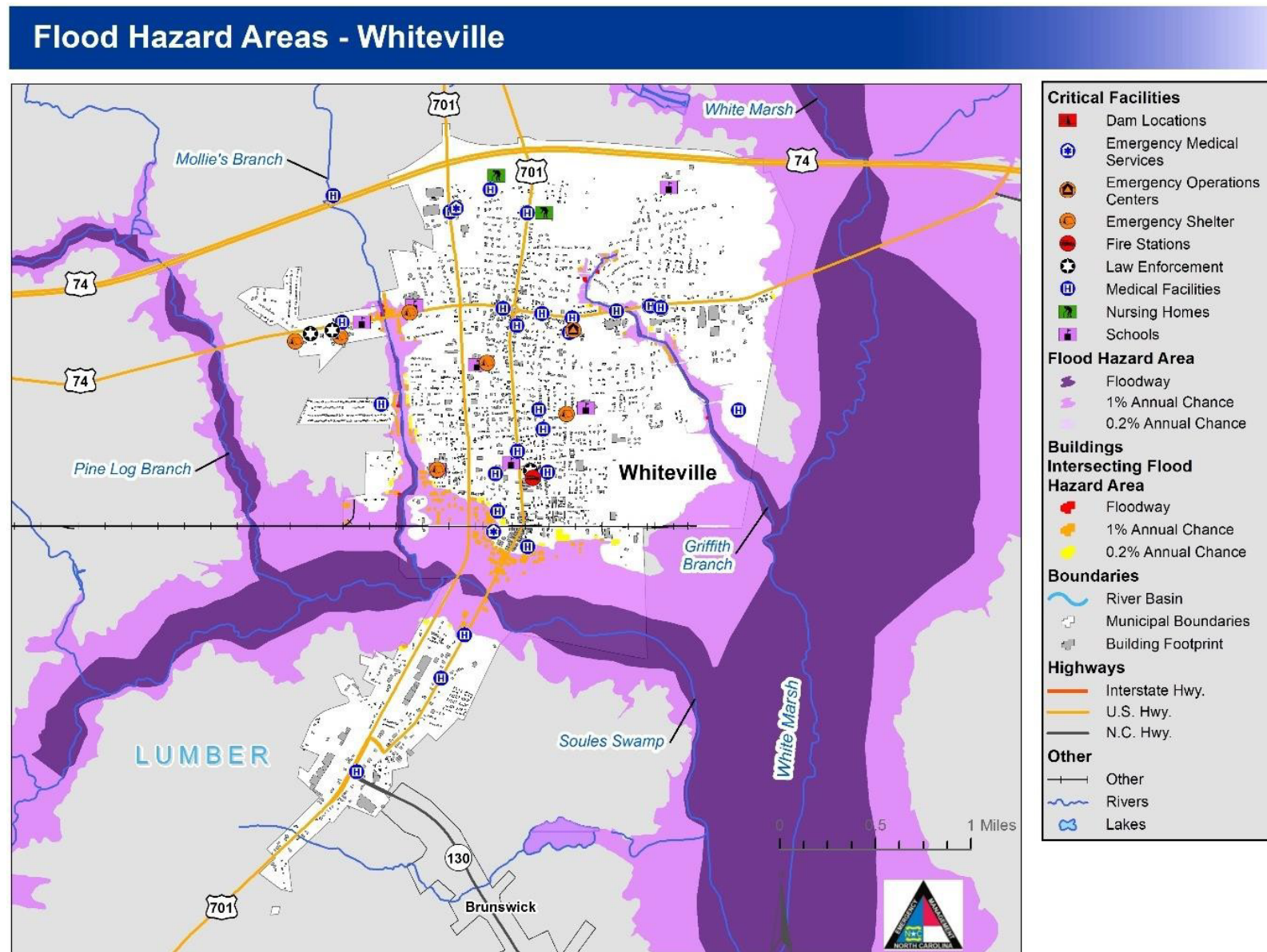


Figure 5-34: Flood Hazard Areas - Whiteville

## Flood Hazard Areas - Robeson County

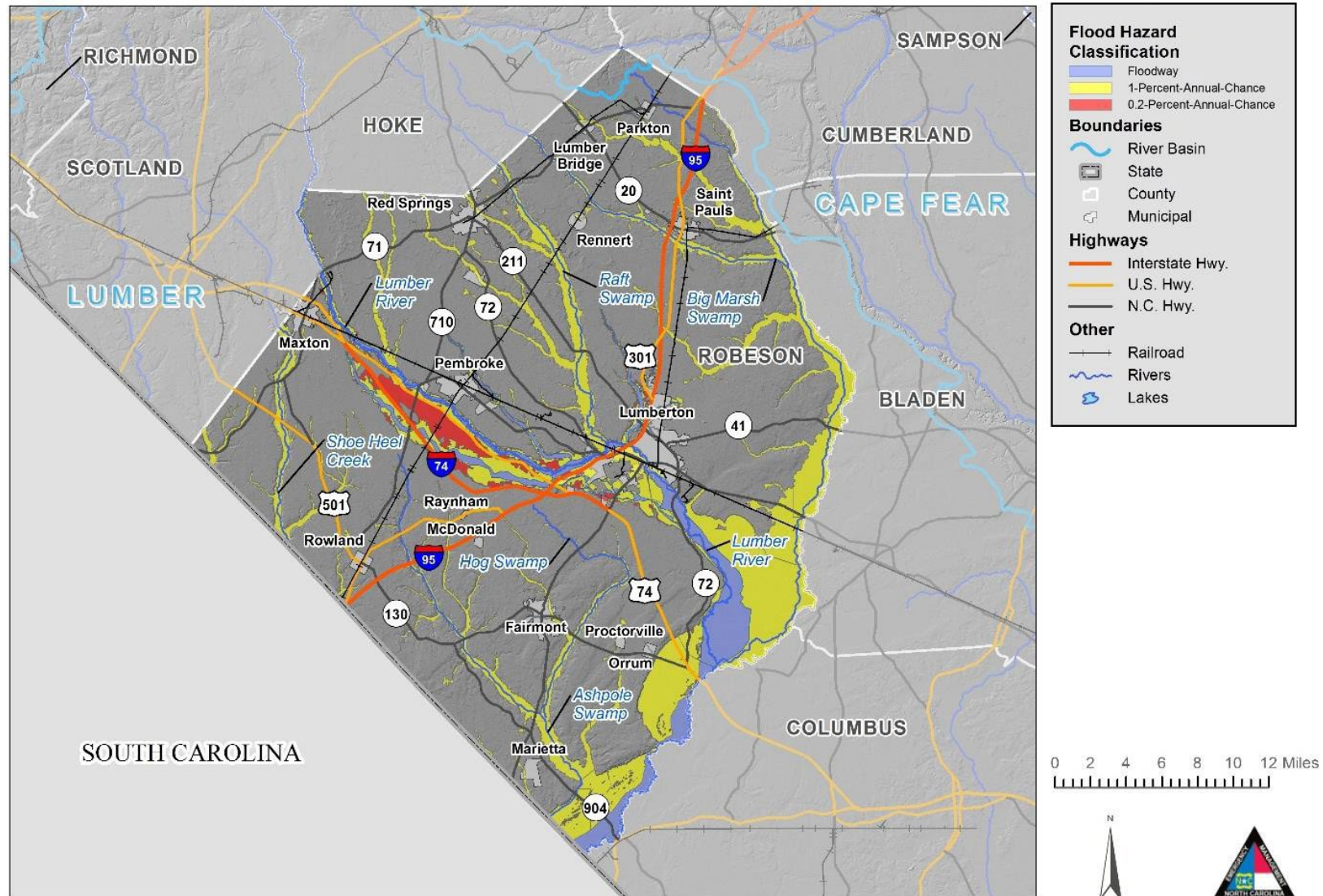
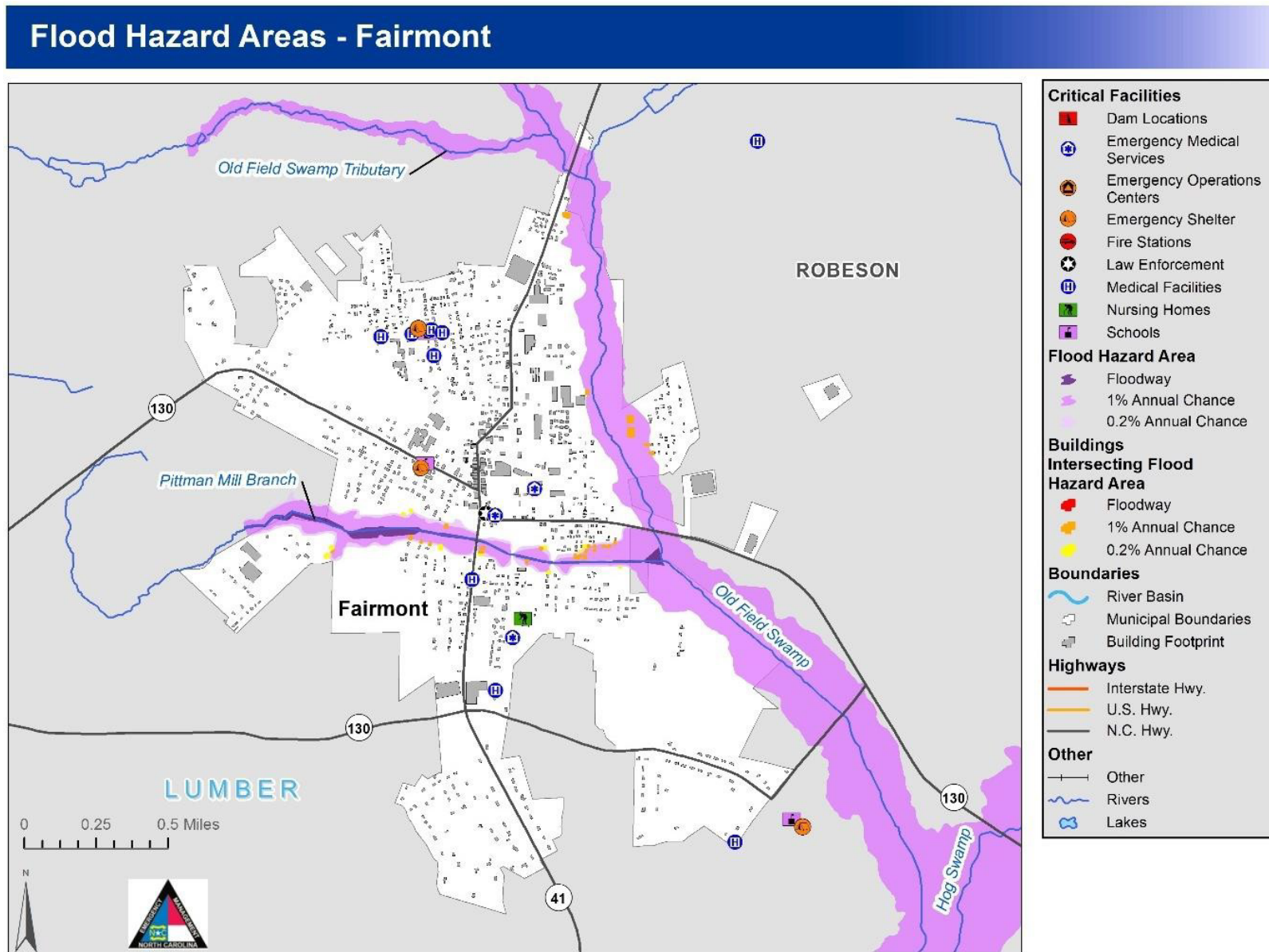


Figure 5-35: Flood Hazard Areas – Robeson County







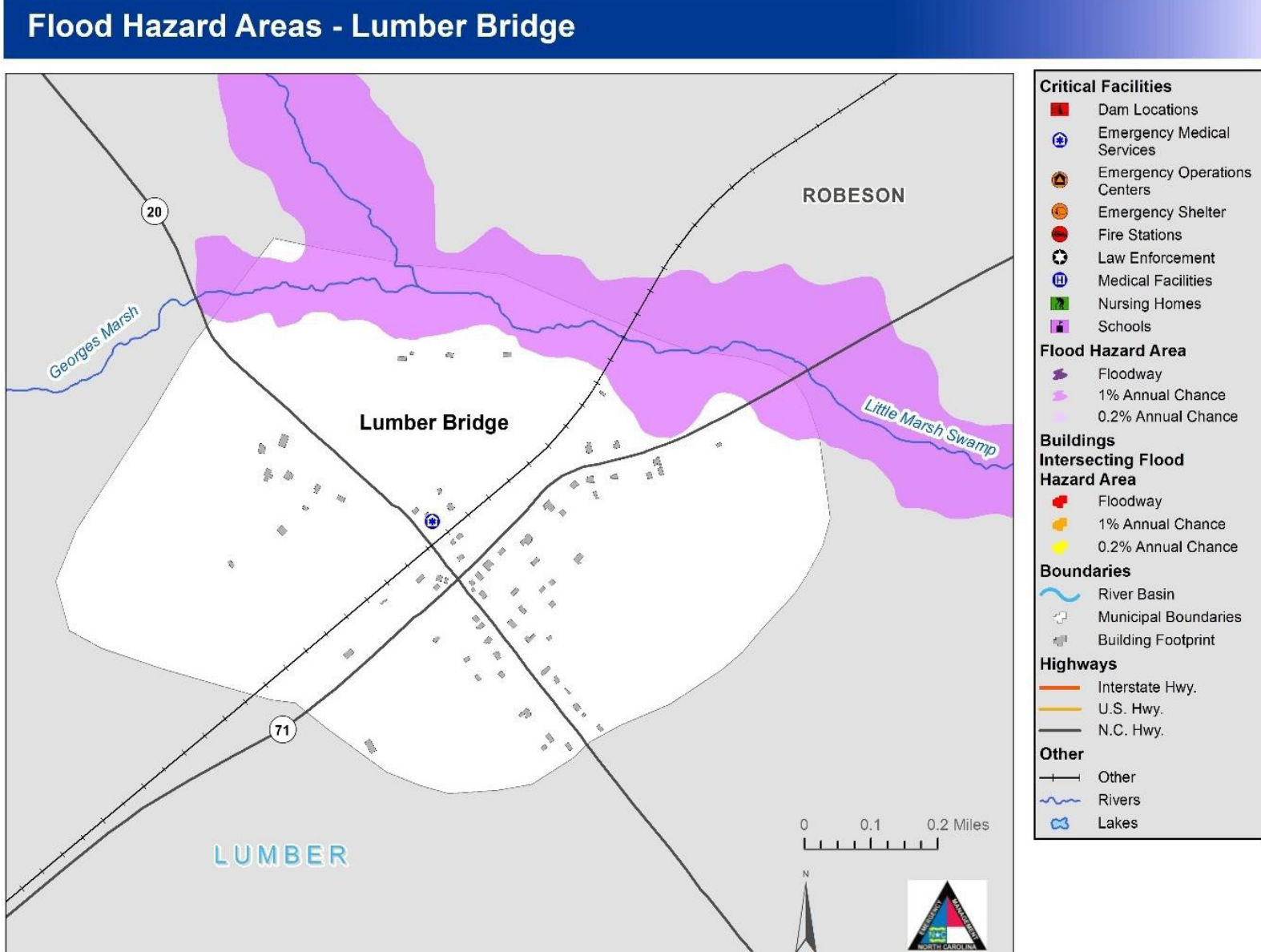


Figure 5-37: Flood Hazard Areas – Lumber Bridge

## Flood Hazard Areas - Lumberton

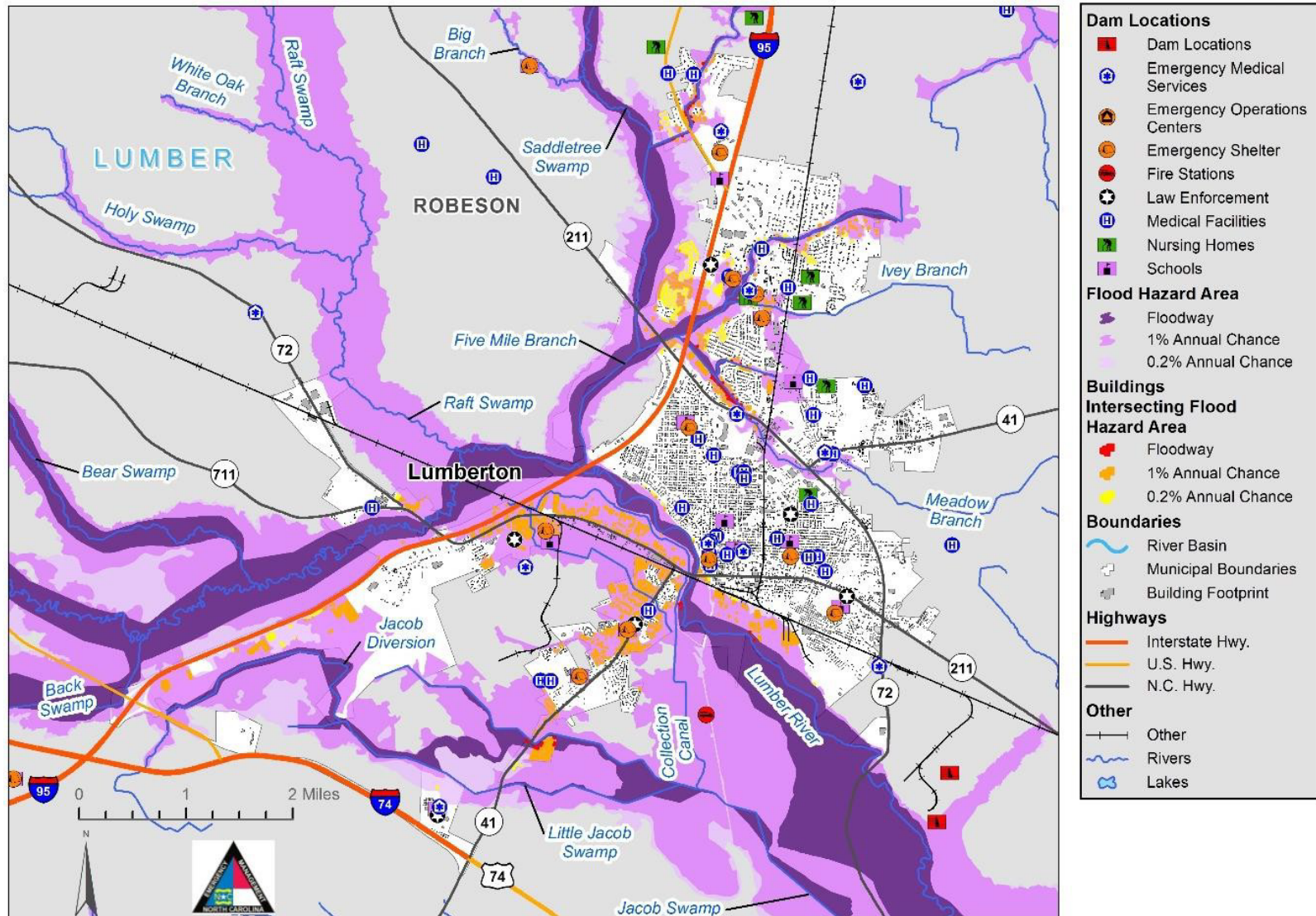


Figure 5-38: Flood Hazard Areas - Lumberton

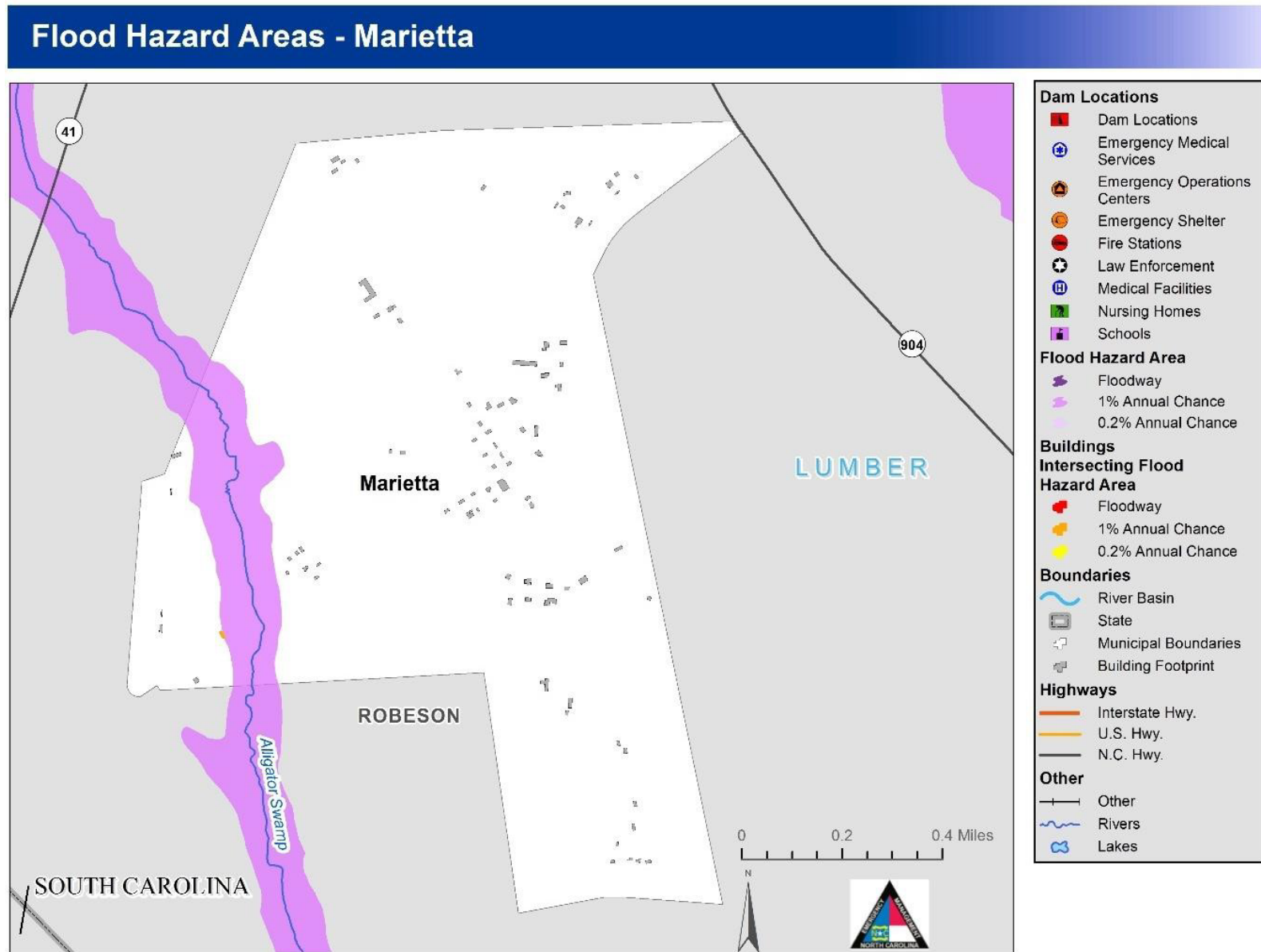


Figure 5-39: Flood Hazard Areas - Marietta



## Flood Hazard Areas - Maxton

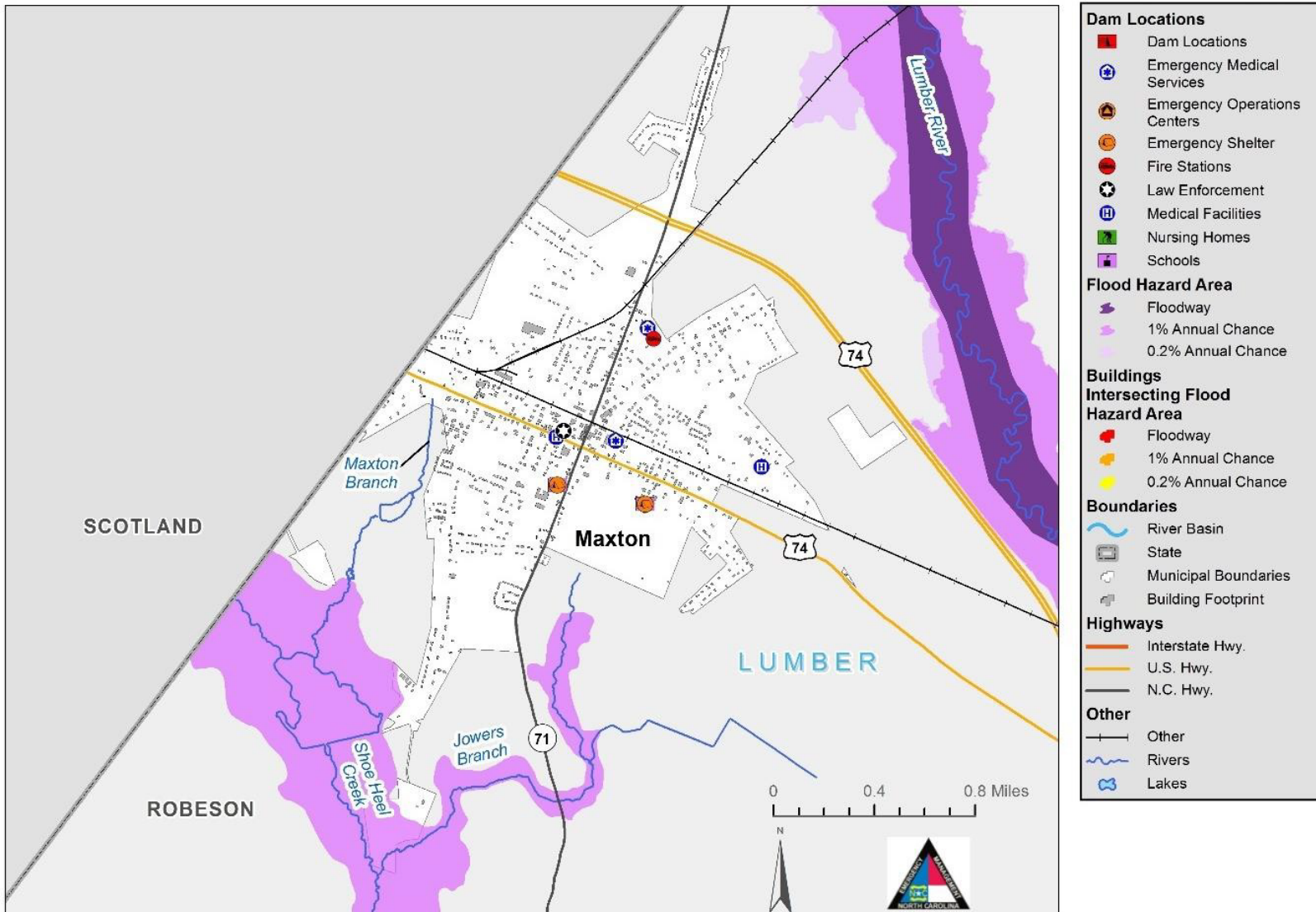


Figure 5-40: Flood Hazard Areas - Maxton

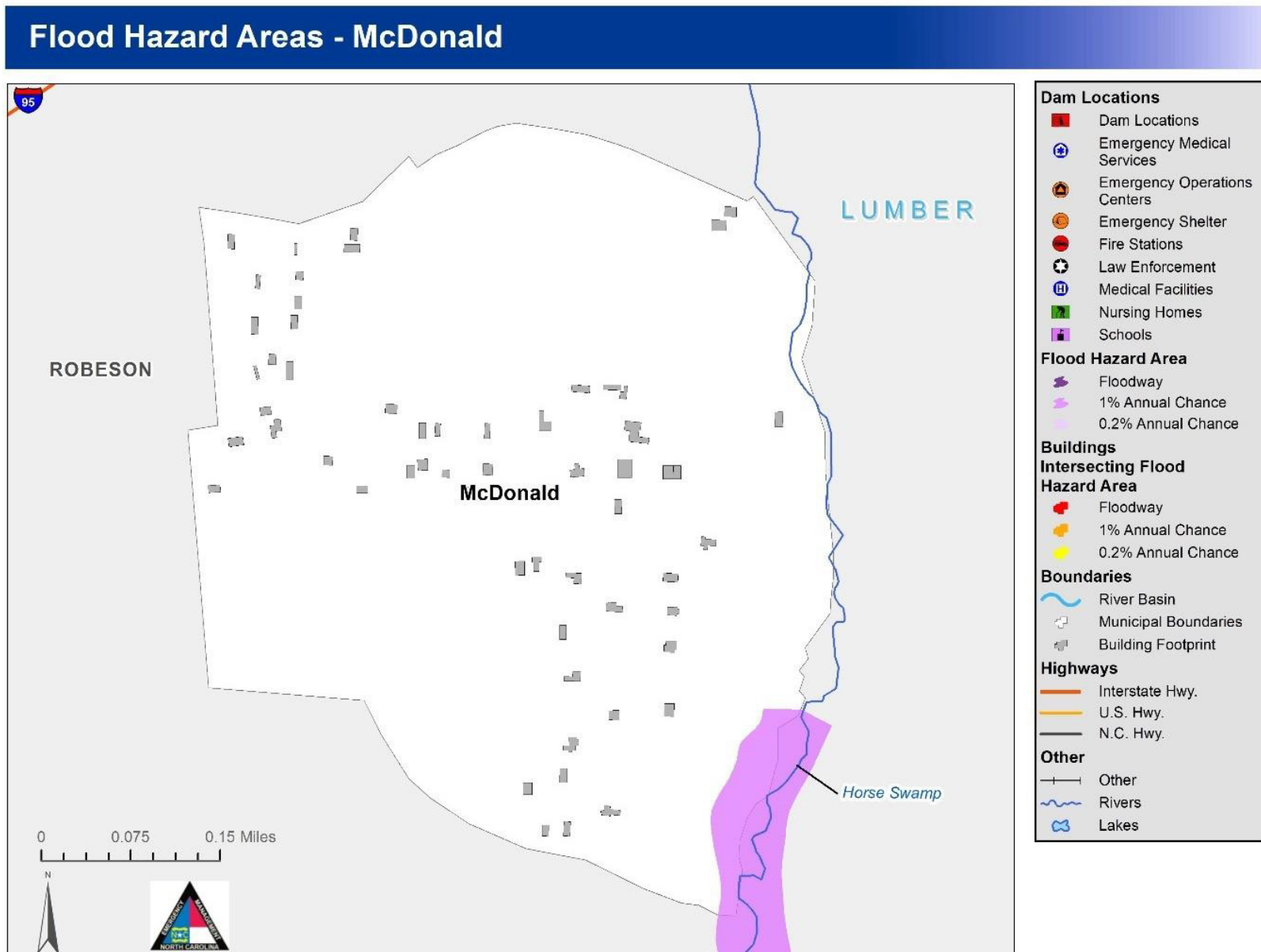


Figure 5-41: Flood Hazard Areas - McDonald

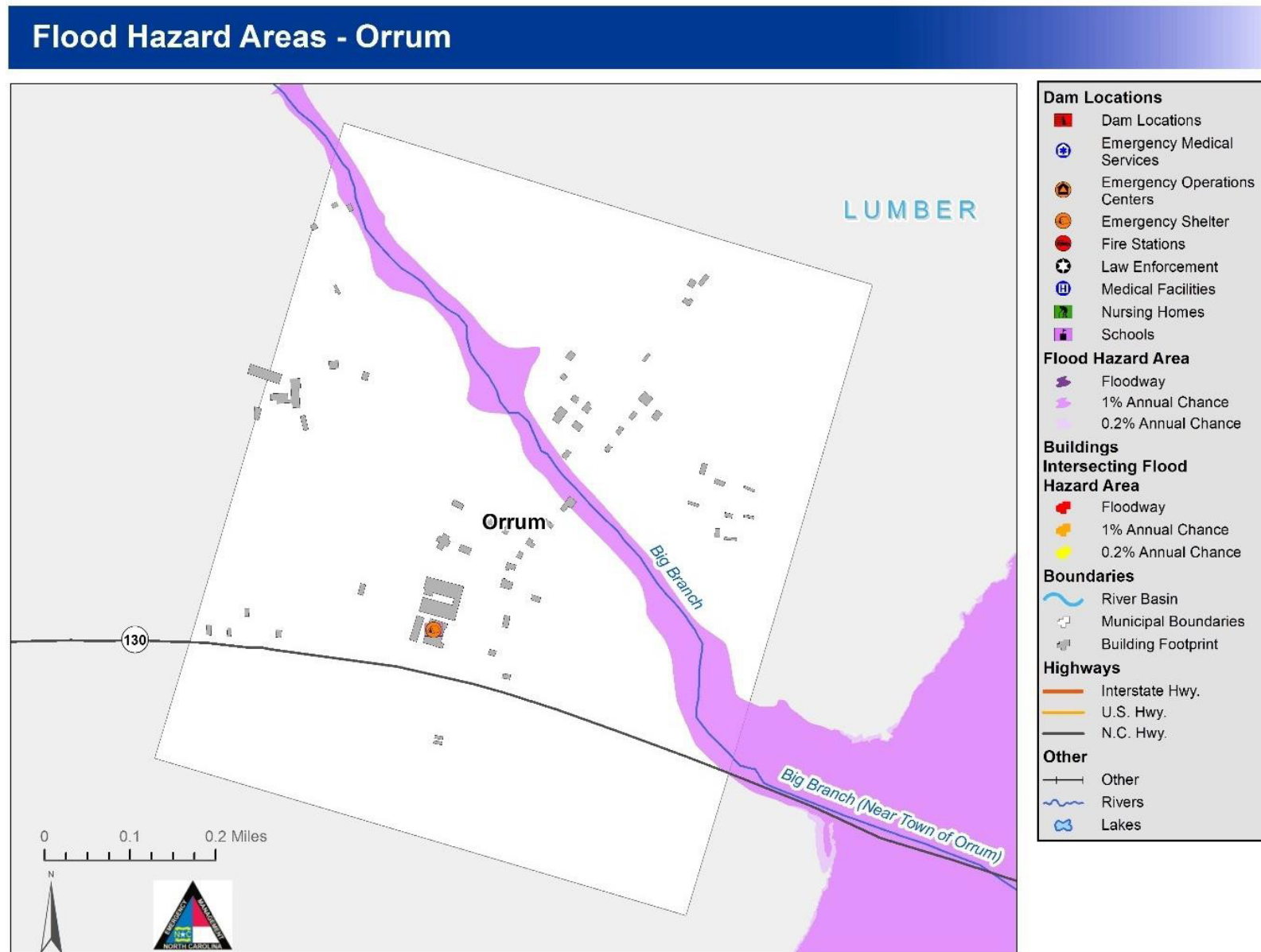


Figure 5-42: Flood Hazard Areas - Orrum



## Flood Hazard Areas - Parkton

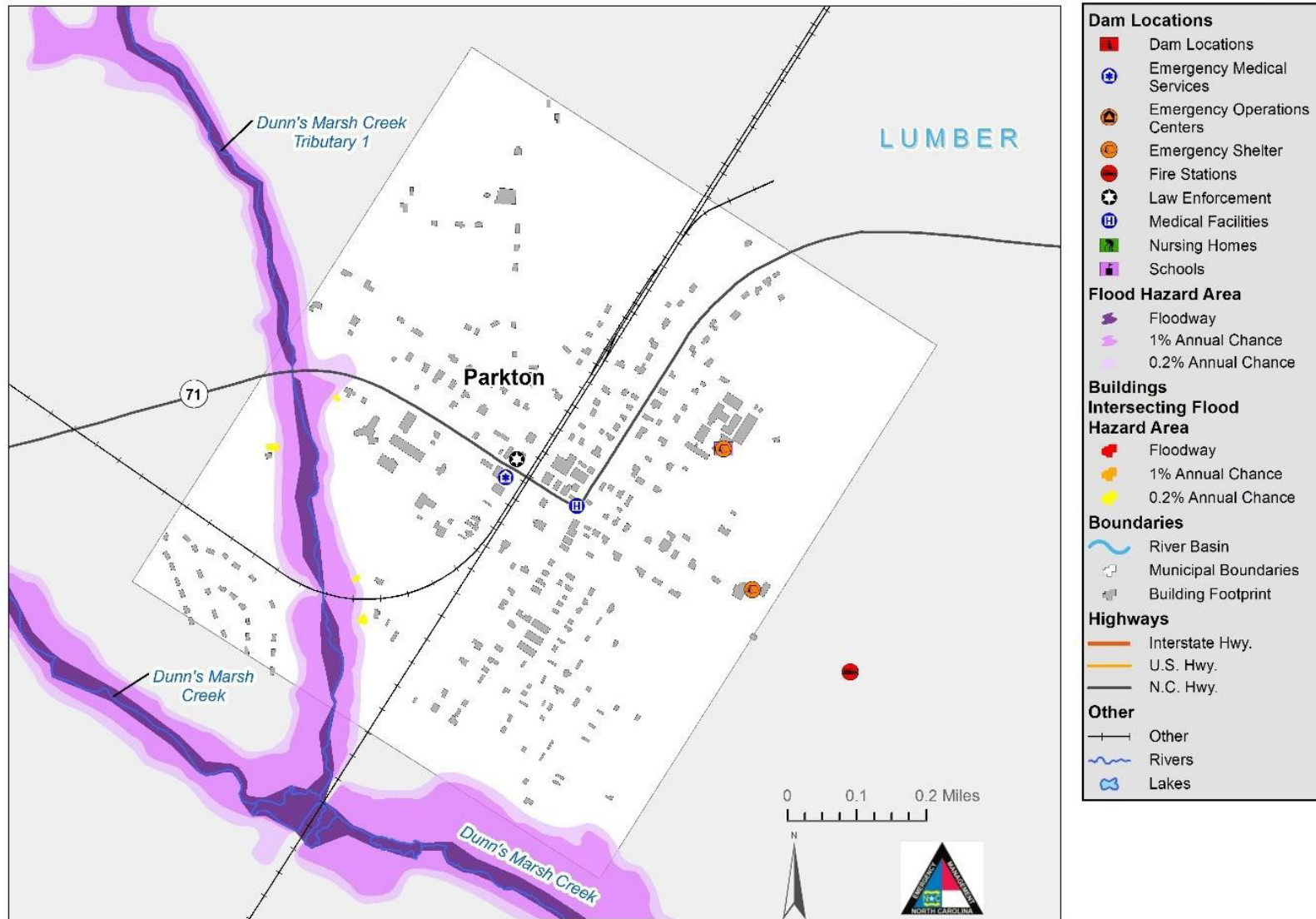


Figure 5-43: Flood Hazard Areas - Parkton

## Flood Hazard Areas - Pembroke

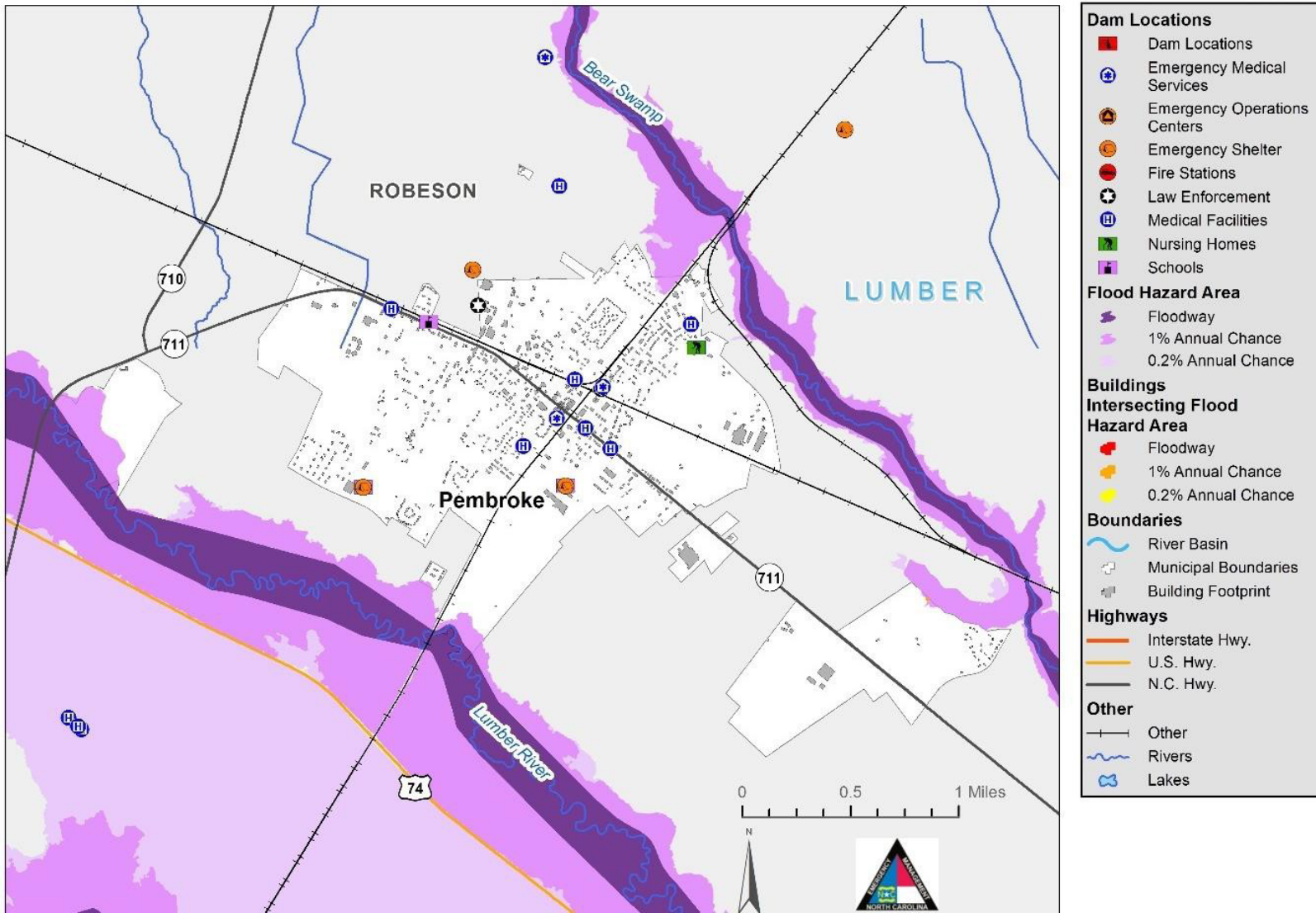


Figure 5-44: Flood Hazard Areas - Pembroke

## Flood Hazard Areas - Proctorville

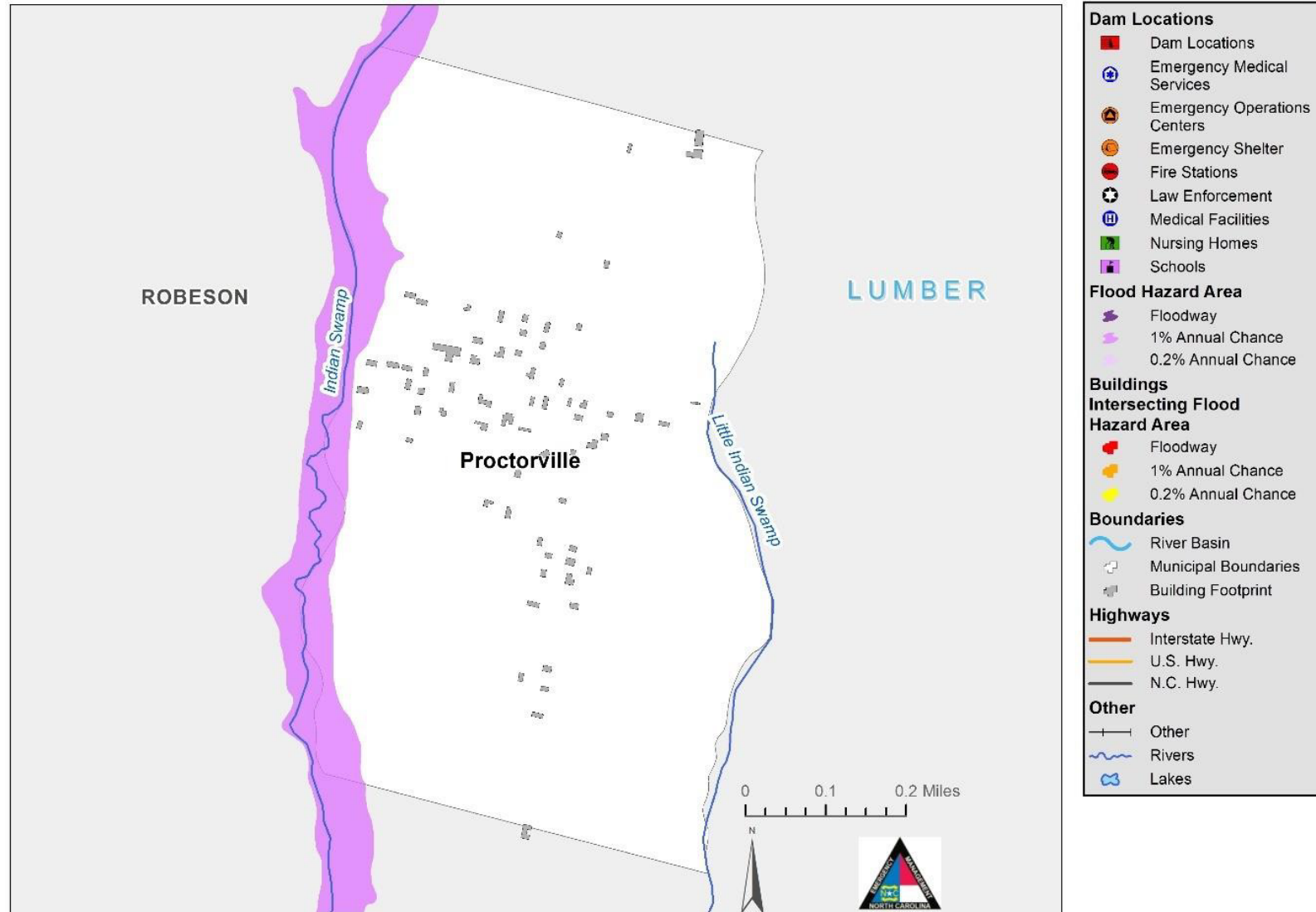


Figure 5-45: Flood Hazard Areas - Proctorville



## Flood Hazard Areas - Red Springs

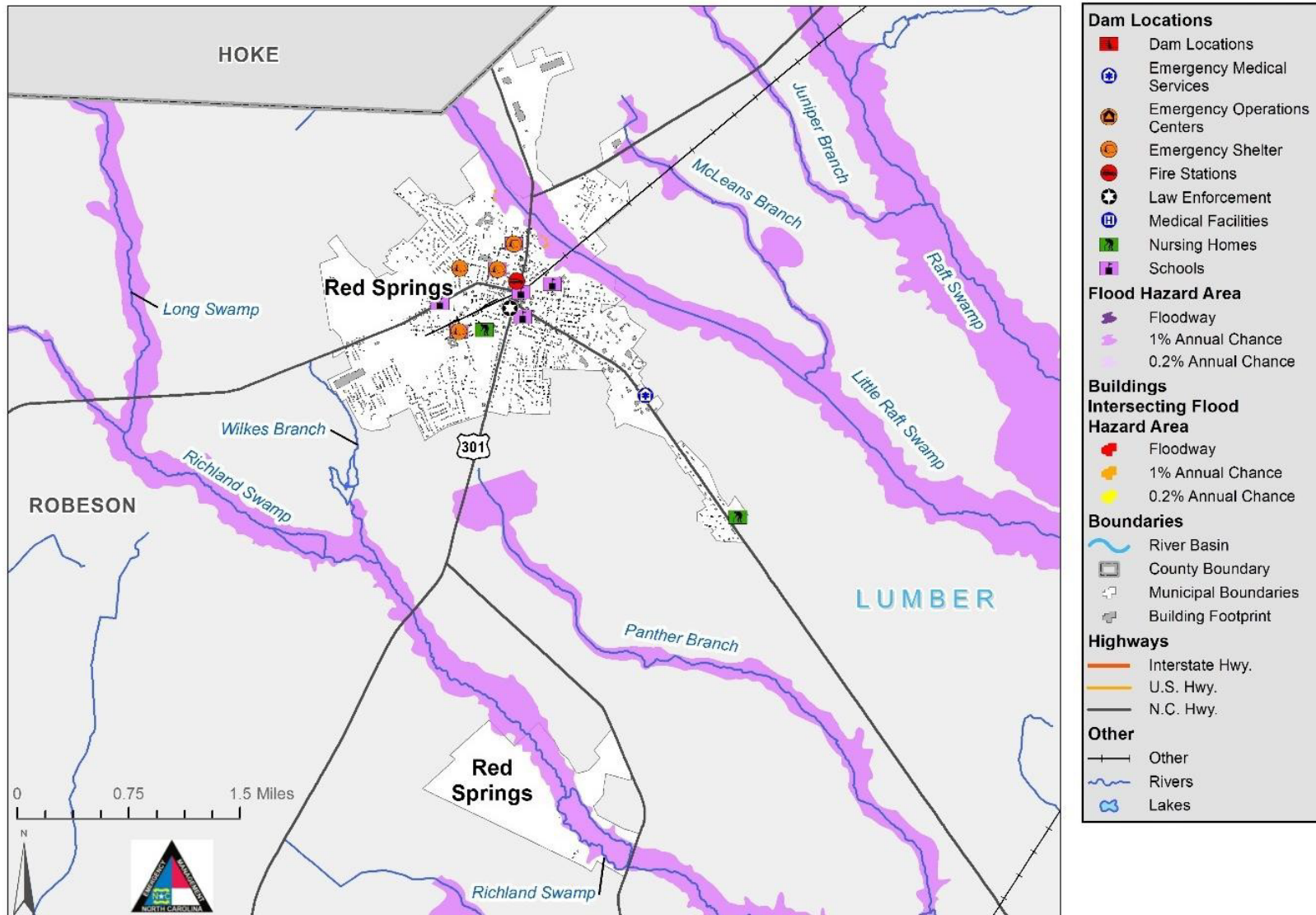


Figure 5-46: Flood Hazard Areas – Red Springs

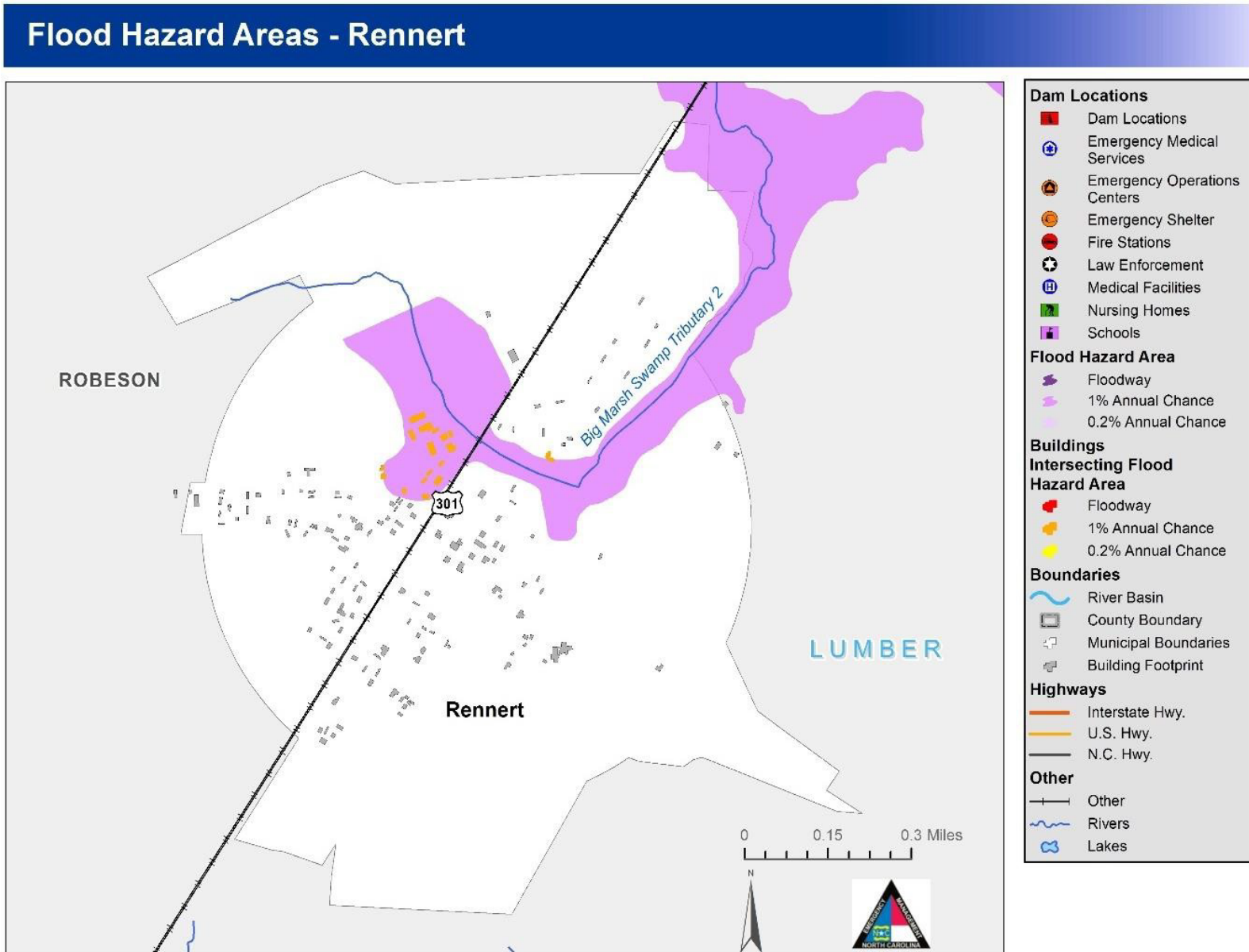


Figure 5-47: Flood Hazard Areas - Rennert

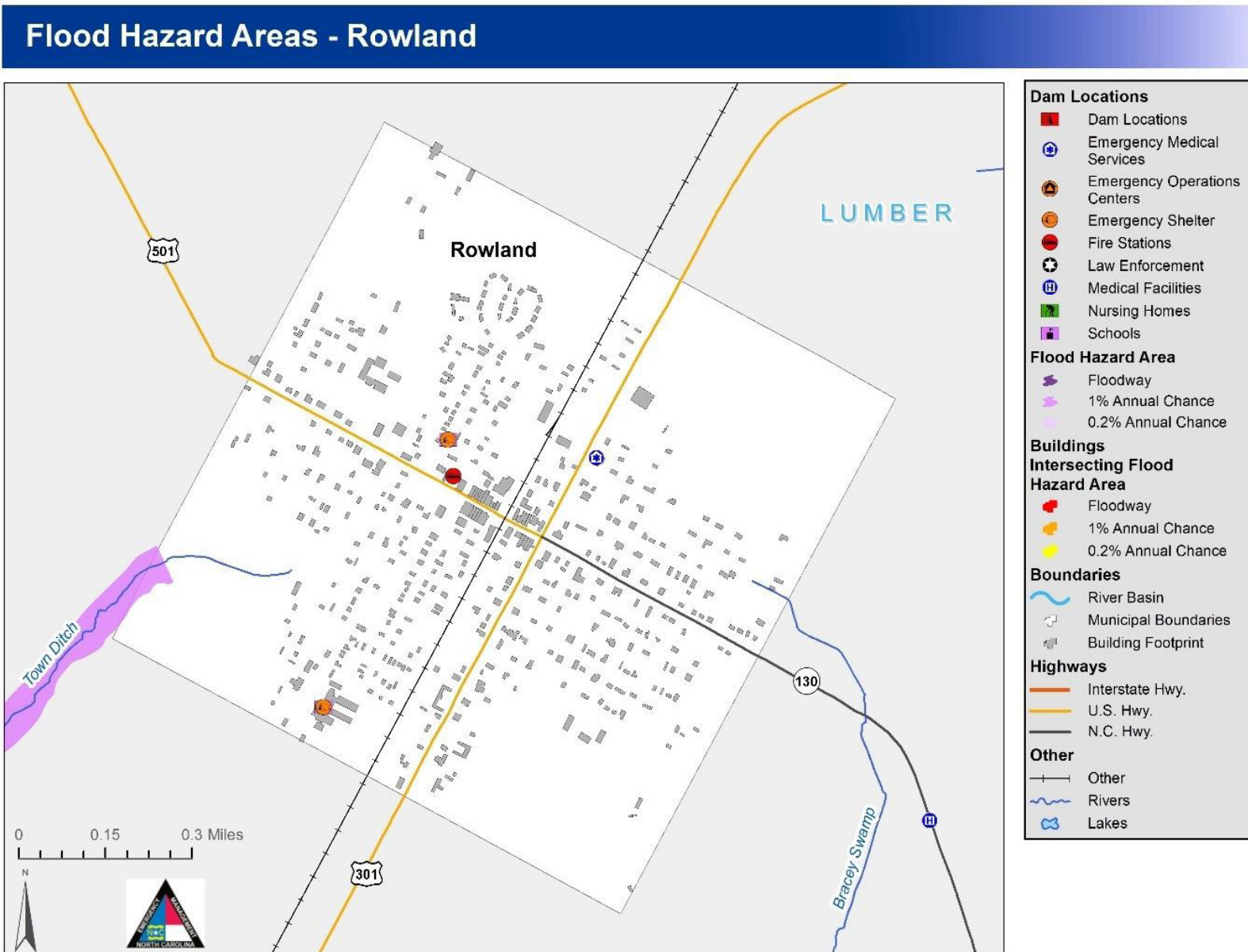


Figure 5-48: Flood Hazard Areas - Rowland



## Flood Hazard Areas - Saint Pauls

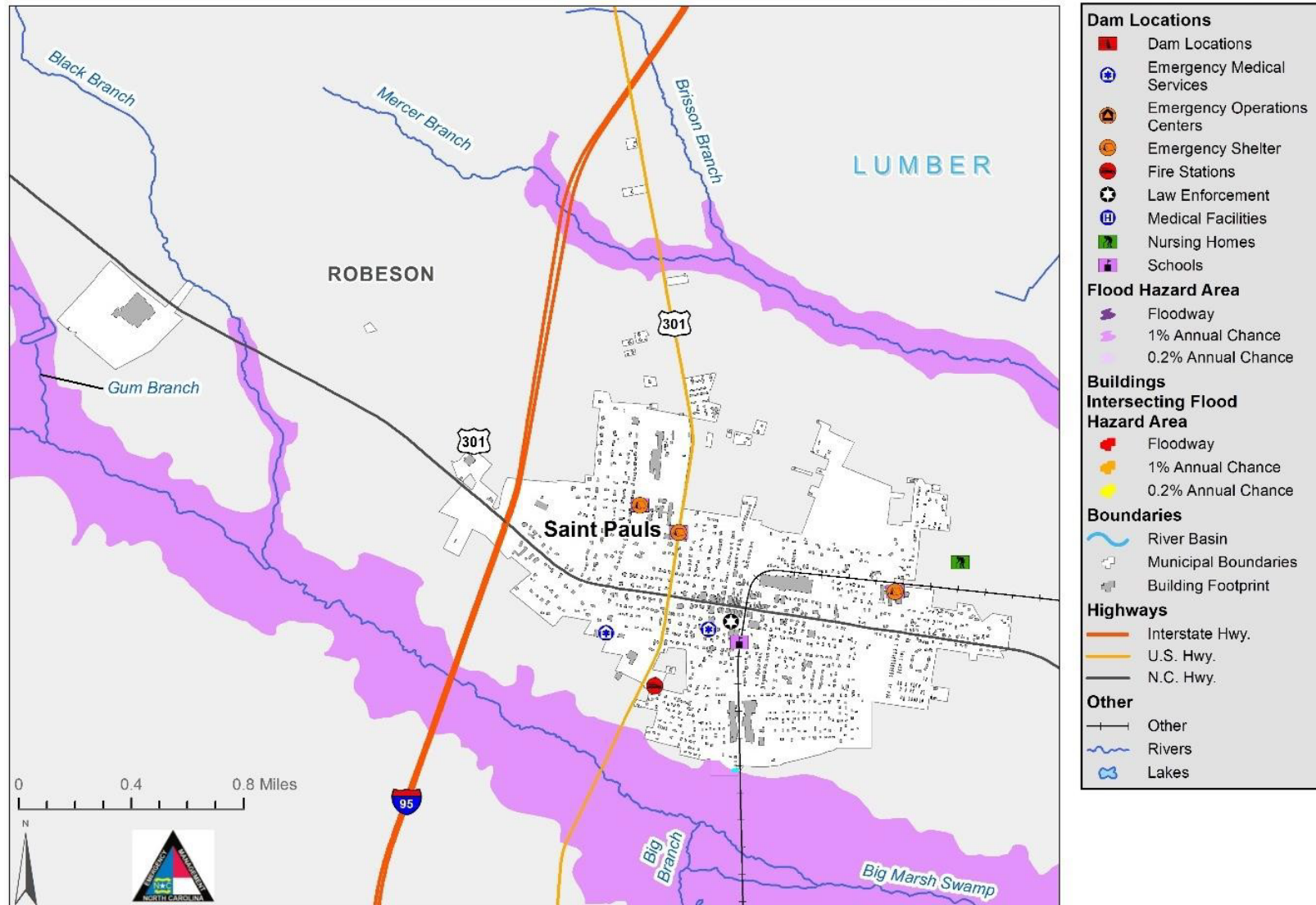


Figure 5-49: Flood Hazard Areas – Saint Pauls

### Flood Extent

The following table provides peak river stage data according to the U.S. Geological Survey (USGS) which shows the highest recorded peak river stage for all jurisdictions.

**Table 5-15: USGS Peak River Stage Data**

| Community              | Flood Extent (Peak streamflow or Highest BFE) & NRI Flood Risk Index | Source (National Risk Index is a source for all) | Anecdotal recollections of first responders and public works engineers |
|------------------------|----------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------|
| <b>Bladen County</b>   |                                                                      |                                                  |                                                                        |
| Bladen County          | 140.3 ft                                                             | FIRM Panel 3720038400J                           | Less than 1 foot of backwater flooding street and local roadways       |
| Bladenboro             | 115.4 ft                                                             | FIRM Panel 3720026900J                           | Less than a half foot of backwater flooding street and local roadways  |
| Clarkton               | N/A                                                                  | N/A                                              | Less than a half foot of backwater flooding street and local roadways  |
| Dublin                 | N/A                                                                  | N/A                                              | Less than 1 foot of backwater flooding street and local roadways       |
| East Arcadia           | 43.7 ft                                                              | FIRM Panel 3720220200L                           | Between 2-4 feet of backwater flooding street and local roadways       |
| Elizabethtown          | 120.4 ft                                                             | FIRM Panel 3720130000J                           | Less than 1-2 feet of backwater flooding street and local roadways     |
| Tar Heel               | N/A                                                                  | N/A                                              | Less than a half foot of backwater flooding street and local roadways  |
| White Lake             | 55.4 ft                                                              | FIRM Panel 3720136200J                           | Less than 1 foot of backwater flooding street and local roadways       |
| <b>Columbus County</b> |                                                                      |                                                  |                                                                        |
| Columbus County        | 104.2 ft                                                             | FIRM Panel 3720012600J                           | Less than 1 foot of backwater flooding street and local roadways       |
| Boardman               | 84.2 ft                                                              | FIRM Panel 3720021500L                           | Less than a half foot of backwater flooding street and local roadways  |
| Bolton                 | N/A                                                                  | N/A                                              | than a half foot of backwater flooding street and local roadways       |
| Brunswick              | N/A                                                                  | N/A                                              | Less than a half foot of backwater flooding street and local roadways  |
| Cerro Gordo            | 83.3 ft                                                              | FIRM Panel 3720022000K                           | Less than 1 foot of backwater flooding street and local roadways       |

## Hazard Profiles

| Community             | Flood Extent (Peak streamflow or Highest BFE) & NRI Flood Risk Index | Source (National Risk Index is a source for all) | Anecdotal recollections of first responders and public works engineers |
|-----------------------|----------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------|
| Chadbourn             | 90 ft                                                                | FIRM Panel 3720024000J                           | Less than 1 foot of backwater flooding street and local roadways       |
| Fair Bluff            | 65.8 ft                                                              | FIRM Panel 3710929000K                           | Less than 1 foot of backwater flooding street and local roadways       |
| Lake Waccamaw         | 54 ft                                                                | FIRM Panel 3720125100J                           | Less than 1 foot of backwater flooding street and local roadways       |
| Sandyfield            | 46.2 ft                                                              | FIRM Panel 3720220200L                           | Less than a half foot of backwater flooding street and local roadways  |
| Tabor City            | 91.4 ft                                                              | FIRM Panel 3720012400K                           | Less than 1 foot of backwater flooding street and local roadways       |
| Whiteville            | 77.7 ft                                                              | FIRM Panel 3720029100K                           | Less than 1 foot of backwater flooding street and local roadways       |
| <b>Robeson County</b> |                                                                      |                                                  |                                                                        |
| Robeson County        | 218.9 ft                                                             | FIRM Panel 3710930800K                           | Between 3-4 feet of backwater flooding street and local roadways       |
| Fairmont              | 126.8 ft                                                             | FIRM Panel 3710926700J                           | Between 3 feet of backwater flooding street and local roadways         |
| Lumber Bridge         | 182.1 ft                                                             | FIRM Panel 3710946000K                           | Between 1-2 feet of backwater flooding street and local roadways       |
| Lumberton             | 140.8 ft                                                             | FIRM Panel 3710939400K                           | Between 1-2 feet of backwater flooding street and local roadways       |
| Marietta              | 80.1 ft                                                              | FIRM Panel 3710926200K                           | Less than 1 foot of backwater flooding street and local roadways       |
| Maxton                | 189.7 ft                                                             | FIRM Panel 3710838400K                           | Between 2-3 feet of backwater flooding street and local roadways       |
| McDonald              | 133.2 ft                                                             | FIRM Panel 3710924800J                           | Between 1-2 feet of backwater flooding street and local roadways       |
| Orrum                 | 101.2 ft                                                             | FIRM Panel 3710928600J                           | Between 1-2 feet of backwater flooding street and local roadways       |
| Parkton               | 178.6 ft                                                             | FIRM Panel 3710949200J                           | Between 2-3 feet of backwater flooding street and local roadways       |
| Pembroke              | 170.6 ft                                                             | FIRM Panel 3710934400K                           | Between 1-2 feet of backwater flooding street and local roadways       |
| Proctorville          | 101.2 ft                                                             | FIRM Panel 3710928600J                           | Between 1-2 feet of backwater flooding street and local roadways       |
| Raynham               | N/A                                                                  | N/A                                              | Less than a half foot of backwater flooding street and local roadways  |

| Community   | Flood Extent (Peak streamflow or Highest BFE) & NRI Flood Risk Index | Source (National Risk Index is a source for all) | Anecdotal recollections of first responders and public works engineers |
|-------------|----------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------|
| Red Springs | 203.9 ft                                                             | FIRM Panel 3710934800K                           | Between 2-3 feet of backwater flooding street and local roadways       |
| Rennert     | 184.8 ft                                                             | FIRM Panel 3710936800J                           | Between 2-3 feet of backwater flooding street and local roadways       |
| Rowland     | 128.8 ft                                                             | FIRM Panel 3710920800J                           | Between 2-3 feet of backwater flooding street and local roadways       |
| Saint Pauls | 157.9 ft                                                             | FIRM Panel 3710938800J                           | Between 1-2 feet of backwater flooding street and local roadways       |
| Shannon     | N/A                                                                  | N/A                                              | Less than a half foot of backwater flooding street and local roadways  |

### 5.8.3 Past Occurrences

The following historical occurrences since 2008 have been identified based on the National Centers for Environmental Information (NCEI) Storm Events database **Table 5-16**. It should be noted that only those historical occurrences listed in the NCEI database are shown here and that other, unrecorded or unreported events may have occurred within the planning area during this timeframe.

Table 5-16: Historical Flooding Occurrences (2008-2025)

| Location                            | Date     | Type        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|-------------------------------------|----------|-------------|--------|----------|--------------------------|----------------------|
| <b>Bladen County</b>                |          |             |        |          |                          |                      |
| Bladen County (Unincorporated Area) | 09/08/08 | Flood       | 0      | 0        | \$10,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 06/30/13 | Flood       | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 08/03/14 | Flood       | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 09/08/14 | Flood       | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 09/02/16 | Flash Flood | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 09/02/16 | Flash Flood | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 0      | 0        | \$350,000                | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 0      | 0        | \$250,000                | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 0      | 0        | \$75,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 0      | 0        | \$750,000                | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 0      | 0        | \$50,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 0      | 0        | \$75,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 2      | 0        | \$75,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 0      | 0        | \$250,000                | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 0      | 0        | \$50,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 0      | 0        | \$75,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 0      | 0        | \$50,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 0      | 0        | \$50,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 0      | 0        | \$100,000                | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 0      | 0        | \$200,000                | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 0      | 0        | \$100,000                | \$0                  |
| Bladen County (Unincorporated Area) | 10/08/16 | Flash Flood | 0      | 0        | \$75,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 09/14/18 | Flash Flood | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 09/15/18 | Flash Flood | 0      | 0        | \$10,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 09/15/18 | Flash Flood | 0      | 0        | \$10,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 09/15/18 | Flash Flood | 0      | 0        | \$10,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 09/15/18 | Flash Flood | 0      | 0        | \$10,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 09/15/18 | Flash Flood | 0      | 0        | \$10,000                 | \$0                  |



## Hazard Profiles

| Location                              | Date             | Type        | Deaths   | Injuries | Reported Property Damage | Reported Crop Damage |
|---------------------------------------|------------------|-------------|----------|----------|--------------------------|----------------------|
| Bladen County (Unincorporated Area)   | 09/16/18         | Flash Flood | 0        | 0        | \$150,000                | \$0                  |
| Bladen County (Unincorporated Area)   | 09/16/18         | Flash Flood | 0        | 0        | \$10,000                 | \$0                  |
| Bladen County (Unincorporated Area)   | 09/16/24         | Flash Flood | 0        | 0        | \$3,000                  | \$0                  |
| Town of Bladenboro                    | 10/08/16         | Flash Flood | 0        | 0        | \$50,000                 | \$0                  |
| Town of Bladenboro                    | 10/08/16         | Flash Flood | 0        | 0        | \$1,000,000              | \$0                  |
| Town of Bladenboro                    | 09/16/18         | Flash Flood | 0        | 0        | \$10,000                 | \$0                  |
| Town of Clarkton                      | 08/03/14         | Flood       | 0        | 0        | \$5,000                  | \$0                  |
| Town of East Arcadia                  | 09/15/18         | Flash Flood | 0        | 0        | \$20,000                 | \$0                  |
| Town of Elizabethtown                 | 09/08/14         | Flood       | 0        | 0        | \$0                      | \$0                  |
| Town of Elizabethtown                 | 08/06/15         | Flood       | 0        | 0        | \$0                      | \$0                  |
| Town of Elizabethtown                 | 10/08/16         | Flash Flood | 0        | 0        | \$75,000                 | \$0                  |
| Town of Elizabethtown                 | 10/08/16         | Flash Flood | 0        | 0        | \$250,000                | \$0                  |
| Town of White Lake                    | 10/08/16         | Flash Flood | 0        | 0        | \$1,000,000              | \$0                  |
| Town of White Lake                    | 10/06/23         | Flood       | 0        | 0        | \$0                      | \$0                  |
| <b>Subtotal Bladen</b>                | <b>42 Events</b> | <b>--</b>   | <b>2</b> | <b>0</b> | <b>\$5,208,000</b>       | <b>\$0</b>           |
| <b>Columbus County</b>                |                  |             |          |          |                          |                      |
| City of Whiteville                    | 07/09/11         | Flood       | 0        | 0        | \$10,000                 | \$0                  |
| City of Whiteville                    | 10/02/15         | Flood       | 0        | 0        | \$0                      | \$0                  |
| City of Whiteville                    | 08/05/16         | Flash Flood | 0        | 0        | \$0                      | \$0                  |
| City of Whiteville                    | 09/02/16         | Flash Flood | 0        | 0        | \$0                      | \$0                  |
| City of Whiteville                    | 09/15/18         | Flash Flood | 0        | 0        | \$40,000                 | \$0                  |
| City of Whiteville                    | 09/16/18         | Flash Flood | 0        | 0        | \$20,000                 | \$0                  |
| City of Whiteville                    | 06/16/20         | Flood       | 0        | 0        | \$0                      | \$0                  |
| City of Whiteville                    | 06/16/20         | Flash Flood | 0        | 0        | \$100,000                | \$0                  |
| City of Whiteville                    | 07/31/23         | Flash Flood | 0        | 0        | \$1000                   | \$0                  |
| Columbus County (Unincorporated Area) | 06/25/13         | Flood       | 0        | 0        | \$10,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 06/27/13         | Flood       | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 06/30/13         | Flood       | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 06/30/13         | Flood       | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 08/03/14         | Flood       | 0        | 0        | \$0                      | \$0                  |

## Hazard Profiles

| Location                              | Date             | Type        | Deaths   | Injuries | Reported Property Damage | Reported Crop Damage |
|---------------------------------------|------------------|-------------|----------|----------|--------------------------|----------------------|
| Columbus County (Unincorporated Area) | 08/09/14         | Flood       | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 10/02/15         | Flood       | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 08/03/16         | Flood       | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 10/08/16         | Flash Flood | 0        | 0        | \$500,000                | \$0                  |
| Columbus County (Unincorporated Area) | 10/08/16         | Flash Flood | 0        | 0        | \$150,000                | \$0                  |
| Columbus County (Unincorporated Area) | 10/08/16         | Flash Flood | 0        | 0        | \$1,000,000              | \$0                  |
| Columbus County (Unincorporated Area) | 10/08/16         | Flash Flood | 0        | 0        | \$500,000                | \$0                  |
| Columbus County (Unincorporated Area) | 10/08/16         | Flash Flood | 0        | 0        | \$250,000                | \$0                  |
| Columbus County (Unincorporated Area) | 07/09/17         | Flash Flood | 0        | 0        | \$7,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 07/09/17         | Flood       | 0        | 0        | \$4,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 05/28/18         | Flash Flood | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 05/28/18         | Flash Flood | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 09/15/18         | Flash Flood | 0        | 0        | \$20,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 09/15/18         | Flash Flood | 0        | 0        | \$30,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 09/15/18         | Flash Flood | 0        | 0        | \$10,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 09/15/18         | Flash Flood | 0        | 0        | \$10,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 09/15/18         | Flash Flood | 0        | 0        | \$10,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 05/21/20         | Flash Flood | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 05/28/20         | Flood       | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 05/28/20         | Flash Flood | 0        | 0        | \$4,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 07/19/21         | Flash Flood | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 07/31/23         | Flash Flood | 0        | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 08/27/23         | Flood       | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 08/31/23         | Flash Flood | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 09/16/24         | Flash Flood | 0        | 0        | \$10,000                 | \$0                  |
| Town of Chadbourn                     | 08/03/14         | Flood       | 0        | 0        | \$2,000                  | \$0                  |
| Town of Chadbourn                     | 08/31/23         | Flash Flood | 0        | 0        | \$0                      | \$0                  |
| Town of Tabor City                    | 08/31/23         | Flash Flood | 0        | 0        | \$0                      | \$0                  |
| <b>Subtotal Columbus</b>              | <b>42 Events</b> | <b>--</b>   | <b>0</b> | <b>0</b> | <b>\$2,689,000</b>       | <b>\$0</b>           |
| <b>Robeson County</b>                 |                  |             |          |          |                          |                      |

## Hazard Profiles

| Location                             | Date              | Type        | Deaths   | Injuries | Reported Property Damage | Reported Crop Damage |
|--------------------------------------|-------------------|-------------|----------|----------|--------------------------|----------------------|
| City of Lumberton                    | 09/09/08          | Flood       | 0        | 0        | \$0                      | \$0                  |
| City of Lumberton                    | 07/11/12          | Flood       | 0        | 0        | \$0                      | \$0                  |
| City of Lumberton                    | 06/26/15          | Flood       | 0        | 0        | \$0                      | \$0                  |
| City of Lumberton                    | 06/26/15          | Flood       | 0        | 0        | \$0                      | \$0                  |
| City of Lumberton                    | 10/08/16          | Flash Flood | 0        | 0        | \$250,000                | \$0                  |
| City of Lumberton                    | 09/15/18          | Flash Flood | 1        | 0        | \$20,000                 | \$0                  |
| City of Lumberton                    | 09/15/18          | Flash Flood | 1        | 0        | \$10,000                 | \$0                  |
| City of Lumberton                    | 09/15/18          | Flash Flood | 0        | 0        | \$20,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 05/16/10          | Flood       | 0        | 0        | \$5,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 08/19/11          | Flood       | 0        | 0        | \$2,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 10/08/16          | Flash Flood | 0        | 0        | \$2,000,000              | \$0                  |
| Robeson County (Unincorporated Area) | 10/08/16          | Flash Flood | 0        | 0        | \$500,000                | \$0                  |
| Robeson County (Unincorporated Area) | 10/08/16          | Flash Flood | 0        | 0        | \$2,000,000              | \$0                  |
| Robeson County (Unincorporated Area) | 09/15/18          | Flash Flood | 0        | 0        | \$10,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 09/15/18          | Flash Flood | 0        | 0        | \$10,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 09/15/18          | Flash Flood | 0        | 0        | \$10,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 09/15/18          | Flash Flood | 0        | 0        | \$10,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 09/15/18          | Flash Flood | 0        | 0        | \$10,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 09/15/18          | Flash Flood | 0        | 0        | \$10,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 09/15/18          | Flash Flood | 0        | 0        | \$10,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 09/16/18          | Flash Flood | 0        | 0        | \$20,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 09/16/18          | Flash Flood | 0        | 0        | \$30,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 11/12/20          | Flash Flood | 0        | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 08/31/23          | Flash Flood | 0        | 0        | \$0                      | \$0                  |
| Town of Fairmont                     | 09/01/20          | Flash Flood | 0        | 0        | \$0                      | \$0                  |
| Town of Red Springs                  | 07/01/13          | Flood       | 0        | 0        | \$0                      | \$0                  |
| Town of Rennert                      | 07/01/13          | Flood       | 0        | 0        | \$0                      | \$0                  |
| Town of Rowland                      | 06/20/23          | Flash Flood | 0        | 0        | \$10,000                 | \$0                  |
| Town of Saint Pauls                  | 06/27/13          | Flood       | 0        | 0        | \$0                      | \$0                  |
| <b>Subtotal Robeson</b>              | <b>28 Events</b>  | --          | <b>2</b> | <b>0</b> | <b>\$4,927,000</b>       | <b>\$0</b>           |
| <b>TOTAL PLAN</b>                    | <b>112 Events</b> | --          | <b>4</b> | <b>0</b> | <b>\$12,824,000</b>      | <b>\$0</b>           |

Source: NCEI Storm Events Database

**Table 5-17** provides a summary of this information by jurisdiction. It is important to note that many of the events attributed to the county are countywide or cover large areas. The individual counts by jurisdiction are for those events that are only attributed to that one jurisdiction.

**Table 5-17: Summary of Historical River Flooding Occurrences by Jurisdiction**

| Jurisdiction                          | Number of Occurrences | Deaths   | Injuries | Reported Property Damage | Reported Crop Damage |
|---------------------------------------|-----------------------|----------|----------|--------------------------|----------------------|
| <b>Bladen County</b>                  |                       |          |          |                          |                      |
| Bladen County (Unincorporated Area)   | 31                    | 2        | 0        | \$2,798,000              | \$0                  |
| Town of Bladenboro                    | 3                     | 0        | 0        | \$1,060,000              | \$0                  |
| Town of Clarkton                      | 1                     | 0        | 0        | \$5,000                  | \$0                  |
| Town of East Arcadia                  | 1                     | 0        | 0        | \$20,000                 | \$0                  |
| Town of Elizabethtown                 | 4                     | 0        | 0        | \$325,000                | \$0                  |
| Town of White Lake                    | 2                     | 0        | 0        | \$1,000,000              | \$0                  |
| <b>Subtotal Bladen</b>                | <b>42</b>             | <b>2</b> | <b>0</b> | <b>\$5,208,000</b>       | <b>\$0</b>           |
| <b>Columbus County</b>                |                       |          |          |                          |                      |
| City of Whiteville                    | 9                     | 0        | 0        | \$171,000                | \$0                  |
| Columbus County (Unincorporated Area) | 30                    | 0        | 0        | \$2,516,000              | \$0                  |
| Town of Chadbourn                     | 2                     | 0        | 0        | \$2,000                  | \$0                  |
| Town of Tabor City                    | 1                     | 0        | 0        | \$0                      | \$0                  |
| <b>Subtotal Columbus</b>              | <b>42</b>             | <b>0</b> | <b>0</b> | <b>\$2,689,000</b>       | <b>\$0</b>           |
| <b>Robeson County</b>                 |                       |          |          |                          |                      |
| City of Lumberton                     | 8                     | 2        | 0        | \$300,000                | \$0                  |
| Robeson County (Unincorporated Area)  | 15                    | 0        | 0        | \$4,617,000              | \$0                  |
| Town of Red Springs                   | 1                     | 0        | 0        | \$0                      | \$0                  |
| Town of Red Springs                   | 1                     | 0        | 0        | \$0                      | \$0                  |
| Town of Rennert                       | 1                     | 0        | 0        | \$0                      | \$0                  |
| Town of Rowland                       | 1                     | 0        | 0        | \$10,000                 | \$0                  |
| Town of Saint Pauls                   | 1                     | 0        | 0        | \$0                      | \$0                  |
| <b>Subtotal Robeson</b>               | <b>28</b>             | <b>2</b> | <b>0</b> | <b>\$4,927,000</b>       | <b>\$0</b>           |
| <b>TOTAL PLAN</b>                     | <b>112</b>            | <b>4</b> | <b>0</b> | <b>\$12,824,000</b>      | <b>\$0</b>           |

Source: NCEI Storm Events Database

### 5.8.4 Repetitive Loss Properties

Many of North Carolina’s insured flood losses have involved repetitive loss properties. The federal definition of a repetitive loss property is “any insured structure with at least two paid flood insurance losses of more than \$1,000 each in any rolling 10-year period since 1978” (FEMA). The table below lists repetitive loss data by county, according to the latest 2024 FEMA records.

**Table 5-18: Repetitive Loss Property Counts by Jurisdiction**

| Jurisdiction                          | Residential Repetitive Loss Properties | Non-Residential/Commercial Repetitive Loss Properties | Total Repetitive Losses Count |
|---------------------------------------|----------------------------------------|-------------------------------------------------------|-------------------------------|
| Bladen County (Unincorporated Area)   | 16                                     | 1                                                     | 38                            |
| Town of Bladenboro                    | 7                                      | 4                                                     | 32                            |
| Town of Clarkton                      | 0                                      | 0                                                     | 0                             |
| Town of Dublin                        | 0                                      | 0                                                     | 0                             |
| Town of East Arcadia                  | 0                                      | 0                                                     | 0                             |
| Town of Elizabethtown                 | 3                                      | 0                                                     | 7                             |
| Town of Tar Heel                      | 0                                      | 0                                                     | 0                             |
| Town of White Lake                    | 1                                      | 0                                                     | 2                             |
| <b>Bladen County Totals</b>           | <b>27</b>                              | <b>5</b>                                              | <b>79</b>                     |
| Columbus County (Unincorporated Area) | 37                                     | 1                                                     | 36                            |
| City of Whiteville                    | 7                                      | 19                                                    | 104                           |
| Town of Boardman                      | 0                                      | 0                                                     | 0                             |
| Town of Bolton                        | 0                                      | 0                                                     | 0                             |
| Town of Brunswick                     | 0                                      | 0                                                     | 0                             |
| Town of Cerro Gordo                   | 0                                      | 0                                                     | 0                             |
| Town of Chadbourn                     | 1                                      | 0                                                     | 9                             |
| Town of Fair Bluff                    | 9                                      | 1                                                     | 20                            |
| Town of Lake Waccamaw                 | 10                                     | 0                                                     | 38                            |
| Town of Sandyfield                    | 0                                      | 0                                                     | 0                             |
| Town of Tabor City                    | 5                                      | 0                                                     | 16                            |
| <b>Columbus County Totals</b>         | <b>69</b>                              | <b>21</b>                                             | <b>223</b>                    |
| Robeson County (Unincorporated Area)  | 1                                      | 0                                                     | 2                             |
| City of Lumberton                     | 234                                    | 16                                                    | 542                           |
| Town of Fairmont                      | 1                                      | 0                                                     | 3                             |
| Town of Lumber Bridge                 | 0                                      | 0                                                     | 0                             |
| Town of Marietta                      | 0                                      | 0                                                     | 0                             |
| Town of Maxton                        | 10                                     | 0                                                     | 22                            |
| Town of McDonald                      | 0                                      | 0                                                     | 0                             |
| Town of Orrum                         | 2                                      | 0                                                     | 4                             |
| Town of Parkton                       | 0                                      | 0                                                     | 0                             |
| Town of Pembroke                      | 7                                      | 0                                                     | 15                            |
| Town of Proctorville                  | 0                                      | 0                                                     | 0                             |
| Town of Raynham                       | 0                                      | 0                                                     | 0                             |
| Town of Red Springs                   | 1                                      | 0                                                     | 2                             |



| Jurisdiction                 | Residential Repetitive Loss Properties | Non-Residential/Commercial Repetitive Loss Properties | Total Repetitive Losses Count |
|------------------------------|----------------------------------------|-------------------------------------------------------|-------------------------------|
| Town of Rennert              | 0                                      | 0                                                     | 0                             |
| Town of Rowland              | 11                                     | 0                                                     | 25                            |
| Town of Saint Pauls          | 2                                      | 0                                                     | 4                             |
| <b>Robeson County Totals</b> | <b>269</b>                             | <b>16</b>                                             | <b>619</b>                    |

Source: FEMA NFIP, December 2024

### 5.8.5 Probability of Future Occurrences

The probability of future inland flooding is shown in the table below, by jurisdiction.

#### Definitions for Descriptors Used for Probability of Future Hazard Occurrences

- Unlikely: Less than 1% annual probability of hazard
- Possible: Between 1% and 10% annual probability of hazard
- Likely: Between 10% and 100% annual probability of hazard
- Highly Likely: 100% annual probability of hazard

| Jurisdiction                          | Probability of Future Occurrence |
|---------------------------------------|----------------------------------|
| Bladen County (Unincorporated Area)   | Likely                           |
| Columbus County (Unincorporated Area) | Likely                           |
| Robeson County (Unincorporated Area)  | Likely                           |
| City of Lumberton                     | Likely                           |
| City of Whiteville                    | Likely                           |
| Town of Bladenboro                    | Likely                           |
| Town of Boardman                      | Likely                           |
| Town of Bolton                        | Likely                           |
| Town of Brunswick                     | Likely                           |
| Town of Cerro Gordo                   | Likely                           |
| Town of Chadbourn                     | Likely                           |
| Town of Clarkton                      | Likely                           |
| Town of Dublin                        | Likely                           |
| Town of East Arcadia                  | Likely                           |
| Town of Elizabethtown                 | Likely                           |
| Town of Fair Bluff                    | Likely                           |
| Town of Fairmont                      | Likely                           |
| Town of Lake Waccamaw                 | Likely                           |
| Town of Lumber Bridge                 | Likely                           |
| Town of Marietta                      | Likely                           |

| Jurisdiction         | Probability of Future Occurrence |
|----------------------|----------------------------------|
| Town of Maxton       | Likely                           |
| Town of McDonald     | Likely                           |
| Town of Orrum        | Likely                           |
| Town of Parkton      | Likely                           |
| Town of Pembroke     | Likely                           |
| Town of Proctorville | Likely                           |
| Town of Raynham      | Likely                           |
| Town of Red Springs  | Likely                           |
| Town of Rennert      | Likely                           |
| Town of Rowland      | Likely                           |
| Town of Saint Pauls  | Likely                           |
| Town of Sandyfield   | Likely                           |
| Town of Tabor City   | Likely                           |
| Town of Tar Heel     | Likely                           |
| Town of White Lake   | Likely                           |

Source: NCEM RMT & plan risk assessment

### 5.8.6 Consequence and Impact Analysis (Vulnerability)

#### Changing Future Conditions

Changing climatic patterns may translate to increasingly dangerous severe weather, stronger storms, and significant changes in rainfall which can all exacerbate flood risks across different regions. The 2020 North Carolina Climate Science Report notes that there is an upward trend in the number of heavy rainfall events (3 inches or more per day), with the last four years (2015-2018) demonstrating the greatest number of events since 1900. A warmer atmosphere also contributes to increased evaporation and greater atmospheric water availability when it rains. Current projections in the report indicate it is likely that annual total precipitation in North Carolina will increase and very likely for extreme precipitation frequency and intensity due to related increases in atmospheric water vapor content<sup>15</sup>. Additionally, greater intensity and frequency of flooding could also present a variety of extreme public health and emergency management challenges.

#### People

Certain health hazards are common to flood events. While such problems are often not reported, three general types of health hazards accompany floods. The first comes from the water itself. Floodwaters carry anything that was on the ground that the upstream runoff picked up, including dirt, oil, animal waste, and lawn, farm and industrial chemicals. Pastures and areas where farm animals are kept, or their wastes are stored can contribute polluted waters to the receiving streams. Floodwaters also saturate the ground, which leads to infiltration into sanitary sewer lines. When wastewater treatment plants are flooded, there is nowhere for the sewage to flow. Infiltration and lack of treatment can lead to overloaded sewer lines that can back up into low-lying areas and homes. Even when it is diluted by flood waters, raw sewage can be a breeding ground for bacteria such as E. coli and other pathogens.

<sup>15</sup> 2020 North Carolina Climate Science Report (<https://ncics.org/programs/nccsr/>)

The second type of health problem arises after most of the water has gone. Stagnant pools can become breeding grounds for mosquitoes, and wet areas of a building that have not been properly cleaned breed mold and mildew. A building that is not thoroughly cleaned becomes a health hazard, especially for small children and the elderly. Another health hazard occurs when heating ducts in a forced air system are not properly cleaned after inundation. When the furnace or air conditioner is turned on, the sediments left in the ducts are circulated throughout the building and breathed in by the occupants. If the local water system loses pressure, a boil order may be issued to avoid using contaminated water.

The third problem is the long-term psychological impact of having been through a flood and seeing one's home damaged and personal belongings destroyed. The cost and labor needed to repair a flood-damaged home puts a severe strain on people, especially the unprepared and uninsured. There is also a long-term problem for those who know that their homes can be flooded again. The resulting stress on floodplain residents takes its toll in the form of aggravated physical and mental health problems.

### **First Responders**

First responders are at risk when attempting to rescue people from their homes. They are subject to the same health hazards as the public mentioned above. Flood waters may prevent access to areas in need of response, or the flood may prevent access to the critical facilities which may prolong response time.

### **Continuity of Operations**

Floods can severely disrupt normal operations, especially when there is a loss of power. In 2018, Hurricane Florence caused major flooding in Lake Waccamaw that resulted in damages to their sewer treatment plant<sup>16</sup>. For a detailed analysis of critical facilities at risk to flooding, see **Chapter 6 Vulnerability Assessment**.

### **Built Environment**

Residential, commercial, and public buildings, as well as critical infrastructure such as transportation, water, energy, and communication systems may be damaged or destroyed by flood waters. For a detailed analysis of properties at risk to flooding, see **Chapter 6 Vulnerability Assessment**.

An example of flooding impacts on the Region's built environment followed in the aftermath of Hurricane Matthew, as the Dublin Fire Department and other areas of the town flooded. It was noted that farm fields resembled lakes, and roadways became rivers and streams<sup>17</sup>. Two men from Clarkton also died during Hurricane Matthew when their vehicle was submerged in flood waters near Rosendale Road<sup>18</sup>.

### **Economy**

During floods (especially flash floods), roads, bridges, farms, houses and automobiles are destroyed. Additionally, the local government must deploy firemen, police and other emergency response personnel and equipment to help the affected area. It may take years for the affected communities to be re-built and businesses to return to normal.

### **Natural Environment**

During a flood event, chemicals and other hazardous substances may end up contaminating local water bodies. Flooding kills animals and in general disrupts the ecosystem. Snakes and insects may also make their way to the flooded areas.

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<sup>16</sup> <https://www.wwaytv3.com/2020/05/29/heavy-rains-bring-flooding-concerns-to-columbus-county/>

<sup>17</sup> <https://bladenonline.com/hurricane-matthew-causing-flooding-throughout-bladen-county/>

<sup>18</sup> <https://www.cbs17.com/news/2-die-in-submerged-vehicle-in-nc-as-hurricane-matthew-impacts-state/>

## 5.9 Severe Weather (Thunderstorm Wind, Lightning & Hail)

### 5.9.1 Hazard Description

#### Thunderstorms

Thunderstorms result from the rapid upward movement of warm, moist air. They can occur inside warm, moist air masses and at fronts. As the warm, moist air moves upward, it cools, condenses, and forms cumulonimbus clouds that can reach heights greater than 35,000 ft. As the rising air reaches its dew point, water droplets and ice form and begin falling the long distance through the clouds towards Earth's surface. As the droplets fall, they collide with other droplets and become larger. The falling droplets create a downdraft of air that spreads out at Earth's surface and causes strong winds associated with thunderstorms.

There are four ways in which thunderstorms can organize: single cell, multi-cell cluster, multi-cell lines (squall lines), and supercells. Even though supercell thunderstorms are most frequently associated with severe weather phenomena, thunderstorms most frequently organize into clusters or lines. Warm, humid conditions are favorable for the development of thunderstorms. The average single cell thunderstorm is approximately 15 miles in diameter and lasts less than 30 minutes at a single location. However, thunderstorms, especially when organized into clusters or lines, can travel intact for distances exceeding 600 miles.

Thunderstorms are responsible for the development and formation of many severe weather phenomena, posing great hazards to the population and landscape. Damage that results from thunderstorms is mainly inflicted by downburst winds, large hailstones, and flash flooding caused by heavy precipitation. Stronger thunderstorms can produce tornadoes and waterspouts.

The NCEI divides wind events into several types including High Wind, Strong Wind, Thunderstorm Wind, Tornado and Hurricane. For the purpose of this severe weather risk assessment, the wind hazard will include data from High Wind, Strong Wind and Thunderstorm Wind. Hurricane Wind and Tornadoes are addressed as individual hazards. The following definitions come from the NCEI Storm Data Preparation document.

- High Wind – Sustained non-convective winds of 40mph or greater lasting for one hour or longer or winds (sustained or gusts) of 58 mph for any duration on a widespread or localized basis.
- Strong Wind – Non-convective winds gusting less than 58 mph, or sustained winds less than 40 mph, resulting in a fatality, injury, or damage.
- Thunderstorm Wind – Winds, arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 58 mph, or winds of any speed (non-severe thunderstorm winds below 58 mph) producing a fatality, injury or damage.

#### Lightning

Lightning is an electrical discharge between positive and negative regions of a thunderstorm. A lightning flash is composed of a series of strokes with an average of about four. The length and duration of each lightning stroke vary but typically average about 30 microseconds.

Lightning is one of the more dangerous weather hazards in the United States. Each year, lightning is responsible for deaths, injuries, and millions of dollars in property damage, including damage to buildings, communications systems, power lines, and electrical systems. Lightning also causes forest and brush fires, and deaths and injuries to livestock and other animals. According to the National Lightning Safety Institute, lightning causes more than 26,000 fires in the United States each year. The institute estimates property damage, increased operating costs, production delays, and lost revenue from lightning and secondary effects to be more than \$6 billion per year. Impacts can be direct or indirect. People or objects can be directly struck, or damage can occur indirectly when the current passes

through or near it.

### Hail

Hail is associated with thunderstorms that can also bring high winds and tornados. It forms when updrafts carry raindrops into extremely cold areas of the atmosphere where they freeze into ice. Hail falls when it becomes heavy enough to overcome the strength of the updraft and is pulled by gravity towards the earth. Hailstorms occur throughout the spring, summer, and fall in the region, but are more frequent in late spring and early summer. Hailstones are usually less than two inches in diameter and can fall at speeds of 120 mph. Hail causes nearly \$1 billion in damage to crops and property each year in the United States.

#### 5.9.2 Location and Spatial Extent

The entirety of the Region including all assets located within the Counties and each jurisdiction can be considered at risk to severe weather events. This includes the entire population and all critical facilities, buildings (commercial and residential), and infrastructure. Figures below show the locations for recorded thunderstorm and lightning events with data ranging from 1987 to present. Per the *National Weather Service Instruction 10-1605*, a lightning event is defined as a sudden electrical discharge from a thunderstorm, resulting in a fatality, injury, and/or damage, so each point represented on the map for event type “lightning” records an exact location of lightning strike/strikes that result in a fatality, injury, and/or damage. The same manual defines “thunderstorm winds” as winds arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 50 knots (58 mph), or winds of any speed (non-severe thunderstorm winds below 50 knots) producing a fatality, injury, or damage.



## Severe Thunderstorm Hazard Areas - Regional

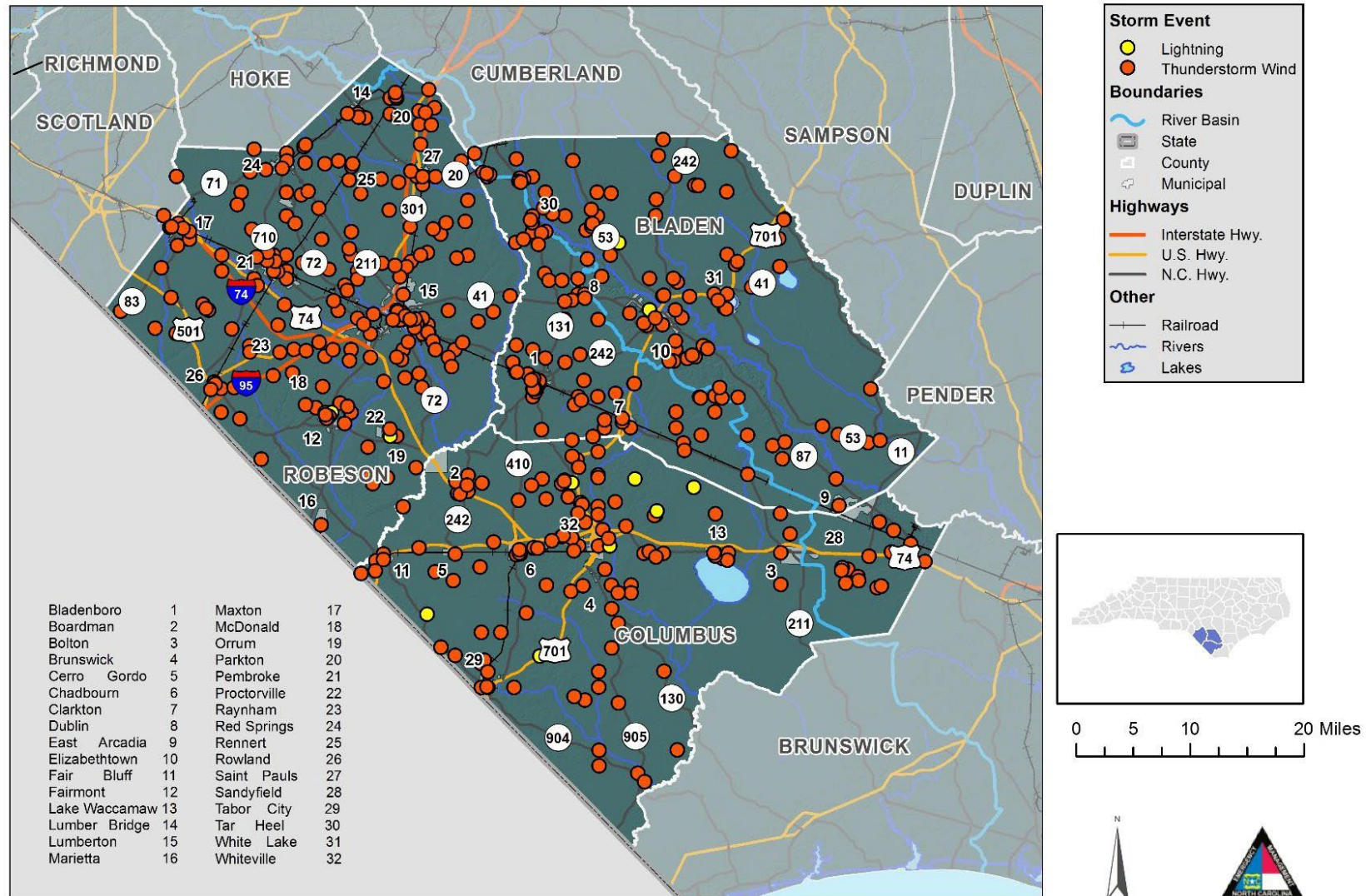


Figure 5-50: Severe Thunderstorm Hazard Areas - Regional



The figure below shows the average annual cloud-to-ground lightning strikes in the Region with “High” being > 100 strikes per year, “Medium” 99-50 strikes per year and “Low” being < 50 strikes per year.

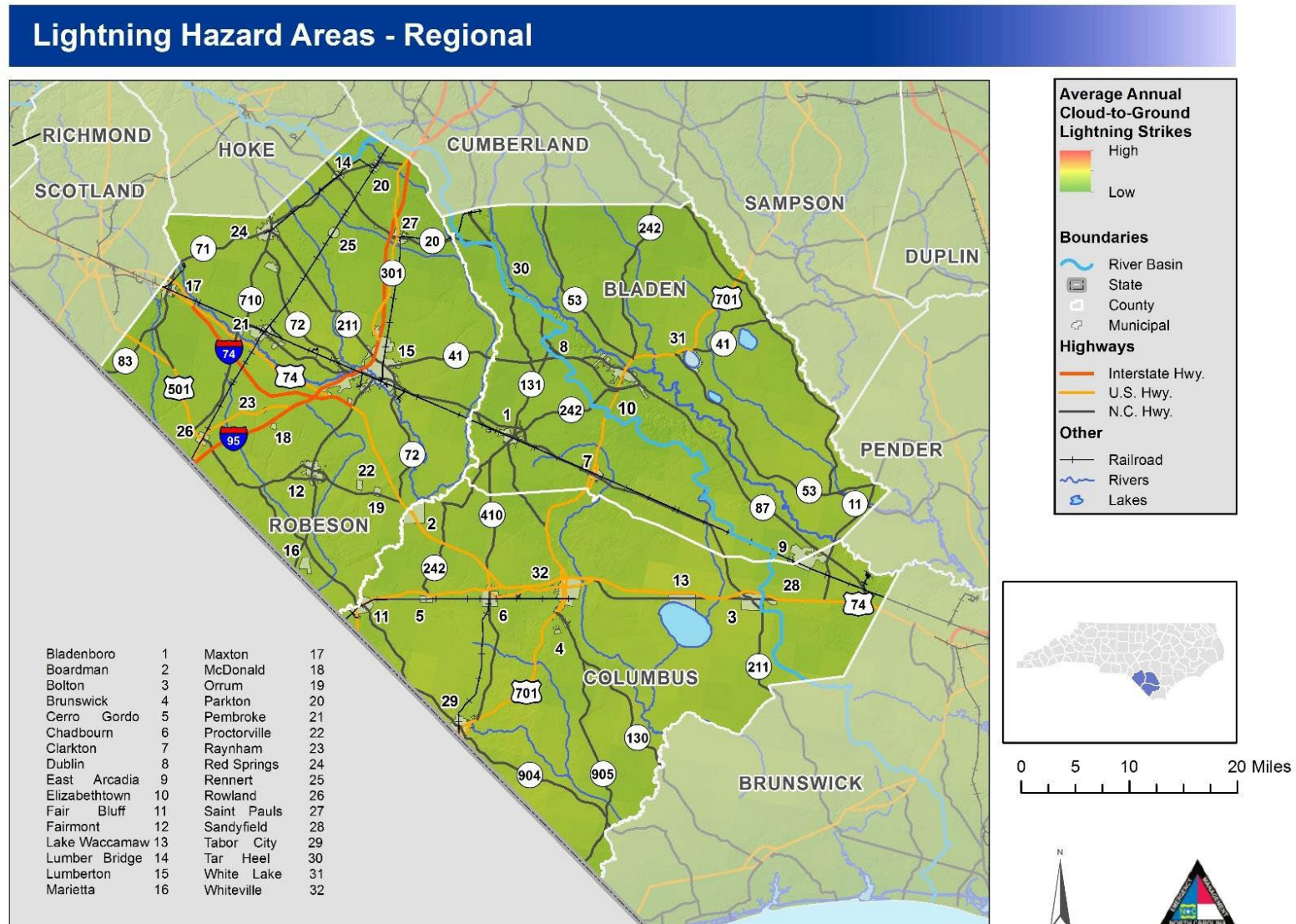


Figure 5-51: Lightning Hazard Areas - Regional

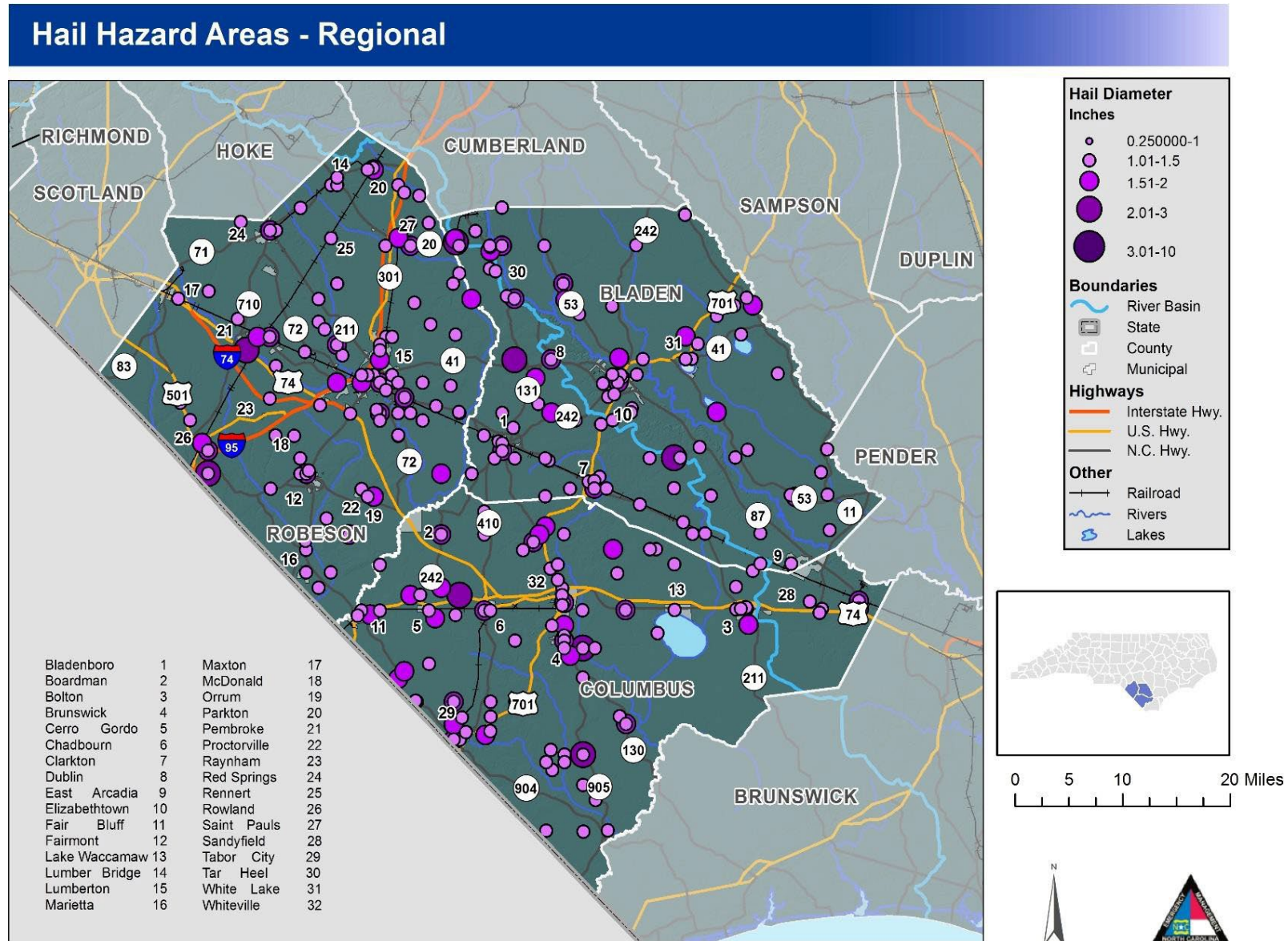


Figure 5-52: Hail Hazard Areas - Regional



## Severe Thunderstorm Hazard Areas - Bladen County

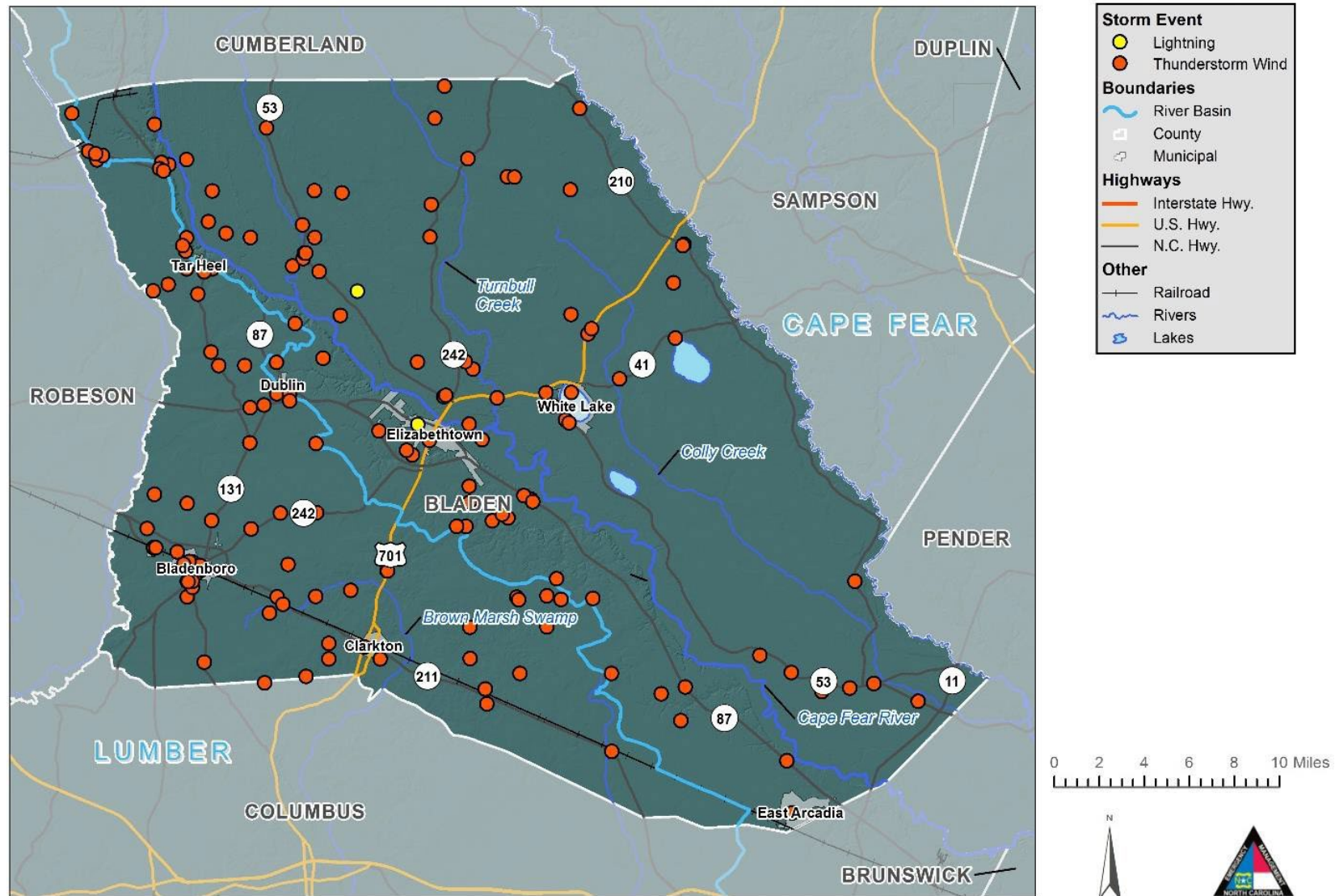


Figure 5-53: Severe Thunderstorm Hazard Areas – Bladen County

The figure below shows the average annual cloud-to-ground lightning strikes in the county with “High” being > 100 strikes per year, “Medium” 99-50 strikes per year and “Low” being < 50 strikes per year.

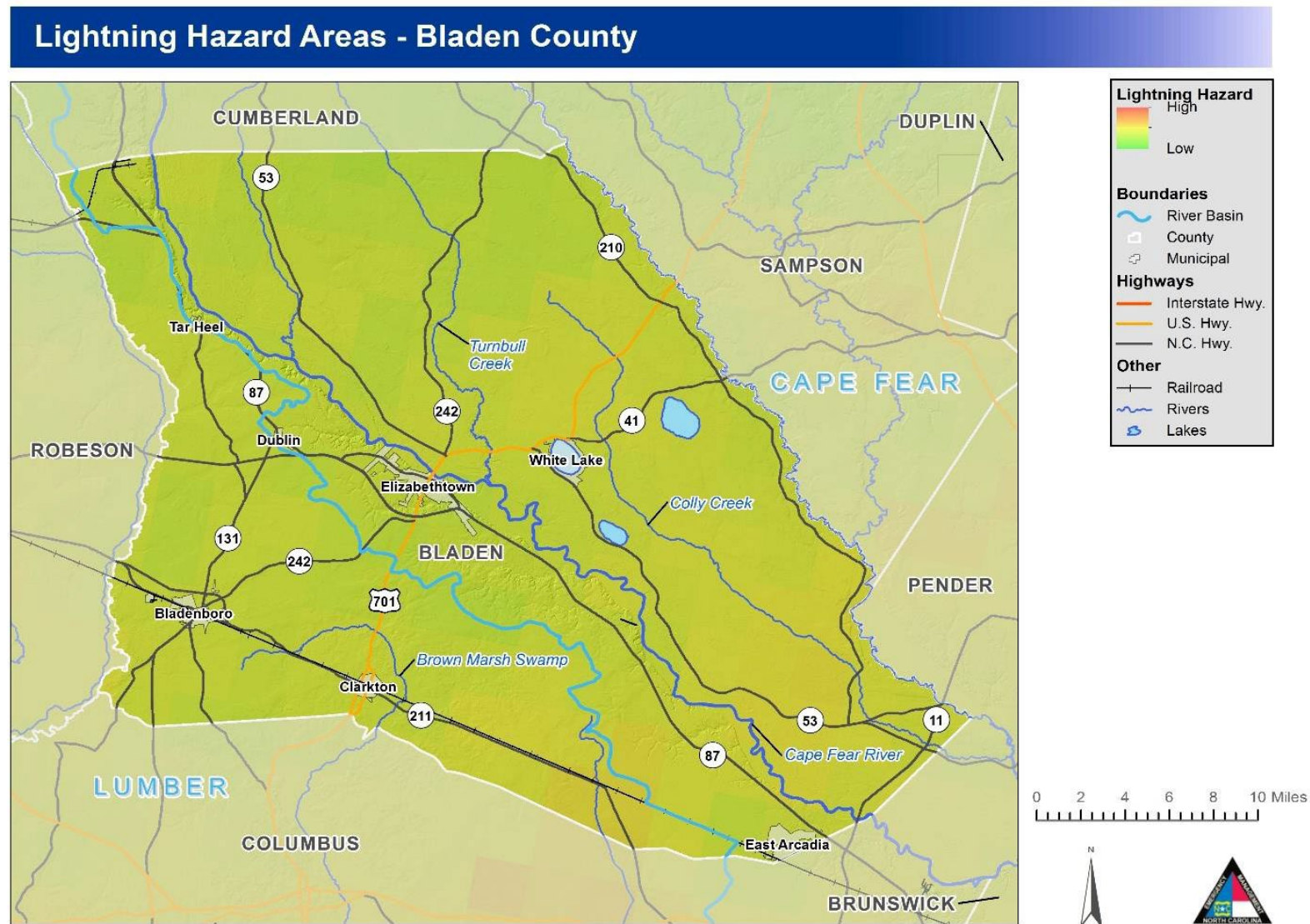


Figure 5-54: Lightning Hazard Areas – Bladen County



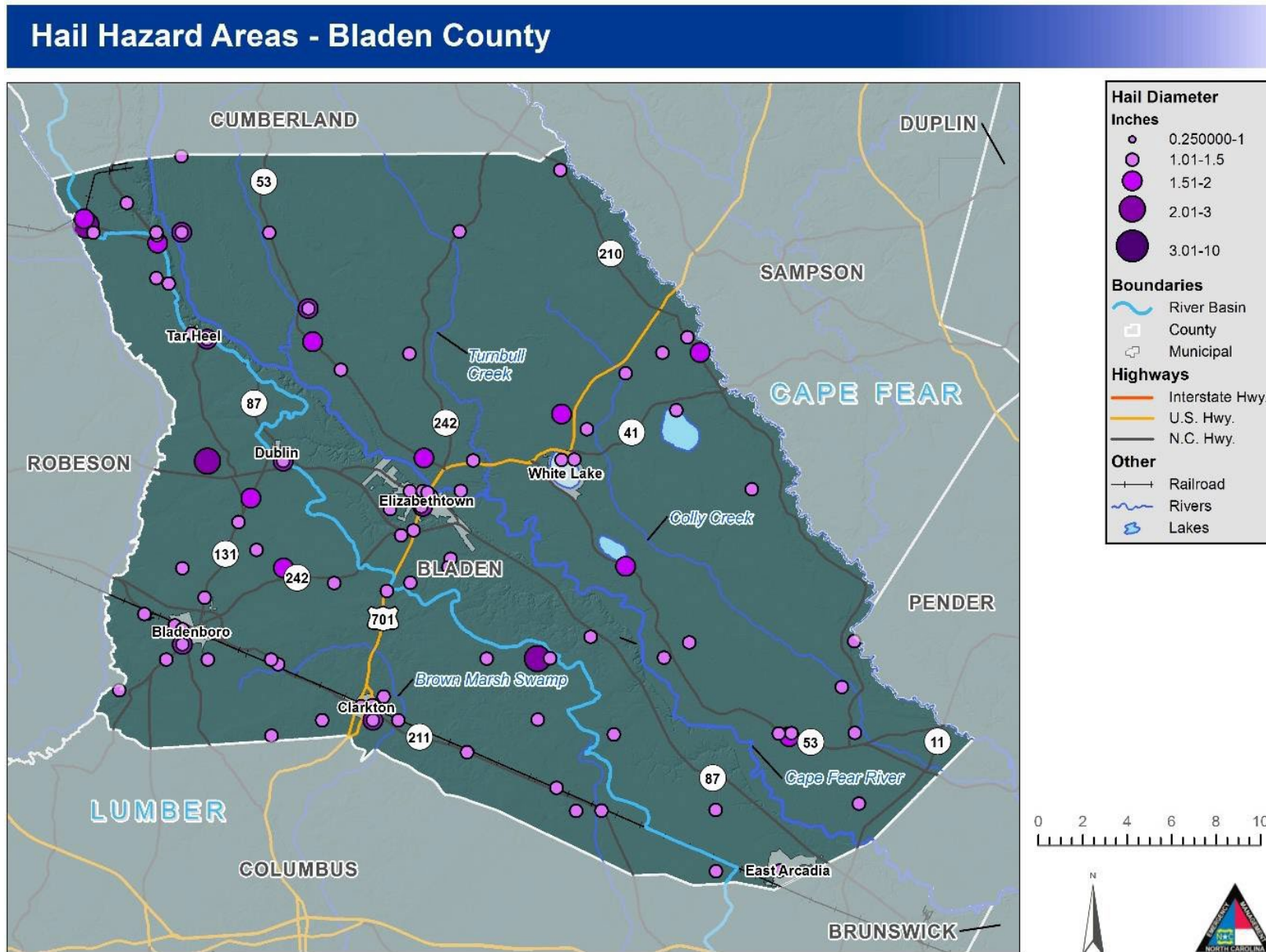


Figure 5-55: Hail Hazard Areas – Bladen County

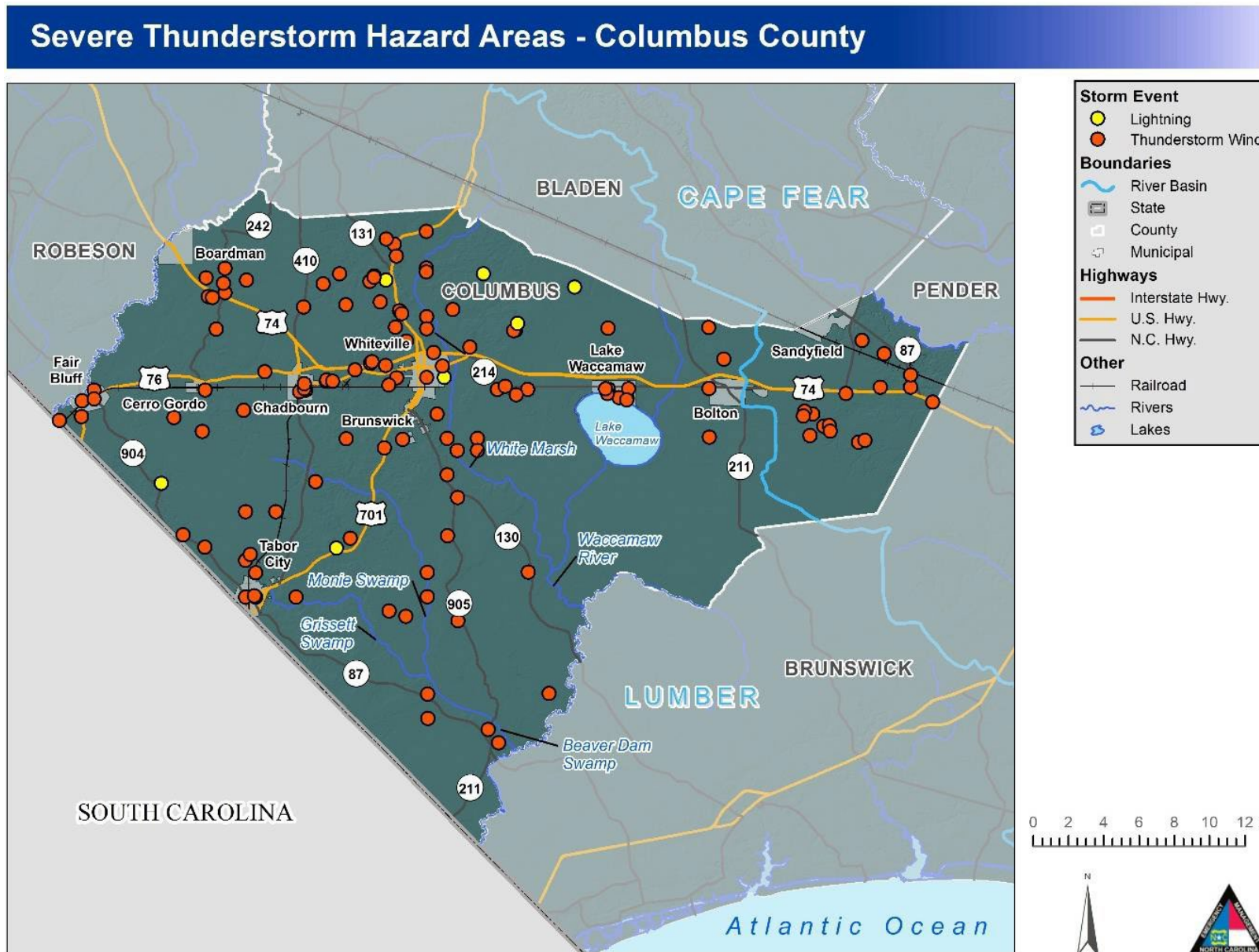


Figure 5-56: Severe Thunderstorm Hazard Areas – Columbus County



The figure below shows the average annual cloud-to-ground lightning strikes in the county with “High” being > 100 strikes per year, “Medium” 99-50 strikes per year and “Low” being < 50 strikes per year.

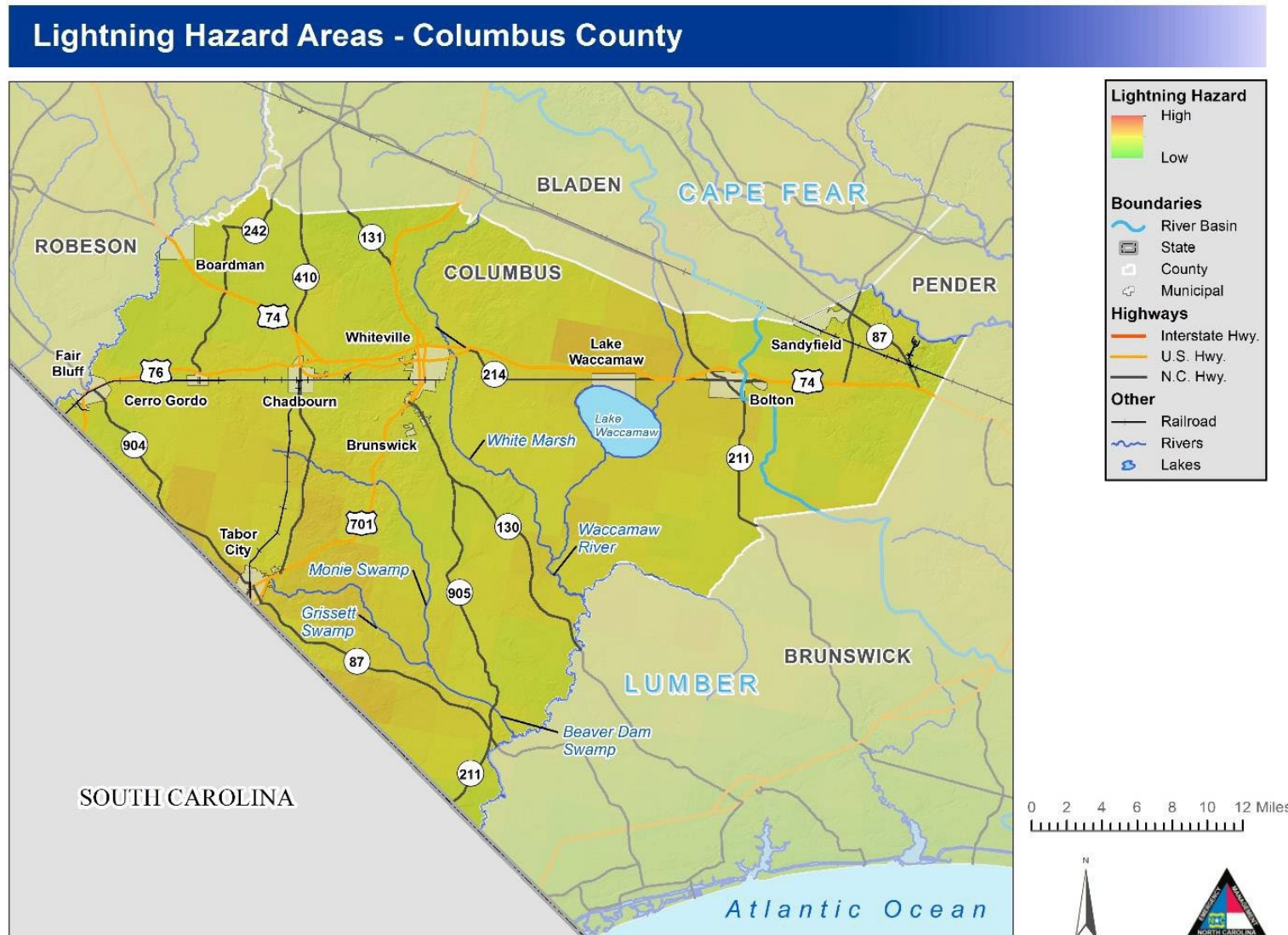


Figure 5-57: Lightning Hazard Areas – Columbus County

## Hail Hazard Areas - Columbus County

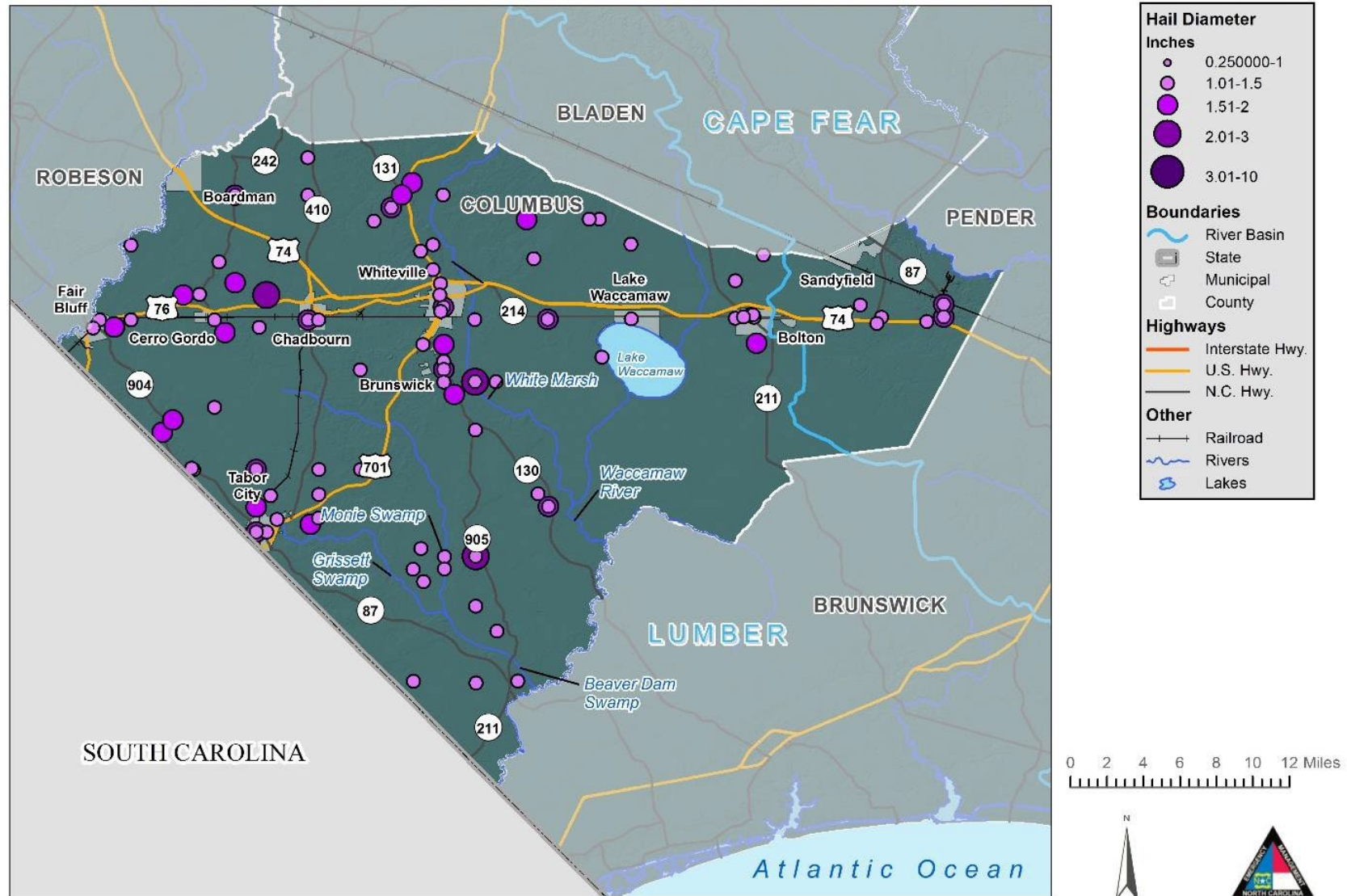


Figure 5-58: Hail Hazard Areas – Columbus County



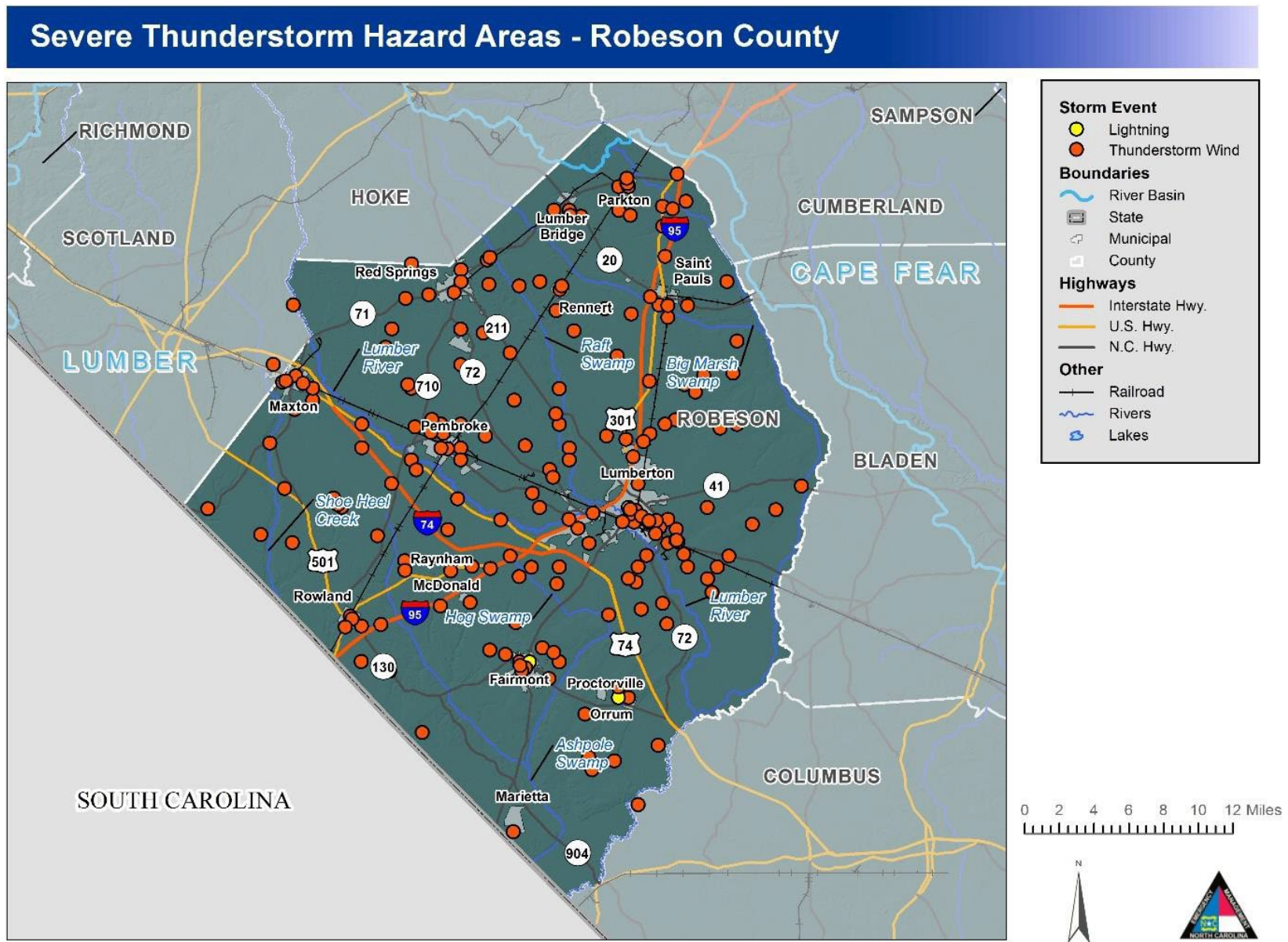


Figure 5-59: Severe Thunderstorm Hazard Areas – Robeson County

The figure below shows the average annual cloud-to-ground lightning strikes in the county with “High” being > 100 strikes per year, “Medium” 99-50 strikes per year and “Low” being < 50 strikes per year.

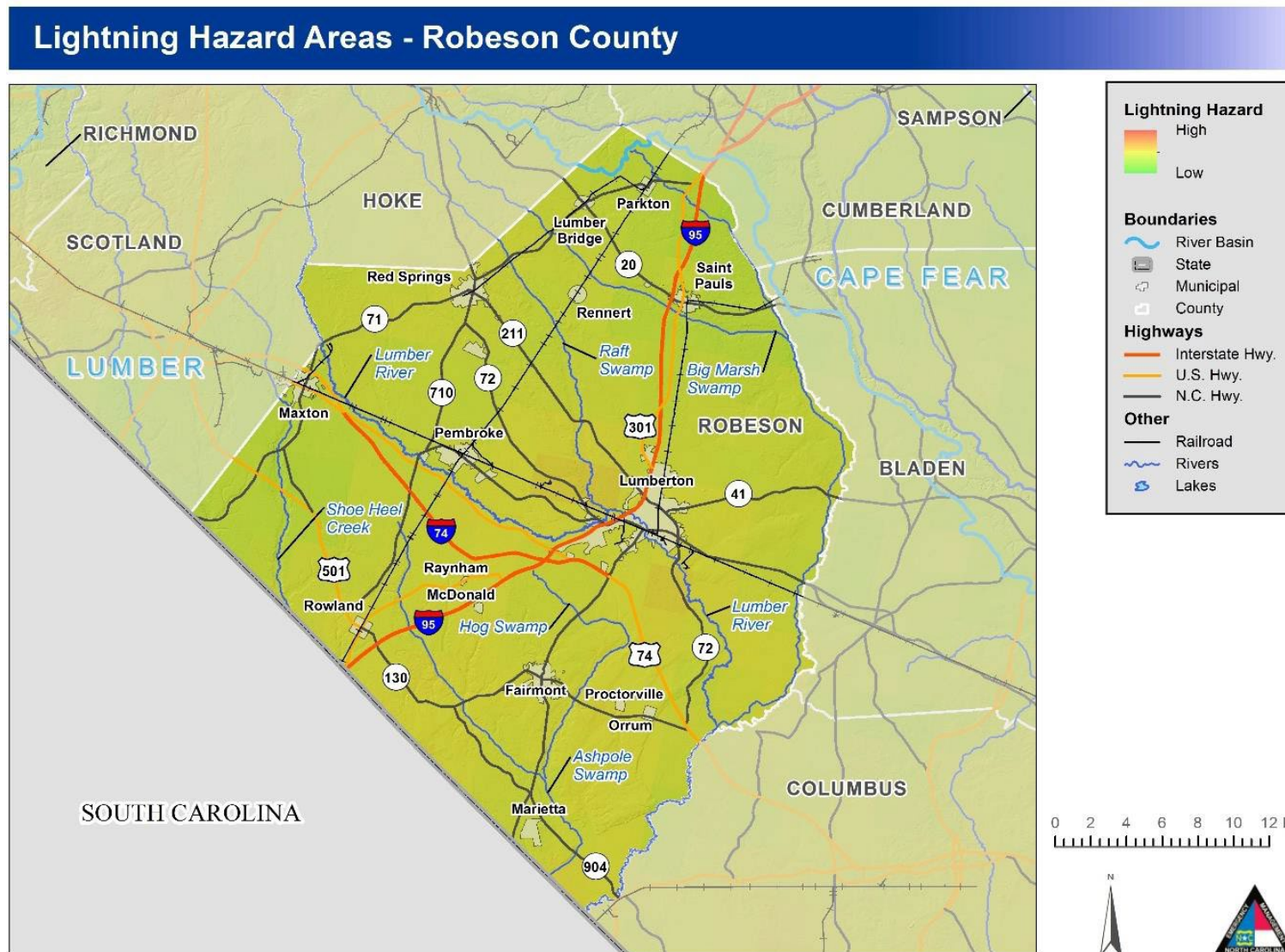


Figure 5-60: Lightning Hazard Areas – Robeson County



## Hail Hazard Areas - Robeson County

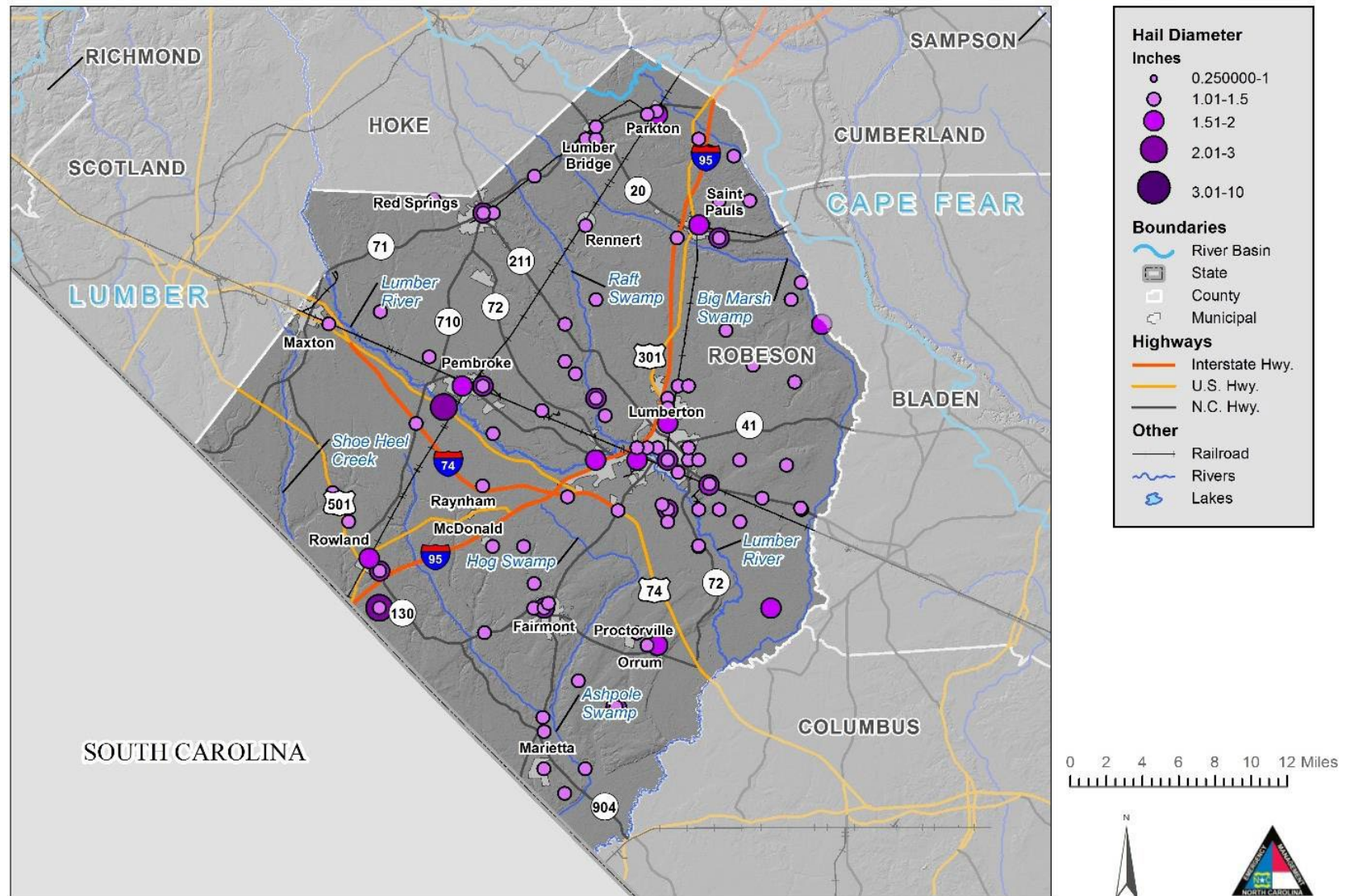


Figure 5-61: Hail Hazard Areas – Robeson County



Thunderstorm extent is defined by the number of thunder events and wind speeds reported. According to a 69-year history from NCEI, the strongest recorded wind event in the Region was reported on May 11, 2009, at 109 knots (approximately 125 mph). It should be noted that future events may exceed these historical occurrences.

**Table 5-19: NCEI Thunderstorm Wind Extent by Jurisdiction**

| Jurisdiction           | Date of Event | Magnitude |
|------------------------|---------------|-----------|
| <b>Bladen County</b>   |               |           |
| Bladen County          | 4/16/2011     | 70 kts    |
| Bladenboro             | 6/15/2009     | 78 kts    |
| Clarkton               | 9/6/1999      | 75 kts    |
| Dublin                 | 4/1/2001      | 70 kts    |
| East Arcadia           | 4/28/2011     | 56 kts    |
| Elizabethtown          | 4/16/2011     | 70 kts    |
| Tar Heel               | 7/31/1998     | 65 kts    |
| White Lake             | 6/3/2000      | 65 kts    |
| <b>Columbus County</b> |               |           |
| Whiteville             | 4/17/2006     | 70 kts    |
| Columbus County        | 6/15/1998     | 75 kts    |
| Boardman               | No Data       | No Data   |
| Bolton                 | 4/3/2006      | 60 kts    |
| Brunswick              | 4/19/2019     | 52 kts    |
| Cerro Gordo            | 10/23/2017    | 52 kts    |
| Chadbourn              | 1/17/2013     | 65 kts    |
| Fair Bluff             | 5/4/2009      | 52 kts    |
| Lake Waccamaw          | 6/4/1998      | 70 kts    |
| Sandyfield             | No Data       | No Data   |
| Tabor City             | 3/8/2005      | 70 kts    |
| <b>Robeson County</b>  |               |           |
| Lumberton              | 5/31/2003     | 70 kts    |
| Robeson County         | 5/11/2009     | 109 kts   |
| Fairmont               | 6/14/2002     | 70 kts    |
| Lumber Bridge          | 5/27/1998     | 70 kts    |
| Marietta               | 6/26/2013     | 50 kts    |
| Maxton                 | 3/16/2002     | 90 kts    |
| Mcdonald               | No Data       | No Data   |

| Jurisdiction | Date of Event | Magnitude |
|--------------|---------------|-----------|
| Orrum        | 6/29/2010     | 52 kts    |
| Parkton      | 5/30/2019     | 61 kts    |
| Pembroke     | 5/2/2003      | 70 kts    |
| Proctorville | 11/16/2011    | 50 kts    |
| Raynham      | 5/11/2009     | 61 kts    |
| Red Springs  | 4/1/2001      | 78 kts    |
| Rennert      | 5/16/2010     | 52 kts    |
| Rowland      | 4/16/2011     | 65 kts    |
| Saint Pauls  | 2/21/2014     | 52 kts    |

\*Magnitude is depicted in knots

### 5.9.3 Past Occurrences

**Table 5-20** shows details for severe weather events reported by NCEI since 2009 for the Region. There have been over 500 recorded events causing 4 injuries and over \$2M in property damage.

Table 5-20: Historical Severe Weather Occurrences (2009-2025)

| Location                            | Date    | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|-------------------------------------|---------|-------------------|------------|--------|----------|--------------------------|----------------------|
| <b>Bladen County</b>                |         |                   |            |        |          |                          |                      |
| Bladen County (Unincorporated Area) | 6/15/09 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/10/10 | Hail              | 1.00 in.   | 0      | 0        | \$3,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/13/11 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/13/11 | Hail              | 1.25 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/30/11 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/27/13 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/27/13 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 5/27/14 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$6,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 4/20/24 | Hail              | 1.25 in.   | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 6/15/09 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/20/10 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$2,000              |
| Bladen County (Unincorporated Area) | 6/19/11 | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 5/9/12  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/10/13 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$7,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/13/13 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/13/13 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/15/16 | Thunderstorm Wind | 65 kts. EG | 0      | 0        | \$12,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 3/1/17  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 4/26/19 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 5/8/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 6/15/09 | Thunderstorm Wind | 78 kts. EG | 0      | 1        | \$48,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 7/5/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 3/22/12 | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Bladen County (Unincorporated Area) | 3/22/12 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/10/13 | Hail              | 0.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 7/13/15 | Hail              | 1.00 in.   | 0      | 0        | \$750                    | \$0                  |
| Bladen County (Unincorporated Area) | 7/5/11  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,000                  | \$0                  |

## Hazard Profiles

| Location                            | Date    | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|-------------------------------------|---------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Bladen County (Unincorporated Area) | 9/3/13  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 8/5/15  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 4/19/19 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/23/19 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 1/3/22  | Thunderstorm Wind | 52 kts. MG | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 4/20/09 | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 5/4/09  | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 6/29/10 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$7,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/13/11 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/13/11 | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 8/20/11 | Lightning         |            | 0      | 0        | \$5,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/27/13 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 5/27/14 | Thunderstorm Wind | 54 kts. EG | 0      | 0        | \$2,500                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/18/15 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/23/15 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 4/19/19 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$10,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 1/3/22  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 1/9/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$500                |
| Bladen County (Unincorporated Area) | 5/15/24 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 4/20/09 | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 1/25/10 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/24/14 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$10,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 6/24/15 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 5/29/09 | Hail              | 0.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 7/29/13 | Thunderstorm Wind | 53 kts. MG | 0      | 0        | \$500                    | \$0                  |
| Bladen County (Unincorporated Area) | 7/29/13 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,500                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/29/13 | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 8/6/15  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 2/24/16 | Thunderstorm Wind | 56 kts. MG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 5/3/16  | Hail              | 1.75 in.   | 0      | 0        | \$1,000                  | \$0                  |

## Hazard Profiles

| Location                            | Date     | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|-------------------------------------|----------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Bladen County (Unincorporated Area) | 5/8/24   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 6/22/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$6,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/22/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/1/12   | Thunderstorm Wind | 54 kts. EG | 0      | 0        | \$1,500                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/1/12   | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/13/13  | Hail              | 1.25 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/13/13  | Hail              | 1.25 in.   | 0      | 0        | \$1,500                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/13/13  | Hail              | 1.25 in.   | 0      | 0        | \$1,500                  | \$0                  |
| Bladen County (Unincorporated Area) | 4/28/14  | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Bladen County (Unincorporated Area) | 7/10/14  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/9/15   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 8/26/15  | Thunderstorm Wind | 65 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 1/9/24   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 4/12/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 4/12/24  | Thunderstorm Wind | 53 kts. MG | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 5/15/24  | Hail              | 1.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 12/26/12 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 4/14/09  | Hail              | 0.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 6/16/10  | Hail              | 0.88 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/27/11  | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 8/19/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$750                    | \$0                  |
| Bladen County (Unincorporated Area) | 3/25/12  | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/1/12   | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/1/12   | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 8/2/12   | Hail              | 1.75 in.   | 0      | 0        | \$3,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 9/18/12  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/8/16   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/24/18  | Thunderstorm Wind | 60 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/24/18  | Thunderstorm Wind | 60 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 9/9/19   | Hail              | 1.00 in.   | 0      | 0        | \$0                      | \$0                  |



## Hazard Profiles

| Location                            | Date     | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|-------------------------------------|----------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Bladen County (Unincorporated Area) | 12/11/23 | Thunderstorm Wind | 51 kts. MG | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 6/14/17  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/7/23   | Lightning         |            | 0      | 0        | \$0                      | \$500,000            |
| Bladen County (Unincorporated Area) | 4/20/09  | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 6/1/09   | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 1/25/10  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$6,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/22/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 6/22/11  | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/1/12   | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/1/12   | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/7/23   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 5/15/24  | Hail              | 2.75 in.   | 0      | 0        | \$4,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 5/15/24  | Hail              | 1.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 4/6/09   | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$10,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 5/16/22  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 7/13/11  | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 5/22/12  | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 7/8/10   | Hail              | 0.75 in.   | 0      | 0        | \$500                    | \$0                  |
| Bladen County (Unincorporated Area) | 6/22/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/9/13   | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$15,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 9/3/13   | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,500                  | \$0                  |
| Bladen County (Unincorporated Area) | 5/3/16   | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$8,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 5/3/16   | Hail              | 1.75 in.   | 0      | 0        | \$1,500                  | \$0                  |
| Bladen County (Unincorporated Area) | 5/3/16   | Hail              | 2.50 in.   | 0      | 0        | \$5,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 4/15/18  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 4/15/18  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 4/15/18  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 4/15/18  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$10,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 4/19/19  | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 7/18/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |

## Hazard Profiles

| Location                            | Date    | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|-------------------------------------|---------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Bladen County (Unincorporated Area) | 6/15/09 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 8/22/09 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 8/22/09 | Thunderstorm Wind | 54 kts. EG | 0      | 0        | \$20,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 8/22/09 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 9/3/13  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 4/28/14 | Lightning         |            | 0      | 0        | \$25,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 4/28/14 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$250                    | \$0                  |
| Bladen County (Unincorporated Area) | 4/28/14 | Hail              | 1.75 in.   | 0      | 0        | \$3,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 4/28/14 | Hail              | 1.00 in.   | 0      | 0        | \$1,500                  | \$0                  |
| Bladen County (Unincorporated Area) | 4/13/20 | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$10,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 1/9/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Bladenboro                  | 6/26/09 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$30,000                 | \$0                  |
| Town of Bladenboro                  | 6/29/10 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Bladenboro                  | 2/24/12 | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Town of Bladenboro                  | 3/22/12 | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Town of Bladenboro                  | 3/22/12 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Bladenboro                  | 3/22/12 | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Town of Bladenboro                  | 5/22/12 | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Town of Bladenboro                  | 6/27/13 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Bladenboro                  | 9/3/13  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Town of Bladenboro                  | 9/3/13  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Bladenboro                  | 6/27/15 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Town of Bladenboro                  | 5/31/19 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$10,000                 | \$0                  |
| Town of Bladenboro                  | 5/22/20 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$500                    | \$0                  |
| Town of Bladenboro                  | 5/29/21 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Bladenboro                  | 8/1/21  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Bladenboro                  | 1/3/22  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Dublin                      | 5/4/09  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Dublin                      | 5/14/11 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Dublin                      | 4/26/12 | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |

## Hazard Profiles

| Location              | Date    | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|-----------------------|---------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Town of Dublin        | 7/1/12  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Dublin        | 7/5/12  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Dublin        | 6/10/13 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Dublin        | 1/11/14 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Dublin        | 2/21/14 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Dublin        | 6/9/15  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Dublin        | 5/2/16  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Dublin        | 3/18/17 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Dublin        | 4/19/19 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Town of Dublin        | 4/12/24 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Dublin        | 5/8/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Dublin        | 5/8/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of East Arcadia  | 4/28/11 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$10,000                 | \$0                  |
| Town of Elizabethtown | 5/29/09 | Hail              | 1.00 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Elizabethtown | 5/29/09 | Hail              | 1.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Elizabethtown | 5/29/09 | Hail              | 1.00 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Elizabethtown | 6/1/09  | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Elizabethtown | 4/16/11 | Thunderstorm Wind | 70 kts. EG | 0      | 0        | \$60,000                 | \$0                  |
| Town of Elizabethtown | 6/22/11 | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Town of Elizabethtown | 7/13/11 | Lightning         |            | 0      | 0        | \$20,000                 | \$0                  |
| Town of Elizabethtown | 8/19/11 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$4,500                  | \$0                  |
| Town of Elizabethtown | 3/24/12 | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Town of Elizabethtown | 6/1/12  | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Town of Elizabethtown | 7/1/12  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Elizabethtown | 8/2/12  | Hail              | 0.88 in.   | 0      | 0        | \$500                    | \$0                  |
| Town of Elizabethtown | 8/2/12  | Hail              | 1.00 in.   | 0      | 0        | \$3,000                  | \$0                  |
| Town of Elizabethtown | 2/21/14 | Thunderstorm Wind | 54 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Town of Elizabethtown | 4/28/14 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Elizabethtown | 4/28/14 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Elizabethtown | 4/28/14 | Hail              | 1.75 in.   | 0      | 0        | \$3,000                  | \$0                  |

## Hazard Profiles

| Location              | Date    | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|-----------------------|---------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Town of Elizabethtown | 4/28/14 | Hail              | 0.75 in.   | 0      | 0        | \$200                    | \$0                  |
| Town of Elizabethtown | 6/27/15 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Town of Elizabethtown | 3/1/17  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Elizabethtown | 3/18/17 | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Town of Elizabethtown | 6/24/18 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$10,000                 | \$0                  |
| Town of Elizabethtown | 5/7/21  | Hail              | 1.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Elizabethtown | 5/7/21  | Hail              | 1.00 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Elizabethtown | 5/7/21  | Hail              | 2.00 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Elizabethtown | 1/9/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$15,000                 | \$15,000             |
| Town of Tar Heel      | 6/25/10 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Tar Heel      | 7/1/12  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Tar Heel      | 9/3/13  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Tar Heel      | 9/3/13  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$18,000                 | \$0                  |
| Town of Tar Heel      | 2/21/14 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Town of Tar Heel      | 5/27/14 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Tar Heel      | 5/3/16  | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Town of White Lake    | 6/18/11 | Thunderstorm Wind | 51 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Town of White Lake    | 6/22/11 | Hail              | 1.75 in.   | 0      | 0        | \$3,000                  | \$0                  |
| Town of White Lake    | 7/13/11 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Town of White Lake    | 5/16/12 | Hail              | 1.00 in.   | 0      | 0        | \$250                    | \$0                  |
| Town of White Lake    | 7/1/12  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of White Lake    | 7/1/12  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Town of White Lake    | 6/10/13 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Town of White Lake    | 2/21/14 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of White Lake    | 6/19/14 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of White Lake    | 6/19/14 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Town of White Lake    | 5/21/15 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of White Lake    | 8/6/15  | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$50,000                 | \$0                  |
| Town of White Lake    | 8/6/15  | Hail              | 1.25 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Town of White Lake    | 5/7/21  | Hail              | 1.00 in.   | 0      | 0        | \$0                      | \$0                  |

## Hazard Profiles

| Location               | Date              | Type              | Mag        | Deaths   | Injuries | Reported Property Damage | Reported Crop Damage |
|------------------------|-------------------|-------------------|------------|----------|----------|--------------------------|----------------------|
| Town of White Lake     | 1/9/24            | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$0                      | \$0                  |
| Town of White Lake     | 4/12/24           | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$0                      | \$0                  |
| Town of White Lake     | 5/10/24           | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$0                      | \$0                  |
| Town of White Lake     | 5/10/24           | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$0                      | \$0                  |
| Town of White Lake     | 7/15/24           | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$0                      | \$0                  |
| <b>Subtotal Bladen</b> | <b>212 Events</b> |                   |            | <b>0</b> | <b>1</b> | <b>\$691,700</b>         | <b>\$517,500</b>     |
| <b>Columbus County</b> |                   |                   |            |          |          |                          |                      |
| City of Whiteville     | 4/20/09           | Hail              | 0.75 in.   | 0        | 0        | \$0                      | \$0                  |
| City of Whiteville     | 5/11/09           | Hail              | 0.75 in.   | 0        | 0        | \$0                      | \$0                  |
| City of Whiteville     | 6/15/09           | Thunderstorm Wind | 54 kts. EG | 0        | 0        | \$3,000                  | \$0                  |
| City of Whiteville     | 6/26/09           | Thunderstorm Wind | 50 kts. MG | 0        | 0        | \$1,000                  | \$0                  |
| City of Whiteville     | 4/5/11            | Thunderstorm Wind | 56 kts. EG | 0        | 0        | \$4,000                  | \$0                  |
| City of Whiteville     | 4/16/11           | Hail              | 1.00 in.   | 0        | 0        | \$500                    | \$0                  |
| City of Whiteville     | 4/28/11           | Hail              | 1.75 in.   | 0        | 0        | \$3,000                  | \$0                  |
| City of Whiteville     | 5/10/11           | Hail              | 1.00 in.   | 0        | 0        | \$1,000                  | \$0                  |
| City of Whiteville     | 5/10/11           | Hail              | 1.00 in.   | 0        | 0        | \$1,000                  | \$0                  |
| City of Whiteville     | 6/27/11           | Lightning         |            | 0        | 0        | \$1,000                  | \$0                  |
| City of Whiteville     | 6/27/11           | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$0                      | \$0                  |
| City of Whiteville     | 8/14/11           | Lightning         |            | 0        | 1        | \$0                      | \$0                  |
| City of Whiteville     | 5/9/12            | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| City of Whiteville     | 6/1/12            | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| City of Whiteville     | 6/1/12            | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| City of Whiteville     | 5/27/14           | Thunderstorm Wind | 54 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| City of Whiteville     | 5/27/14           | Thunderstorm Wind | 54 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| City of Whiteville     | 6/22/15           | Hail              | 0.75 in.   | 0        | 0        | \$500                    | \$0                  |
| City of Whiteville     | 6/22/15           | Hail              | 1.00 in.   | 0        | 0        | \$1,000                  | \$0                  |
| City of Whiteville     | 6/24/15           | Hail              | 1.00 in.   | 0        | 0        | \$500                    | \$0                  |
| City of Whiteville     | 7/23/15           | Thunderstorm Wind | 52 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| City of Whiteville     | 7/23/15           | Thunderstorm Wind | 52 kts. EG | 0        | 0        | \$1,000                  | \$0                  |



## Hazard Profiles

| Location                              | Date     | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|---------------------------------------|----------|-------------------|------------|--------|----------|--------------------------|----------------------|
| City of Whiteville                    | 7/23/15  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$700                    | \$0                  |
| City of Whiteville                    | 5/3/16   | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| City of Whiteville                    | 5/3/16   | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |
| City of Whiteville                    | 5/3/16   | Hail              | 1.00 in.   | 0      | 0        | \$0                      | \$0                  |
| City of Whiteville                    | 5/3/16   | Hail              | 0.88 in.   | 0      | 0        | \$250                    | \$0                  |
| City of Whiteville                    | 6/5/16   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| City of Whiteville                    | 7/7/16   | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| City of Whiteville                    | 10/23/17 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| City of Whiteville                    | 10/23/17 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$15,000                 | \$0                  |
| City of Whiteville                    | 3/1/18   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| City of Whiteville                    | 1/3/22   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| City of Whiteville                    | 1/9/24   | Thunderstorm Wind | 60 kts. EG | 0      | 0        | \$10,000                 | \$0                  |
| City of Whiteville                    | 5/10/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 4/5/11   | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$6,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 4/19/19  | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 12/2/09  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 6/18/15  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/8/24   | Hail              | 1.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 5/15/12  | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 4/19/19  | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$10,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 6/26/09  | Thunderstorm Wind | 55 kts. EG | 0      | 0        | \$100,000                | \$0                  |
| Columbus County (Unincorporated Area) | 8/21/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 3/1/18   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/10/11  | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/11/09  | Thunderstorm Wind | 51 kts. MG | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 4/28/11  | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 4/28/11  | Hail              | 2.00 in.   | 0      | 0        | \$5,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 7/13/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 4/26/12  | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/9/12   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |

## Hazard Profiles

| Location                              | Date    | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|---------------------------------------|---------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Columbus County (Unincorporated Area) | 8/2/12  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$12,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 1/17/13 | Thunderstorm Wind | 65 kts. EG | 0      | 0        | \$30,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 6/18/13 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 8/5/15  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 8/5/15  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 8/5/15  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 8/23/17 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 1/3/22  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 1/9/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$500                |
| Columbus County (Unincorporated Area) | 4/14/09 | Hail              | 1.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 5/22/12 | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Columbus County (Unincorporated Area) | 7/6/16  | Lightning         |            | 0      | 0        | \$10,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 6/1/12  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 6/10/13 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 7/23/12 | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 6/2/18  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 5/8/24  | Hail              | 1.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 7/13/11 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 8/2/12  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 7/7/16  | Thunderstorm Wind | 54 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 4/28/11 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 6/22/11 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 9/3/13  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 1/11/14 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 6/18/15 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/3/16  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 7/11/16 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 1/9/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$500                |
| Columbus County (Unincorporated Area) | 5/10/24 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 5/10/24 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |

## Hazard Profiles

| Location                              | Date    | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|---------------------------------------|---------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Columbus County (Unincorporated Area) | 7/1/12  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 7/1/12  | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/21/15 | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/21/15 | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/21/15 | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$8,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/21/15 | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$8,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/21/15 | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$6,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/21/15 | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/21/15 | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/21/15 | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/21/15 | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$8,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 4/28/11 | Hail              | 2.75 in.   | 0      | 0        | \$5,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 6/10/13 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/29/14 | Hail              | 1.00 in.   | 0      | 0        | \$250                    | \$0                  |
| Columbus County (Unincorporated Area) | 6/24/15 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 1/9/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$500                |
| Columbus County (Unincorporated Area) | 5/5/09  | Lightning         |            | 0      | 0        | \$20,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 7/1/12  | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Columbus County (Unincorporated Area) | 6/26/13 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,500                  | \$0                  |
| Columbus County (Unincorporated Area) | 6/18/15 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 9/29/20 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 6/15/21 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 6/15/21 | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 5/10/11 | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 5/22/12 | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 7/15/14 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 7/15/14 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/16/22 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 1/9/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$1,000              |
| Columbus County (Unincorporated Area) | 6/22/19 | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$5,000                  | \$0                  |

## Hazard Profiles

| Location                              | Date     | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|---------------------------------------|----------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Columbus County (Unincorporated Area) | 8/10/23  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 8/21/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$500                    | \$0                  |
| Columbus County (Unincorporated Area) | 4/20/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 6/23/11  | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/28/17  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/15/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 10/23/17 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 4/27/12  | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 6/23/11  | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$10,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 3/24/12  | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Columbus County (Unincorporated Area) | 7/7/16   | Thunderstorm Wind | 54 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 4/14/09  | Hail              | 1.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 7/11/16  | Hail              | 1.00 in.   | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 7/11/16  | Thunderstorm Wind | 54 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/16/22  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 5/3/16   | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Columbus County (Unincorporated Area) | 5/10/11  | Hail              | 1.75 in.   | 0      | 0        | \$5,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/10/11  | Hail              | 1.75 in.   | 0      | 0        | \$5,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 6/27/11  | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Columbus County (Unincorporated Area) | 7/13/11  | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/9/12   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 7/23/12  | Lightning         |            | 0      | 0        | \$5,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 8/11/12  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 7/11/16  | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 9/9/19   | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 5/10/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 4/27/12  | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 9/8/12   | Lightning         |            | 0      | 0        | \$5,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 6/24/18  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$500                    | \$0                  |
| Columbus County (Unincorporated Area) | 6/23/12  | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |

## Hazard Profiles

| Location                              | Date     | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|---------------------------------------|----------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Columbus County (Unincorporated Area) | 7/19/16  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 6/1/09   | Hail              | 1.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 5/15/12  | Hail              | 0.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 8/15/22  | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 7/26/23  | Lightning         |            | 0      | 1        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 5/28/17  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 6/24/18  | Thunderstorm Wind | 55 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Columbus County (Unincorporated Area) | 6/24/18  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$500                    | \$0                  |
| Columbus County (Unincorporated Area) | 8/7/23   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Boardman                      | 1/9/24   | Thunderstorm Wind | 65 kts. EG | 0      | 0        | \$3,000                  | \$1,000              |
| Town of Boardman                      | 1/9/24   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$500                |
| Town of Bolton                        | 9/30/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,500                  | \$0                  |
| Town of Bolton                        | 5/22/12  | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Town of Bolton                        | 5/22/12  | Hail              | 0.88 in.   | 0      | 0        | \$250                    | \$0                  |
| Town of Brunswick                     | 4/19/19  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Town of Cerro Gordo                   | 4/28/11  | Hail              | 1.75 in.   | 0      | 0        | \$3,000                  | \$0                  |
| Town of Cerro Gordo                   | 8/21/11  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Cerro Gordo                   | 5/23/12  | Hail              | 1.50 in.   | 0      | 0        | \$1,500                  | \$0                  |
| Town of Cerro Gordo                   | 5/23/12  | Hail              | 1.75 in.   | 0      | 0        | \$1,750                  | \$0                  |
| Town of Cerro Gordo                   | 7/2/15   | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Cerro Gordo                   | 10/23/17 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$10,000                 | \$0                  |
| Town of Cerro Gordo                   | 10/23/17 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Cerro Gordo                   | 9/8/21   | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Cerro Gordo                   | 1/3/22   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Cerro Gordo                   | 1/9/24   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$500                |
| Town of Fair Bluff                    | 5/4/09   | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Town of Fair Bluff                    | 5/23/12  | Hail              | 1.75 in.   | 0      | 0        | \$1,750                  | \$0                  |
| Town of Fair Bluff                    | 7/7/16   | Thunderstorm Wind | 54 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Fair Bluff                    | 5/5/20   | Hail              | 1.00 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Lake Waccamaw                 | 12/2/09  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |



## Hazard Profiles

| Location                 | Date              | Type              | Mag        | Deaths   | Injuries | Reported Property Damage | Reported Crop Damage |
|--------------------------|-------------------|-------------------|------------|----------|----------|--------------------------|----------------------|
| Town of Lake Waccamaw    | 9/28/11           | Thunderstorm Wind | 52 kts. EG | 0        | 0        | \$6,000                  | \$0                  |
| Town of Lake Waccamaw    | 6/27/13           | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$2,000                  | \$0                  |
| Town of Lake Waccamaw    | 7/28/14           | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| Town of Lake Waccamaw    | 6/18/15           | Thunderstorm Wind | 52 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| Town of Lake Waccamaw    | 6/5/16            | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$2,000                  | \$0                  |
| Town of Tabor City       | 10/15/12          | Hail              | 1.00 in.   | 0        | 0        | \$1,000                  | \$0                  |
| Town of Tabor City       | 2/24/16           | Thunderstorm Wind | 52 kts. EG | 0        | 0        | \$3,000                  | \$0                  |
| Town of Tabor City       | 5/28/17           | Thunderstorm Wind | 52 kts. EG | 0        | 0        | \$2,000                  | \$0                  |
| Town of Tabor City       | 7/7/17            | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$3,000                  | \$0                  |
| Town of Tabor City       | 4/19/19           | Thunderstorm Wind | 52 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| Town of Tabor City       | 4/19/19           | Thunderstorm Wind | 52 kts. EG | 0        | 0        | \$30,000                 | \$0                  |
| Town of Tabor City       | 4/7/22            | Hail              | 1.50 in.   | 0        | 0        | \$0                      | \$0                  |
| <b>Subtotal Columbus</b> | <b>184 Events</b> | --                | --         | <b>0</b> | <b>2</b> | <b>\$538,950</b>         | <b>\$4,500</b>       |
| <b>Robeson County</b>    |                   |                   |            |          |          |                          |                      |
| City of Lumberton        | 4/27/10           | Hail              | 0.88 in.   | 0        | 0        | \$0                      | \$0                  |
| City of Lumberton        | 5/23/10           | Hail              | 0.88 in.   | 0        | 0        | \$3,000                  | \$0                  |
| City of Lumberton        | 2/28/11           | Hail              | 0.75 in.   | 0        | 0        | \$0                      | \$0                  |
| City of Lumberton        | 4/5/11            | Thunderstorm Wind | 56 kts. EG | 0        | 0        | \$2,000                  | \$0                  |
| City of Lumberton        | 4/16/11           | Thunderstorm Wind | 63 kts. MG | 0        | 0        | \$4,000                  | \$0                  |
| City of Lumberton        | 6/12/11           | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$4,000                  | \$0                  |
| City of Lumberton        | 6/12/11           | Lightning         |            | 0        | 1        | \$0                      | \$0                  |
| City of Lumberton        | 8/21/11           | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| City of Lumberton        | 8/29/11           | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| City of Lumberton        | 7/11/16           | Thunderstorm Wind | 56 kts. EG | 0        | 0        | \$10,000                 | \$0                  |
| City of Lumberton        | 7/19/16           | Thunderstorm Wind | 56 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| City of Lumberton        | 7/19/16           | Thunderstorm Wind | 52 kts. EG | 0        | 0        | \$250                    | \$0                  |
| City of Lumberton        | 7/19/16           | Thunderstorm Wind | 52 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| City of Lumberton        | 7/19/16           | Thunderstorm Wind | 56 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| City of Lumberton        | 7/19/16           | Thunderstorm Wind | 56 kts. EG | 0        | 0        | \$1,500                  | \$0                  |

## Hazard Profiles

| Location                             | Date    | Type              | Mag         | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|--------------------------------------|---------|-------------------|-------------|--------|----------|--------------------------|----------------------|
| City of Lumberton                    | 7/19/16 | Thunderstorm Wind | 56 kts. EG  | 0      | 0        | \$2,000                  | \$0                  |
| City of Lumberton                    | 6/18/18 | Thunderstorm Wind | 55 kts. EG  | 0      | 0        | \$500                    | \$0                  |
| City of Lumberton                    | 6/18/18 | Thunderstorm Wind | 50 kts. EG  | 0      | 0        | \$10,000                 | \$0                  |
| City of Lumberton                    | 4/20/24 | Hail              | 1.50 in.    | 0      | 0        | \$0                      | \$0                  |
| City of Lumberton                    | 4/20/24 | Hail              | 4.50 in.    | 0      | 0        | \$0                      | \$0                  |
| City of Lumberton                    | 5/8/24  | Hail              | 1.75 in.    | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 4/16/11 | Hail              | 1.00 in.    | 0      | 0        | \$2,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 9/3/13  | Hail              | 0.88 in.    | 0      | 0        | \$500                    | \$0                  |
| Robeson County (Unincorporated Area) | 5/11/09 | Thunderstorm Wind | 109 kts. EG | 0      | 1        | \$813,000                | \$0                  |
| Robeson County (Unincorporated Area) | 4/27/10 | Hail              | 0.88 in.    | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 6/29/10 | Hail              | 0.75 in.    | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 6/29/10 | Thunderstorm Wind | 52 kts. MG  | 0      | 0        | \$10,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 6/16/11 | Hail              | 1.00 in.    | 0      | 0        | \$2,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/24/11 | Thunderstorm Wind | 50 kts. EG  | 0      | 0        | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/24/11 | Thunderstorm Wind | 50 kts. EG  | 0      | 0        | \$2,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/15/12 | Hail              | 1.00 in.    | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 7/19/16 | Thunderstorm Wind | 54 kts. EG  | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/22/20 | Thunderstorm Wind | 52 kts. EG  | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 4/22/23 | Hail              | 1.00 in.    | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 6/12/11 | Thunderstorm Wind | 52 kts. EG  | 0      | 0        | \$4,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 3/18/17 | Thunderstorm Wind | 50 kts. EG  | 0      | 0        | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/24/18 | Thunderstorm Wind | 55 kts. EG  | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/25/18 | Thunderstorm Wind | 50 kts. EG  | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 8/3/22  | Thunderstorm Wind | 50 kts. EG  | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 8/3/22  | Thunderstorm Wind | 50 kts. EG  | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 4/20/24 | Hail              | 1.50 in.    | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 7/1/12  | Hail              | 1.00 in.    | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 8/15/23 | Thunderstorm Wind | 50 kts. EG  | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 6/5/14  | Thunderstorm Wind | 61 kts. EG  | 0      | 0        | \$25,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 9/8/21  | Thunderstorm Wind | 50 kts. EG  | 0      | 0        | \$0                      | \$0                  |

## Hazard Profiles

| Location                             | Date    | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|--------------------------------------|---------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Robeson County (Unincorporated Area) | 4/16/11 | Hail              | 1.00 in.   | 0      | 0        | \$2,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/22/11 | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/18/11 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 2/21/14 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 4/20/24 | Hail              | 1.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 6/14/10 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 7/27/10 | Hail              | 0.88 in.   | 0      | 0        | \$500                    | \$0                  |
| Robeson County (Unincorporated Area) | 7/27/10 | Thunderstorm Wind | 56 kts. MG | 0      | 0        | \$11,000                 | \$4,000              |
| Robeson County (Unincorporated Area) | 4/28/11 | Thunderstorm Wind | 61 kts. MG | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 4/28/11 | Hail              | 1.75 in.   | 0      | 0        | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/23/12 | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 7/19/16 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 7/19/16 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$1,500                  | \$0                  |
| Robeson County (Unincorporated Area) | 7/19/16 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 7/21/12 | Hail              | 1.00 in.   | 0      | 0        | \$750                    | \$0                  |
| Robeson County (Unincorporated Area) | 7/21/12 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 2/24/16 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$35,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 5/16/10 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/16/10 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/23/10 | Hail              | 1.00 in.   | 0      | 0        | \$10,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 5/11/09 | Hail              | 0.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 7/27/10 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 3/25/12 | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/27/15 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/27/15 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/18/18 | Thunderstorm Wind | 51 kts. MG | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 8/2/18  | Thunderstorm Wind | 52 kts. MG | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 4/6/22  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 1/9/24  | Thunderstorm Wind | 54 kts. MG | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 6/18/11 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$2,500                  | \$0                  |

## Hazard Profiles

| Location                             | Date    | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|--------------------------------------|---------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Robeson County (Unincorporated Area) | 5/22/12 | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Robeson County (Unincorporated Area) | 7/1/12  | Hail              | 1.50 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 7/1/12  | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Robeson County (Unincorporated Area) | 7/10/12 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/13/13 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/26/13 | Thunderstorm Wind | 54 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 8/23/14 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/19/15 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 1/4/23  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 5/23/10 | Hail              | 1.00 in.   | 0      | 0        | \$5,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 4/5/11  | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$6,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/18/11 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/26/13 | Thunderstorm Wind | 54 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/29/14 | Hail              | 0.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 8/26/23 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$10,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 5/8/24  | Hail              | 1.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 5/23/10 | Hail              | 0.75 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/27/11 | Hail              | 0.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 6/26/13 | Thunderstorm Wind | 54 kts. EG | 0      | 0        | \$15,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 4/19/19 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 4/19/13 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 2/21/14 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/3/16  | Hail              | 1.00 in.   | 0      | 0        | \$500                    | \$0                  |
| Robeson County (Unincorporated Area) | 6/17/22 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 6/23/11 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$15,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 6/26/13 | Thunderstorm Wind | 54 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/2/16  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/11/18 | Thunderstorm Wind | 60 kts. EG | 0      | 0        | \$50,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 5/3/22  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 4/20/24 | Hail              | 1.75 in.   | 0      | 0        | \$0                      | \$0                  |

## Hazard Profiles

| Location                             | Date    | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|--------------------------------------|---------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Robeson County (Unincorporated Area) | 4/20/24 | Hail              | 1.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 5/28/10 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 4/20/24 | Hail              | 1.00 in.   | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 5/27/11 | Hail              | 1.75 in.   | 0      | 0        | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/14/11 | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 8/21/11 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 8/21/11 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$2,500                  | \$0                  |
| Robeson County (Unincorporated Area) | 4/19/13 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 8/23/14 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 8/23/14 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 7/19/16 | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 7/10/17 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/22/20 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/8/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 6/18/11 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 7/21/12 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 7/4/16  | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$12,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 8/15/23 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 5/11/09 | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$30,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 5/11/09 | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$15,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 7/5/12  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/9/13  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 2/24/16 | Thunderstorm Wind | 65 kts. EG | 0      | 2        | \$45,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 1/3/22  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 8/15/23 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 4/5/11  | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/29/14 | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 5/2/16  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/8/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 5/28/10 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$2,000                  | \$0                  |



## Hazard Profiles

| Location                             | Date     | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|--------------------------------------|----------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Robeson County (Unincorporated Area) | 6/17/14  | Thunderstorm Wind | 54 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 11/17/10 | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$8,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 7/21/12  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 1/30/13  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 4/19/13  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/26/13  | Thunderstorm Wind | 54 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 2/21/14  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$9,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 8/23/14  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,500                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/2/16   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 4/6/17   | Hail              | 0.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 7/25/10  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/26/15  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/18/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$20,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 8/29/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/26/15  | Hail              | 0.88 in.   | 0      | 0        | \$250                    | \$0                  |
| Robeson County (Unincorporated Area) | 7/5/16   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/24/18  | Thunderstorm Wind | 55 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 1/31/13  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 5/3/16   | Hail              | 1.25 in.   | 0      | 0        | \$500                    | \$0                  |
| Robeson County (Unincorporated Area) | 4/12/24  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 6/18/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 9/3/14   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 6/19/14  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 8/15/23  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Fairmont                     | 5/29/09  | Hail              | 1.13 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Fairmont                     | 7/16/09  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Fairmont                     | 5/23/10  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$15,000                 | \$0                  |
| Town of Fairmont                     | 5/23/10  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$15,000                 | \$0                  |
| Town of Fairmont                     | 4/5/11   | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Town of Fairmont                     | 5/10/11  | Hail              | 1.25 in.   | 0      | 0        | \$1,000                  | \$0                  |

## Hazard Profiles

| Location              | Date     | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|-----------------------|----------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Town of Fairmont      | 6/12/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Town of Fairmont      | 11/16/11 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Fairmont      | 4/26/12  | Hail              | 1.00 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Town of Fairmont      | 1/30/13  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Town of Fairmont      | 6/19/14  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Fairmont      | 6/19/14  | Lightning         |            | 0      | 0        | \$150,000                | \$0                  |
| Town of Fairmont      | 6/18/15  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$10,000                 | \$0                  |
| Town of Fairmont      | 7/11/16  | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$15,000                 | \$0                  |
| Town of Fairmont      | 7/23/17  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Town of Fairmont      | 8/23/17  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Town of Fairmont      | 6/22/19  | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$20,000                 | \$0                  |
| Town of Fairmont      | 4/22/23  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Lumber Bridge | 6/29/10  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,500                  | \$0                  |
| Town of Lumber Bridge | 5/22/11  | Hail              | 0.88 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Lumber Bridge | 5/22/11  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$7,000                  | \$0                  |
| Town of Lumber Bridge | 5/22/11  | Hail              | 1.25 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Town of Lumber Bridge | 7/1/12   | Hail              | 1.25 in.   | 0      | 0        | \$750                    | \$0                  |
| Town of Lumber Bridge | 7/1/12   | Hail              | 0.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Lumber Bridge | 7/10/12  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Marietta      | 5/29/09  | Hail              | 0.75 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Marietta      | 6/26/13  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Town of Marietta      | 8/15/23  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Maxton        | 5/11/09  | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Town of Maxton        | 6/23/11  | Thunderstorm Wind | 65 kts. EG | 0      | 0        | \$15,000                 | \$0                  |
| Town of Maxton        | 7/5/12   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Maxton        | 6/19/15  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Town of Maxton        | 7/11/16  | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$15,000                 | \$0                  |
| Town of Maxton        | 7/19/19  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$10,000                 | \$0                  |
| Town of Mc Donalds    | 5/10/11  | Hail              | 1.50 in.   | 0      | 0        | \$2,000                  | \$0                  |
| Town of Mc Donalds    | 7/5/12   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |

## Hazard Profiles

| Location             | Date     | Type              | Mag        | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|----------------------|----------|-------------------|------------|--------|----------|--------------------------|----------------------|
| Town of Mc Donalds   | 6/27/15  | Thunderstorm Wind | 56 kts. EG | 0      | 0        | \$5,000                  | \$0                  |
| Town of Mc Donalds   | 3/1/18   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Town of Mc Donalds   | 8/1/21   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Mc Donalds   | 3/17/22  | Thunderstorm Wind | 65 kts. EG | 0      | 0        | \$0                      | \$0                  |
| Town of Orrum        | 6/16/10  | Lightning         |            | 0      | 0        | \$1,500                  | \$0                  |
| Town of Orrum        | 6/29/10  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$34,000                 | \$0                  |
| Town of Orrum        | 5/10/24  | Hail              | 1.00 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Parkton      | 8/29/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Parkton      | 7/1/12   | Hail              | 1.75 in.   | 0      | 0        | \$1,250                  | \$0                  |
| Town of Parkton      | 7/10/12  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Town of Parkton      | 6/26/13  | Thunderstorm Wind | 54 kts. EG | 0      | 0        | \$13,000                 | \$0                  |
| Town of Parkton      | 9/3/14   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$500                    | \$0                  |
| Town of Parkton      | 4/9/15   | Hail              | 1.25 in.   | 0      | 0        | \$1,000                  | \$0                  |
| Town of Parkton      | 7/10/17  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Parkton      | 5/30/19  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$50,000                 | \$0                  |
| Town of Parkton      | 5/30/19  | Thunderstorm Wind | 61 kts. EG | 0      | 0        | \$50,000                 | \$0                  |
| Town of Parkton      | 1/9/24   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$0                      | \$50,000             |
| Town of Parkton      | 1/9/24   | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Pembroke     | 4/16/11  | Hail              | 1.75 in.   | 0      | 0        | \$10,000                 | \$0                  |
| Town of Pembroke     | 6/12/11  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$4,000                  | \$0                  |
| Town of Pembroke     | 5/29/14  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Pembroke     | 2/24/16  | Thunderstorm Wind | 52 kts. EG | 0      | 0        | \$8,000                  | \$0                  |
| Town of Pembroke     | 2/24/16  | Hail              | 3.00 in.   | 0      | 0        | \$25,000                 | \$0                  |
| Town of Pembroke     | 4/20/24  | Hail              | 1.00 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Proctorville | 5/14/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$1,000                  | \$0                  |
| Town of Proctorville | 8/19/11  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Town of Proctorville | 11/16/11 | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$3,000                  | \$0                  |
| Town of Proctorville | 6/26/13  | Thunderstorm Wind | 50 kts. EG | 0      | 0        | \$2,000                  | \$0                  |
| Town of Proctorville | 4/22/23  | Hail              | 1.00 in.   | 0      | 0        | \$0                      | \$0                  |
| Town of Proctorville | 5/10/24  | Hail              | 1.75 in.   | 0      | 0        | \$0                      | \$0                  |

## Hazard Profiles

| Location                | Date              | Type              | Mag        | Deaths   | Injuries | Reported Property Damage | Reported Crop Damage |
|-------------------------|-------------------|-------------------|------------|----------|----------|--------------------------|----------------------|
| Town of Proctorville    | 5/10/24           | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$0                      | \$0                  |
| Town of Raynham         | 5/11/09           | Thunderstorm Wind | 61 kts. EG | 0        | 0        | \$15,000                 | \$0                  |
| Town of Raynham         | 4/5/11            | Thunderstorm Wind | 56 kts. EG | 0        | 0        | \$2,000                  | \$0                  |
| Town of Raynham         | 6/27/15           | Thunderstorm Wind | 56 kts. EG | 0        | 0        | \$5,000                  | \$0                  |
| Town of Red Springs     | 5/28/10           | Hail              | 0.75 in.   | 0        | 0        | \$1,000                  | \$0                  |
| Town of Red Springs     | 6/23/11           | Thunderstorm Wind | 56 kts. EG | 0        | 0        | \$2,000                  | \$0                  |
| Town of Red Springs     | 6/28/11           | Thunderstorm Wind | 56 kts. EG | 0        | 0        | \$9,000                  | \$0                  |
| Town of Red Springs     | 6/26/13           | Thunderstorm Wind | 54 kts. EG | 0        | 0        | \$12,000                 | \$0                  |
| Town of Red Springs     | 4/28/14           | Hail              | 1.00 in.   | 0        | 0        | \$150                    | \$0                  |
| Town of Red Springs     | 6/24/17           | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$2,000                  | \$0                  |
| Town of Red Springs     | 4/13/20           | Thunderstorm Wind | 61 kts. EG | 0        | 0        | \$5,000                  | \$0                  |
| Town of Red Springs     | 1/9/24            | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$0                      | \$50,000             |
| Town of Rennert         | 5/16/10           | Thunderstorm Wind | 52 kts. EG | 0        | 0        | \$4,000                  | \$0                  |
| Town of Rennert         | 4/5/11            | Thunderstorm Wind | 56 kts. EG | 0        | 0        | \$2,000                  | \$0                  |
| Town of Rennert         | 5/27/11           | Hail              | 0.88 in.   | 0        | 0        | \$0                      | \$0                  |
| Town of Rennert         | 7/13/11           | Thunderstorm Wind | 56 kts. EG | 0        | 0        | \$3,000                  | \$0                  |
| Town of Rennert         | 6/26/13           | Thunderstorm Wind | 54 kts. EG | 0        | 0        | \$2,000                  | \$0                  |
| Town of Rennert         | 6/26/13           | Thunderstorm Wind | 54 kts. EG | 0        | 0        | \$2,000                  | \$0                  |
| Town of Rennert         | 6/26/15           | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| Town of Rowland         | 4/16/11           | Thunderstorm Wind | 65 kts. EG | 0        | 0        | \$50,000                 | \$0                  |
| Town of Rowland         | 7/5/12            | Thunderstorm Wind | 52 kts. EG | 0        | 0        | \$1,500                  | \$0                  |
| Town of Rowland         | 7/5/12            | Thunderstorm Wind | 52 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| Town of Rowland         | 6/19/14           | Thunderstorm Wind | 52 kts. EG | 0        | 0        | \$1,000                  | \$0                  |
| Town of Rowland         | 4/19/19           | Thunderstorm Wind | 56 kts. EG | 0        | 0        | \$2,000                  | \$0                  |
| Town of St Pauls        | 2/21/14           | Thunderstorm Wind | 52 kts. EG | 0        | 0        | \$2,000                  | \$0                  |
| Town of St Pauls        | 2/24/16           | Hail              | 1.75 in.   | 0        | 0        | \$3,000                  | \$0                  |
| Town of St Pauls        | 2/24/16           | Hail              | 1.75 in.   | 0        | 0        | \$3,000                  | \$0                  |
| Town of St Pauls        | 6/18/18           | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$0                      | \$0                  |
| Town of St Pauls        | 8/7/23            | Thunderstorm Wind | 50 kts. EG | 0        | 0        | \$0                      | \$0                  |
| <b>Subtotal Robeson</b> | <b>254 Events</b> | --                | --         | <b>0</b> | <b>4</b> | <b>\$2,021,400</b>       | <b>\$104,000</b>     |

## Hazard Profiles

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| Location          | Date              | Type | Mag | Deaths   | Injuries | Reported Property Damage | Reported Crop Damage |
|-------------------|-------------------|------|-----|----------|----------|--------------------------|----------------------|
| <b>TOTAL PLAN</b> | <b>650 Events</b> | --   | —   | <b>0</b> | <b>6</b> | <b>\$26,300,50</b>       | <b>\$532,400</b>     |

Source: NCEI Storm Events Database



The following provides details on select severe weather events recorded in the NCEI database:

- **September 5, 1996** – Winds sustained 50 mph and gusted near 70 mph, with nearly 6 inches of rain as the outskirts of Hurricane Fran crossed Robeson County Thursday evening. There were 45 injuries associated with the storm and during cleanup efforts over the following few days, and one man died while clearing a tree on Friday. Ten homes and 20 businesses suffered major damage, and schools had \$500,000 worth of damage.
- **May 27, 1998** – Hail up to an inch diameter fell as thunderstorms tracked southeast. Downburst winds in Orrum caused major damage to two homes, and minor damage to 8 others, resulting in \$80,000 in property damage.
- **March 3, 1999** – A cold front crossed the area with powerful wind gusts. In Prospect, a woman was blown off her porch, while in Rennert a mobile home was overturned, injuring 3. Trees were downed onto power lines and an electric power substation was knocked out, with a loss of power to 11,000 customers. Damage occurred to schools, homes and businesses.
- **August 28, 2001** – Lightning struck a business (body shop) on Roberts Avenue in Lumberton. The resulting fire completely destroyed the building, as well as caused second degree burns to the owner. Property damage was estimated at \$300,000.
- **March 16, 2002** – ANWS Storm survey determined that straight line thunderstorm winds produce extensive damage to a trailer park in the northern part of Robeson County. 18 structures in all were damaged. 8 mobile homes were completely destroyed with one double wide trailer moved 10 feet off its foundation. A large metal electrical tower in the area was also blown down. A woman was injured in her mobile home during the event, dislocating her elbow. Large hail was also produced from the strong thunderstorm, with 2.5" hail reported in the area. Total property damages were estimated at \$750,000.
- **May 3, 2003** – Golf ball sized hail fell in Lumberton causing damage to the roofs of homes and cars on Broadridge Road and in Long Branch. The hail also completely destroyed a strawberry crop, estimated at \$50,000 worth of damage.
- **May 11, 2009** – A super-cell thunderstorm with damaging winds accelerated as it moved across Robeson County. Numerous trees and power lines were down and there was considerable structural damage. A National Weather Service Storm Survey concluded that a wet microburst produced a swath of damaging straight-line winds up to 125 mph. The microburst damage began near the intersection of Wilton Drive and Gem Road. Several trees were uprooted or snapped off and minor to moderate damage was observed to roof shingles and to siding. Significant damage was observed to the east of NC Highway 72. Numerous large trees were snapped off or uprooted along NC Highway 72 and significant structural damage occurred to approximately 8 homes on Sadie Drive. One of these homes was completely destroyed and another lost its entire roof. Several sheds and outbuildings were destroyed in this area. One adult woman suffered broken bones. The damage had a maximum path width of 350 yards and a path length of 2.25 miles. The Robeson County Emergency Manager estimated the damage at \$813,000.
- **April 16, 2011** – A powerful storm system that had moved across the Deep South during previous days, swept across the eastern Carolinas during the afternoon and evening hours. Instability and shear values were highly supportive of super-cell thunderstorms. The result was a large outbreak of severe weather including strong and deadly tornadoes across eastern North Carolina. Golf ball sized hail was reported near UNC Pembroke and lasted for about 15 minutes.
- **March 5, 2012** – A tight pressure gradient produced strong wind gusts over much of the Carolinas. The gusts caused structural damage to a mobile home at the Sandy Acres Mobile Home Park in Red Springs, resulting in \$10,000 worth of property damage.

- **June 19, 2014** – Lightning struck the Lumber River Electric Company building at the corner of Main and Red Cross Streets in Fairmont. The resulting fire destroyed the interior of the structure. Property damage was estimated at \$150,000.
- **February 24, 2016** – Deep low pressure lifting north across the Ohio River Valley brought a warm front through the area during the morning. In the wake of the warm front, the atmosphere destabilized, and this helped to bring very strong winds aloft to the surface. Supercells produced some very large hail and damaging winds. In Pembroke, hail of about 3 inches or greater was measured, and property damage was estimated at \$25,000.

#### 5.9.4 Probability of Future Occurrences

The probability of future severe weather is shown in the table below, by jurisdiction.

##### Definitions for Descriptors Used for Probability of Future Hazard Occurrences

- Unlikely: Less than 1% annual probability of hazard
- Possible: Between 1% and 10% annual probability of hazard
- Likely: Between 10% and 100% annual probability of hazard
- Highly Likely: 100% annual probability of hazard

| Jurisdiction                          | Probability of Future Occurrence |
|---------------------------------------|----------------------------------|
| Bladen County (Unincorporated Area)   | Highly Likely                    |
| Columbus County (Unincorporated Area) | Highly Likely                    |
| Robeson County (Unincorporated Area)  | Highly Likely                    |
| City of Lumberton                     | Highly Likely                    |
| City of Whiteville                    | Highly Likely                    |
| Town of Bladenboro                    | Highly Likely                    |
| Town of Boardman                      | Highly Likely                    |
| Town of Bolton                        | Highly Likely                    |
| Town of Brunswick                     | Highly Likely                    |
| Town of Cerro Gordo                   | Highly Likely                    |
| Town of Chadbourn                     | Highly Likely                    |
| Town of Clarkton                      | Highly Likely                    |
| Town of Dublin                        | Highly Likely                    |
| Town of East Arcadia                  | Highly Likely                    |
| Town of Elizabethtown                 | Highly Likely                    |
| Town of Fair Bluff                    | Highly Likely                    |
| Town of Fairmont                      | Highly Likely                    |
| Town of Lake Waccamaw                 | Highly Likely                    |
| Town of Lumber Bridge                 | Highly Likely                    |
| Town of Marietta                      | Highly Likely                    |
| Town of Maxton                        | Highly Likely                    |

| Jurisdiction         | Probability of Future Occurrence |
|----------------------|----------------------------------|
| Town of McDonald     | Highly Likely                    |
| Town of Orrum        | Highly Likely                    |
| Town of Parkton      | Highly Likely                    |
| Town of Pembroke     | Highly Likely                    |
| Town of Proctorville | Highly Likely                    |
| Town of Raynham      | Highly Likely                    |
| Town of Red Springs  | Highly Likely                    |
| Town of Rennert      | Highly Likely                    |
| Town of Rowland      | Highly Likely                    |
| Town of Saint Pauls  | Highly Likely                    |
| Town of Sandyfield   | Highly Likely                    |
| Town of Tabor City   | Highly Likely                    |
| Town of Tar Heel     | Highly Likely                    |
| Town of White Lake   | Highly Likely                    |

Source: NCEM RMT & plan risk assessment

### 5.9.5 Consequence and Impact Analysis (Vulnerability)

#### Changing Future Conditions

Changing climatic patterns may result in more frequent and more severe storms (e.g., thunderstorms, lightning, and/or hail) throughout the Region. According to the National Aeronautics and Space Administration (NASA), severe storm events are likely to become more frequent and intense throughout the Southeast in the future due to radical changes in weather extremes and environmental conditions<sup>19</sup>.

#### People

Thunderstorms are generally associated with hazards such as high wind, lightning and hail. High wind can cause trees to fall and potentially result in injuries or death and lightning can lead to house fires and serious injury. Hail can cause injury as well as severe property damage to homes and automobiles.

#### First Responders

First responders can be impacted in the same way as the general public. Downed trees, power lines and flood waters may prevent access to areas in need which prolongs response time.

#### Continuity of Operations

Thunderstorm events can result in a loss of power which may impact operations. Downed trees, power lines and flash flooding may prevent access to critical facilities and/or emergency equipment.

#### Built Environment

Thunderstorms can cause damage to commercial buildings and homes due to strong winds, lightning strikes and hail. Heavy rains associated with thunderstorm events may also lead to flash flooding which can damage

<sup>19</sup> NASA Climate Change Effects (<https://science.nasa.gov/climate-change/effects/>)

roads and bridges. In October 2016, Hurricane Matthew flooded Lumberton (Robeson County) south and east of the I-95 crossing over the Lumber River<sup>20</sup>.

### **Economy**

Economic damages include property damage from wind, lightning and hail, and other intangibles such as business interruption and additional living expenses.

### **Natural Environment**

Thunderstorms have a huge impact on the environment. One of the most dangerous outcomes for the environment is when lightning causes sparks to flare up in surrounding forests or immense shrubs. This is often the cause of bush fires, which then spread quickly due to the fast winds that accompany the storm. High winds can also damage crops and trees. Flooding can kill animals and cause soil erosion.

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<sup>20</sup> <https://www.usgs.gov/media/images/hurricane-matthew-flooding-interstate-95-robeson-county-nc>

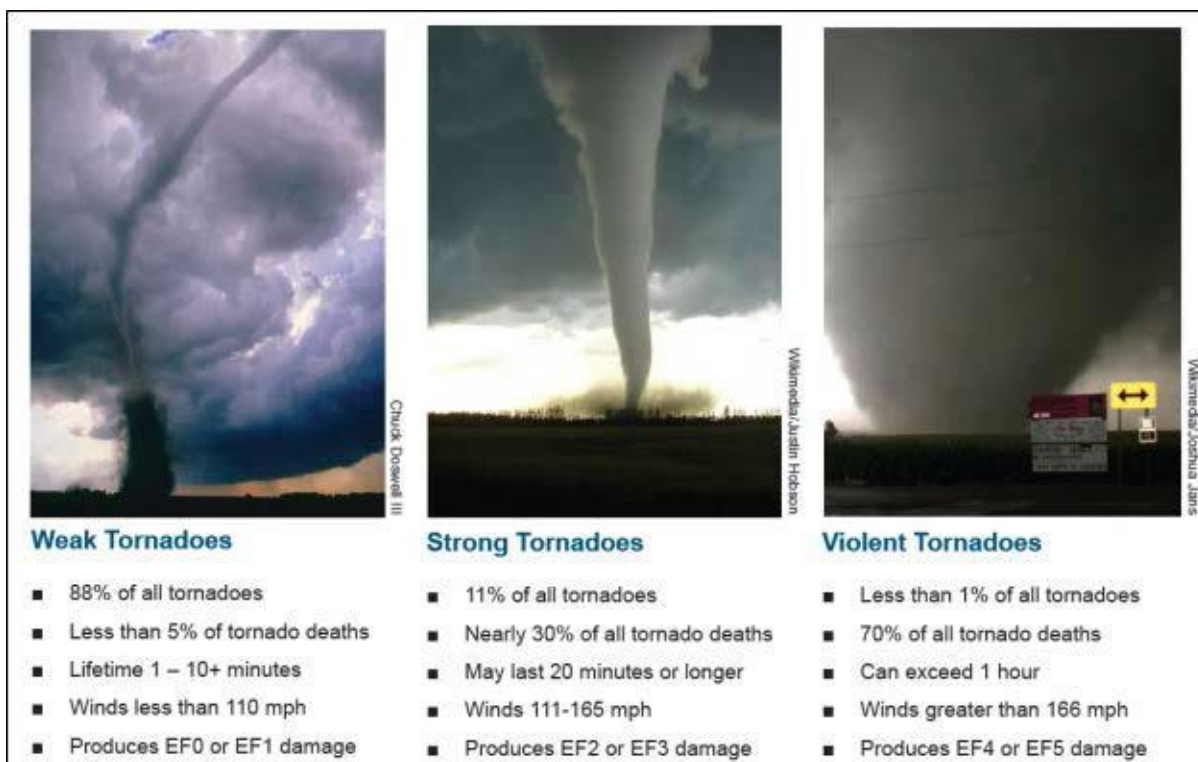
## 5.10 Tornado

### 5.10.1 Hazard Description

According to the Glossary of Meteorology (AMS 2000), a tornado is "a violently rotating column of air, pendant from a cumuliform cloud or underneath a cumuliform cloud, and often (but not always) visible as a funnel cloud." Tornadoes can appear from any direction. Most move from southwest to northeast, or west to east. Some tornadoes have changed direction amid paths or even backtracked.

Tornadoes are commonly produced by land falling tropical cyclones. Those making landfall along the Gulf coast traditionally produce more tornadoes than those making landfall along the Atlantic coast. Tornadoes that form within hurricanes are more common in the right front quadrant with respect to the forward direction but can occur in other areas as well. According to the NHC, about 10% of the tropical cyclone-related fatalities are caused by tornadoes. Tornadoes are more likely to be spawned within 24 hours of landfall and are usually within 30 miles of the tropical cyclone's center.

Tornadoes have the potential to produce winds in excess of 200 mph (EF5 on the Enhanced Fujita Scale) and can be very expansive – some in the Great Plains have exceeded two miles in width. Tornadoes associated with tropical cyclones, however, tend to be of lower intensity (EF0 to EF2) and much smaller in size than ones that form in the Great Plains.



**Figure 5-62: Types of Tornadoes**

Prior to February 1, 2007, tornado intensity was measured by the Fujita (F) scale. This scale was revised and is now the Enhanced Fujita (EF) scale. Both scales are sets of wind estimates (not measurements) based on damage. The new scale provides more damage indicators (28) and associated degrees of damage, allowing for more detailed analysis, better correlation between damage and wind speed. It is also more precise because it considers the materials affected and the construction of structures damaged by a tornado. **Table 5-21** shows the wind speeds associated with the enhanced Fujita scale



ratings and the damage that could result at different levels of intensity.

**Table 5-21: Enhanced Fujita Scale**

| Storm Category | Damage Level | 3 Second Gust (mph) | Description of Damages                                                                                                                                                                                                                     | Photo Example                                                                         |
|----------------|--------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| F0             | GALE         | 65–85               | Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages to sign boards                                                                                                                               |    |
| F1             | WEAK         | 86–110              | The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages might be destroyed.                              |    |
| F2             | STRONG       | 111–135             | Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.                                                                          |    |
| F3             | SEVERE       | 136–165             | Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.                                                                                                                                    |   |
| F4             | DEVASTATING  | 166–200             | Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.                                                                                                       |  |
| F5             | INCREDIBLE   | 200+                | Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel re-enforced concrete structures badly damaged. |  |

### 5.10.2 Location and Spatial Extent

Although tornadoes can occur in most locations, most of the tornado activity in the United States exists in the Midwest and Southeast. An exact season does not exist for tornadoes; however, most occur within the period of early spring to middle summer (February – June). **Figure 5-63** shows tornado activity in the United States based on the number of recorded tornadoes per 1,000 square miles.

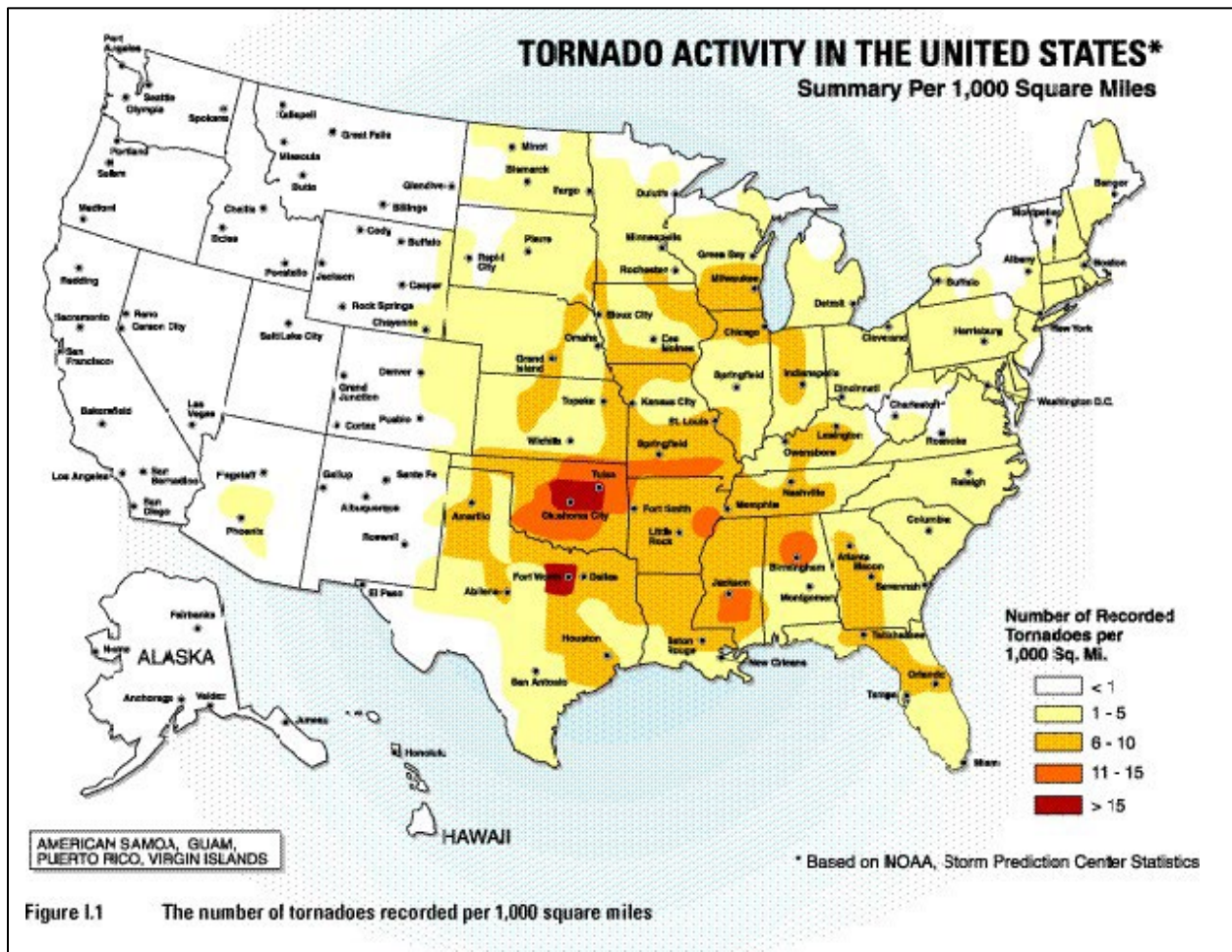
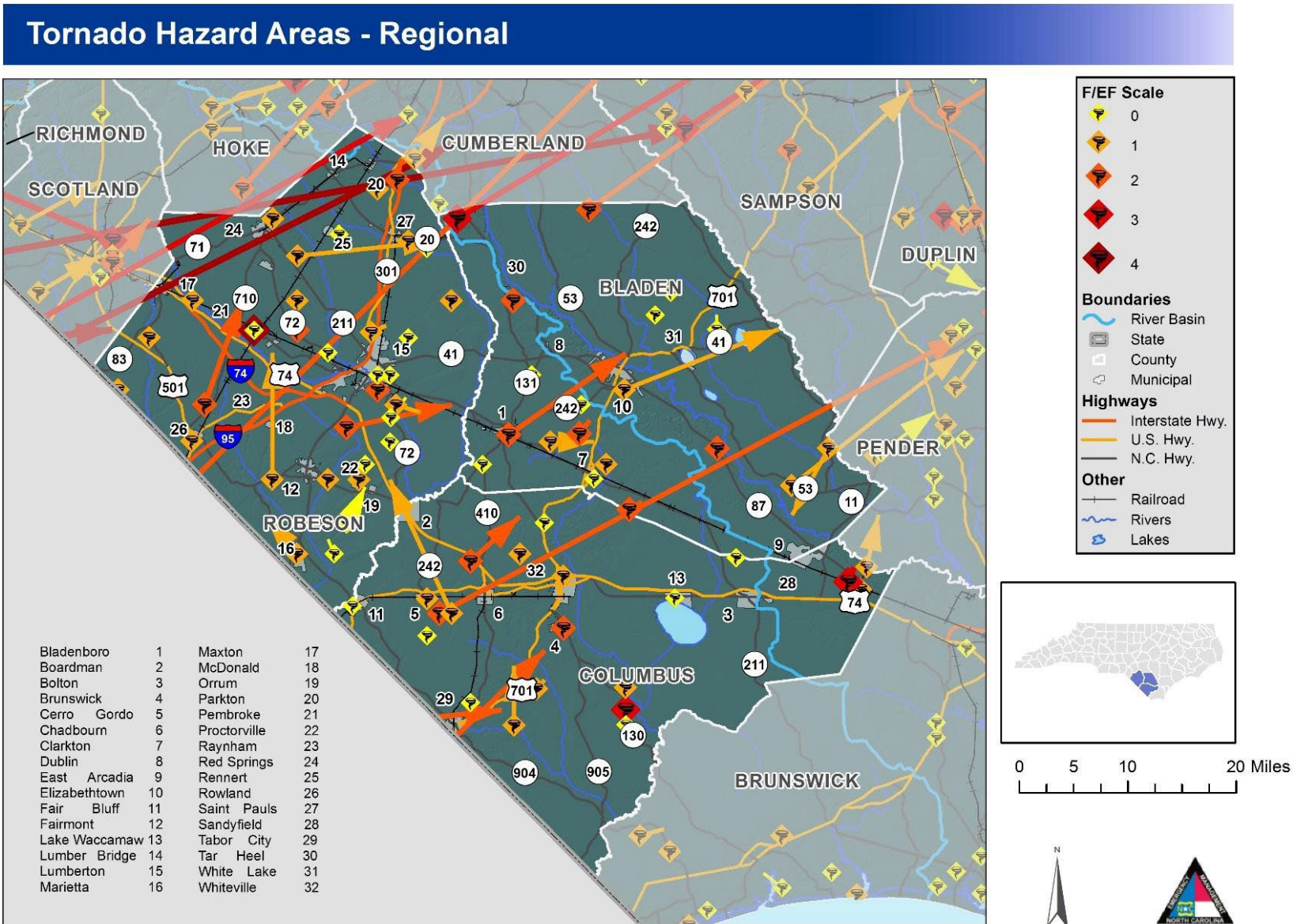


Figure 5-63: Tornado Activity in the United States

Tornadoes occur throughout the state of North Carolina, and thus in the Region. Tornadoes typically impact a relatively small area, but damage may be extensive. Event locations are completely random, and it is not possible to predict specific areas that are more susceptible to tornado strikes over time. Therefore, it is assumed that the Region is uniformly exposed to this hazard. The figures below illustrate the paths of previous tornadoes in the Region.





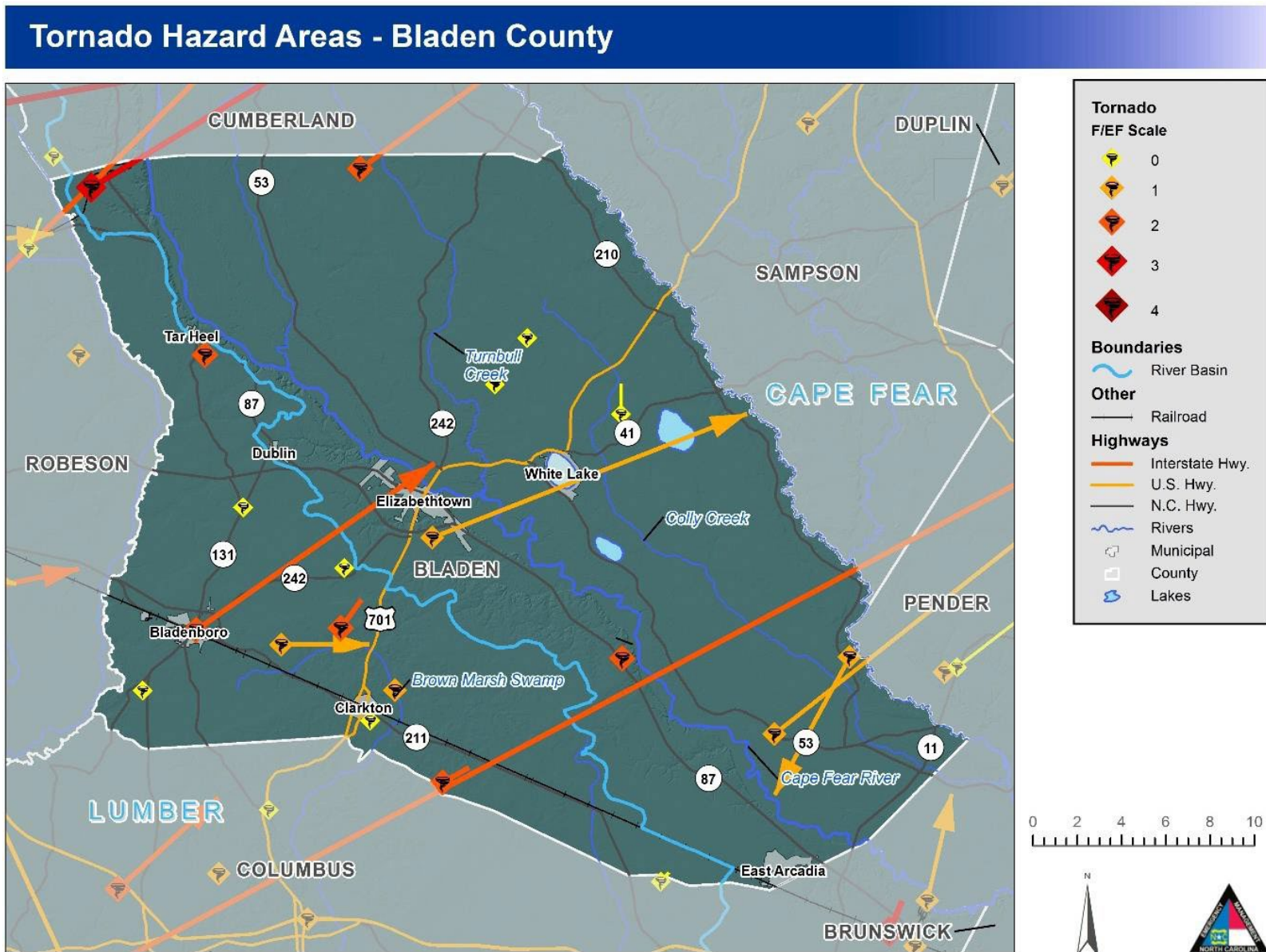


Figure 5-65: Tornado Hazard Areas – Bladen County



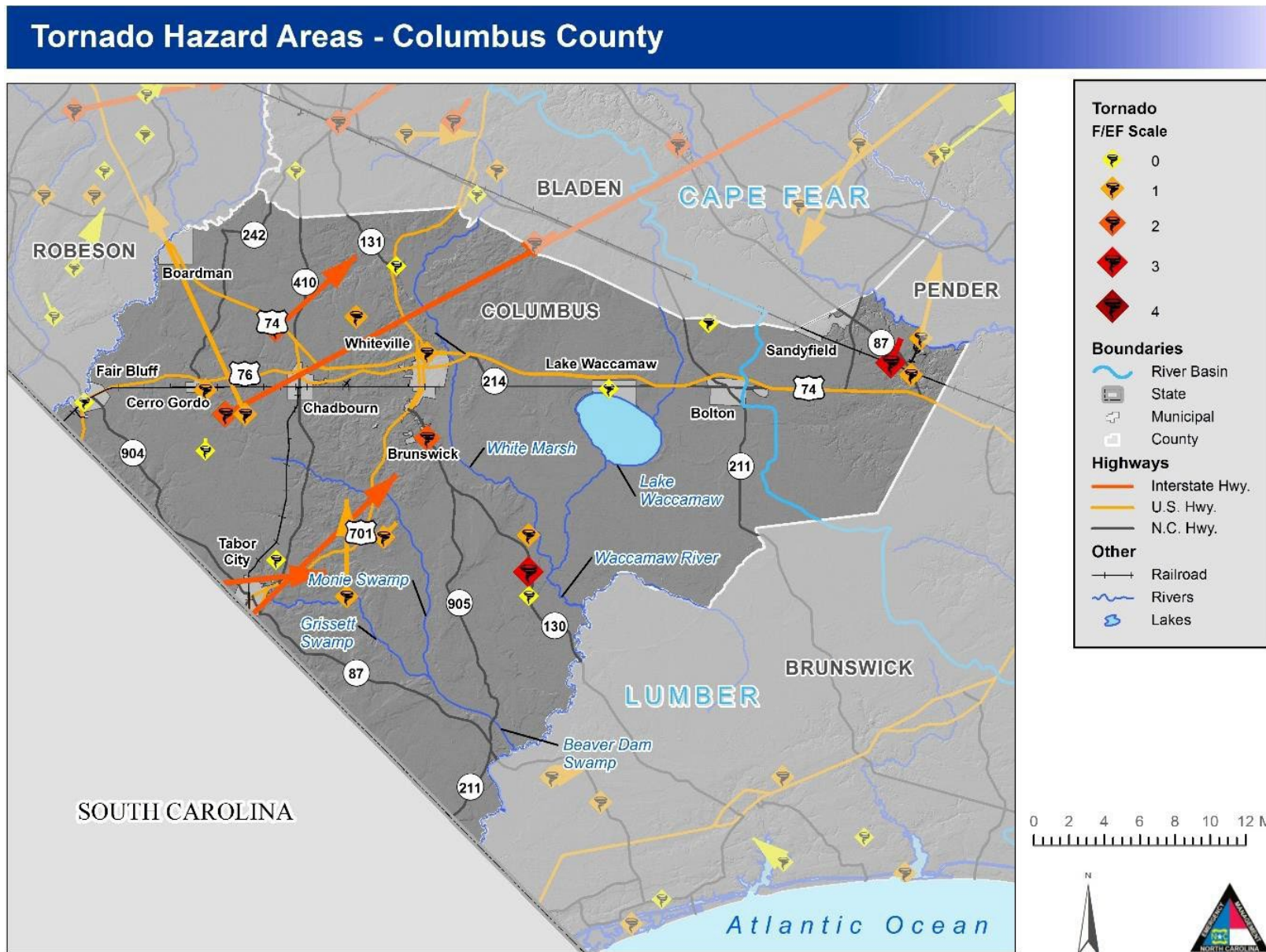


Figure 5-66: Tornado Hazard Areas – Columbus County



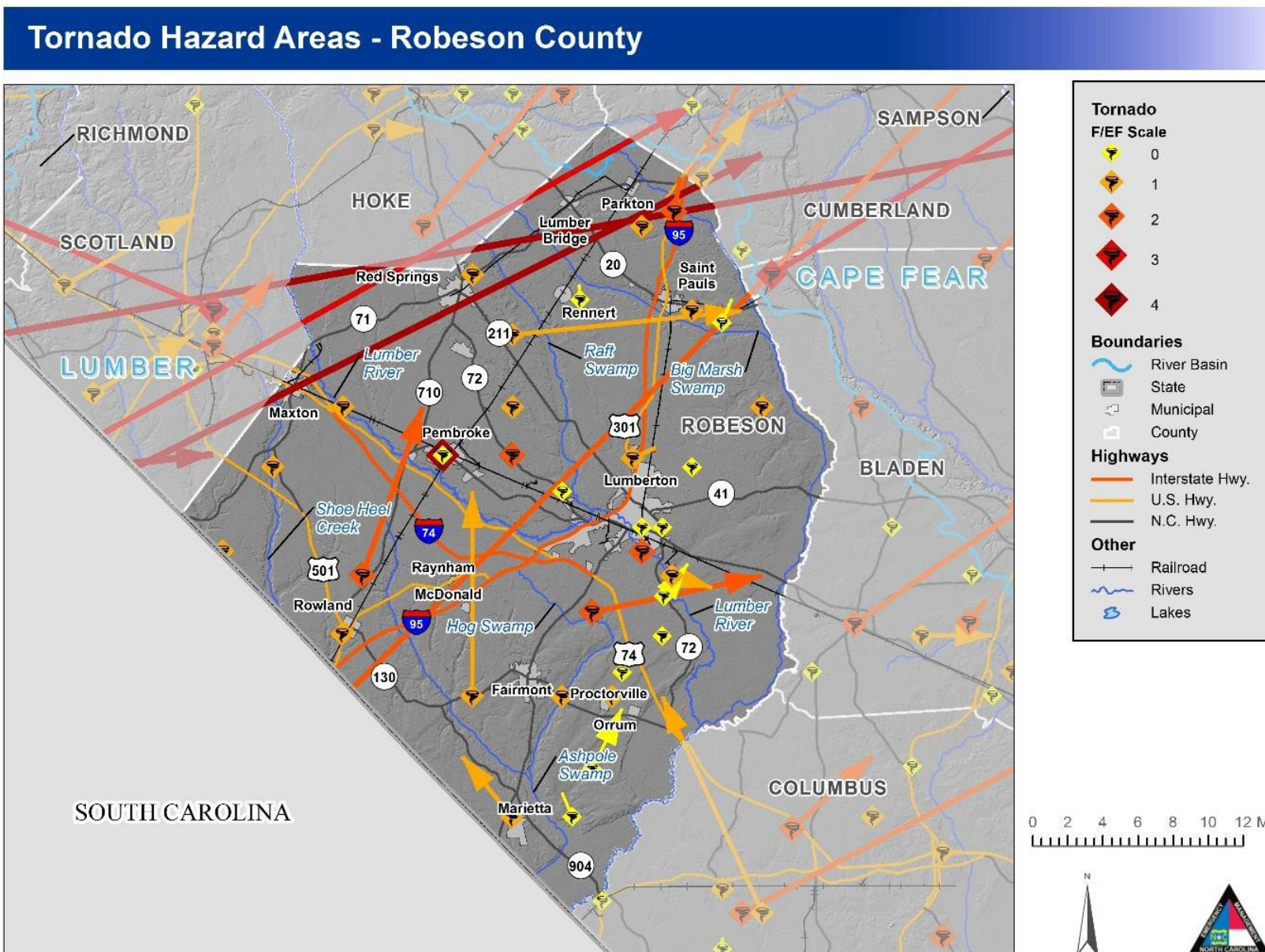


Figure 5-67: Tornado Hazard Areas – Robeson County

## Hazard Profiles

Tornado hazard extent is measured by tornado occurrences in the US provided by the Fujita/Enhanced Fujita Scale. The following table provides the highest recorded events in the jurisdictions (except Clarkton, Dublin, East Arcadia, Tarheel, White Lake, Boardman, Bolton, Brunswick, Chadbourn, Sandyfield, Lumber Bridge, Maxton, McDonald, Orrum, Parkton, Proctorville, Raynham, Rennert, and Rowland; which haven't experienced tornadoes in their jurisdictions) in the Region below:

**Table 5-22: NCEI Tornado Event Extent by Jurisdiction**

| Jurisdiction                     | Event Date | Magnitude |
|----------------------------------|------------|-----------|
| Bladen County (Unincorporated)   | 04/06/09   | EF2       |
| Bladen County (Unincorporated)   | 04/16/11   | EF2       |
| Columbus County (Unincorporated) | 10/09/50   | EF3       |
| Robeson County (Unincorporated)  | 04/08/57   | EF4       |
| City of Lumberton                | 07/19/63   | EF2       |
| City of Whiteville               | 04/17/06   | EF1       |
| Town of Bladenboro               | 04/16/11   | EF2       |
| Town of Cerro Gordo              | 03/03/91   | EF1       |
| Town of Elizabethtown            | 09/11/60   | EF1       |
| Town of Fair Bluff               | 03/15/08   | EF0       |
| Town of Fairmont                 | 09/29/63   | EF2       |
| Town of Lake Waccamaw            | 07/02/03   | EF0       |
| Town of Marietta                 | 09/07/04   | EF1       |
| Town of Pembroke                 | 04/08/57   | EF4       |
| Town of Red Springs              | 05/15/75   | EF1       |
| Town of Saint Pauls              | 07/05/97   | EF1       |
| Town of Tabor City               | 03/28/84   | EF2       |

### 5.10.3 Past Occurrences

The following historical occurrences since 1950 have been identified based on the NCEI Storm Events database **Table 5-23**. It should be noted that only those historical occurrences listed in the NCEI database are shown here and that other, unrecorded or unreported events may have occurred within the planning area during this timeframe.

Table 5-23: Historical Tornado Occurrences (1950-2025)

| Location                            | Date     | Magnitude | Deaths | Injuries | Reported Property Damage | Reported Crop Damage |
|-------------------------------------|----------|-----------|--------|----------|--------------------------|----------------------|
| <b>Bladen County</b>                |          |           |        |          |                          |                      |
| Bladen County (Unincorporated Area) | 03/04/66 | EF1       | 0      | 0        | \$25,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 08/21/79 | EF0       | 0      | 0        | \$30                     | \$0                  |
| Bladen County (Unincorporated Area) | 03/28/84 | EF3       | 0      | 0        | \$25,000,000             | \$0                  |
| Bladen County (Unincorporated Area) | 07/01/90 | EF2       | 0      | 0        | \$250,000                | \$0                  |
| Bladen County (Unincorporated Area) | 05/11/96 | EF0       | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 11/08/96 | EF0       | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 12/07/96 | EF0       | 0      | 0        | \$5,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 10/26/97 | EF1       | 0      | 0        | \$250,000                | \$0                  |
| Bladen County (Unincorporated Area) | 06/13/98 | EF1       | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 06/13/98 | EF1       | 0      | 0        | \$25,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 04/15/99 | EF2       | 0      | 5        | \$200,000                | \$0                  |
| Bladen County (Unincorporated Area) | 07/02/03 | EF1       | 0      | 0        | \$20,000                 | \$10,000             |
| Bladen County (Unincorporated Area) | 10/25/07 | EF0       | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 03/28/09 | EF2       | 0      | 0        | \$200,000                | \$0                  |
| Bladen County (Unincorporated Area) | 03/28/09 | EF0       | 0      | 0        | \$1,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 04/06/09 | EF2       | 0      | 0        | \$300,000                | \$0                  |
| Bladen County (Unincorporated Area) | 04/16/11 | EF2       | 3      | 0        | \$1,000,000              | \$0                  |
| Bladen County (Unincorporated Area) | 04/16/11 | EF2       | 0      | 4        | \$250,000                | \$0                  |
| Bladen County (Unincorporated Area) | 04/28/11 | EF0       | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 04/28/11 | EF0       | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 08/21/11 | EF0       | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 10/01/12 | EF0       | 0      | 0        | \$2,500                  | \$0                  |
| Bladen County (Unincorporated Area) | 10/01/12 | EF0       | 0      | 0        | \$4,000                  | \$0                  |
| Bladen County (Unincorporated Area) | 09/05/19 | EF0       | 0      | 0        | \$20,000                 | \$0                  |
| Bladen County (Unincorporated Area) | 06/02/21 | EF0       | 0      | 0        | \$0                      | \$0                  |
| Bladen County (Unincorporated Area) | 09/27/24 | EF1       | 0      | 0        | \$0                      | \$0                  |
| Town of Bladenboro                  | 04/16/11 | EF2       | 1      | 0        | \$3,100,000              | \$0                  |
| Town of Clarkton                    | 09/27/24 | EF0       | 0      | 0        | \$3,000                  | \$3,000              |

## Hazard Profiles

| Location                              | Date             | Magnitude | Deaths   | Injuries | Reported Property Damage | Reported Crop Damage |
|---------------------------------------|------------------|-----------|----------|----------|--------------------------|----------------------|
| Town of Elizabethtown                 | 09/11/60         | EF1       | 0        | 0        | \$25,000                 | \$0                  |
| Town of White lake                    | 09/27/24         | EF0       | 0        | 0        | \$0                      | \$0                  |
| <b>Subtotal Bladen</b>                | <b>30 Events</b> | <b>--</b> | <b>4</b> | <b>9</b> | <b>\$30,680,530</b>      | <b>\$13,000</b>      |
| <b>Columbus County</b>                |                  |           |          |          |                          |                      |
| City of Whiteville                    | 04/17/06         | EF1       | 0        | 0        | \$10,000                 | \$0                  |
| City of Whiteville                    | 04/28/11         | EF0       | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 10/09/50         | EF3       | 0        | 3        | \$250,000                | \$0                  |
| Columbus County (Unincorporated Area) | 06/02/59         | EF1       | 0        | 0        | \$25,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 10/04/64         | EF2       | 0        | 0        | \$250,000                | \$0                  |
| Columbus County (Unincorporated Area) | 12/01/67         | EF2       | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 09/06/74         | EF1       | 0        | 2        | \$250,000                | \$0                  |
| Columbus County (Unincorporated Area) | 05/24/75         | EF1       | 0        | 0        | \$2,500                  | \$0                  |
| Columbus County (Unincorporated Area) | 06/07/83         | EF2       | 0        | 0        | \$250,000                | \$0                  |
| Columbus County (Unincorporated Area) | 03/03/91         | EF0       | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 04/26/96         | EF0       | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 03/08/98         | EF0       | 0        | 0        | \$20,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 09/07/04         | EF1       | 0        | 0        | \$700,000                | \$0                  |
| Columbus County (Unincorporated Area) | 05/20/05         | EF1       | 0        | 0        | \$200,000                | \$0                  |
| Columbus County (Unincorporated Area) | 11/16/06         | EF3       | 8        | 20       | \$500,000                | \$0                  |
| Columbus County (Unincorporated Area) | 04/16/11         | EF0       | 0        | 0        | \$0                      | \$0                  |
| Columbus County (Unincorporated Area) | 04/16/11         | EF1       | 0        | 0        | \$35,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 04/28/11         | EF0       | 0        | 0        | \$27,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 10/01/12         | EF0       | 0        | 0        | \$4,000                  | \$500                |
| Columbus County (Unincorporated Area) | 10/01/12         | EF0       | 0        | 0        | \$10,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 05/21/15         | EF1       | 0        | 0        | \$75,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 09/16/18         | EF1       | 0        | 0        | \$250,000                | \$0                  |
| Columbus County (Unincorporated Area) | 09/05/19         | EF0       | 0        | 0        | \$30,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 04/13/20         | EF1       | 0        | 0        | \$100,000                | \$0                  |
| Columbus County (Unincorporated Area) | 10/11/20         | EF1       | 0        | 0        | \$60,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 06/02/21         | EF0       | 0        | 0        | \$200,000                | \$0                  |

## Hazard Profiles

| Location                              | Date             | Magnitude | Deaths   | Injuries  | Reported Property Damage | Reported Crop Damage |
|---------------------------------------|------------------|-----------|----------|-----------|--------------------------|----------------------|
| Columbus County (Unincorporated Area) | 05/14/24         | EF0       | 0        | 0         | \$20,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 05/14/24         | EF0       | 0        | 0         | \$1,000                  | \$0                  |
| Town of Cerro Gordo                   | 03/03/91         | EF1       | 0        | 3         | \$250,000                | \$0                  |
| Town of Chadbourn                     | 12/24/20         | EF0       | 0        | 0         | \$1,000                  | \$0                  |
| Town of Fair Bluff                    | 03/15/08         | EF0       | 0        | 0         | \$0                      | \$0                  |
| Town of Lake Waccamaw                 | 07/02/03         | EF0       | 0        | 0         | \$5,000                  | \$0                  |
| Town of Tabor City                    | 03/28/84         | EF2       | 0        | 0         | \$2,500,000              | \$0                  |
| <b>Subtotal Columbus</b>              | <b>33 Events</b> | <b>--</b> | <b>8</b> | <b>28</b> | <b>\$6,025,500</b>       | <b>\$500</b>         |
| <b>Robeson County</b>                 |                  |           |          |           |                          |                      |
| City of Lumberton                     | 07/19/63         | EF2       | 0        | 0         | \$25,000                 | \$0                  |
| City of Lumberton                     | 09/06/96         | EF0       | 0        | 0         | \$0                      | \$0                  |
| City of Lumberton                     | 03/08/98         | EF0       | 0        | 0         | \$10,000                 | \$0                  |
| City of Lumberton                     | 09/07/04         | EF0       | 0        | 0         | \$0                      | \$0                  |
| City of Lumberton                     | 04/16/11         | EF1       | 0        | 0         | \$3,000,000              | \$0                  |
| Robeson County (Unincorporated Area)  | 04/08/57         | EF4       | 0        | 6         | \$250,000                | \$0                  |
| Robeson County (Unincorporated Area)  | 04/08/57         | EF4       | 0        | 8         | \$250,000                | \$0                  |
| Robeson County (Unincorporated Area)  | 02/27/58         | EF0       | 0        | 0         | \$2,500                  | \$0                  |
| Robeson County (Unincorporated Area)  | 02/19/63         | EF1       | 0        | 0         | \$2,500                  | \$0                  |
| Robeson County (Unincorporated Area)  | 02/16/75         | EF1       | 0        | 1         | \$25,000                 | \$0                  |
| Robeson County (Unincorporated Area)  | 05/15/75         | EF1       | 0        | 0         | \$2,500                  | \$0                  |
| Robeson County (Unincorporated Area)  | 05/15/76         | EF2       | 3        | 4         | \$250,000                | \$0                  |
| Robeson County (Unincorporated Area)  | 03/04/77         | EF1       | 0        | 4         | \$250,000                | \$0                  |
| Robeson County (Unincorporated Area)  | 04/19/78         | EF1       | 0        | 0         | \$2,500                  | \$0                  |
| Robeson County (Unincorporated Area)  | 06/03/78         | EF1       | 0        | 0         | \$2,500                  | \$0                  |
| Robeson County (Unincorporated Area)  | 03/23/79         | EF2       | 0        | 9         | \$250,000                | \$0                  |
| Robeson County (Unincorporated Area)  | 08/21/79         | EF0       | 0        | 0         | \$0                      | \$0                  |
| Robeson County (Unincorporated Area)  | 05/20/80         | EF1       | 0        | 0         | \$25,000                 | \$0                  |
| Robeson County (Unincorporated Area)  | 04/14/84         | EF1       | 0        | 0         | \$25,000                 | \$0                  |
| Robeson County (Unincorporated Area)  | 09/16/96         | EF0       | 0        | 0         | \$0                      | \$0                  |
| Robeson County (Unincorporated Area)  | 03/08/98         | EF1       | 0        | 3         | \$100,000                | \$0                  |



## Hazard Profiles

| Location                             | Date             | Magnitude | Deaths   | Injuries  | Reported Property Damage | Reported Crop Damage |
|--------------------------------------|------------------|-----------|----------|-----------|--------------------------|----------------------|
| Robeson County (Unincorporated Area) | 03/20/98         | EF1       | 0        | 1         | \$20,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 04/15/99         | EF2       | 1        | 4         | \$200,000                | \$0                  |
| Robeson County (Unincorporated Area) | 04/15/99         | EF1       | 0        | 0         | \$20,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 08/18/01         | EF0       | 0        | 0         | \$25,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 09/07/04         | EF0       | 0        | 0         | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 09/07/04         | EF0       | 0        | 0         | \$3,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 11/15/08         | EF0       | 0        | 0         | \$50,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 03/27/09         | EF0       | 0        | 0         | \$5,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 03/27/09         | EF2       | 0        | 1         | \$35,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 04/16/11         | EF1       | 0        | 0         | \$1,500,000              | \$0                  |
| Robeson County (Unincorporated Area) | 04/28/11         | EF0       | 0        | 0         | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 09/06/11         | EF0       | 0        | 0         | \$20,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 02/21/14         | EF0       | 0        | 0         | \$9,000                  | \$0                  |
| Robeson County (Unincorporated Area) | 06/27/15         | EF1       | 0        | 0         | \$40,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 06/27/15         | EF1       | 0        | 0         | \$20,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 05/23/17         | EF0       | 0        | 0         | \$100,000                | \$0                  |
| Robeson County (Unincorporated Area) | 09/16/18         | EF0       | 0        | 0         | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 09/16/18         | EF0       | 0        | 0         | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 06/17/22         | EF0       | 0        | 0         | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 05/14/24         | EF0       | 0        | 0         | \$0                      | \$0                  |
| Robeson County (Unincorporated Area) | 05/14/24         | EF0       | 0        | 0         | \$10,000                 | \$0                  |
| Robeson County (Unincorporated Area) | 05/14/24         | EF0       | 0        | 0         | \$5,000                  | \$0                  |
| Town of Fairmont                     | 09/29/63         | EF2       | 0        | 0         | \$250,000                | \$0                  |
| Town of Marietta                     | 09/07/04         | EF1       | 0        | 0         | \$200,000                | \$0                  |
| Town of Pembroke                     | 04/08/57         | EF4       | 0        | 21        | \$250,000                | \$0                  |
| Town of Pembroke                     | 03/04/77         | EF0       | 0        | 0         | \$25,000                 | \$0                  |
| Town of Red Springs                  | 05/15/75         | EF1       | 0        | 0         | \$25,000                 | \$0                  |
| Town of Saint Pauls                  | 07/05/97         | EF1       | 0        | 0         | \$20,000                 | \$0                  |
| Town of Saint Pauls                  | 02/21/14         | EF0       | 0        | 0         | \$11,000                 | \$0                  |
| <b>Subtotal Robeson</b>              | <b>50 Events</b> | <b>--</b> | <b>4</b> | <b>62</b> | <b>\$7,330,500</b>       | <b>\$0</b>           |

## Hazard Profiles

| Location          | Date              | Magnitude | Deaths    | Injuries  | Reported Property Damage | Reported Crop Damage |
|-------------------|-------------------|-----------|-----------|-----------|--------------------------|----------------------|
| <b>Total Plan</b> | <b>113 Events</b> | <b>--</b> | <b>16</b> | <b>99</b> | <b>\$44,036,530</b>      | <b>\$1,800</b>       |

Source: NCEI Storm Events Database

**Table 5-24** provides a summary of this information by jurisdiction. It is important to note that many of the events attributed to the county are countywide or cover large areas. The individual counts by jurisdiction are for those events that are only attributed to that one jurisdiction.

**Table 5-24: Summary of Historical Tornado Occurrences by Jurisdiction**

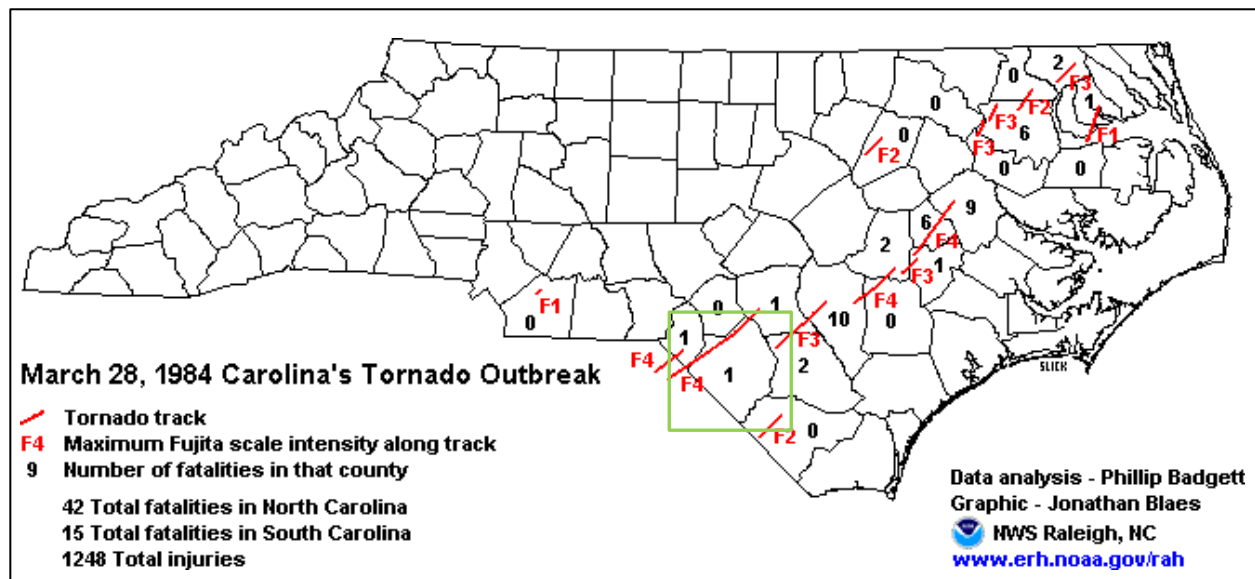
| Jurisdiction                          | Number of Occurrences | Deaths   | Injuries  | Reported Property Damage | Reported Crop Damage |
|---------------------------------------|-----------------------|----------|-----------|--------------------------|----------------------|
| <b>Bladen County</b>                  |                       |          |           |                          |                      |
| Bladen County (Unincorporated Area)   | 26                    | 3        | 9         | \$27,552,530             | \$10,000             |
| Town of Bladenboro                    | 1                     | 1        | 0         | \$3,100,000              | \$0                  |
| Town of Clarkton                      | 1                     | 0        | 0         | \$3,000                  | \$3,000              |
| Town of Elizabethtown                 | 1                     | 0        | 0         | \$25,000                 | \$0                  |
| Town of White lake                    | 1                     | 0        | 0         | \$0                      | \$0                  |
| <b>Subtotal Bladen</b>                | <b>30</b>             | <b>4</b> | <b>9</b>  | <b>\$30,680,530</b>      | <b>\$13,000</b>      |
| <b>Columbus County</b>                |                       |          |           |                          |                      |
| City of Whiteville                    | 2                     | 0        | 0         | \$10,000                 | \$0                  |
| Columbus County (Unincorporated Area) | 26                    | 8        | 25        | \$3,259,500              | \$500                |
| Town of Cerro Gordo                   | 1                     | 0        | 3         | \$250,000                | \$0                  |
| Town of Chadbourn                     | 1                     | 0        | 0         | \$1,000                  | \$0                  |
| Town of Fair Bluff                    | 1                     | 0        | 0         | \$0                      | \$0                  |
| Town of Lake Waccamaw                 | 1                     | 0        | 0         | \$5,000                  | \$0                  |
| Town of Tabor City                    | 1                     | 0        | 0         | \$2,500,000              | \$0                  |
| <b>Subtotal Columbus</b>              | <b>33</b>             | <b>8</b> | <b>28</b> | <b>\$6,025,500</b>       | <b>\$500</b>         |
| <b>Robeson County</b>                 |                       |          |           |                          |                      |
| City of Lumberton                     | 5                     | 0        | 0         | \$3,035,000              | \$0                  |
| Robeson County (Unincorporated Area)  | 38                    | 4        | 41        | \$3,499,500              | \$0                  |
| Town of Fairmont                      | 1                     | 0        | 0         | \$250,000                | \$0                  |
| Town of Marietta                      | 1                     | 0        | 0         | \$200,000                | \$0                  |
| Town of Pembroke                      | 2                     | 0        | 21        | \$275,000                | \$0                  |
| Town of Red Springs                   | 1                     | 0        | 0         | \$25,000                 | \$0                  |

## Hazard Profiles

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| Jurisdiction            | Number of Occurrences | Deaths    | Injuries  | Reported Property Damage | Reported Crop Damage |
|-------------------------|-----------------------|-----------|-----------|--------------------------|----------------------|
| Town of Saint Pauls     | 2                     | 0         | 0         | \$31,000                 | \$0                  |
| <b>Subtotal Robeson</b> | <b>50</b>             | <b>4</b>  | <b>62</b> | <b>\$7,330,500</b>       | <b>\$0</b>           |
| <b>Total Plan</b>       | <b>113</b>            | <b>16</b> | <b>99</b> | <b>\$44,036,530</b>      | <b>\$1800</b>        |

Source: NCEI Storm Events Database



Note: Green square indicates the location of Bladen, Columbus and Robeson Counties.

**Figure 5-68: 1984 Tornado Outbreak**

#### 5.10.4 Probability of Future Occurrences

The probability of future tornadoes is shown in the table below, by jurisdiction.

##### Definitions for Descriptors Used for Probability of Future Hazard Occurrences

- Unlikely: Less than 1% annual probability of hazard EF2 event
- Possible: Between 1% and 10% annual probability of hazard EF2 event
- Likely: Between 10% and 100% annual probability of hazard EF2 event
- Highly Likely: 100% annual probability of hazard EF2 event

| Jurisdiction                          | Probability of Future Occurrence |
|---------------------------------------|----------------------------------|
| Bladen County (Unincorporated Area)   | Likely                           |
| Columbus County (Unincorporated Area) | Likely                           |
| Robeson County (Unincorporated Area)  | Likely                           |
| City of Lumberton                     | Likely                           |
| City of Whiteville                    | Likely                           |
| Town of Bladenboro                    | Likely                           |
| Town of Boardman                      | Likely                           |
| Town of Bolton                        | Likely                           |
| Town of Brunswick                     | Likely                           |
| Town of Cerro Gordo                   | Likely                           |
| Town of Chadbourn                     | Likely                           |
| Town of Clarkton                      | Likely                           |
| Town of Dublin                        | Likely                           |

| Jurisdiction          | Probability of Future Occurrence |
|-----------------------|----------------------------------|
| Town of East Arcadia  | Likely                           |
| Town of Elizabethtown | Likely                           |
| Town of Fair Bluff    | Likely                           |
| Town of Fairmont      | Likely                           |
| Town of Lake Waccamaw | Likely                           |
| Town of Lumber Bridge | Likely                           |
| Town of Marietta      | Likely                           |
| Town of Maxton        | Likely                           |
| Town of Mcdonald      | Likely                           |
| Town of Orrum         | Likely                           |
| Town of Parkton       | Likely                           |
| Town of Pembroke      | Likely                           |
| Town of Proctorville  | Likely                           |
| Town of Raynham       | Likely                           |
| Town of Red Springs   | Likely                           |
| Town of Rennert       | Likely                           |
| Town of Rowland       | Likely                           |
| Town of Saint Pauls   | Likely                           |
| Town of Sandyfield    | Likely                           |
| Town of Tabor City    | Likely                           |
| Town of Tar Heel      | Likely                           |
| Town of White Lake    | Likely                           |

Source: NCEM RMT & plan risk assessment

### 5.10.5 Consequence and Impact Analysis (Vulnerability)

#### Changing Future Conditions

Tornadoes are among the most difficult hazards to investigate related to changing climatic patterns, partially because they are small and short-lived events when compared against wildfires, heat waves, and other hazards with a larger temporal or spatial distribution. However, the clustering of tornado systems has appeared to increase in recent years despite few changes in the total number of systems observed<sup>21</sup>. According to 2022 climate summary data from the NOAA National Centers for Environmental Information, tornadoes can be produced by hurricanes and severe thunderstorm systems, with the largest outbreak of 30 confirmed tornadoes and 24 deaths in North Carolina reported as of April 16, 2011.

<sup>21</sup> Brooks et al. (2014). Increased variability of tornado occurrence in the United States. *Science* **346**(6207). <https://doi.org/10.1126/science.1257460>



### **People**

The rate of onset of tornado events is rapid, giving those in danger minimal time to seek shelter. The current average lead time according to NOAA is 13 minutes. Injury may result from the direct impact of a tornado, or it may occur afterward when people walk among debris and enter damaged buildings. A study of injuries after a tornado in Marion, Illinois, showed that 50 percent of the tornado-related injuries were suffered during rescue attempts, cleanup, and other post-tornado activities. Common causes of injury included falling objects and heavy, rolling objects. Because tornadoes often damage power lines, gas lines, or electrical systems, there is a risk of fire, electrocution, or an explosion.

### **First Responders**

Due to the rapid onset of tornado events, first responders could be critically affected by tornado events through direct impact of the tornado itself or injury received during response efforts. Response may be hindered as responders may be unable to access those that have been affected if storm conditions persist or if they are unable to safely enter affected areas. As mentioned above, a large percentage of tornado-related injuries are suffered during rescue attempts, cleanup, and other post-tornado activities due to walking among debris and entering damaged buildings.

### **Continuity of Operations**

Continuity of operations could be greatly impacted by a tornado. Personnel or families of personnel may be harmed which would limit their response capability. Critical facilities and resources could also be damaged or destroyed during a tornado. In April 2020, more than 10,000 power outages were reported in Robeson County following a storm event that led to tornados in surrounding counties.

### **Built Environment**

The weakest tornadoes, EF0, can cause minor roof damage and strong tornadoes can destroy frame buildings and even badly damage steel reinforced concrete structures. Most building codes in the United States do not include provisions that provide protection against tornadic winds. Given the strength of the wind impact and construction techniques, buildings are vulnerable to direct impact, including potential destruction, from tornadoes and from windborne debris that tornadoes turn into missiles. Mobile homes are particularly susceptible to damage and fatalities during tornadoes.

### **Economy**

The largest impact of tornadoes is the economic damage caused by widespread destruction along their paths. More directly, there are many people killed by these storms, and to a lesser extent pets and farm animals. The major damage is the complete destruction of homes, buildings, farms, the wrecking of cars and trucks, and the loss of power distribution systems. Winds as high as 300 mph blow down walls, tear up trees, and throw debris in every direction at high speeds. Indirect losses include workers who cannot report to jobs and commercial entities that are most close to repair damage.

### **Natural Environment**

There is no defense for plants and animals from a direct impact from a tornado. Plants and animals in the path of the tornado will receive significant damage or be killed. Strong tornados can shred trees and lift grass from the ground.

## 5.11 Wildfire

### 5.11.1 Hazard Description

A wildfire is an uncontained fire that spreads through the environment. Wildfires can consume large areas, including infrastructure, property, and resources. When massive fires, or conflagrations, develop near populated areas, evacuations possibly ensue. Not only do the flames impact the environment, but the massive volumes of smoke spread by certain atmospheric conditions also impact the health of nearby populations. There are three general types of fire spread that are recognized.

- **Ground fires** – burn organic matter in the soil and are sustained by glowing combustion.
- **Surface fires** – spread with a flaming front and burn leaf litter, fallen branches and other fuels located at ground level.
- **Crown fires** – burn through the top layer of foliage on a tree, known as the canopy or crown fires. Crown fires, the most intense type of fire and often the most difficult to contain, need strong winds, steep slopes and a heavy fuel load to continue burning.

Generally, wildfires are started by humans, either through arson or carelessness. Fire intensity is controlled by both short-term weather conditions and longer-term vegetation conditions. During intense fires, understory vegetation, such as leaves, small branches, and other organic materials that accumulate on the ground, can become additional fuel for the fire. The most explosive conditions occur when dry, gusty winds blow across dry vegetation.

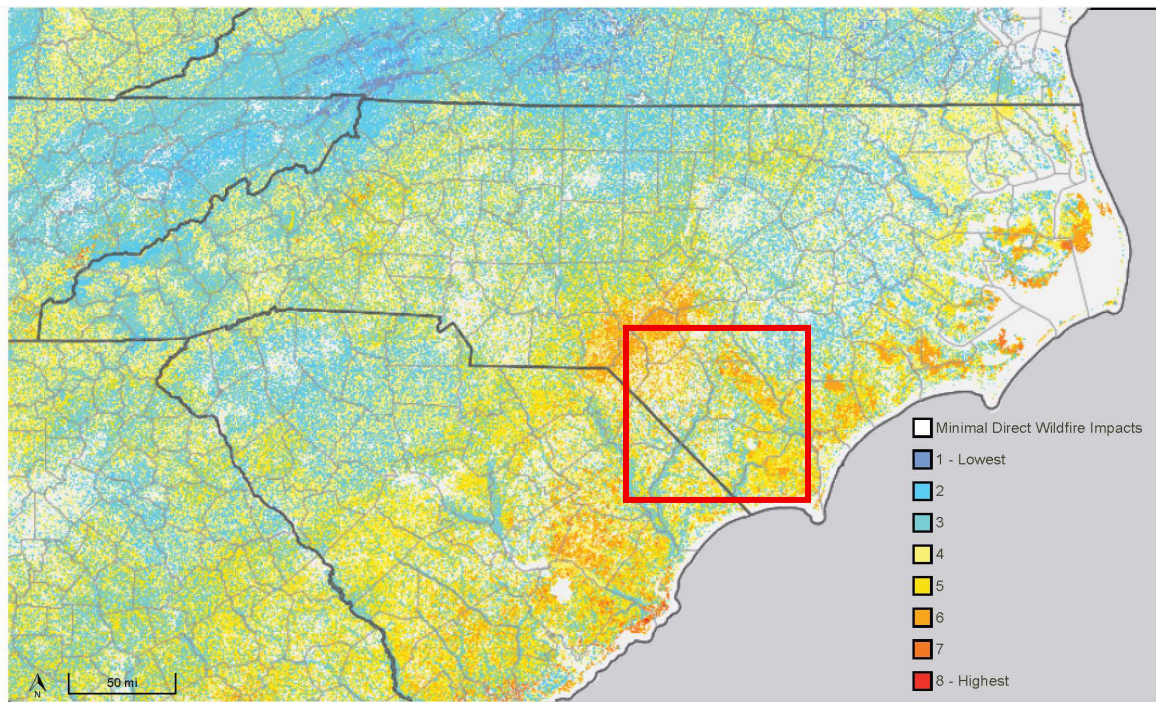
### 5.11.2 Location and Spatial Extent

The entire region is at risk of a wildfire occurrence. However, several factors such as drought conditions or high levels of fuel on the forest floor may make wildfire more likely. Conversely, areas of high development limit wildfire risk. It is also important to note, areas in the urban-wildland interface (where development abuts forest or open land) are particularly susceptible to wildfire hazard. When large wildfires burn on these open lands, it can be difficult to stop its spread to the built environment, thus endangering structures and population. The expansion of residential development from urban centers into rural landscapes increases the potential for wildland fire threat to public safety and the potential for damage to forest resources and dependent industries. The Wildland Urban Interface (WUI) is described as the area where structures and other human improvements meet and intermingle with undeveloped wildland or vegetative or vegetative fuels. Population growth within the WUI substantially increases the risk of wildfire.

To identify specific potential wildfire hazard areas within the planning area, a GIS-based data layer called the Wildland Fire Susceptibility Index (WFSI) was obtained from the North Carolina Forest Service (NCFS). The WFSI is a component layer derived from the Southern Wildfire Risk Assessment (SWRA), a multi-year project to assess and quantify wildfire risk for the 13 Southern states. The WFSI is a value between 0 and 1. It was developed consistently with the mathematical calculation process for determining the probability of an acre burning. The WFSI integrates the probability of an acre igniting and the expected final fire size based on the rate of spread in four weather percentile categories into a single measure of wildland fire susceptibility. Due to some necessary assumptions, mainly fuel homogeneity, it is not the true probability. But since all areas of the planning area have this value determined consistently, it allows for comparison and ordination of areas as to the likelihood of an acre burning.

Wildfire could potentially occur anywhere in the region. **Figure 5-69** below shows areas of the state with a high probability of experiencing a wildfire event. The Region is located within one of the highest probability categories.

## Wildfire Hazard Potential



Source: Southern Wildfire Risk Assessment (SWRA)

**Figure 5-69: North Carolina Wildfire Hazard Potential Map**

The figures below illustrate the level of wildfire potential for the planning area based on the WFSI data provided by NCFs. Areas with a WFSI value of 0.01–0.05 were considered to be at moderate risk to the wildfire hazard. Areas with a WFSI value greater than 0.05 were considered to be at high risk to the wildfire hazard. Areas with a WFSI value less than 0.01 were considered to not be at risk to the wildfire hazard



## BCR Region - Functional Wildland Urban Interface (WUI)

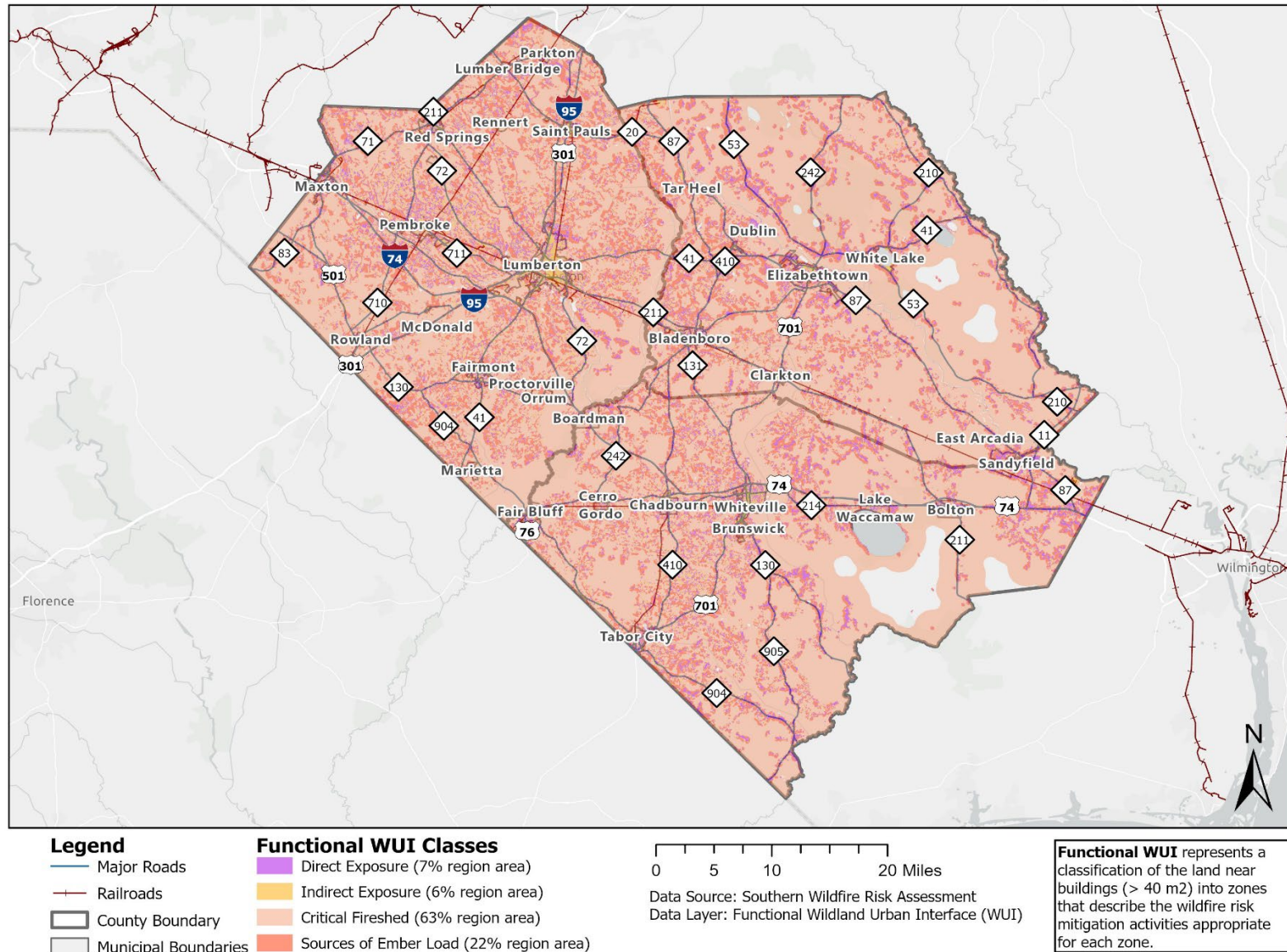


Figure 5-70: Wildfire Hazard Areas – Regional

## Bladen County - Functional Wildland Urban Interface (WUI)

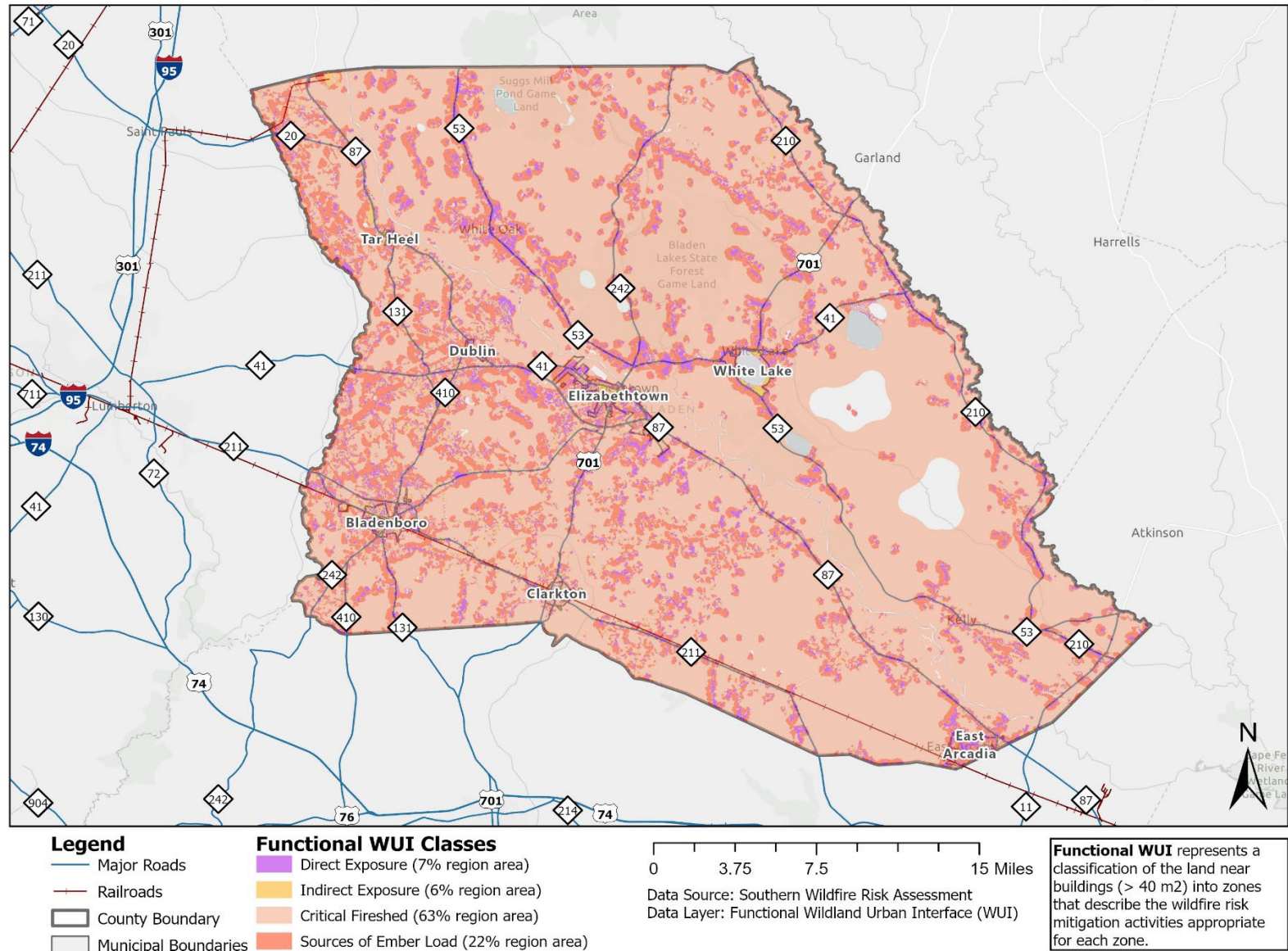


Figure 5-71: Wildfire Hazard Areas – Bladen County



## Bladenboro - Functional Wildland Urban Interface (WUI)

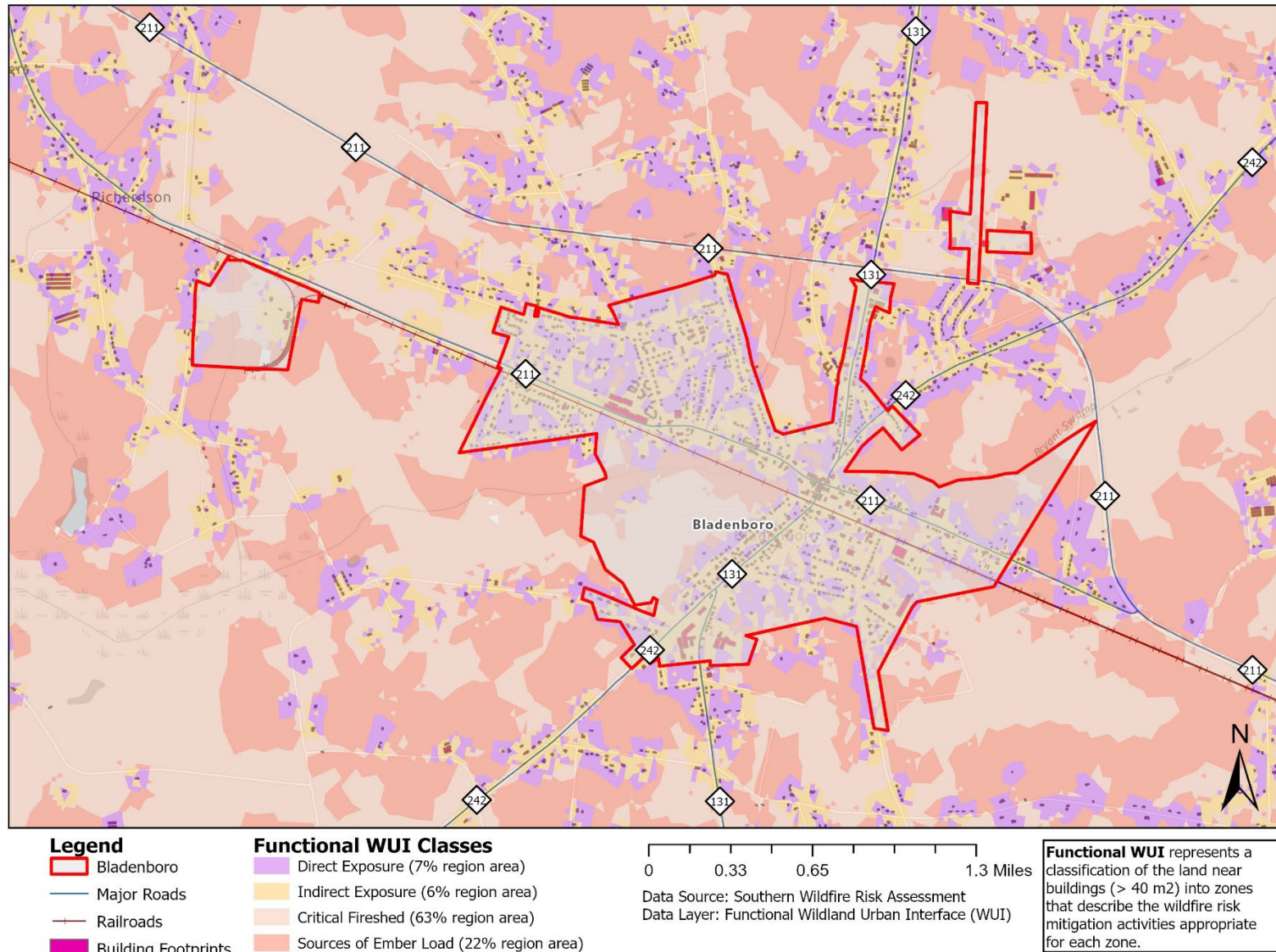
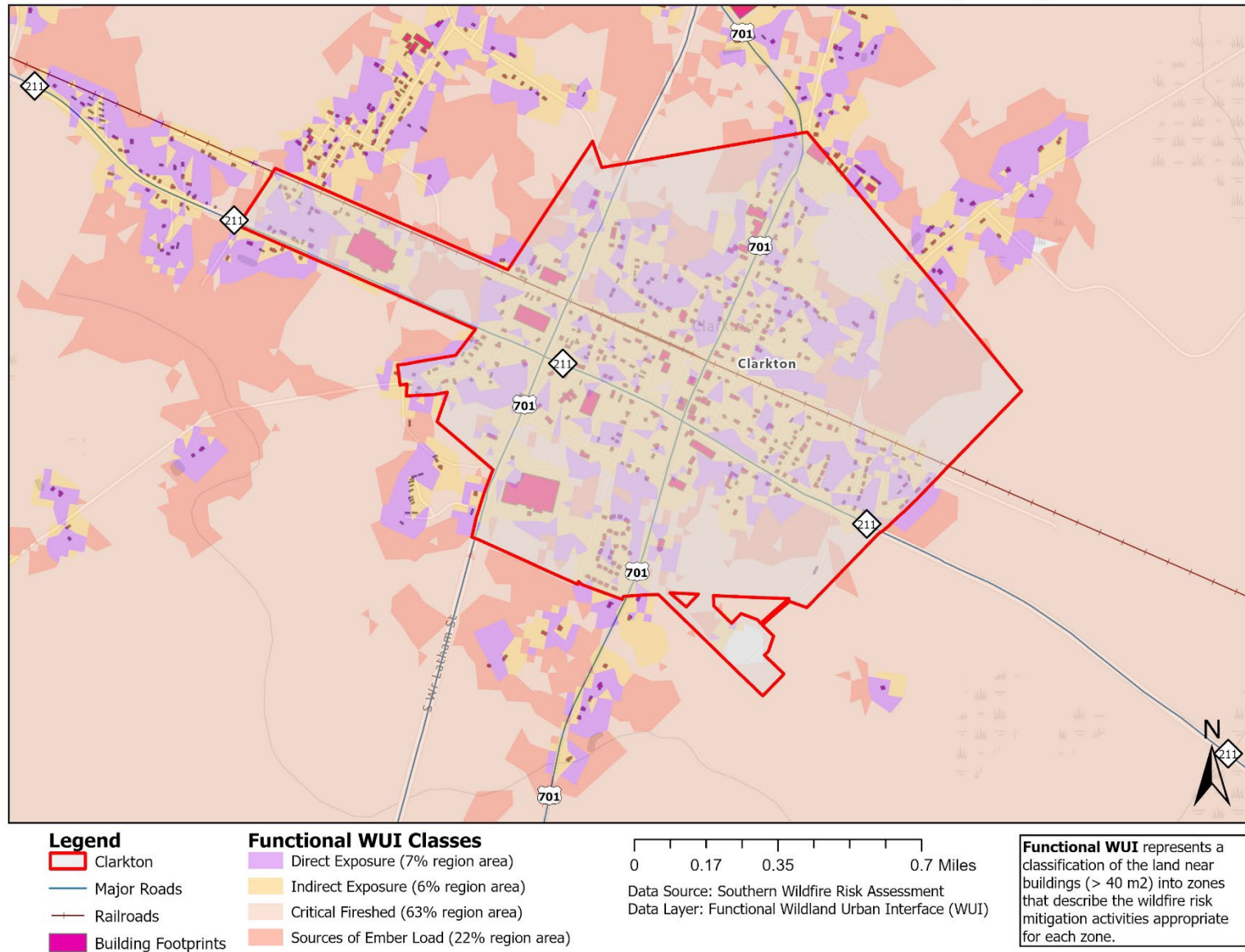


Figure 5-72: Wildfire Hazard Areas – Bladenboro

## Clarkton - Functional Wildland Urban Interface (WUI)



**Figure 5-73: Wildfire Hazard Areas – Clarkton**



## Dublin - Functional Wildland Urban Interface (WUI)

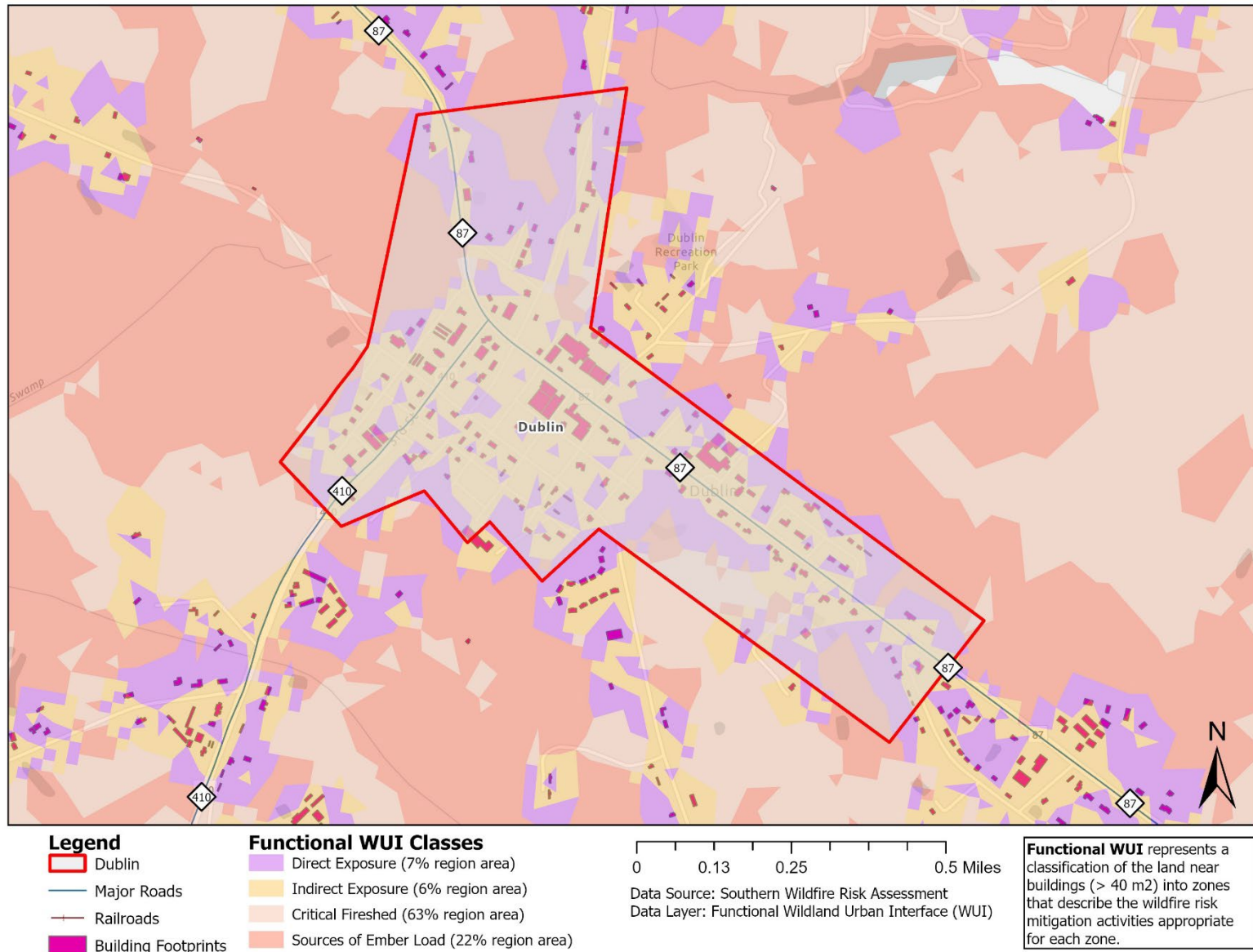


Figure 5-74: Wildfire Hazard Areas – Dublin

## East Arcadia - Functional Wildland Urban Interface (WUI)

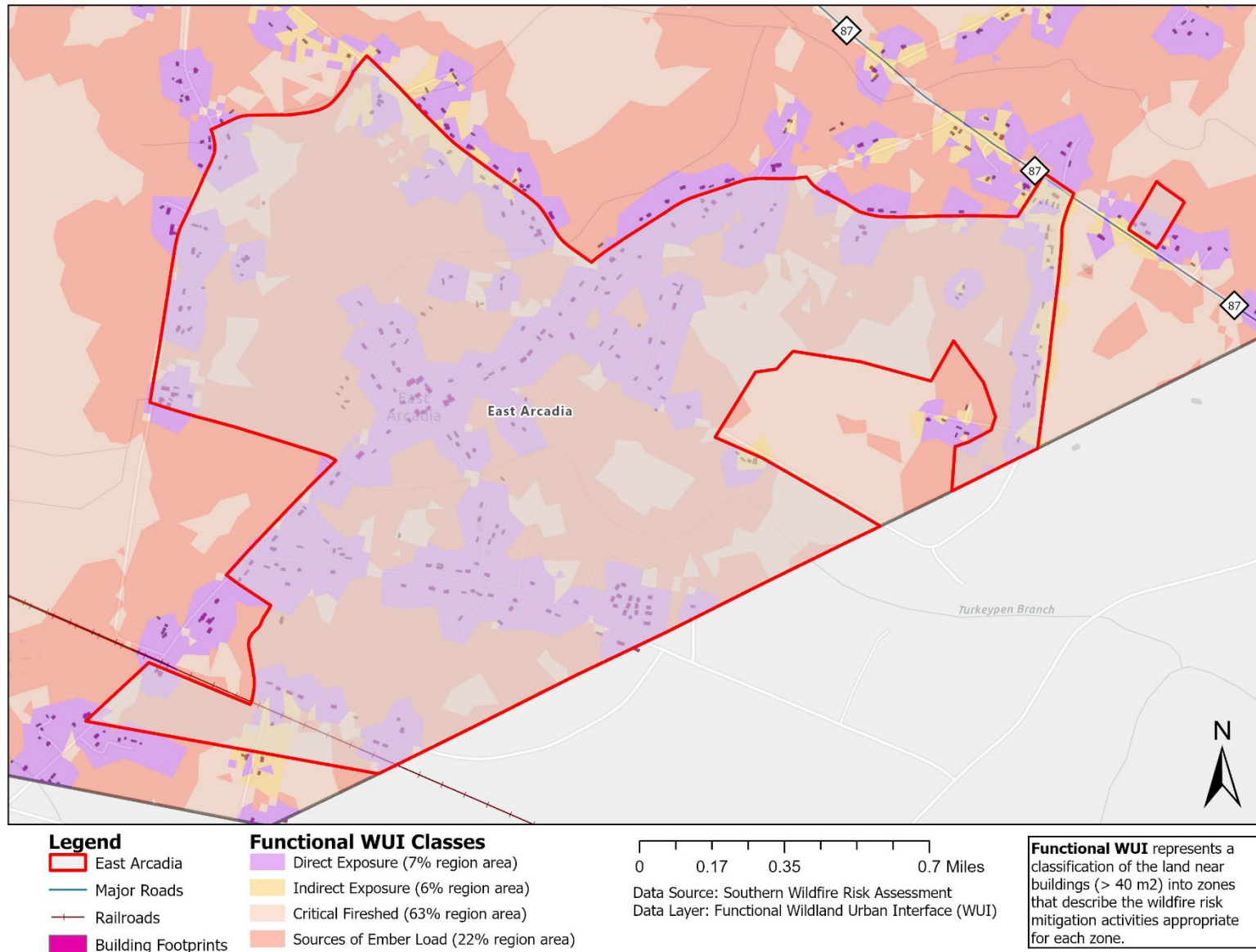


Figure 5-75: Wildfire Hazard Areas – East Arcadia



## Elizabethtown - Functional Wildland Urban Interface (WUI)

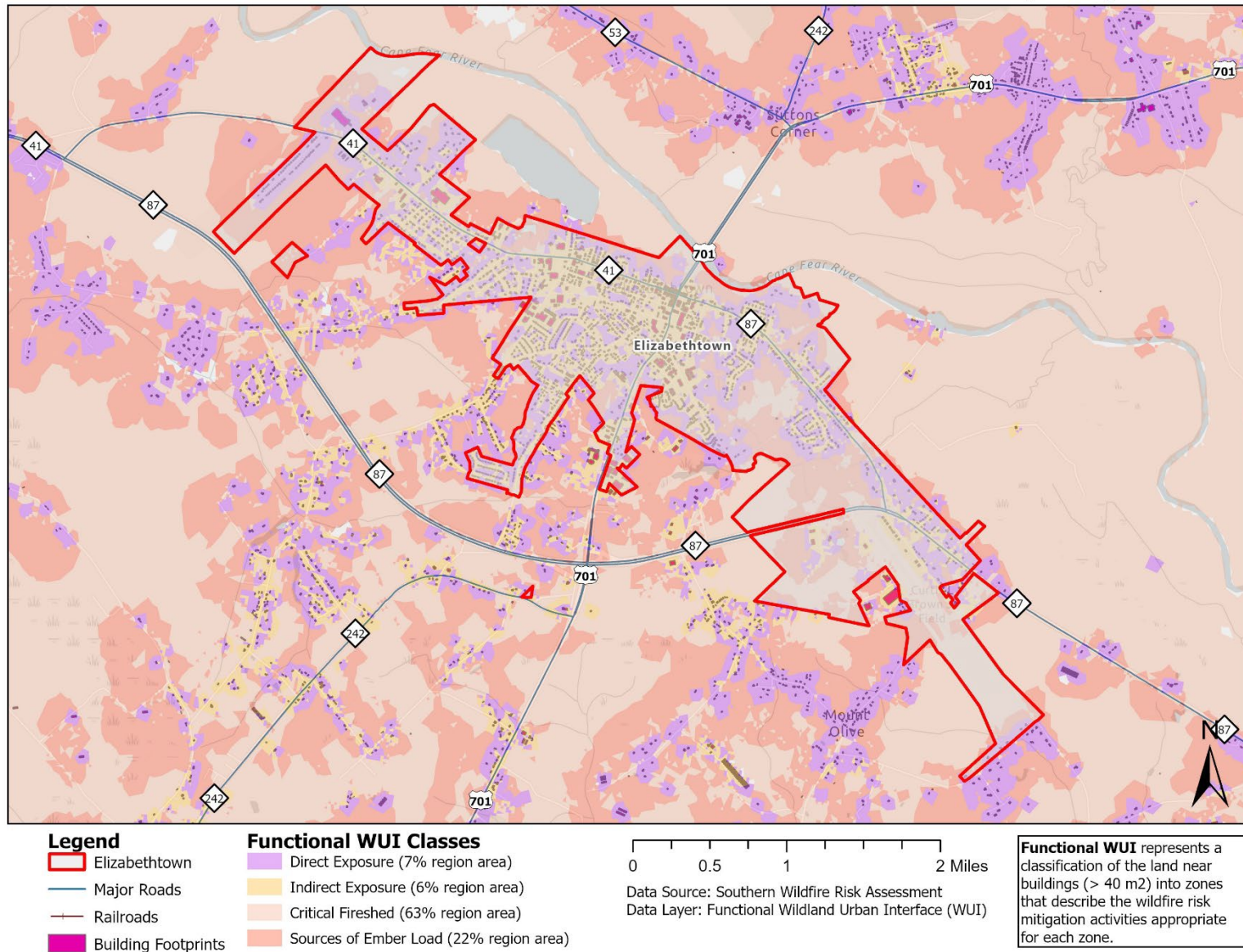


Figure 5-76: Wildfire Hazard Areas – Elizabethtown



## Tar Heel - Functional Wildland Urban Interface (WUI)

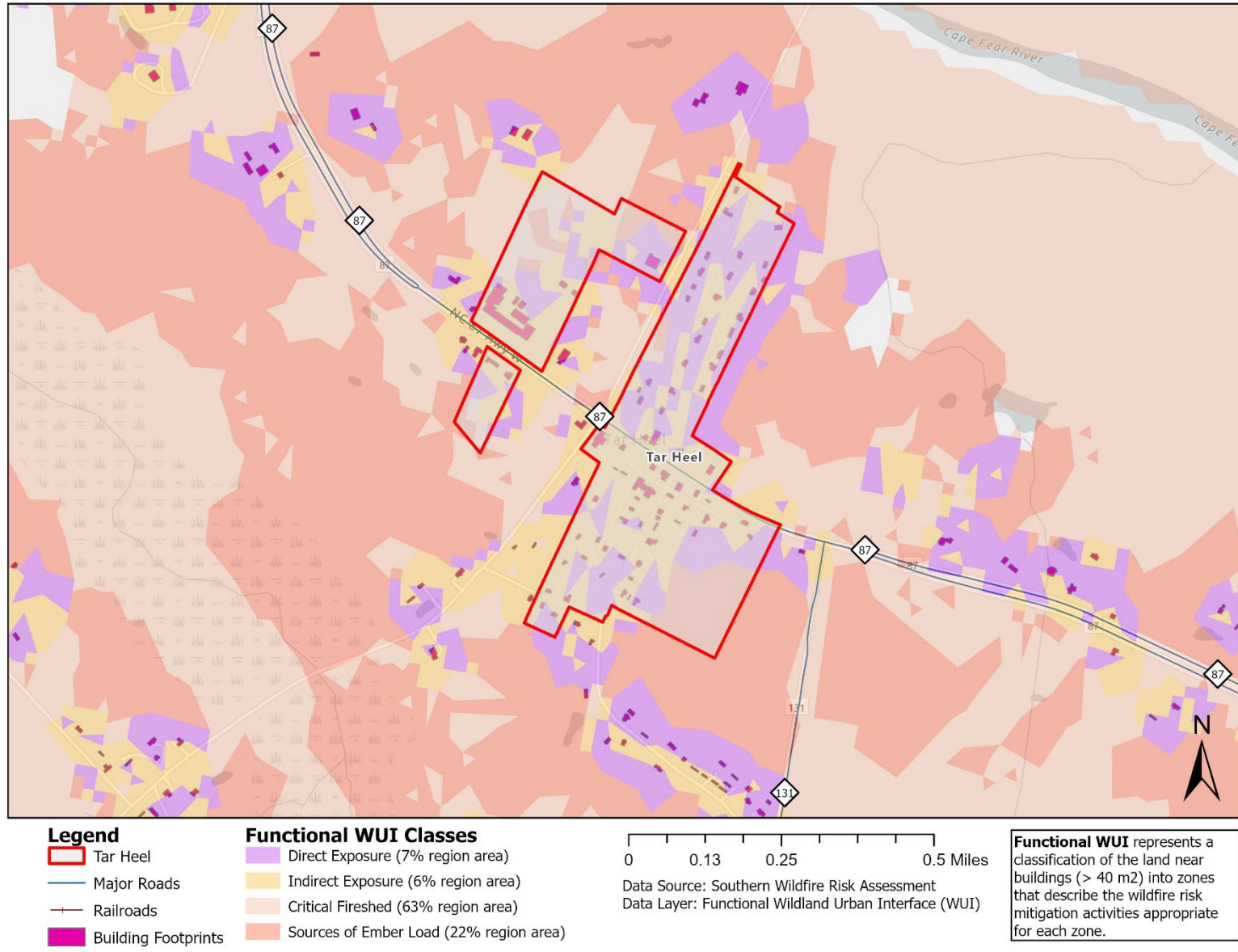


Figure 5-77: Wildfire Hazard Areas – Tar Heel

## White Lake - Functional Wildland Urban Interface (WUI)

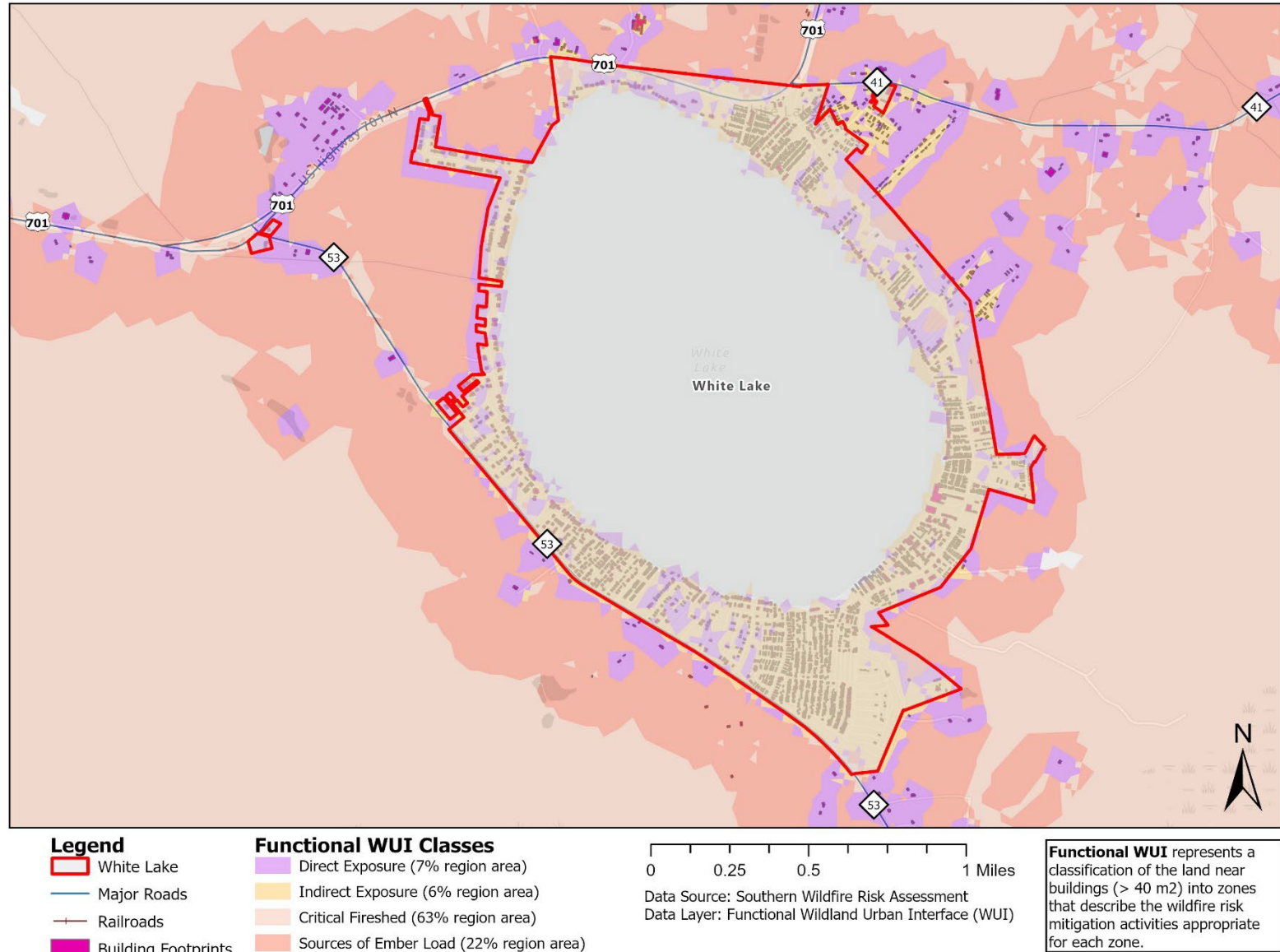


Figure 5-78: Wildfire Hazard Areas – White Lake

## Columbus County - Functional Wildland Urban Interface (WUI)

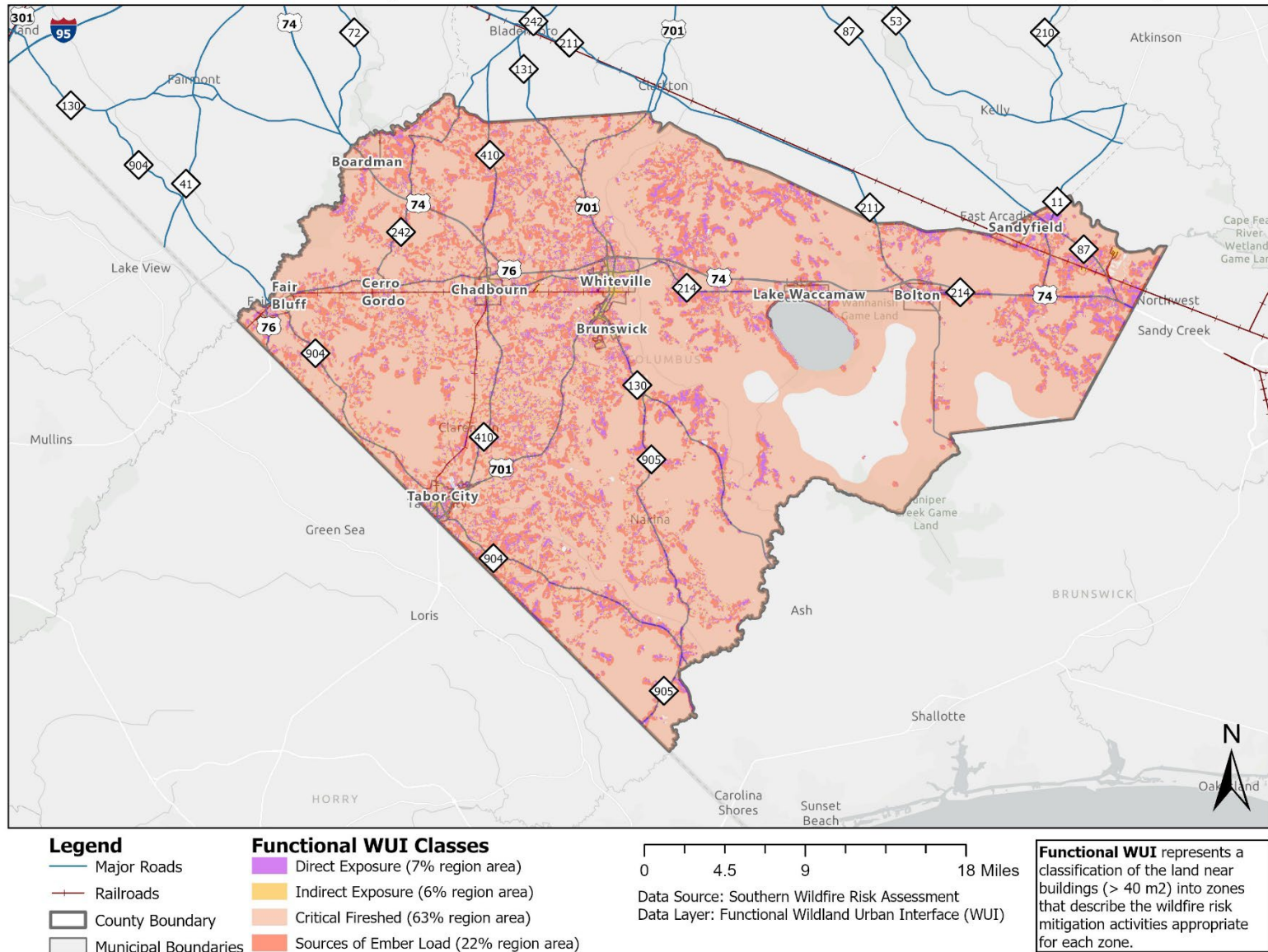


Figure 5-79: Wildfire Hazard Areas – Columbus County



## Boardman - Functional Wildland Urban Interface (WUI)

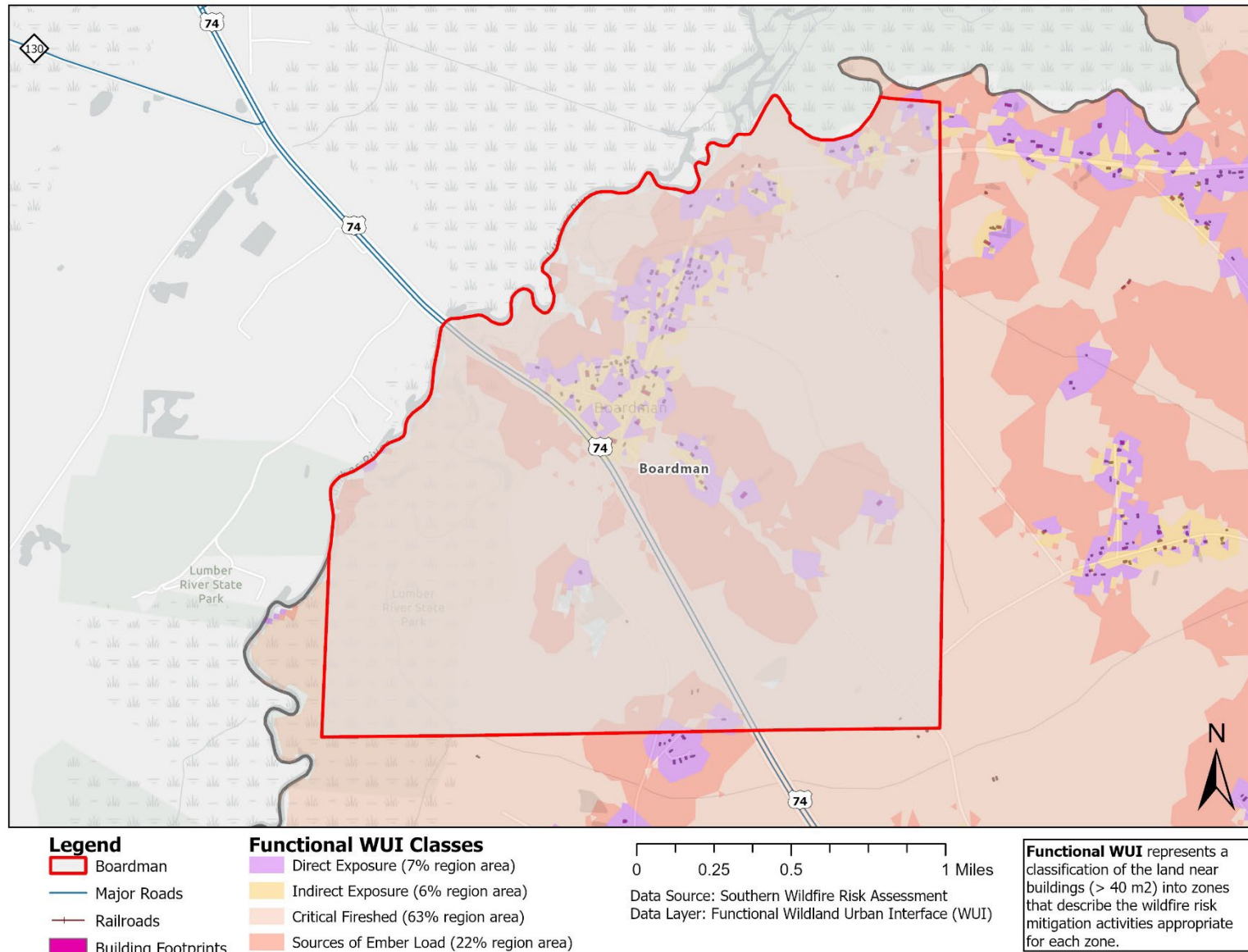


Figure 5-80: Wildfire Hazard Areas – Boardman

## Bolton - Functional Wildland Urban Interface (WUI)

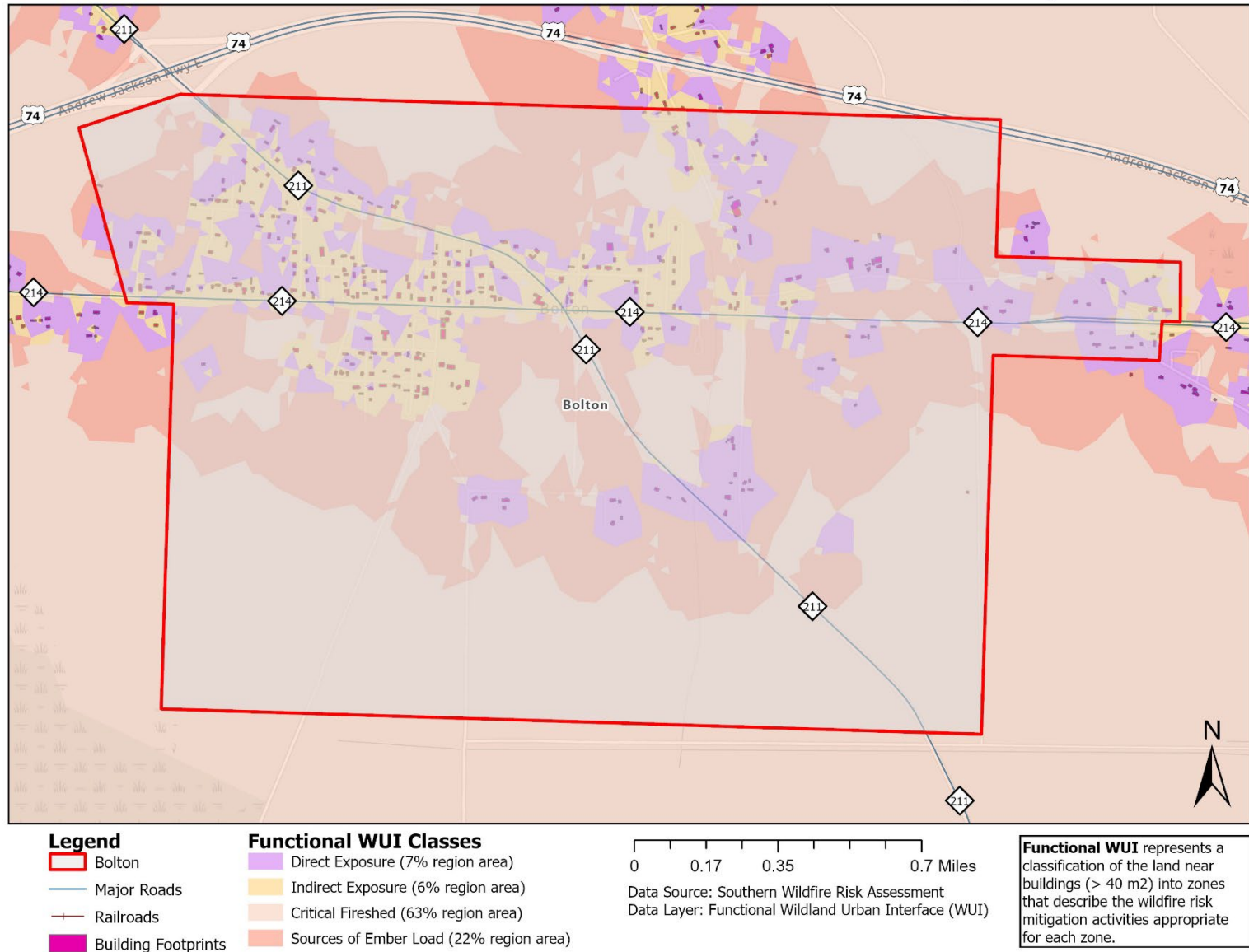


Figure 5-81: Wildfire Hazard Areas – Bolton



## Brunswick - Functional Wildland Urban Interface (WUI)

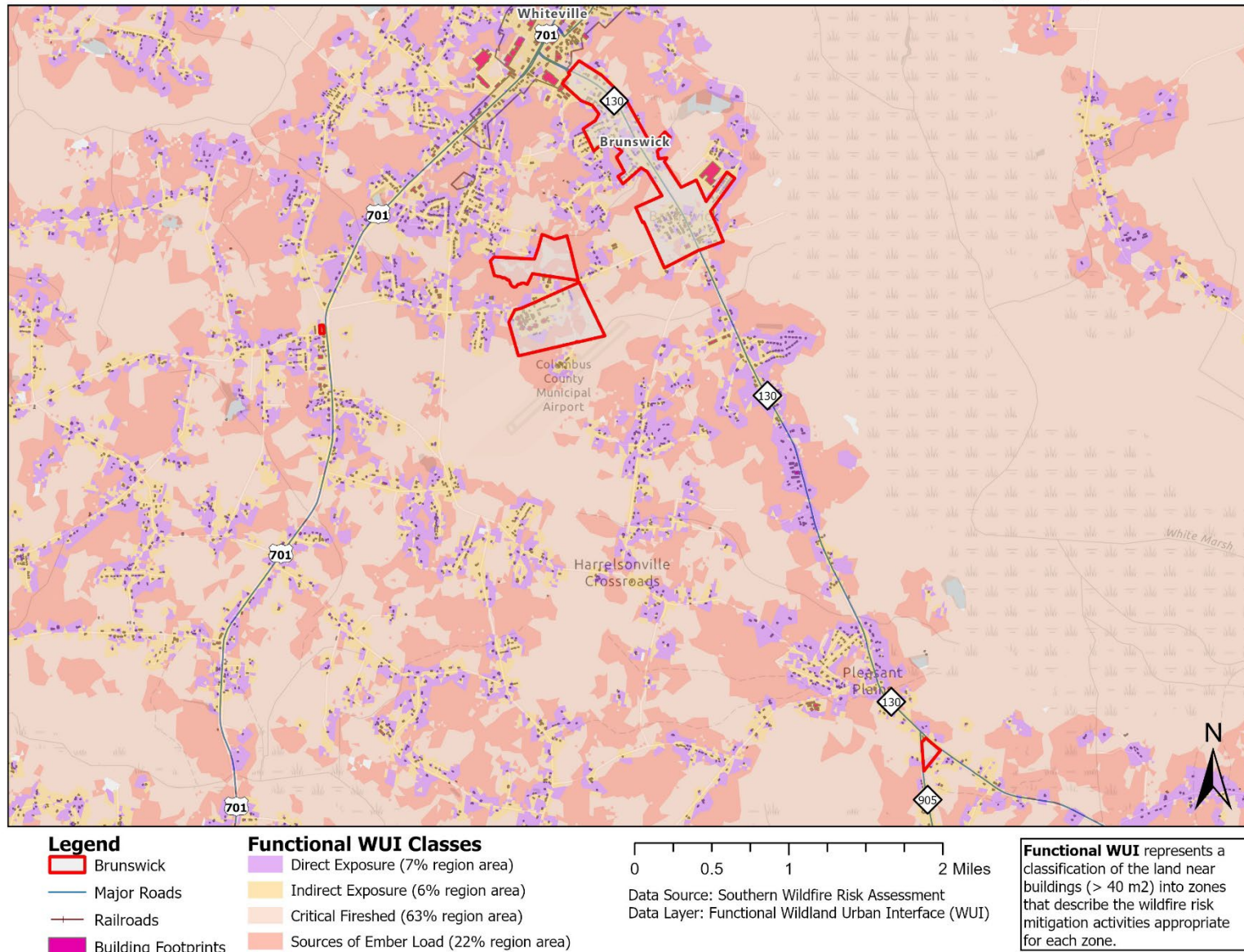


Figure 5-82: Wildfire Hazard Areas – Brunswick

## Cerro Gordo - Functional Wildland Urban Interface (WUI)

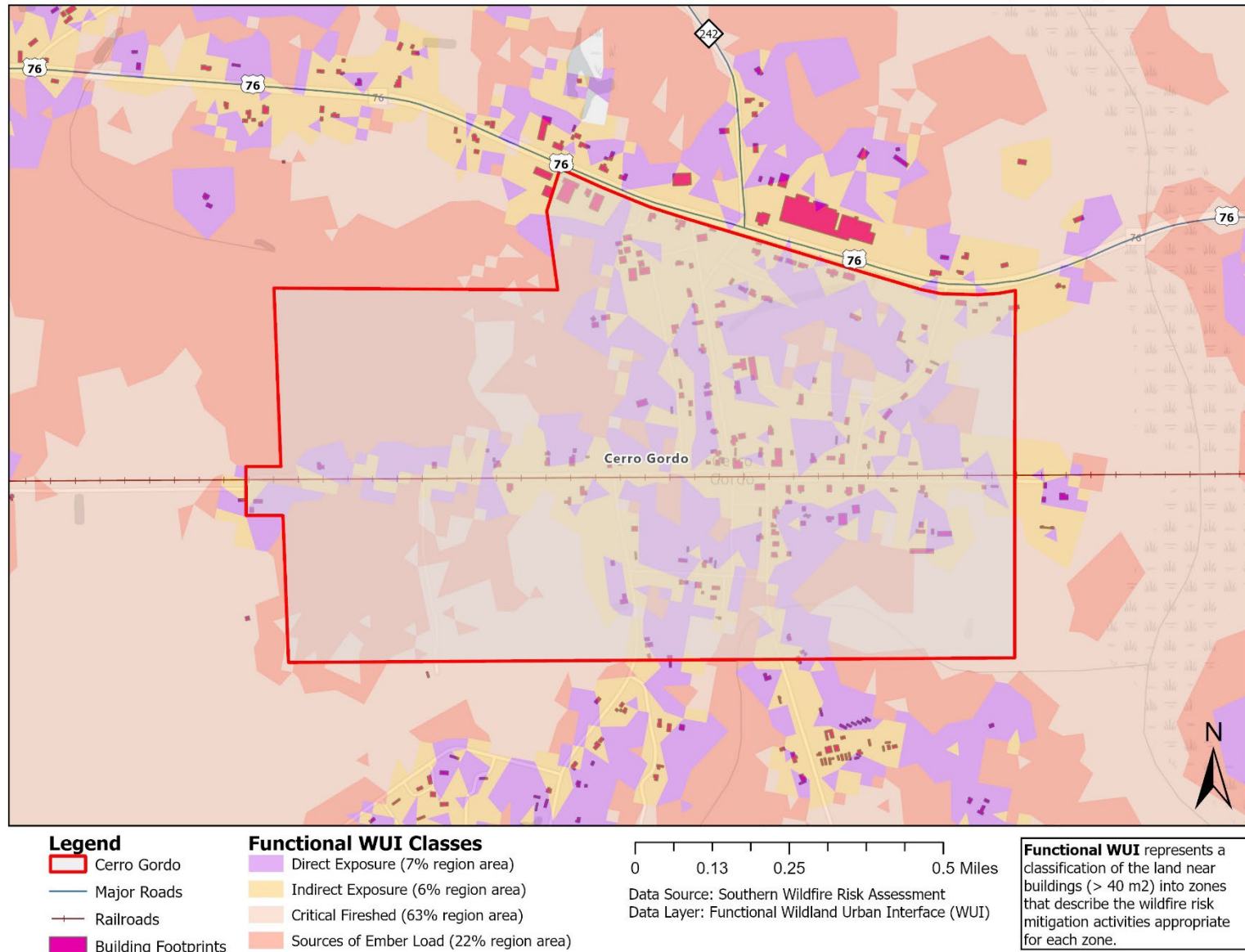


Figure 5-83: Wildfire Hazard Areas – Cerro Gordo



## Chadbourn - Functional Wildland Urban Interface (WUI)

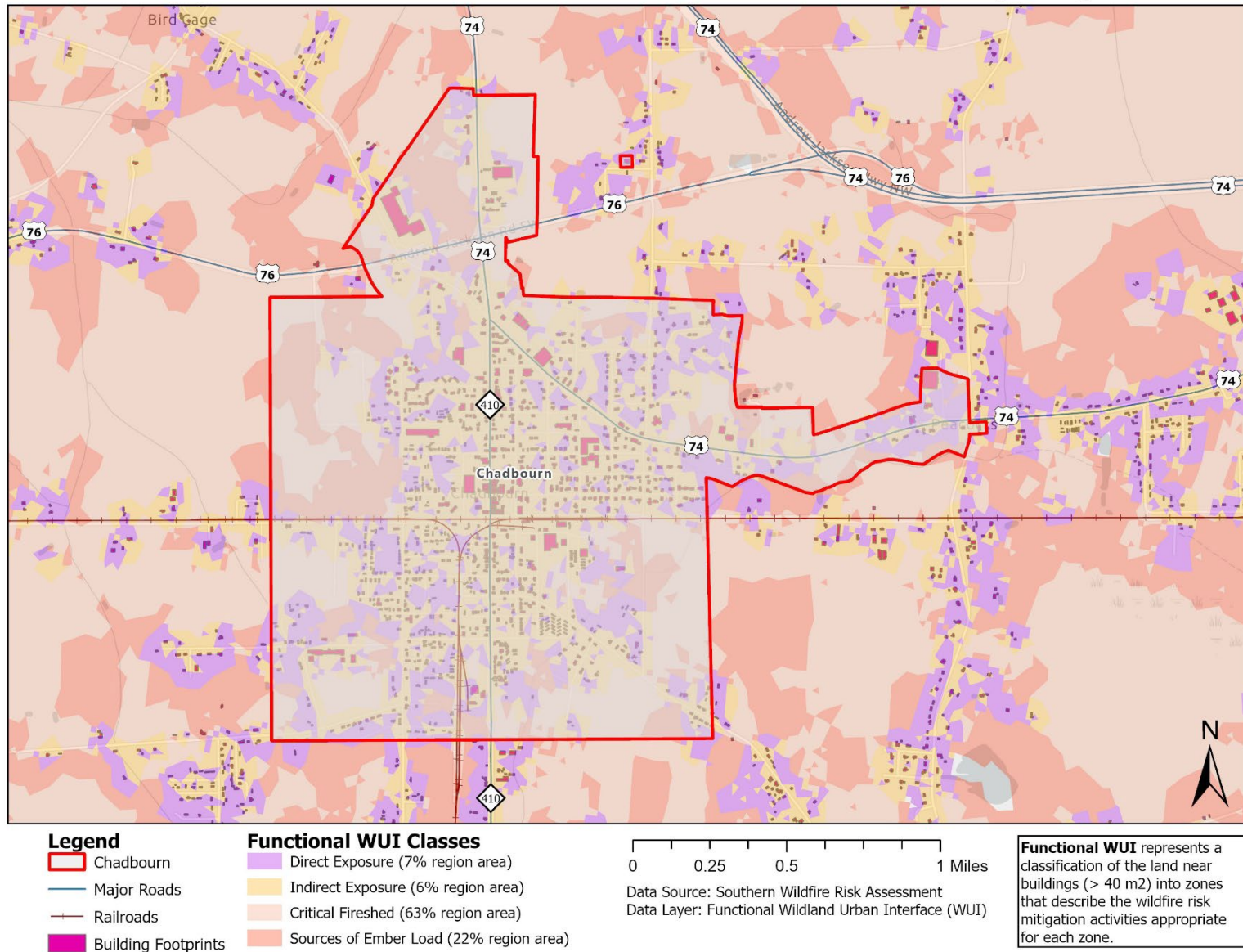


Figure 5-84: Wildfire Hazard Areas – Chadbourne

## Fair Bluff - Functional Wildland Urban Interface (WUI)

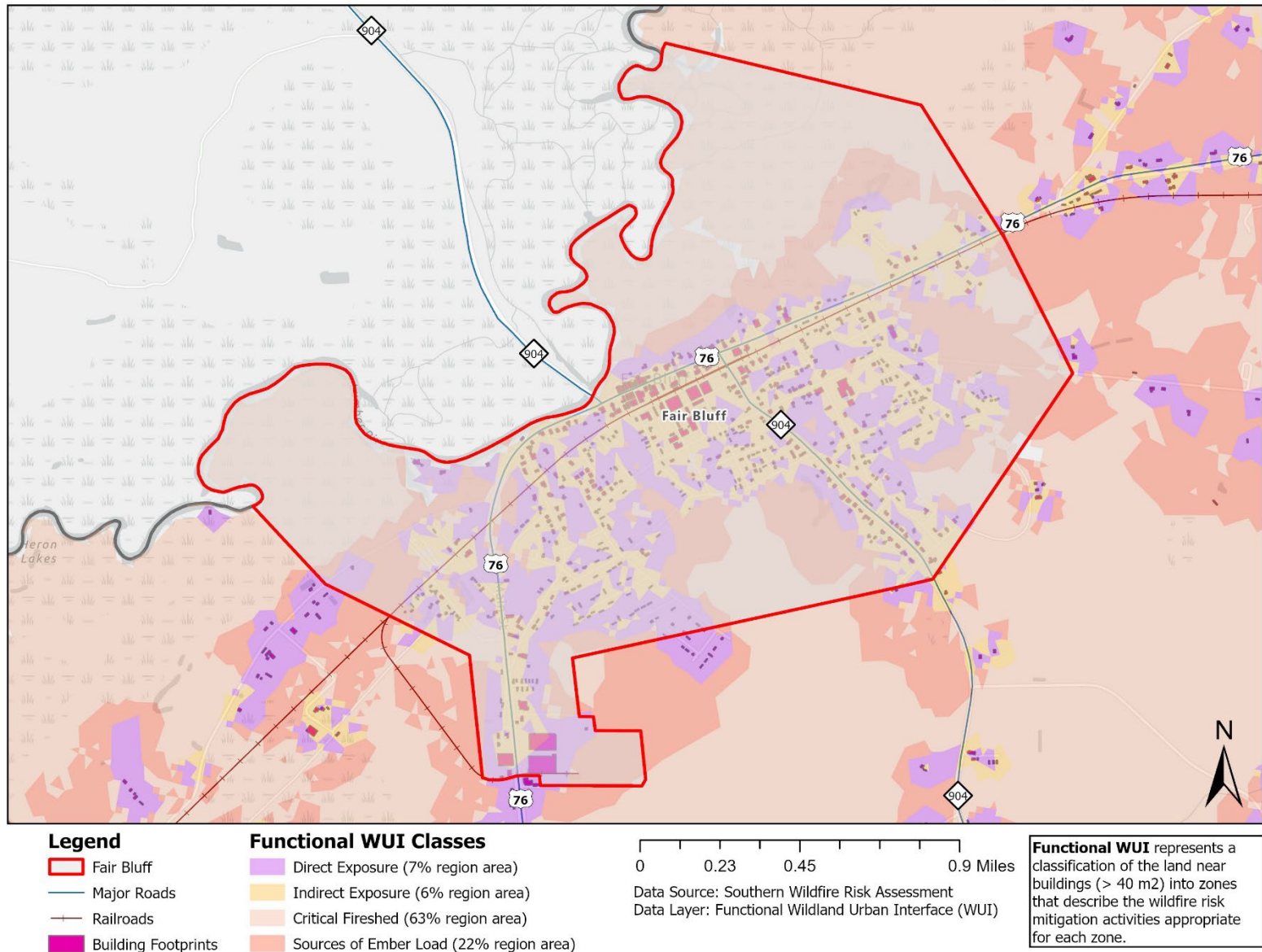
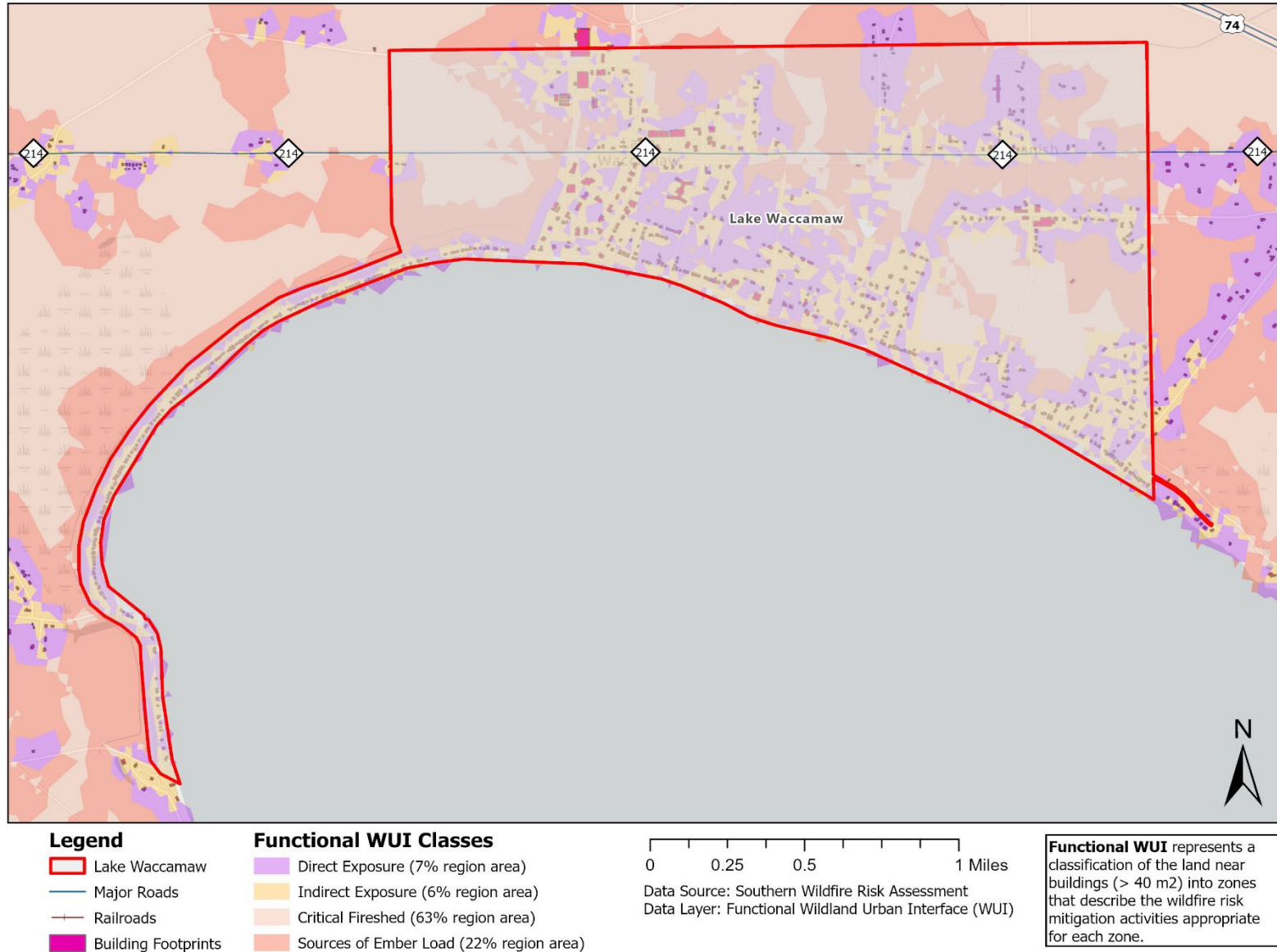


Figure 5-85: Wildfire Hazard Areas – Fair Bluff



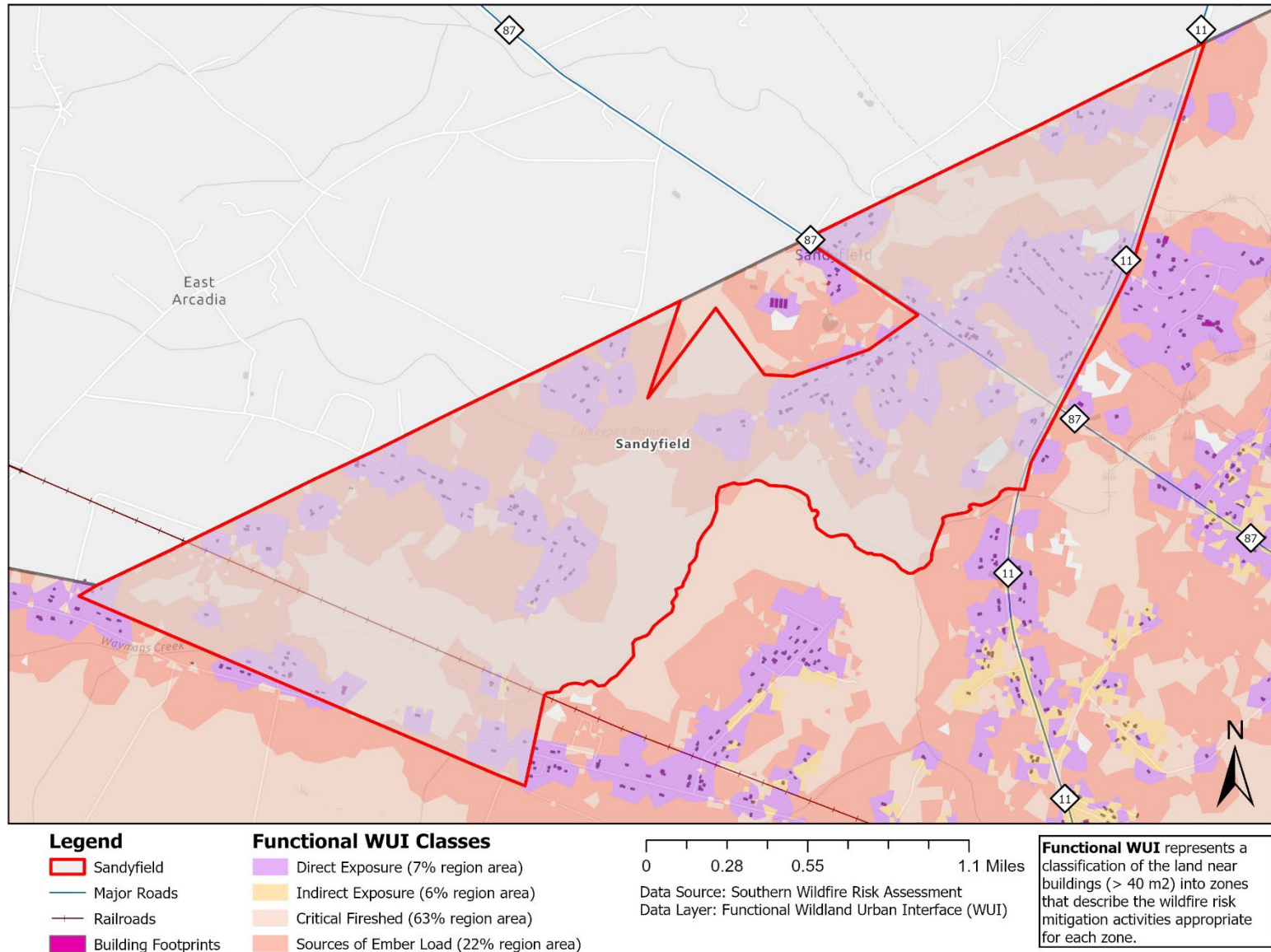
## Lake Waccamaw - Functional Wildland Urban Interface (WUI)



**Figure 5-86: Wildfire Hazard Areas – Lake Waccamaw**



## Sandyfield - Functional Wildland Urban Interface (WUI)



**Figure 5-87: Wildfire Hazard Areas – Sandyfield**

## Tabor City - Functional Wildland Urban Interface (WUI)

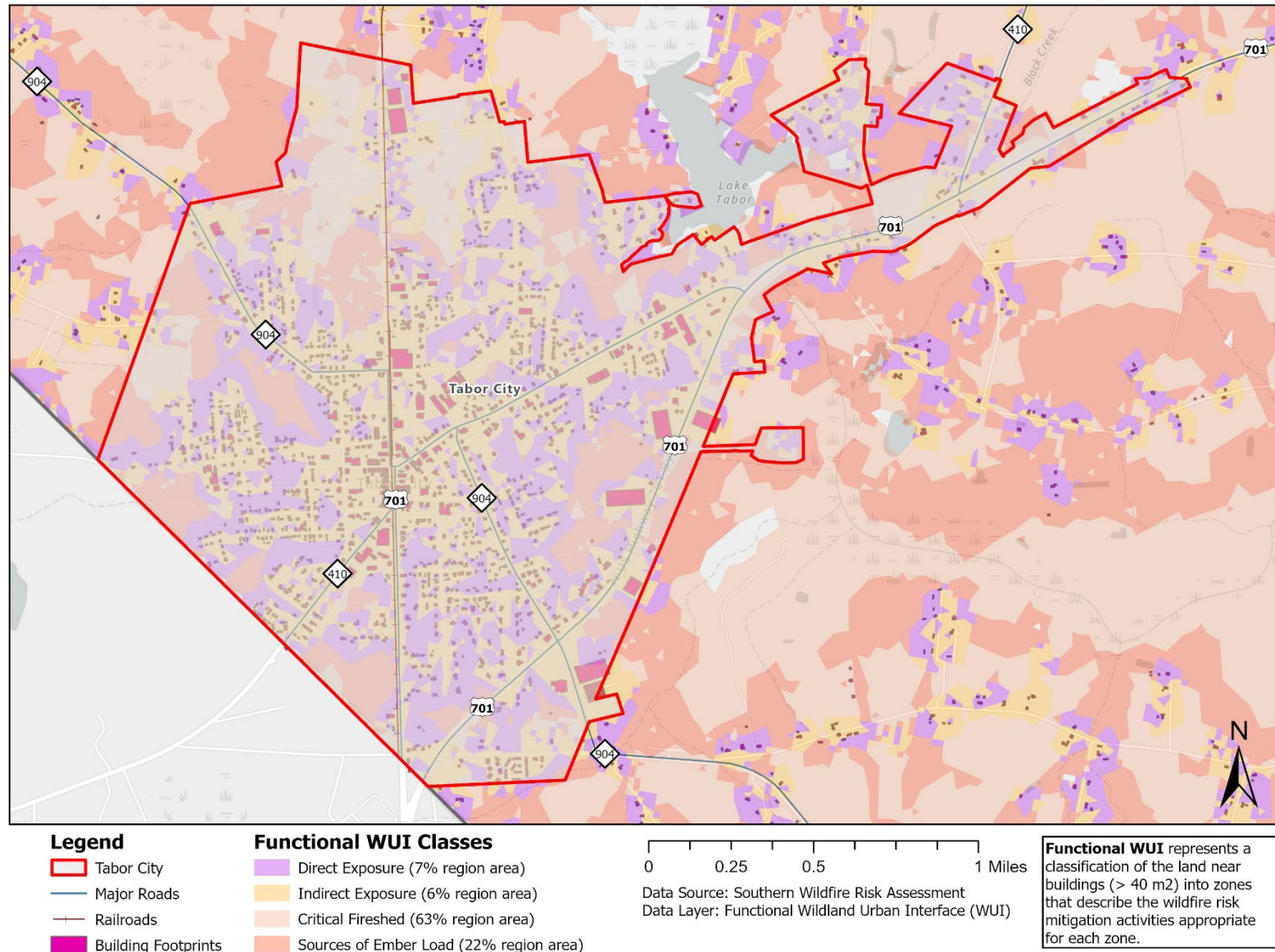


Figure 5-88: Wildfire Hazard Areas – Tabor City



## Whiteville - Functional Wildland Urban Interface (WUI)

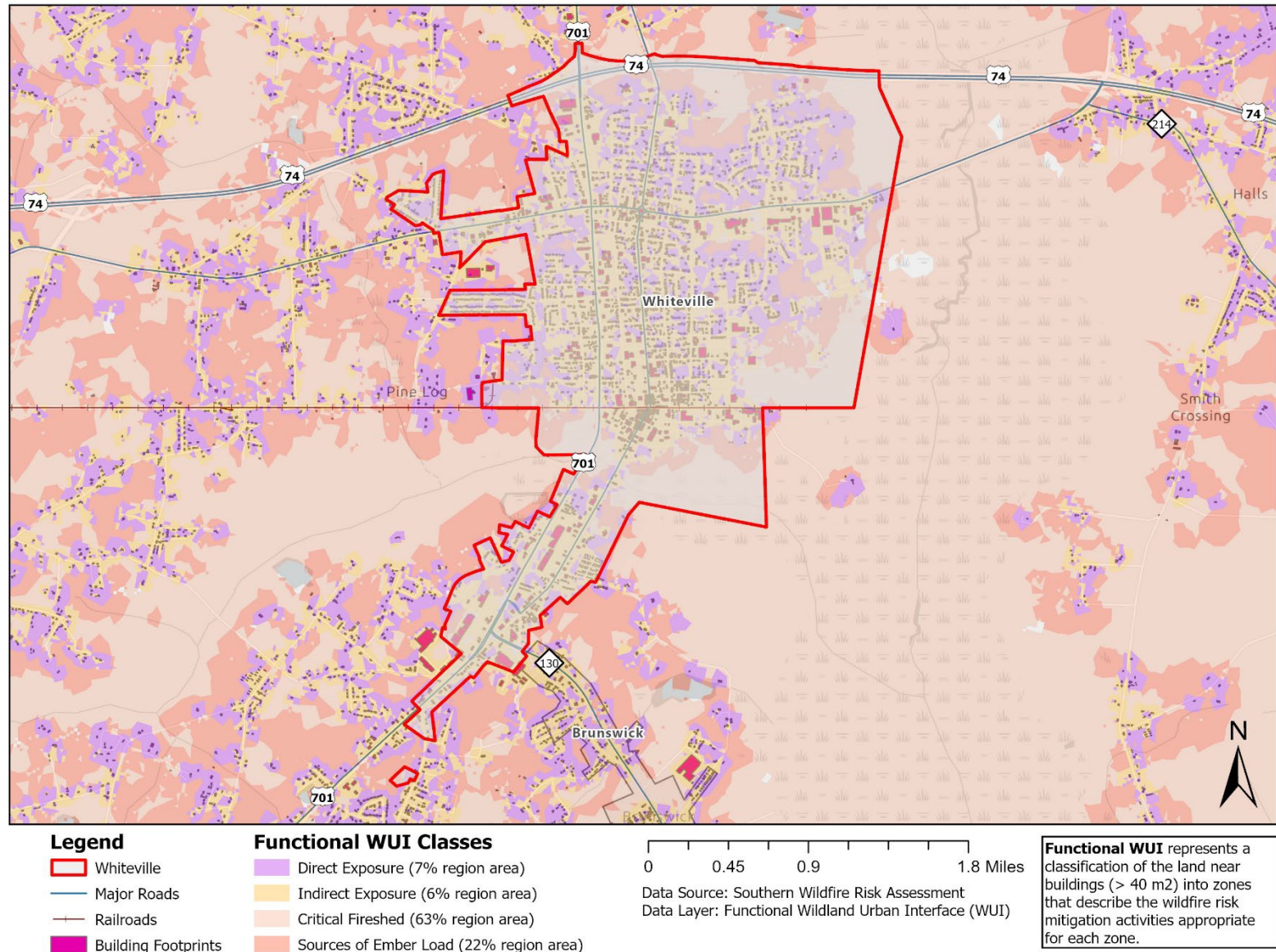


Figure 5-89: Wildfire Hazard Areas – Whiteville

## Robeson County - Functional Wildland Urban Interface (WUI)

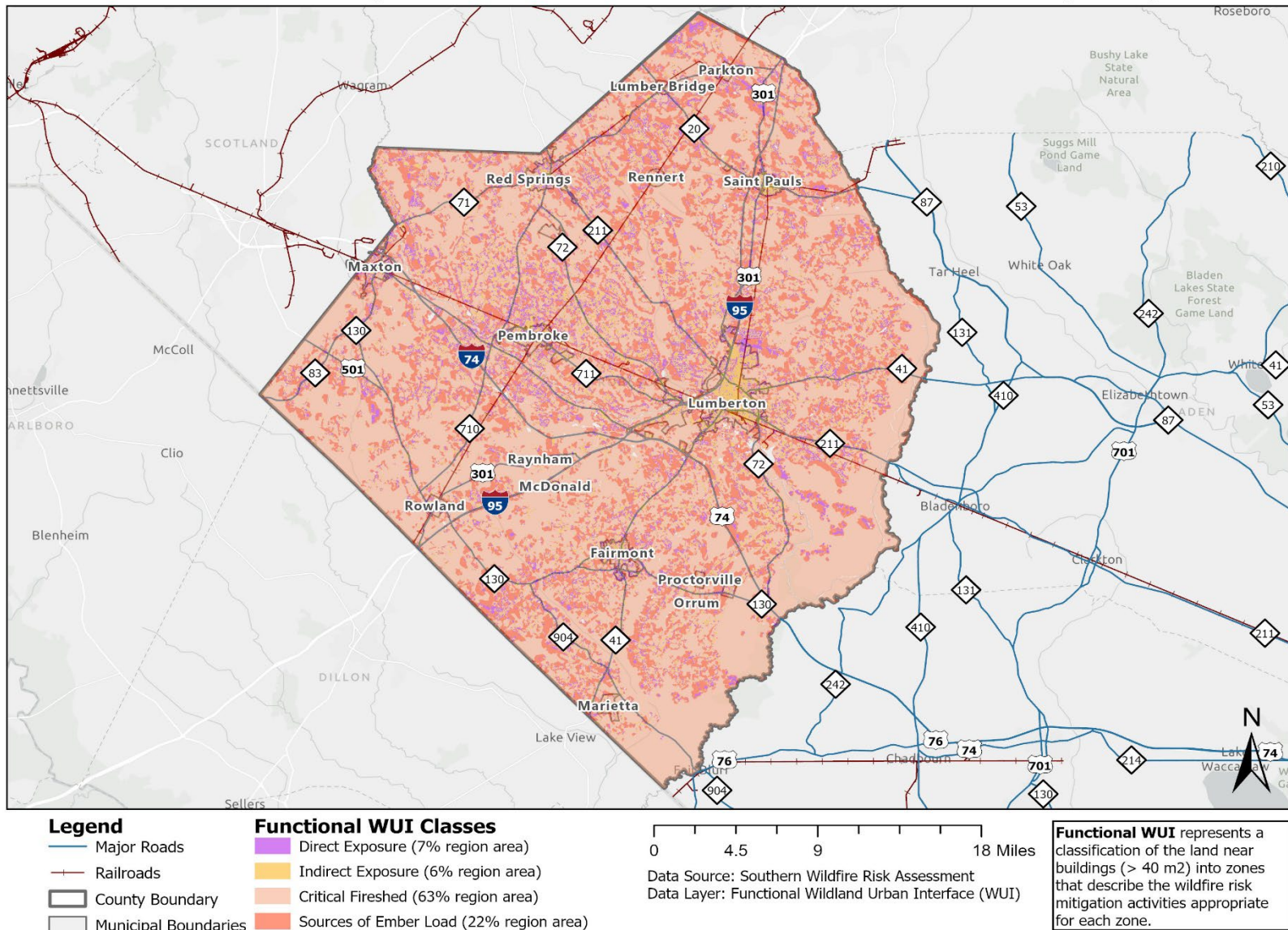


Figure 5-90: Wildfire Hazard Areas – Robeson County



## Fairmont - Functional Wildland Urban Interface (WUI)

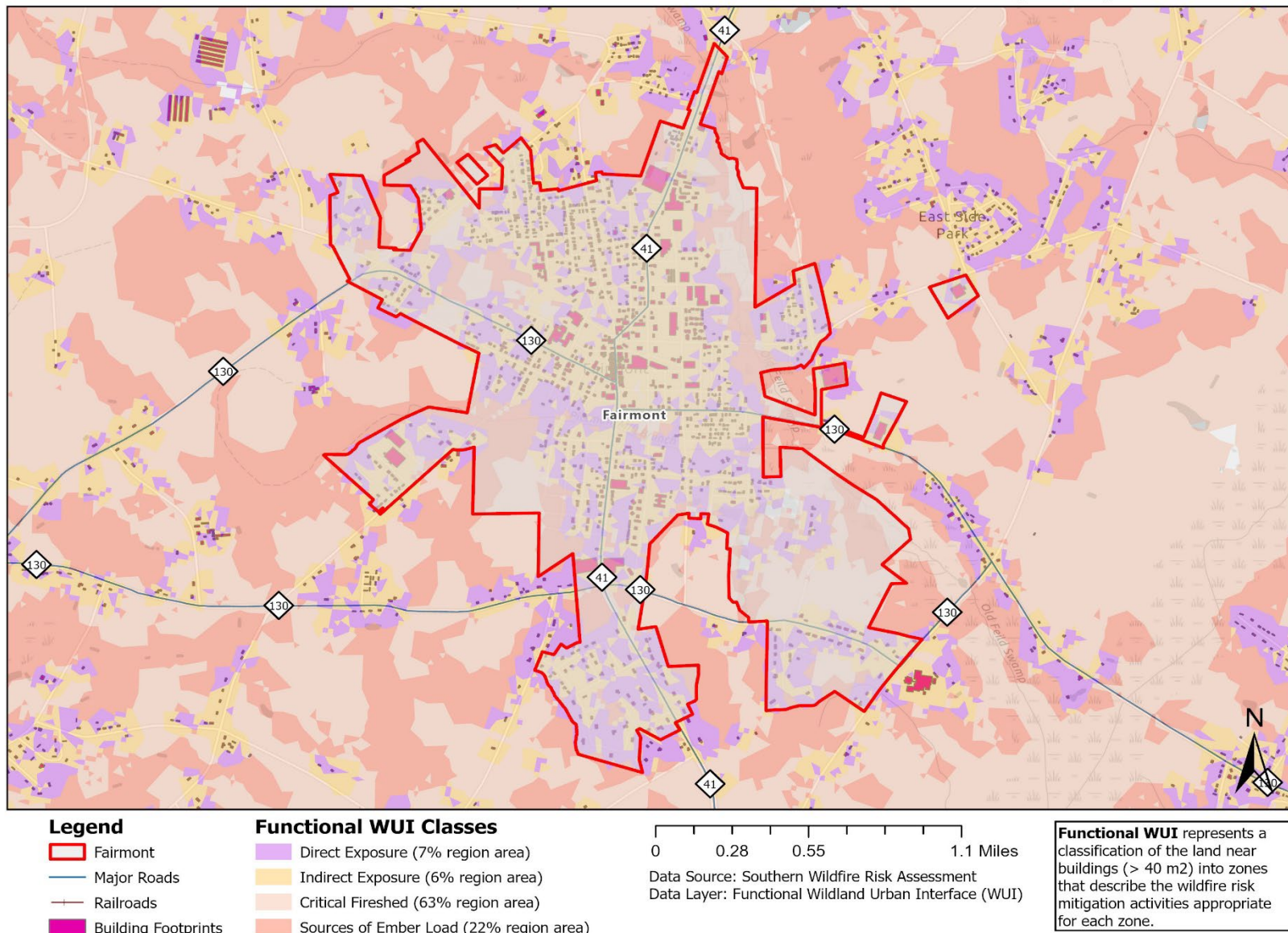


Figure 5-91: Wildfire Hazard Areas – Fairmont



## Lumber Bridge - Functional Wildland Urban Interface (WUI)

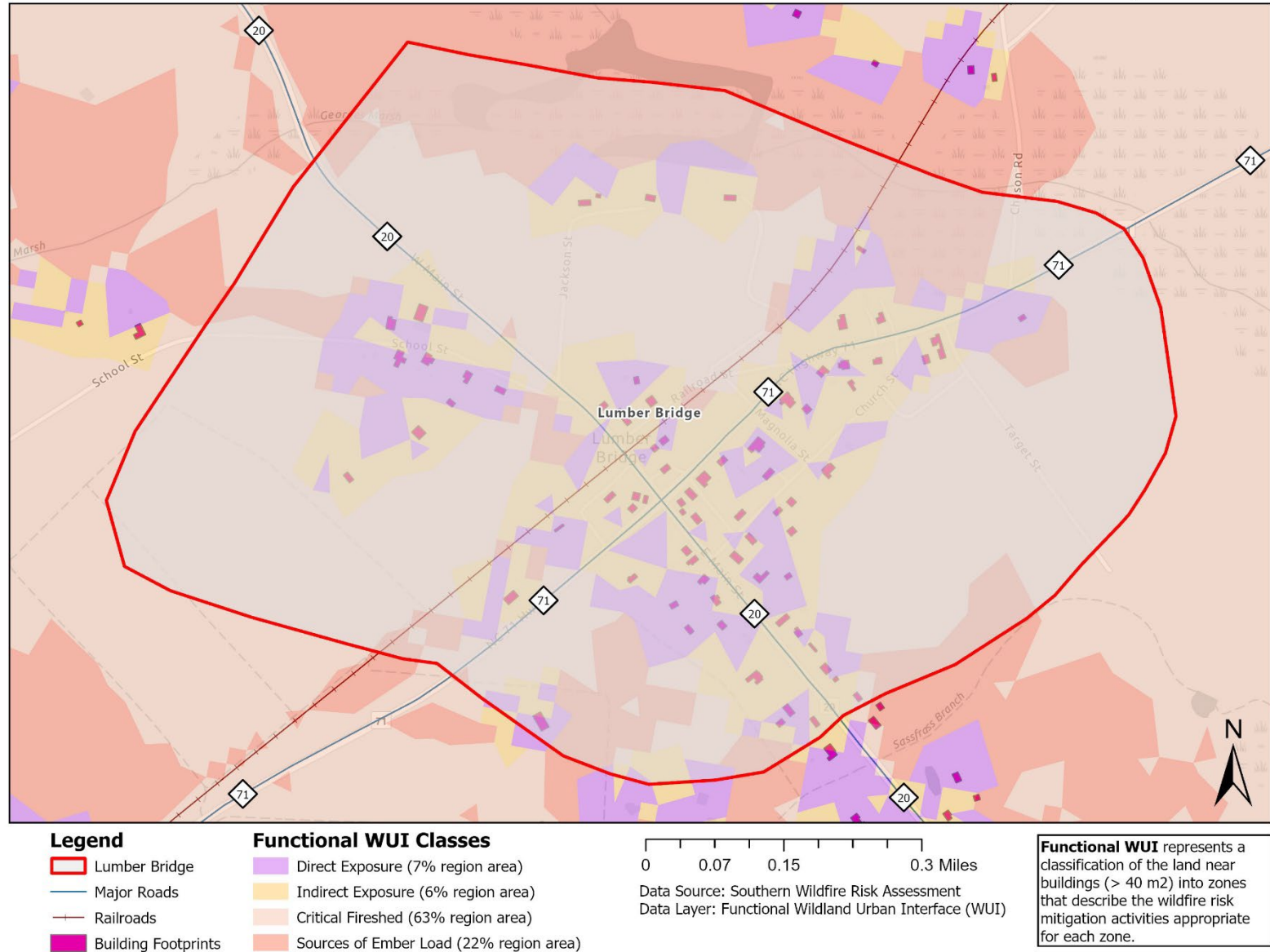


Figure 5-92: Wildfire Hazard Areas – Lumber Bridge

## Lumberton - Functional Wildland Urban Interface (WUI)

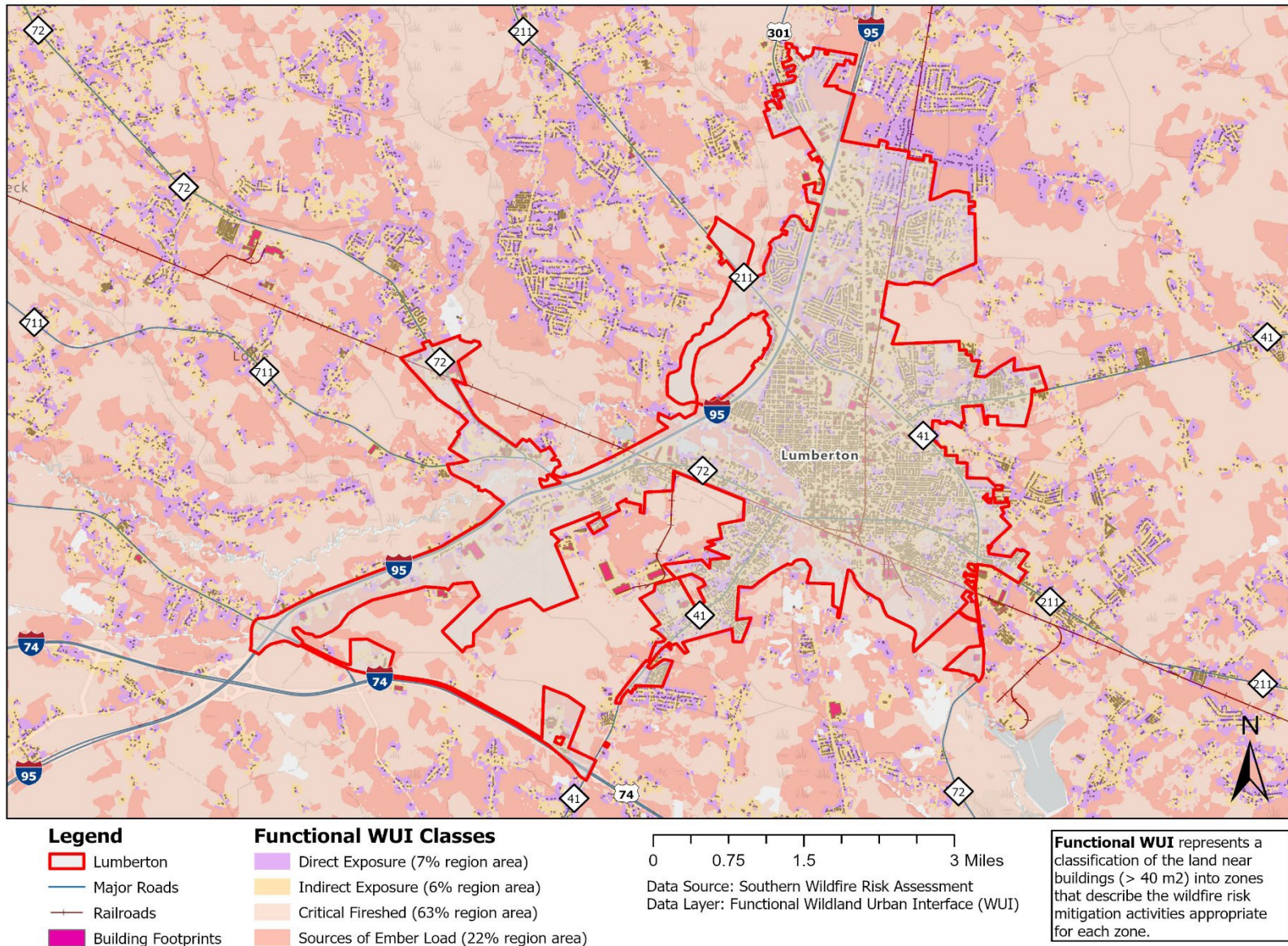


Figure 5-93: Wildfire Hazard Areas – Lumberton



## Marietta - Functional Wildland Urban Interface (WUI)

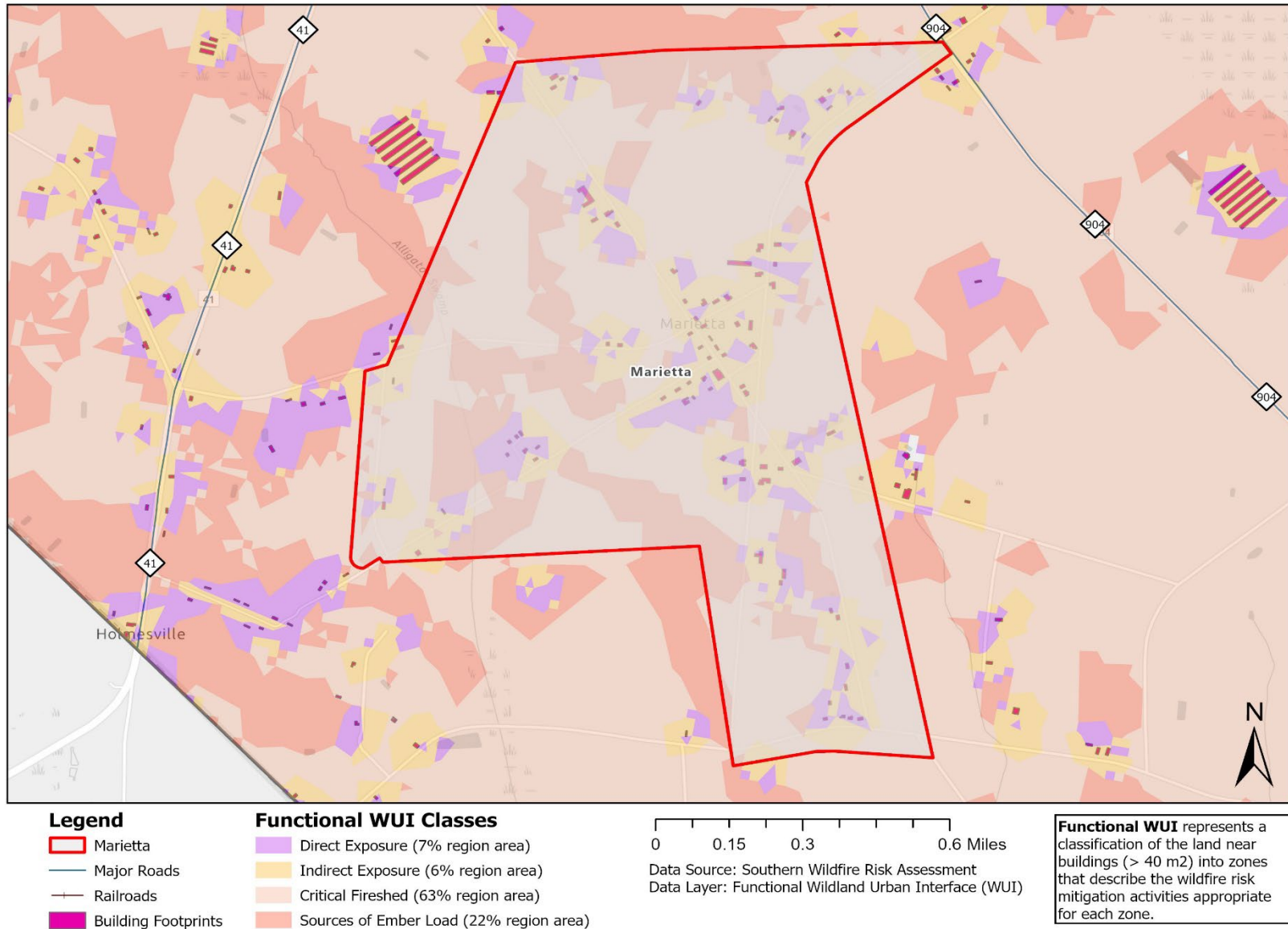


Figure 5-94: Wildfire Hazard Areas – Marietta

## Maxton - Functional Wildland Urban Interface (WUI)

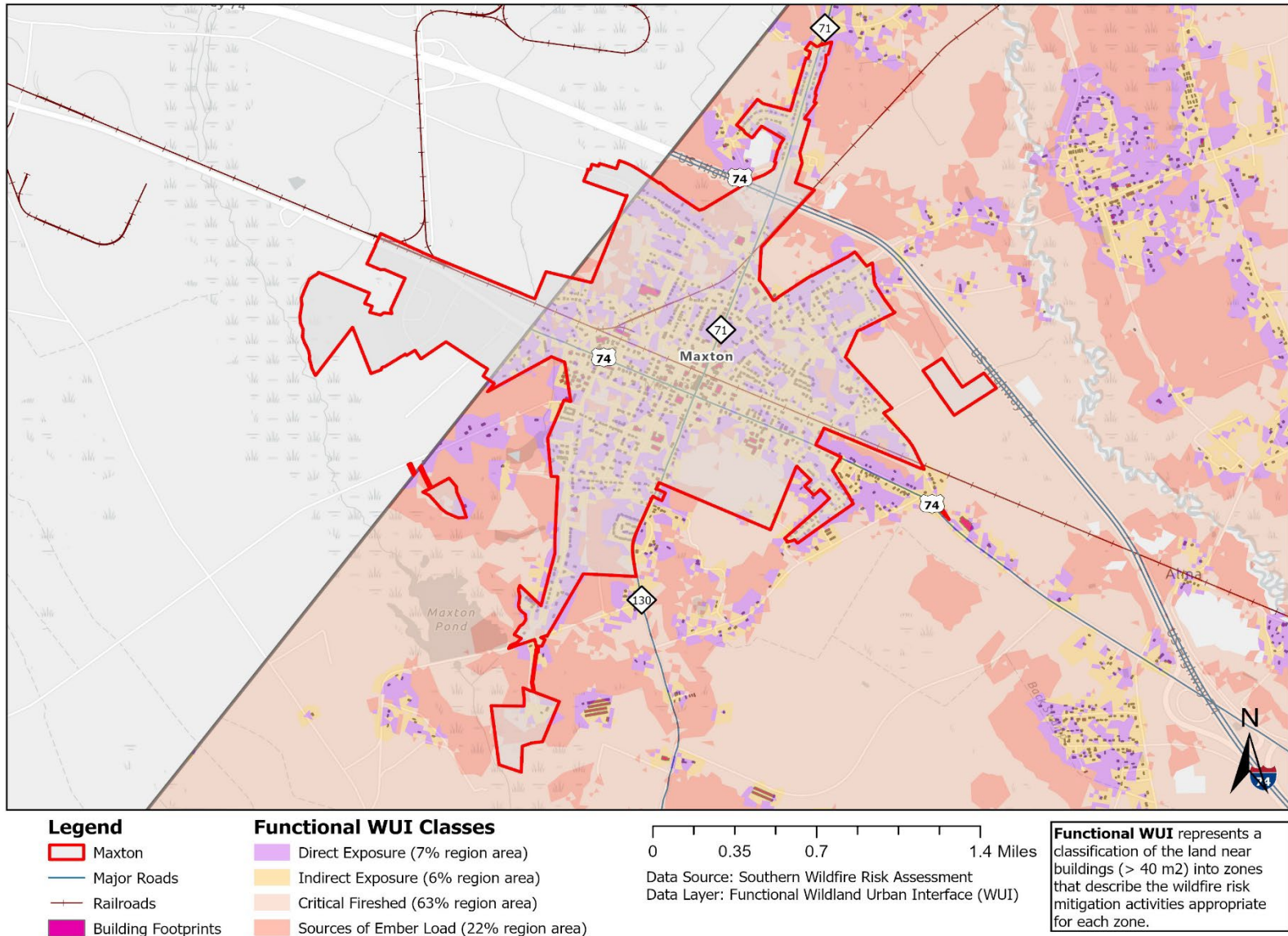


Figure 5-95: Wildfire Hazard Areas – Maxton

## McDonald - Functional Wildland Urban Interface (WUI)

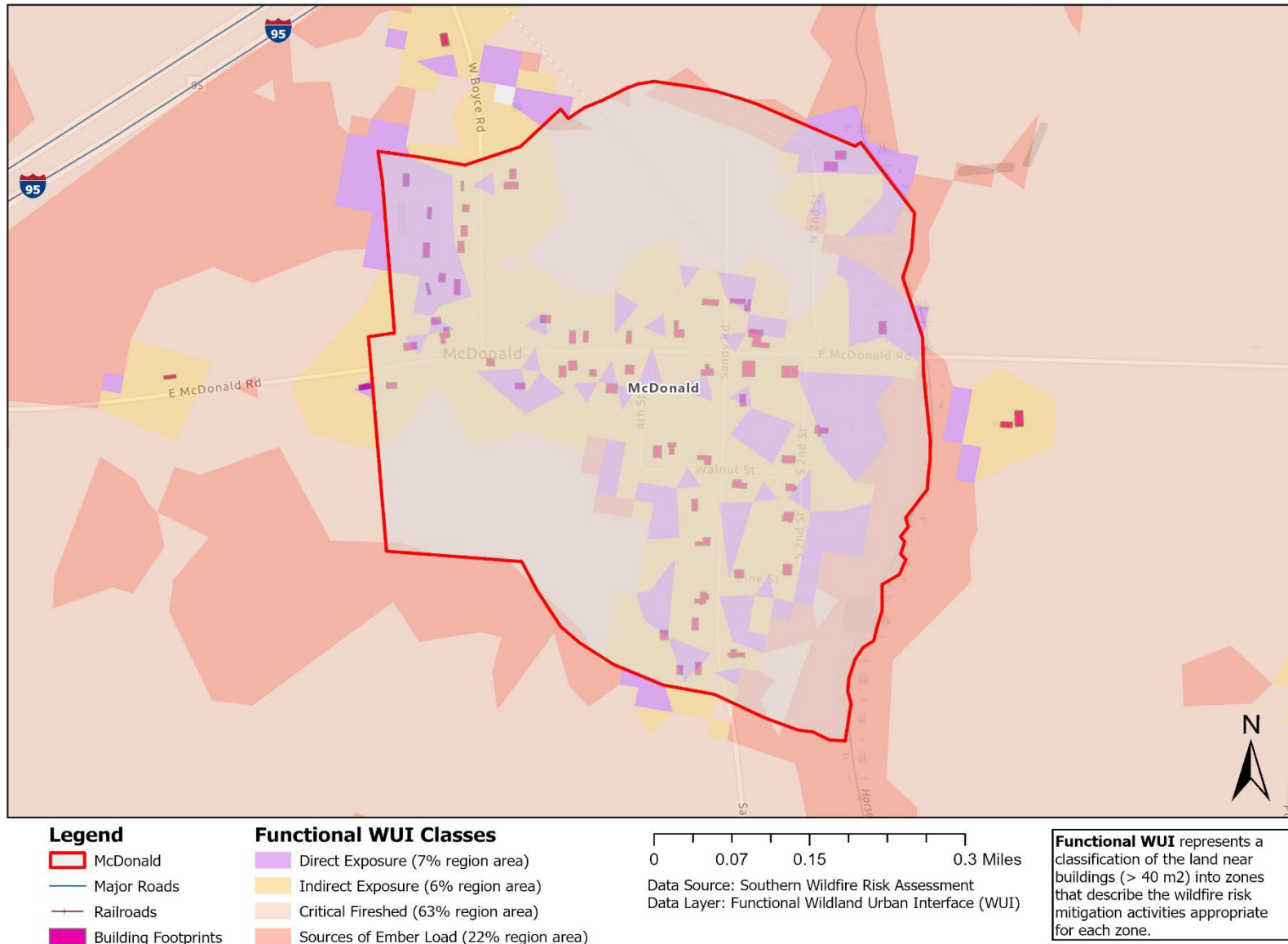


Figure 5-96: Wildfire Hazard Areas – McDonald



## Orrum - Functional Wildland Urban Interface (WUI)

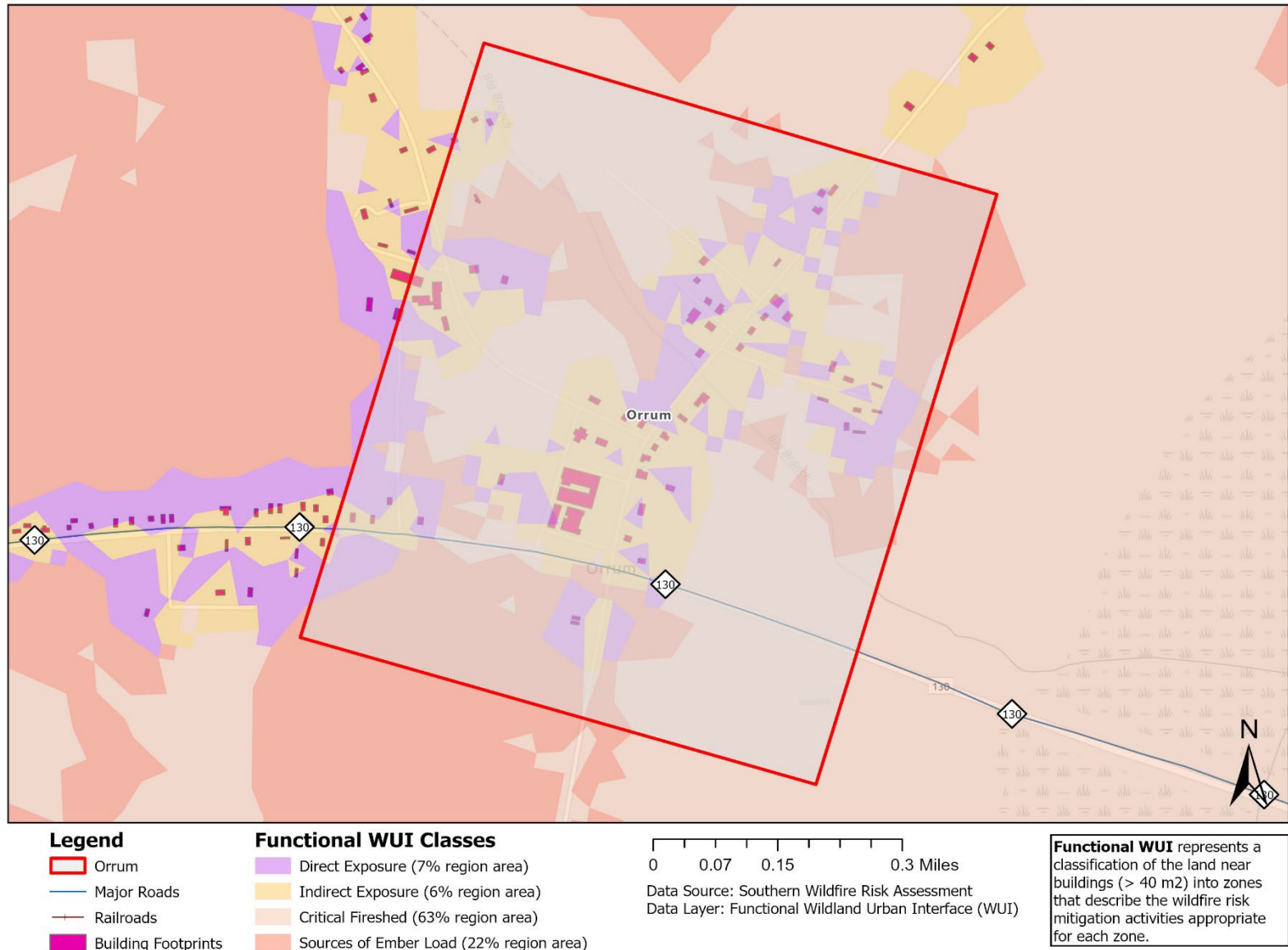


Figure 5-97: Wildfire Hazard Areas – Orrum

## Parkton - Functional Wildland Urban Interface (WUI)

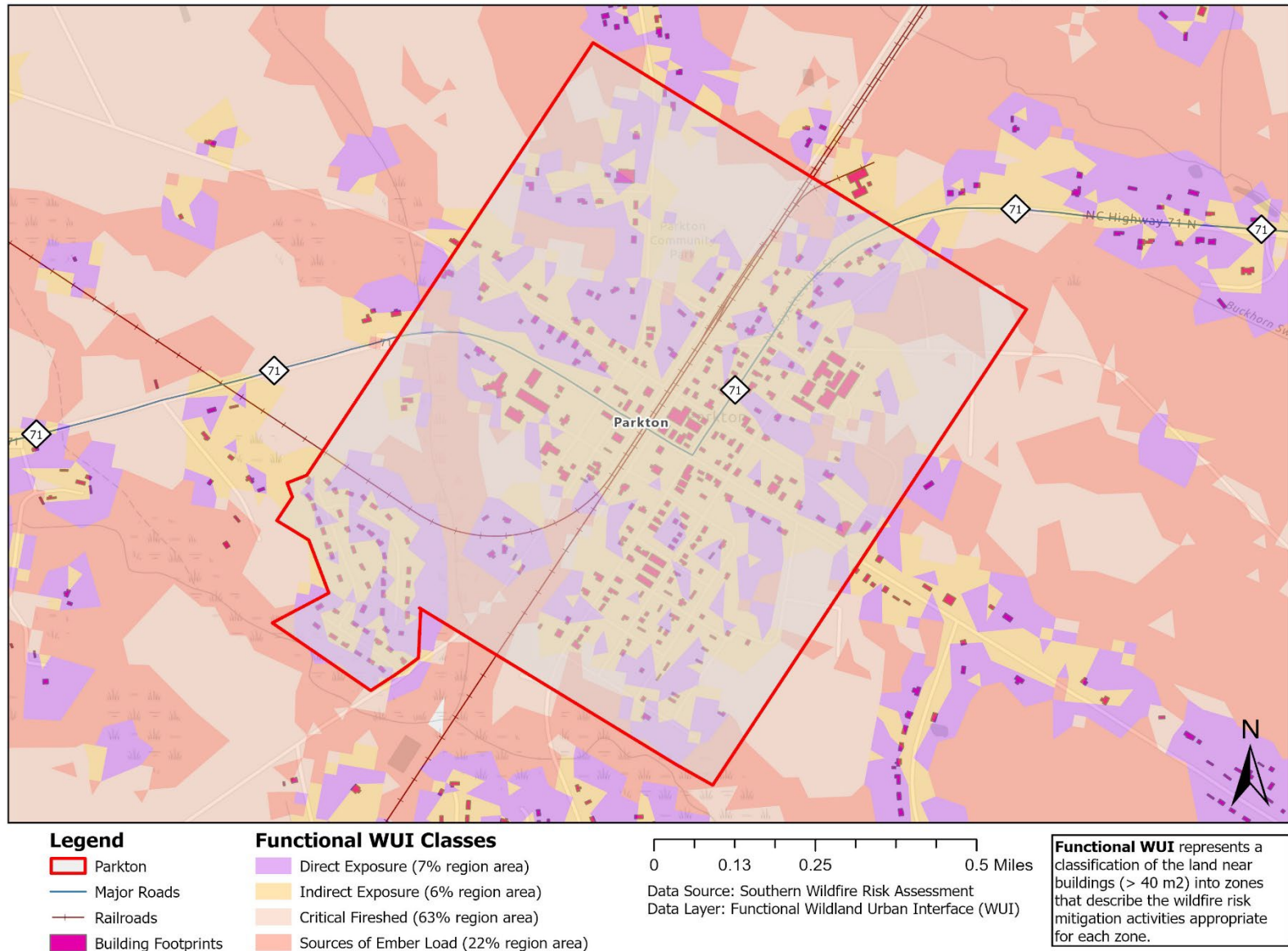


Figure 5-98: Wildfire Hazard Areas – Parkton



## Pembroke - Functional Wildland Urban Interface (WUI)

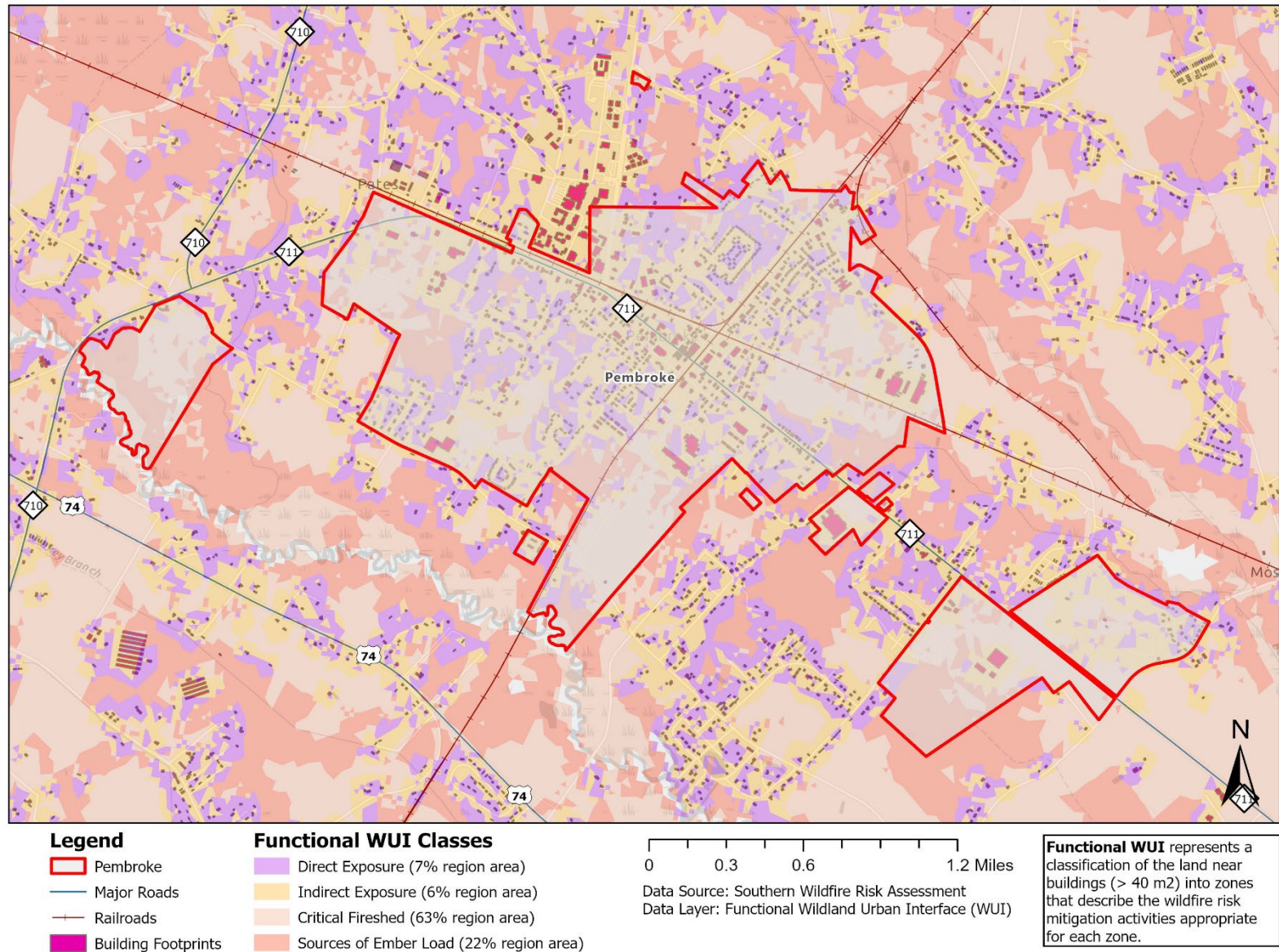


Figure 5-99: Wildfire Hazard Areas – Pembroke

## Proctorville - Functional Wildland Urban Interface (WUI)

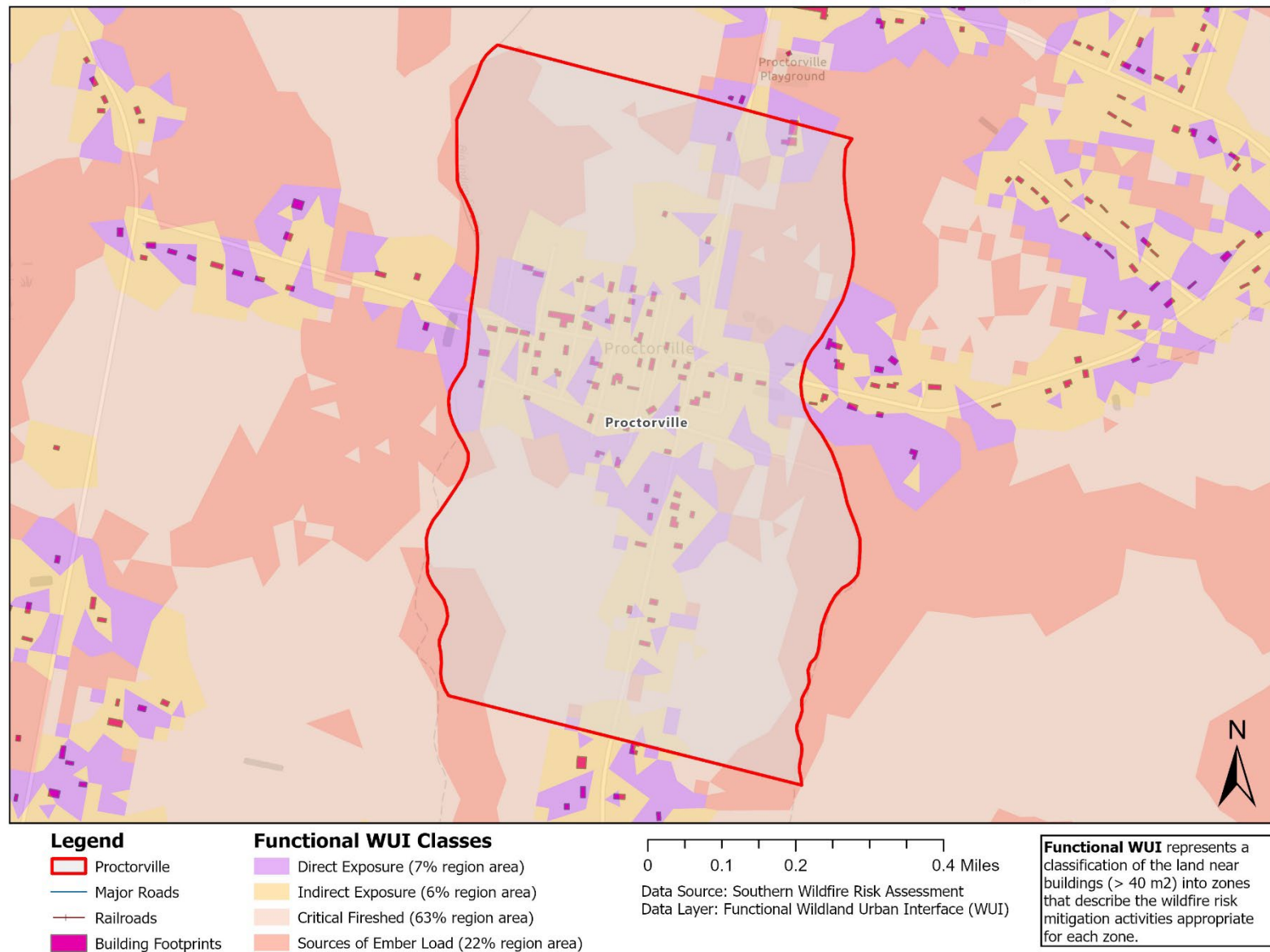


Figure 5-100: Wildfire Hazard Areas – Proctorville



## Raynham - Functional Wildland Urban Interface (WUI)

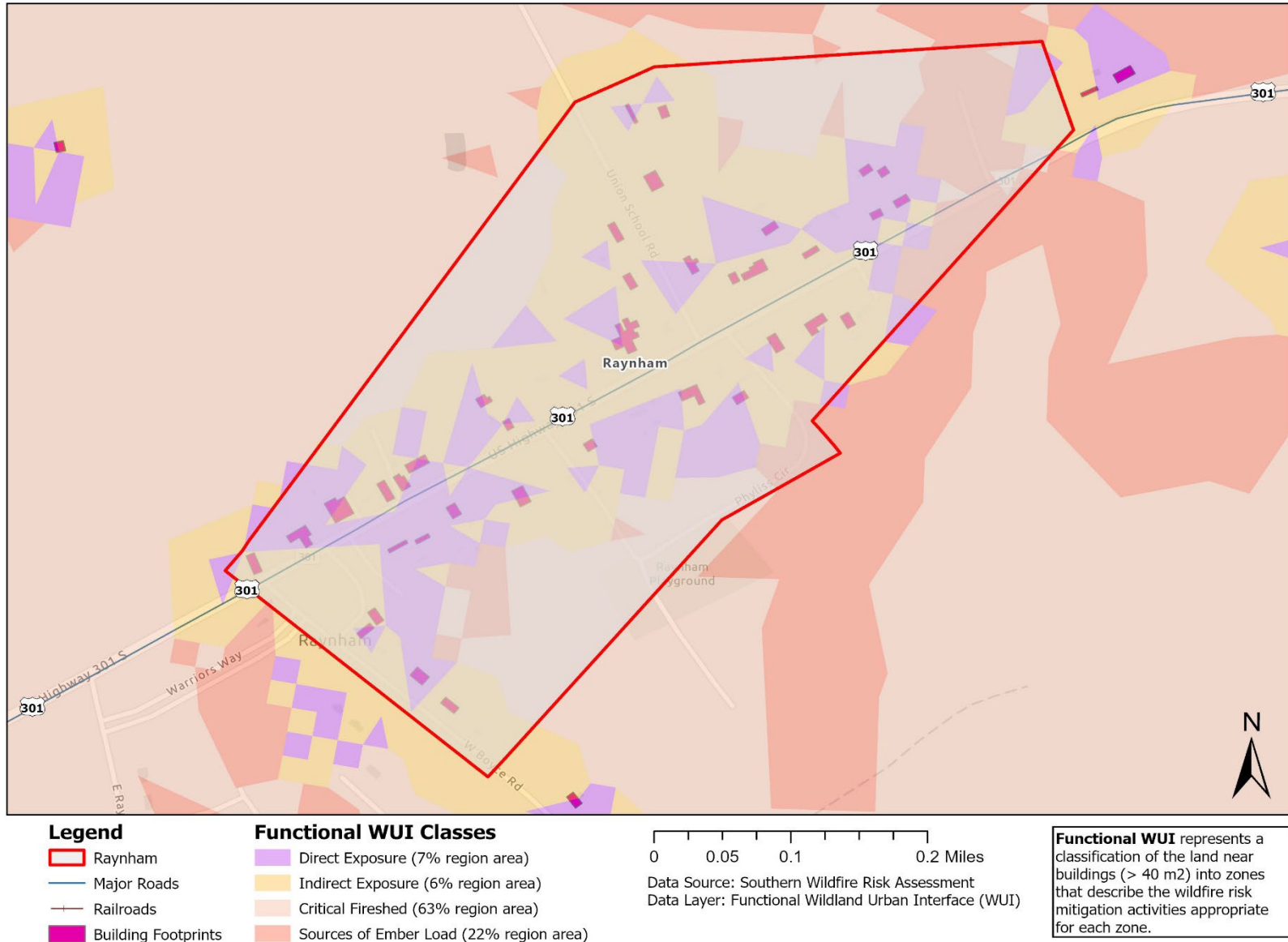


Figure 5-101: Wildfire Hazard Areas – Raynham



## Red Springs - Functional Wildland Urban Interface (WUI)

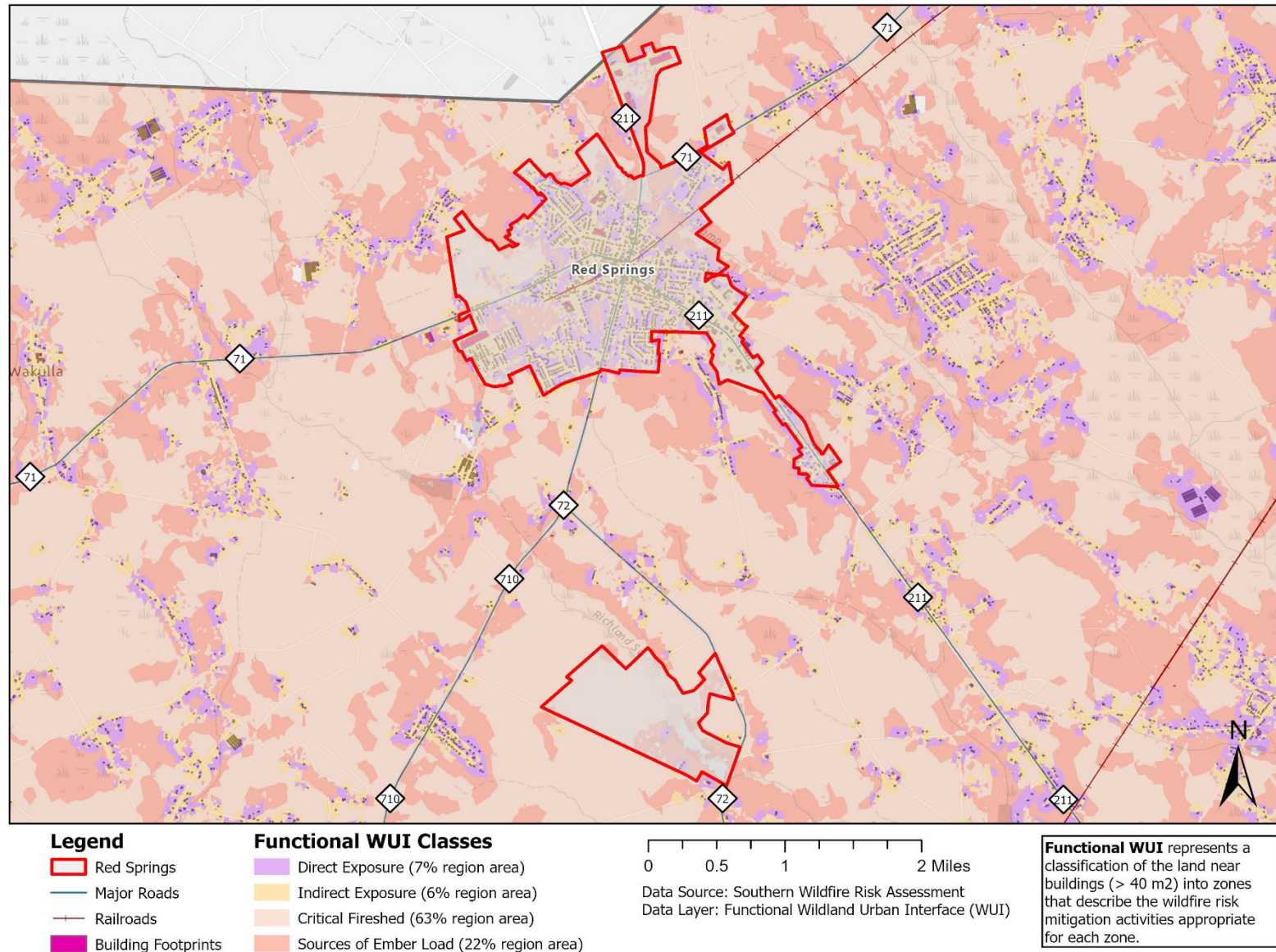


Figure 5-102: Wildfire Hazard Areas – Red Springs

## Rennert - Functional Wildland Urban Interface (WUI)

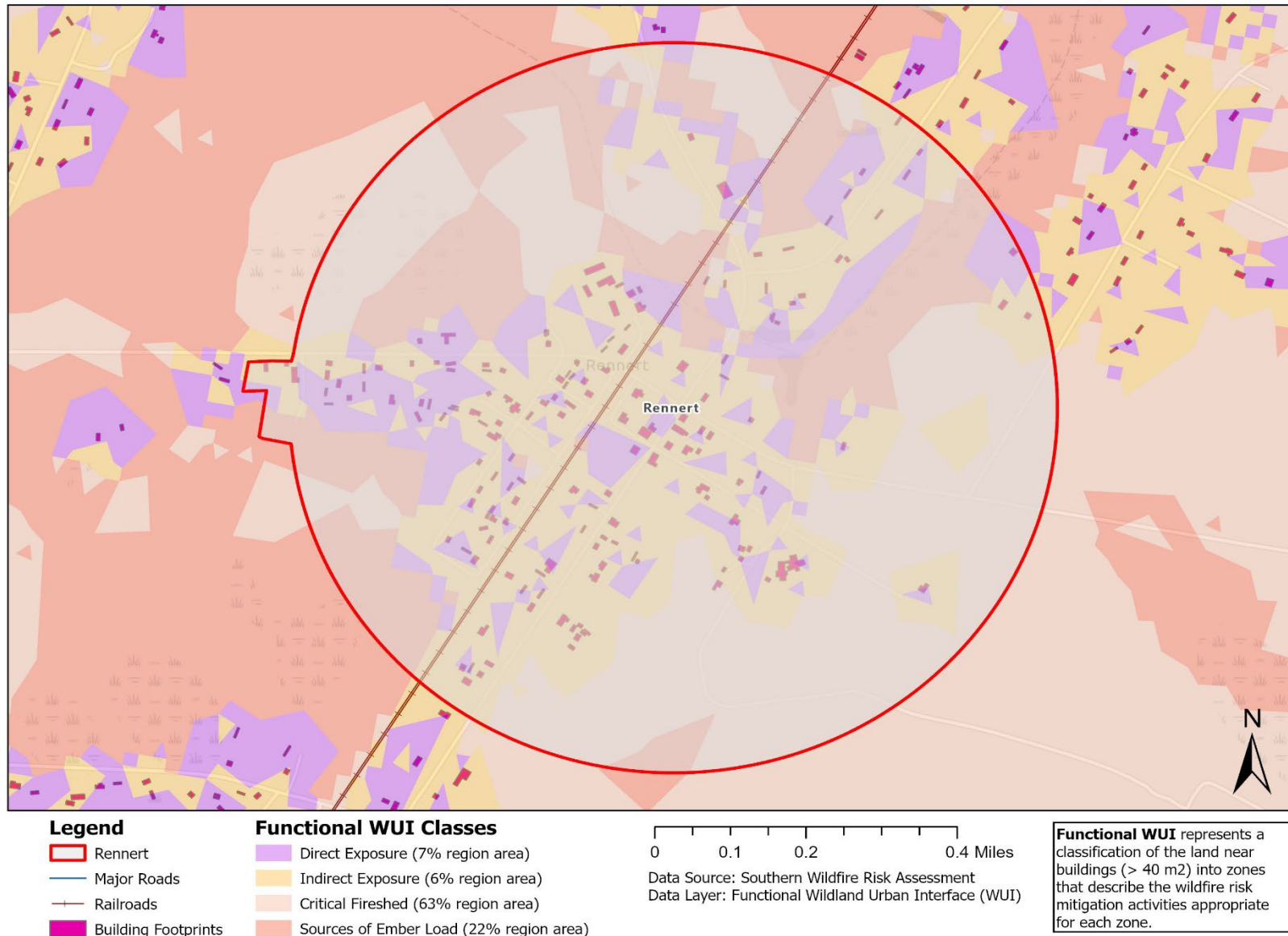
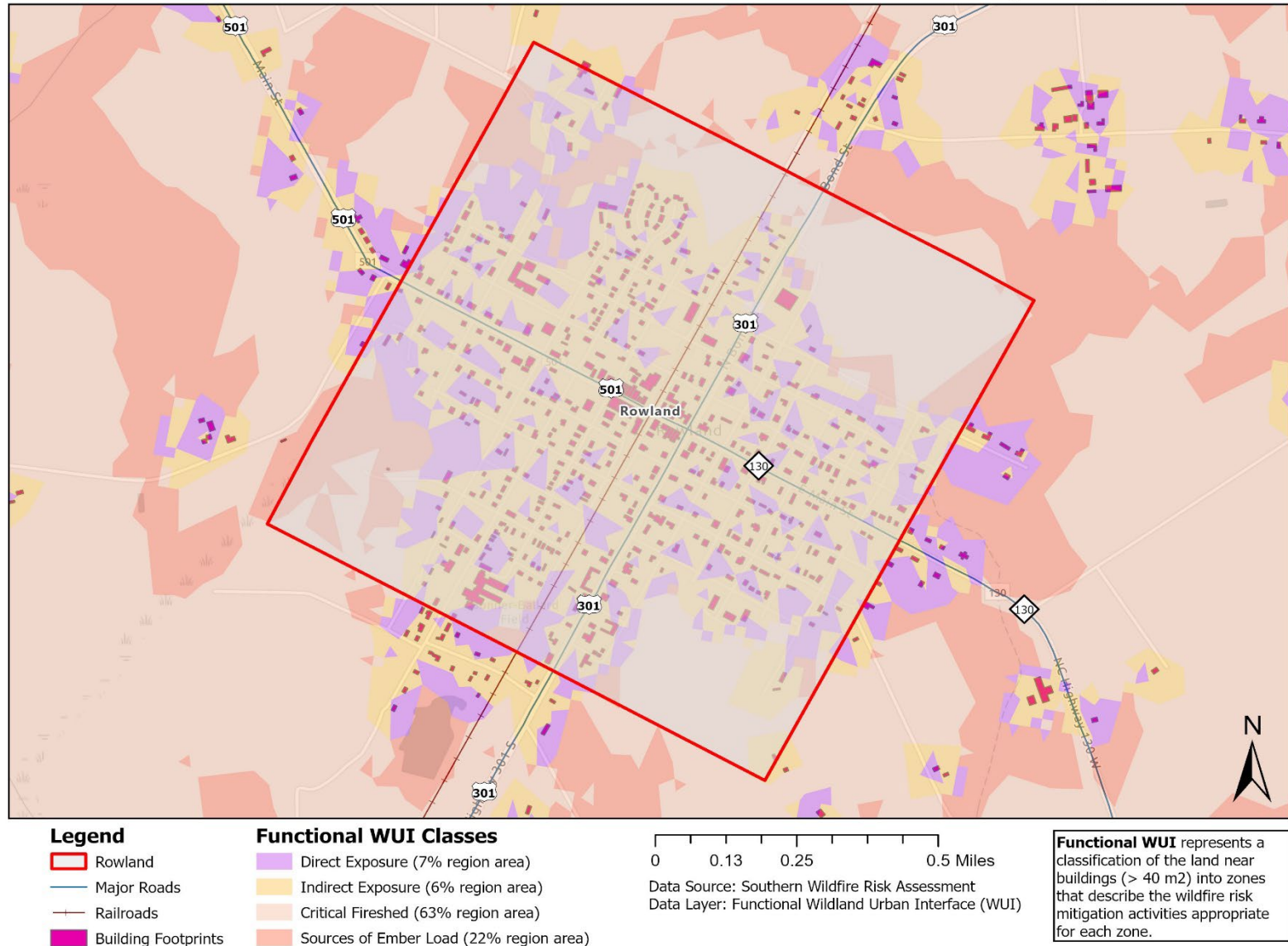


Figure 5-103: Wildfire Hazard Areas – Rennert



## Rowland - Functional Wildland Urban Interface (WUI)



**Figure 5-104: Wildfire Hazard Areas – Rowland**

## Saint Pauls - Functional Wildland Urban Interface (WUI)

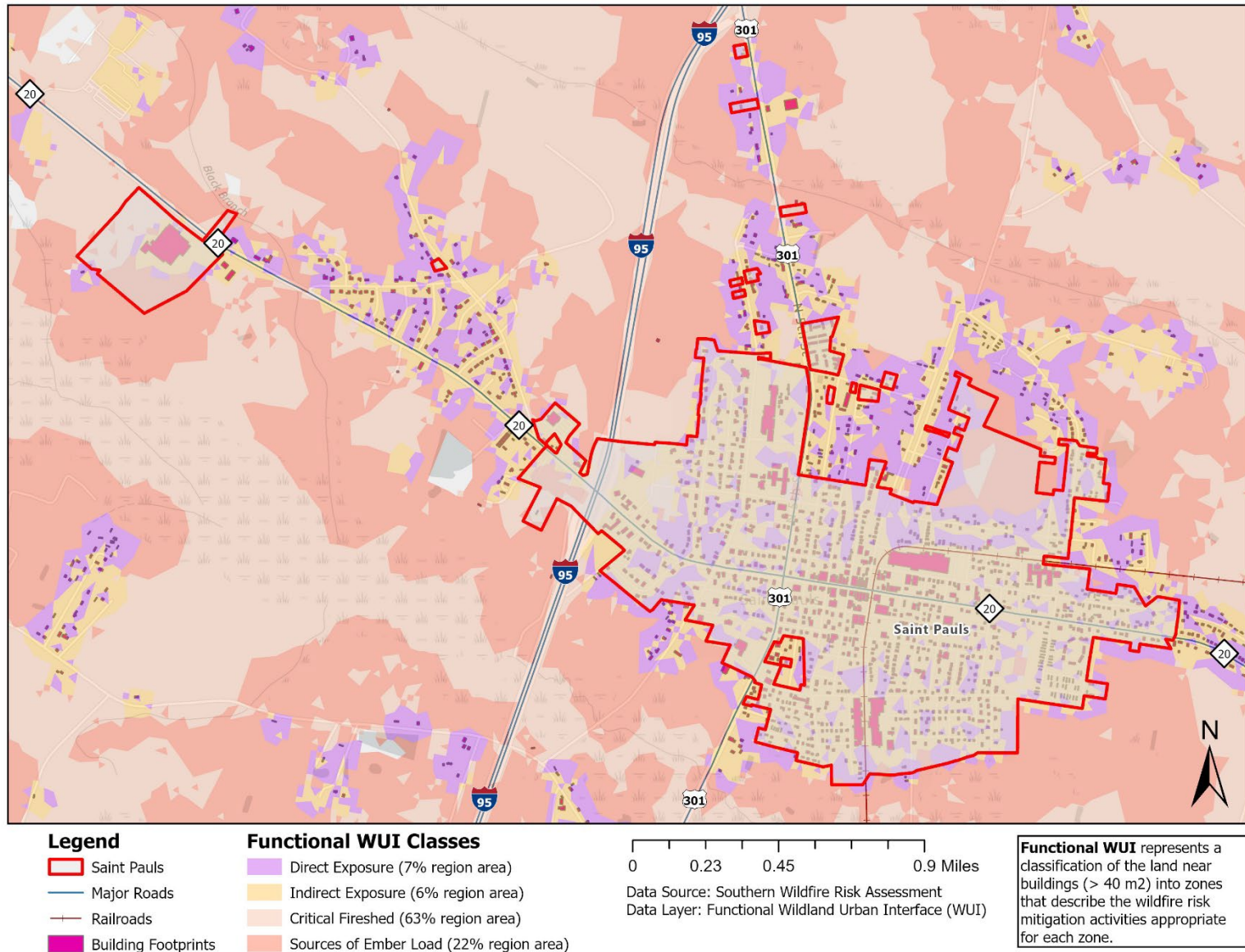


Figure 5-105: Wildfire Hazard Areas – Saint Pauls



The average size of wildfires in the Region is typically small. Wildfire data was provided by the North Carolina Forest Service through Community Wildfire Protection Plans (included in **Appendices**) and is reported annually by county. For more information on the extent of each jurisdiction see the tables included in **Section 6 Vulnerability Assessment**.

### 5.11.3 Past Occurrences

Robeson County has had more than 90 wildfires since the beginning of 2017, burning more than 1,300 acres, with approximately 18 of those occurring on Saturday alone, according to the state Forest Service. The cause of more than 70 percent of these wildfires is undetermined, and some of the more recent ones are under investigation and could possibly be determined as arson. Another 20 percent of fires in recent years have been caused by careless burning of debris.

In February of 2017, a wildfire near Saint Pauls (Robeson County) burned roughly 200 acres (<https://www.robsonian.com/news/96516/fires-torch-200-acres-near-st-pauls>). In 2018, the NC determined that a wildfire burned more than 550 acres in Bladen County near White Lake (<https://www.newsobserver.com/news/local/article207925094.html>).

### 5.11.4 Probability of Future Occurrences

The probability of future wildfires is shown in the table below, by jurisdiction.

#### Definitions for Descriptors Used for Probability of Future Hazard Occurrences

- Unlikely: Less than 1% annual probability of hazard
- Possible: Between 1% and 10% annual probability of hazard
- Likely: Between 10% and 100% annual probability of hazard
- Highly Likely: 100% annual probability of hazard

| Jurisdiction                          | Probability of Future Occurrence |
|---------------------------------------|----------------------------------|
| Bladen County (Unincorporated Area)   | Likely                           |
| Columbus County (Unincorporated Area) | Likely                           |
| Robeson County (Unincorporated Area)  | Likely                           |
| City of Lumberton                     | Likely                           |
| City of Whiteville                    | Likely                           |
| Town of Bladenboro                    | Likely                           |
| Town of Boardman                      | Likely                           |
| Town of Bolton                        | Likely                           |
| Town of Brunswick                     | Likely                           |
| Town of Cerro Gordo                   | Likely                           |
| Town of Chadbourn                     | Likely                           |
| Town of Clarkton                      | Likely                           |
| Town of Dublin                        | Likely                           |
| Town of East Arcadia                  | Likely                           |

| Jurisdiction          | Probability of Future Occurrence |
|-----------------------|----------------------------------|
| Town of Elizabethtown | Likely                           |
| Town of Fair Bluff    | Likely                           |
| Town of Fairmont      | Likely                           |
| Town of Lake Waccamaw | Likely                           |
| Town of Lumber Bridge | Likely                           |
| Town of Marietta      | Likely                           |
| Town of Maxton        | Likely                           |
| Town of McDonald      | Likely                           |
| Town of Orrum         | Likely                           |
| Town of Parkton       | Likely                           |
| Town of Pembroke      | Likely                           |
| Town of Proctorville  | Likely                           |
| Town of Raynham       | Likely                           |
| Town of Red Springs   | Likely                           |
| Town of Rennert       | Likely                           |
| Town of Rowland       | Likely                           |
| Town of Saint Pauls   | Likely                           |
| Town of Sandyfield    | Likely                           |
| Town of Tabor City    | Likely                           |
| Town of Tar Heel      | Likely                           |
| Town of White Lake    | Likely                           |

Source: NCEM RMT & plan risk assessment

### 5.11.5 Consequence and Impact Analysis (Vulnerability)

#### Changing Future Conditions

According to the 2020 North Carolina Forest Action Plan, the state has experienced 41,551 wildfires burning a combined total of over 399,125 acres since 2010. The cost of wildfire response, WUI acreage, fuel loading related to fire exclusion and plant mortality, and climate change stressors are also all increasing in the context of growing wildfire risks<sup>22</sup>. Although wildfires occur naturally and play a long-term role in the health of ecosystems, changing wildfire and climatic patterns threaten to upset the status quo conditions of future seasons. The wildfire season has lengthened in many areas due to factors including warmer springs, longer summer dry seasons, and drier soil/vegetation. For instance, according to the USDA Forest Service during the 2016 fire season, 320 (100+ acre) large fires burned more than 325,000 acres of forestland across the Southeast from October to December. Of increasing concern is the threat wildfires pose to homes and lives throughout North Carolina as it has one of highest percentages of homes in WUI zones in the country<sup>23</sup>.

<sup>22</sup> North Carolina Forest Action Plan (<https://www.stateforesters.org/districts/north-carolina/>)

<sup>23</sup> U.S. Fire Administration (<https://www.usfa.fema.gov/wui/what-is-the-wui/>)

### **People**

The potential health risk from wildfire events and the resulting diminished air quality is a concern. Exposure to wildfire smoke can cause serious health problems within a community, including asthma attacks and pneumonia, and can worsen chronic heart and lung diseases. Vulnerable populations include people with respiratory problems or with heart disease. Even healthy citizens may experience minor symptoms, such as sore throats and itchy eyes.

### **First Responders**

Public and firefighter safety is the first priority in all wildland fire management activities. Wildfires are a real threat to the health and safety of the emergency services. Most fire-fighters in rural areas are 'retained'. This means that they are part-time and can be called away from their normal work to attend to fires.

### **Continuity of Operations**

Wildfire events can result in a loss of power which may impact operations. Downed trees, power lines and damaged road conditions may prevent access to critical facilities and/or emergency equipment.

### **Built Environment**

Wildfires frequently damage community infrastructure, including roadways, communication networks and facilities, power lines, and water distribution systems. Restoring basic services is critical and a top priority. Efforts to restore roadways include the costs of maintenance and damage assessment teams, field data collection, and replacement or repair costs. Direct impacts to municipal water supply may occur through contamination of ash and debris during the fire, destruction of aboveground distribution lines, and soil erosion or debris deposits into waterways after the fire. Utilities and communications repairs are also necessary for equipment damaged by a fire. This includes power lines, transformers, cell phone towers, and phone lines.

### **Economy**

Wildfires can have significant short-term and long-term effects on the local economy. Wildfires, and extreme fire danger, may reduce recreation and tourism in and near the fires. If aesthetics are impaired, local property values can decline. Extensive fire damage to trees can significantly alter the timber supply, both through a short-term surplus from timber salvage and a longer-term decline while the trees regrow. Water supplies can be degraded by post-fire erosion and stream sedimentation.

Wildfires can also have positive effects on local economies. Positive effects come from economic activity generated in the community during fire suppression and post-fire rebuilding. These may include forestry support work, such as building fire lines and performing other defenses, or providing firefighting teams with food, ice, and amenities such as temporary shelters and washing machines.

### **Natural Environment**

Wildfires cause damage to the natural environment, killing vegetation and occasionally animals. The risk of floods and debris flows increases due to the exposure of bare ground and the loss of vegetation. In addition, the secondary effects of wildfires, including erosion, landslides, introduction of invasive species, and changes in water quality, are often more disastrous than the fire itself.

## 5.12 Winter Storm

### 5.12.1 Hazard Description

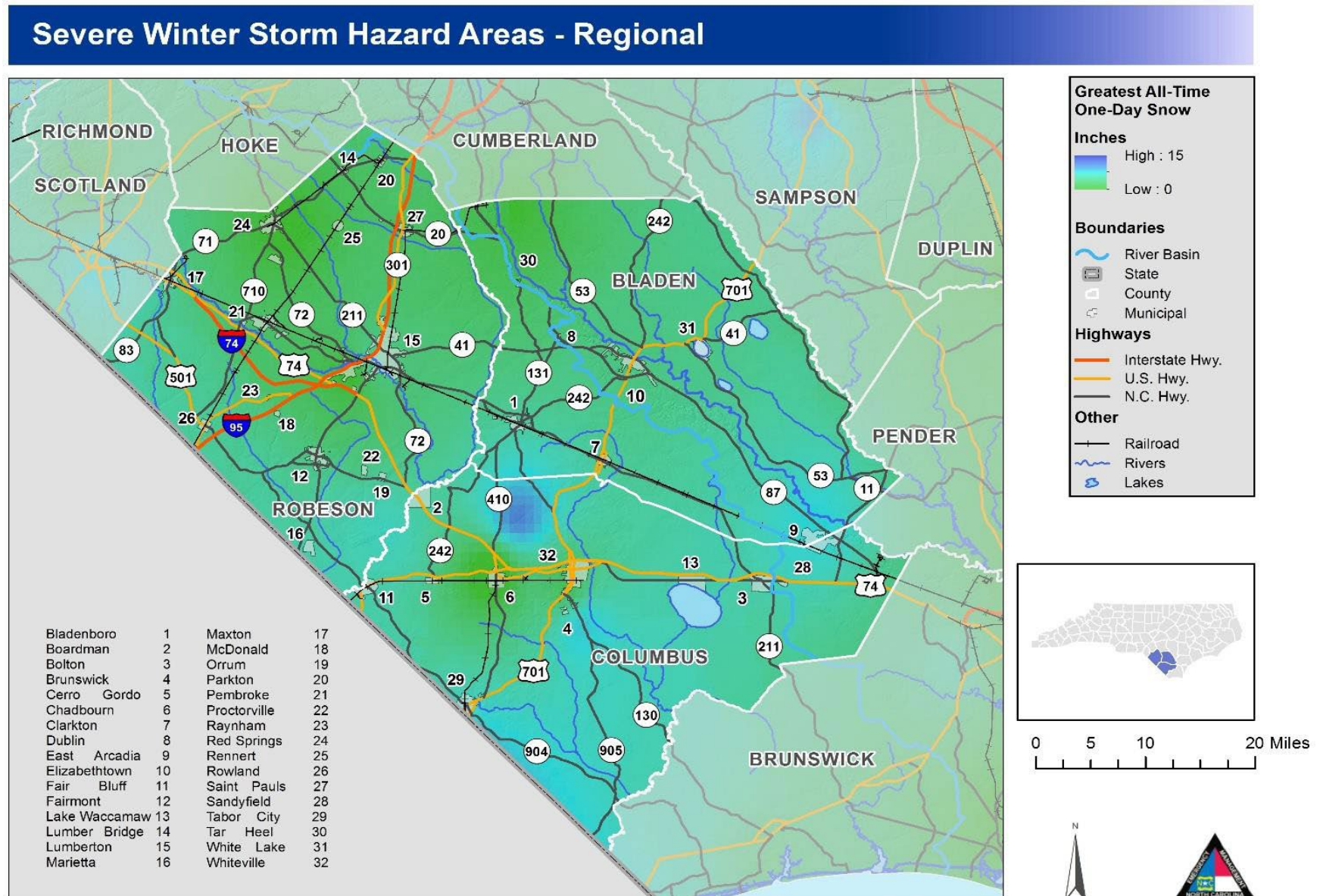
North Carolina winter weather consists of storms that produce snow, sleet, freezing rain or a wintry mix of multiple precipitation types. Along with wintry precipitation, North Carolina winter weather also includes outbreaks of bitterly cold temperatures. The occurrence of severe winter weather has a substantial impact on communities, utilities, transportation systems and agriculture, and often results in loss of life due to accidents or hypothermia. In addition, severe winter weather may spawn other hazards such as flooding, severe thunderstorms, tornadoes, and extreme winds that may delay recovery efforts. Winter storm events defined below:

- **Heavy Snow** - Heavy snow can immobilize a community by stranding commuters, closing airports, stopping the flow of commerce, and disrupting emergency and medical services. The weight of snow can cause roofs to collapse and knock down trees and power lines. Residents may be isolated for days and unprotected livestock may be lost. The cost of snow removal, repairing damages, and the loss of business can have severe economic impacts on communities. Snow accumulation meeting or exceeding locally/regionally defined 12 and/or 24-hour warning criteria, on a widespread or localized basis. For the NWS Office in Raleigh, this means snow accumulation of 3 inches or greater in 12 hours (4 inches or more in 24 hours). In some heavy snow events, structural damage, due to the excessive weight of snow accumulations, may occur in the few days following the meteorological end of the event.
- **Ice Storm** - Ice accretion meeting or exceedingly locally/regionally defined warning criteria. For the NWS Office in Raleigh, this means freezing rain accumulations  $\frac{1}{4}$  inch or greater on a widespread or localized basis.
- **Winter Storm** - A winter weather event which has more than one significant hazard (i.e., heavy snow and blowing snow; snow and ice; snow and sleet; sleet and ice; or snow, sleet and ice) and meets or exceeds locally/regionally defined 12 and/or 24-hour warning criteria for at least one of the precipitation elements, on a widespread or localized basis.
- **Winter Weather** - A winter precipitation event that causes a death, injury, or a significant impact to commerce or transportation but does not meet locally/regionally defined warning criteria. A Winter Weather event could result from one or more winter precipitation types (snow, or blowing/drifted snow, or freezing rain/drizzle), on a widespread or localized basis.

### 5.12.2 Location and Spatial Extent

The entirety of the Region can be considered at risk to winter storm events. This includes the entire population and all critical facilities, buildings (commercial and residential), and infrastructure.





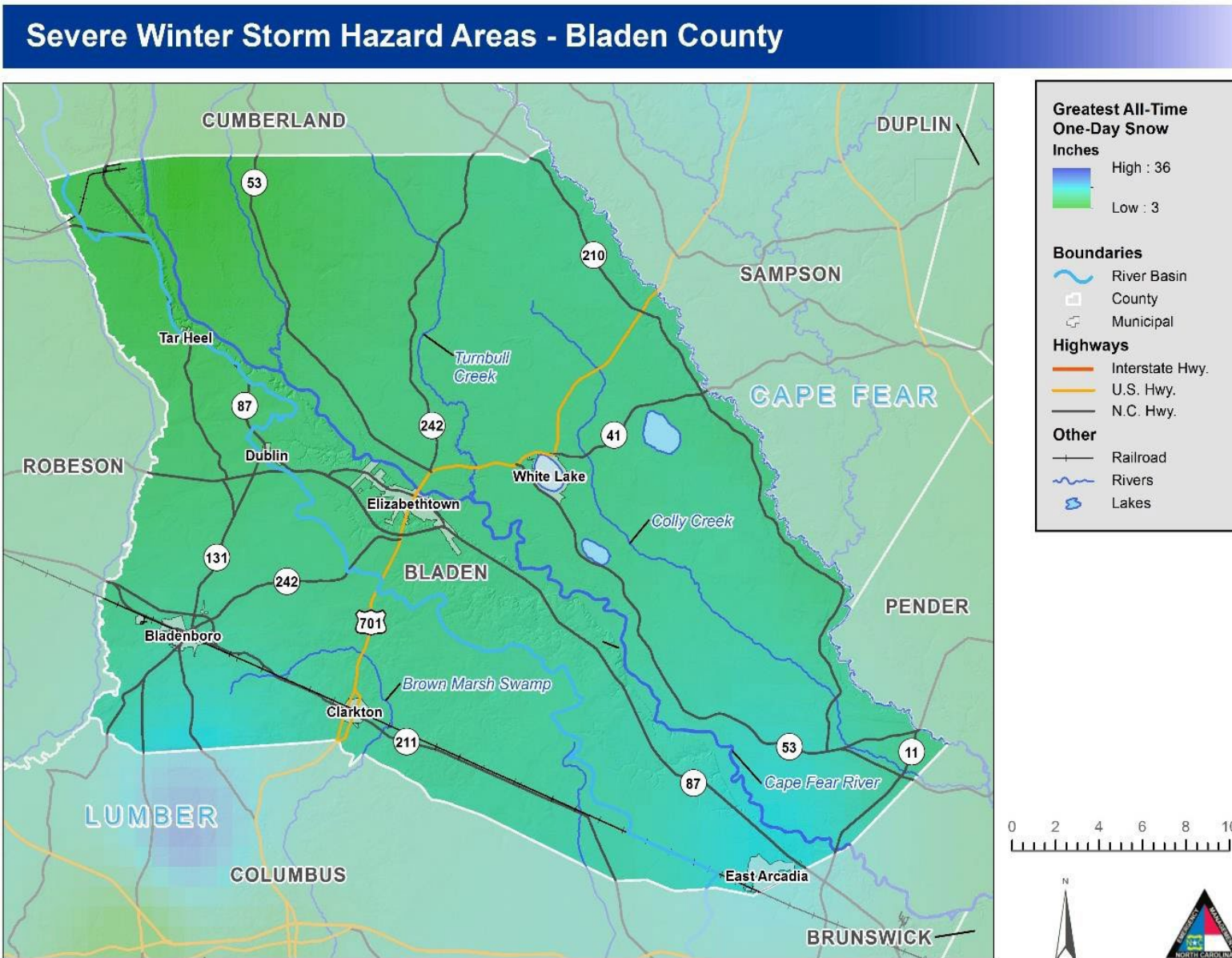


Figure 5-107: Severe Winter Storm Hazard Areas – Bladen County



## Severe Winter Storm Hazard Areas - Bladenboro

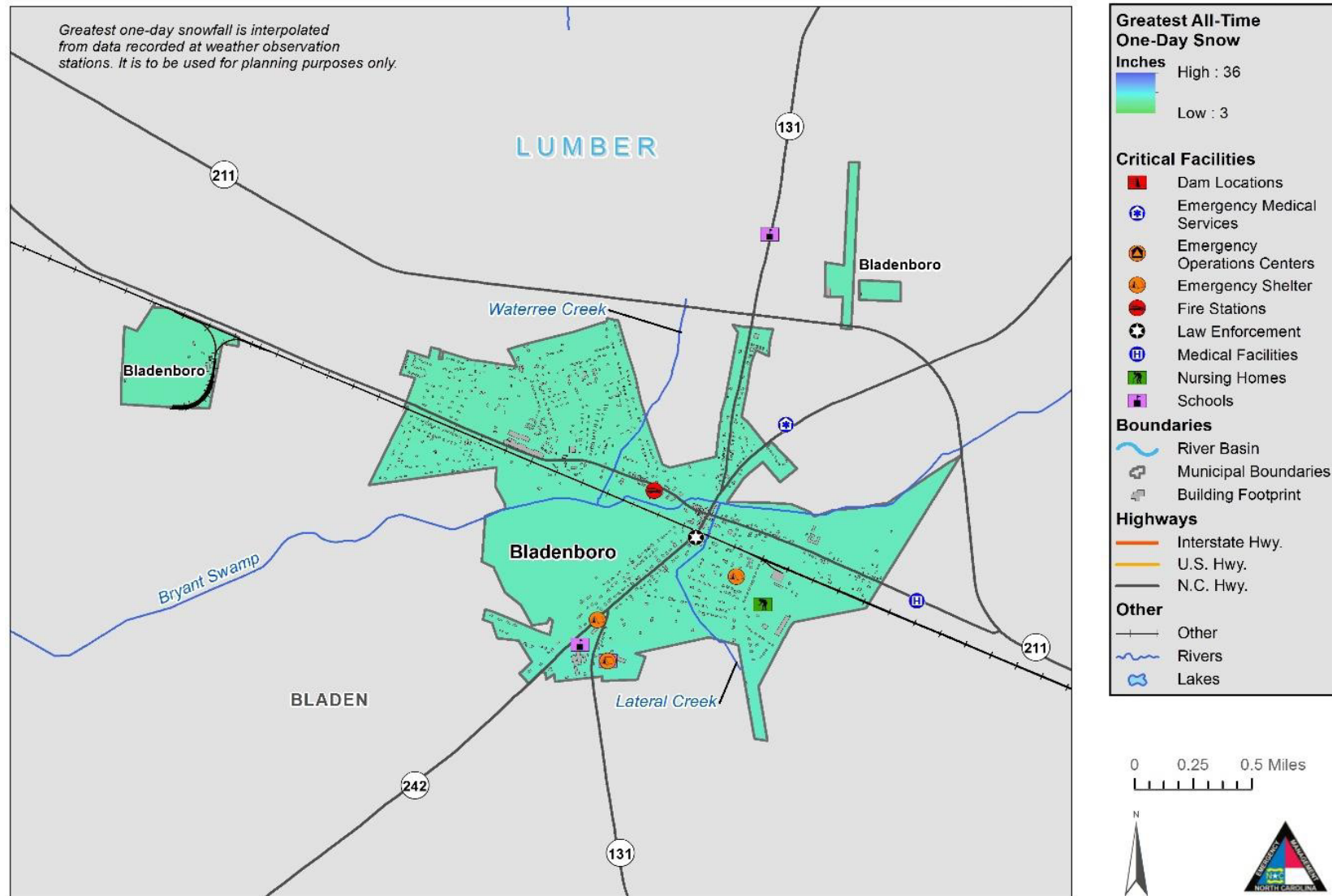


Figure 5-108: Severe Winter Storm Hazard Areas - Bladenboro

## Severe Winter Storm Hazard Areas - Clarkton

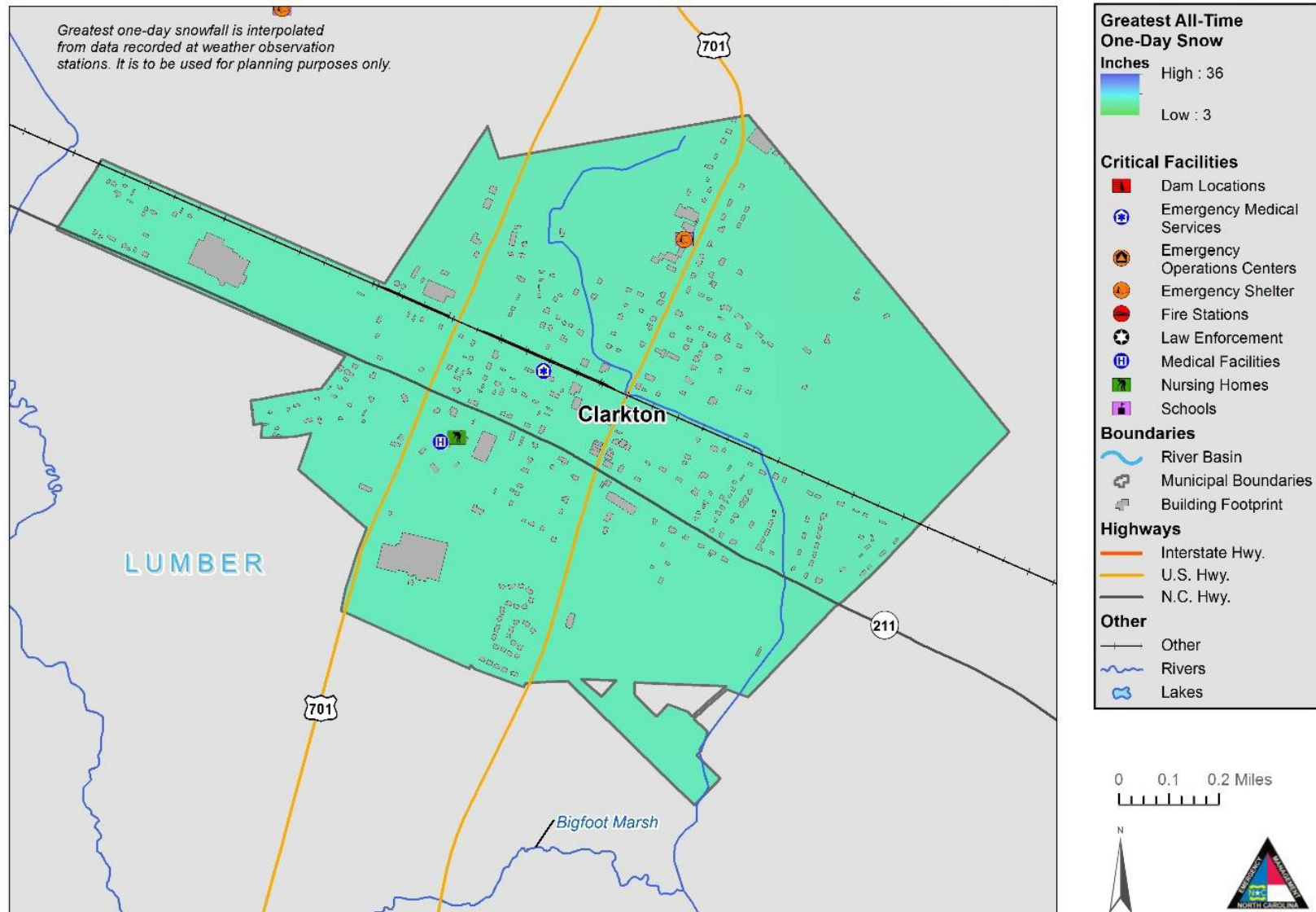


Figure 5-109: Severe Winter Storm Hazard Areas - Clarkton



## Severe Winter Storm Hazard Areas - Dublin

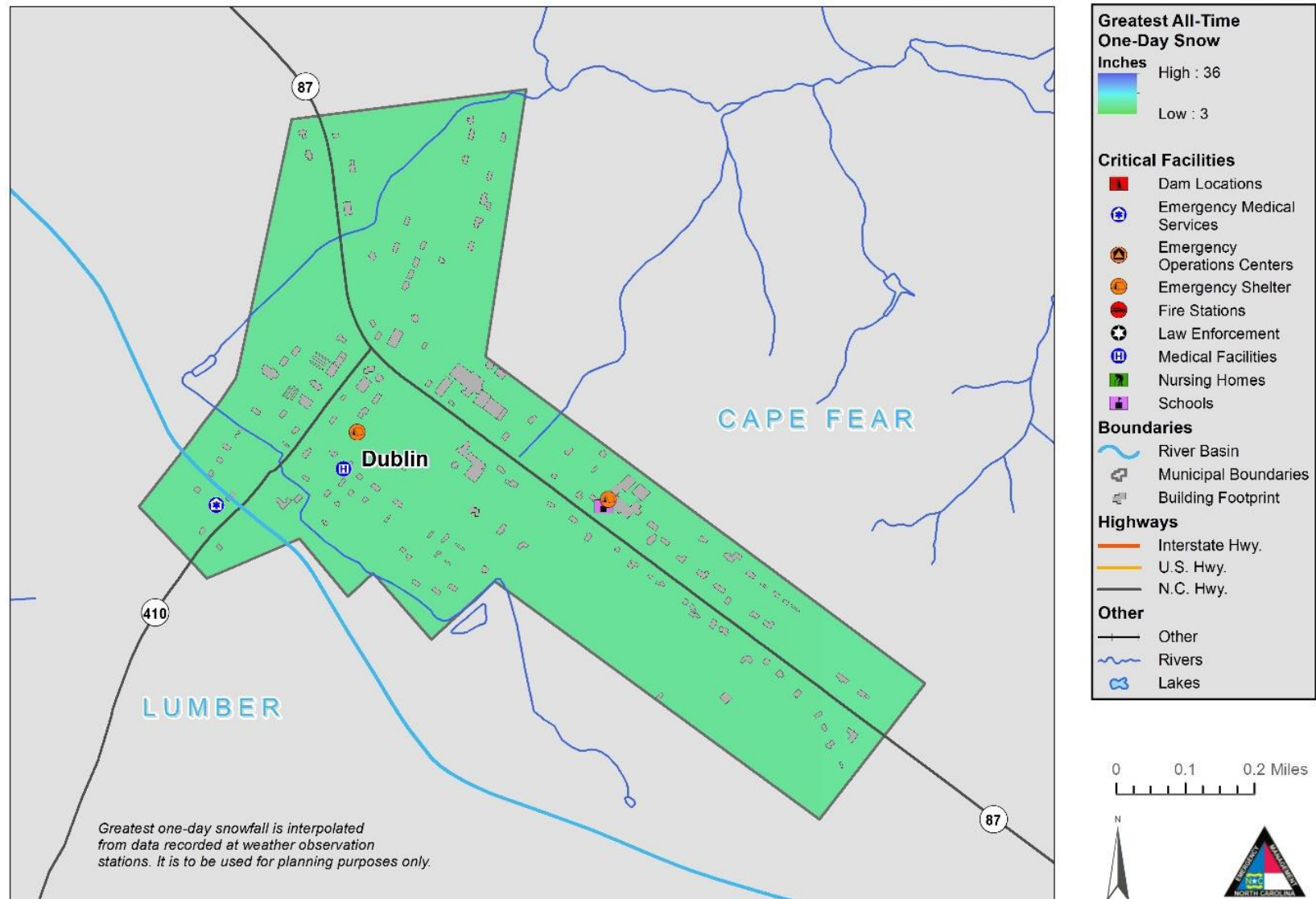


Figure 5-110: Severe Winter Storm Hazard Areas - Dublin

## Severe Winter Storm Hazard Areas - East Arcadia

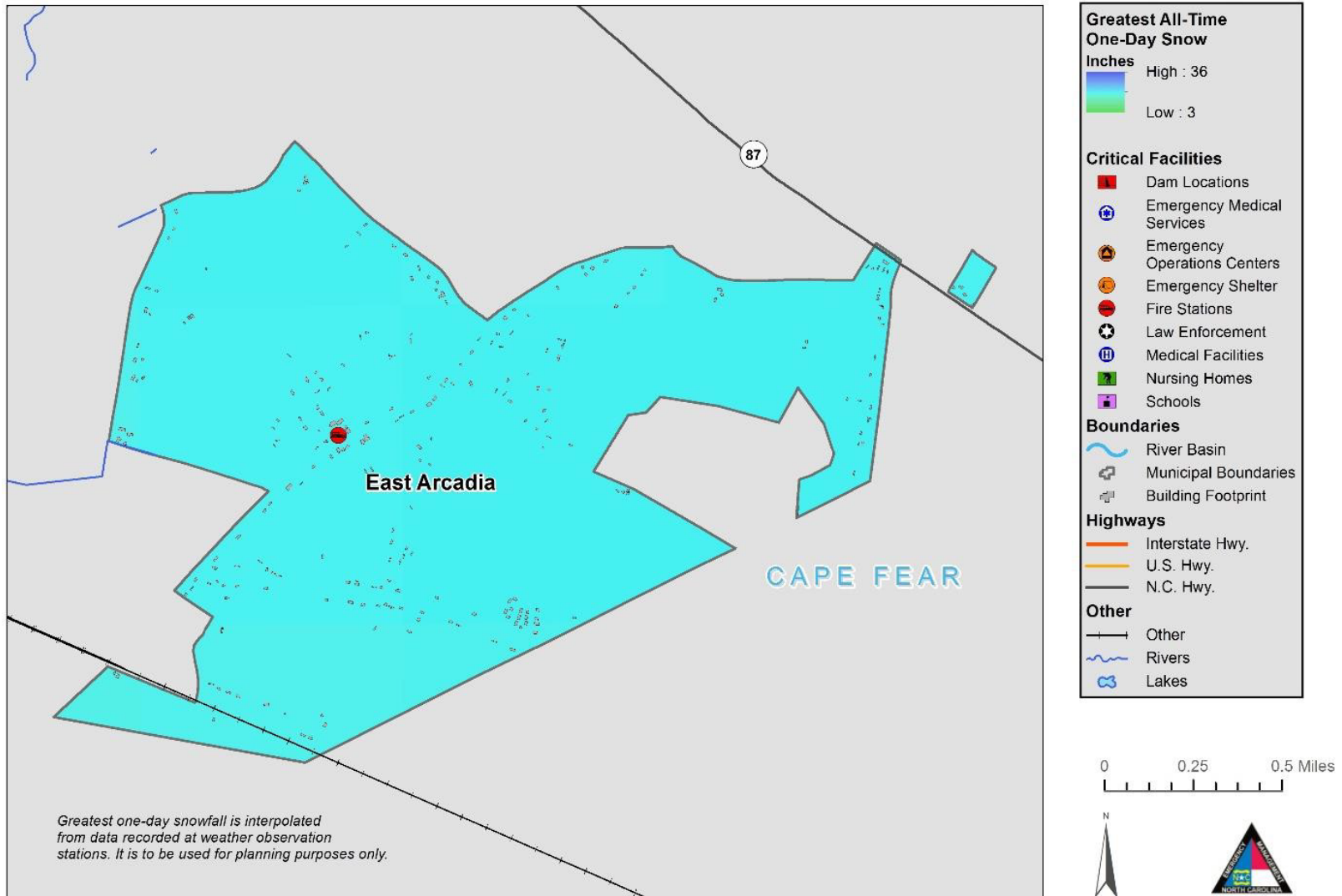


Figure 5-111: Severe Winter Storm Hazard Areas – East Arcadia

## Severe Winter Storm Hazard Areas - Elizabethtown

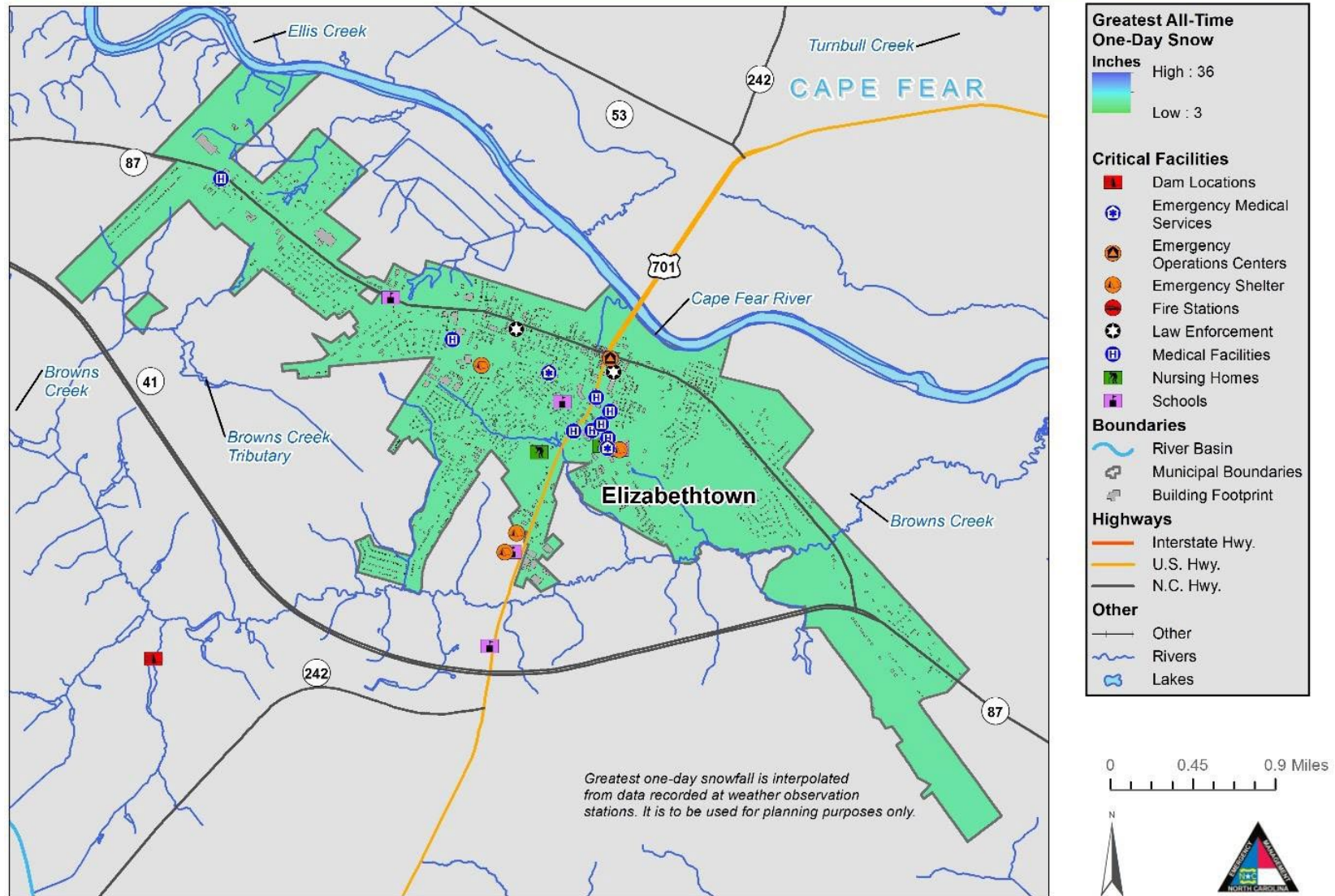


Figure 5-112: Severe Winter Storm Hazard Areas - Elizabethtown



## Severe Winter Storm Hazard Areas - Tar Heel

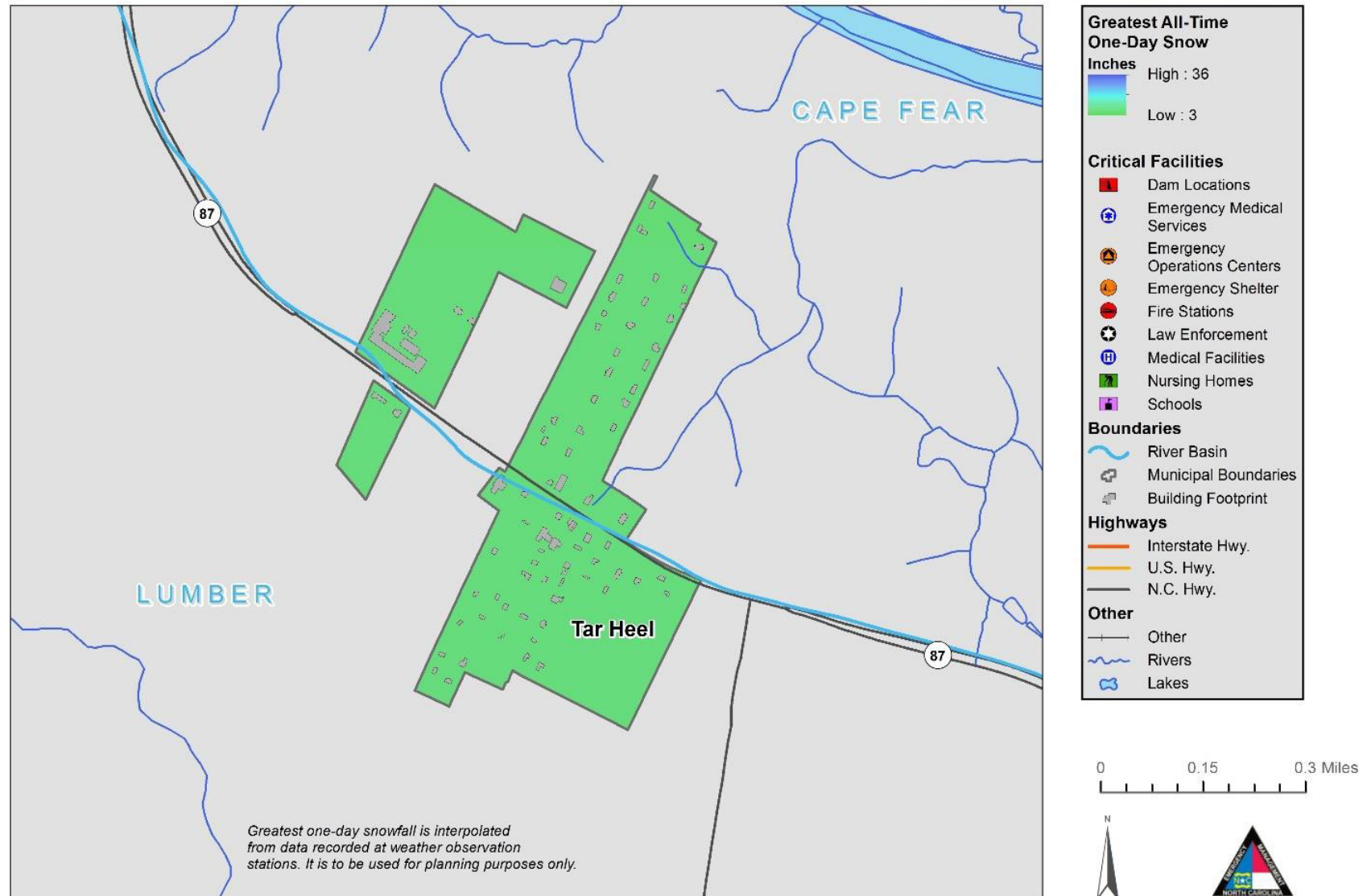


Figure 5-113: Severe Winter Storm Hazard Areas – Tar Heel



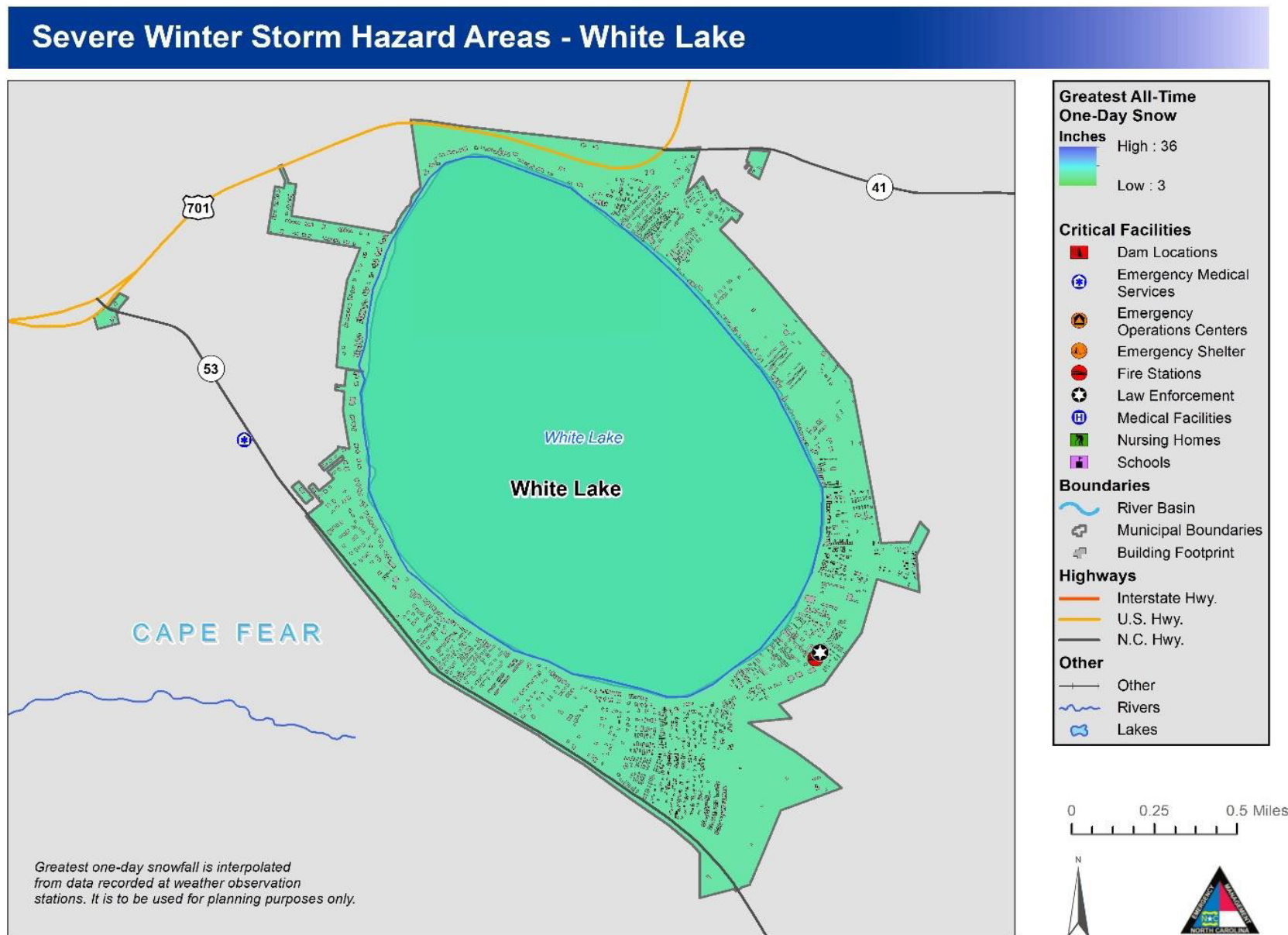


Figure 5-114: Severe Winter Storm Hazard Areas – White Lake

## Severe Winter Storm Hazard Areas - Columbus County

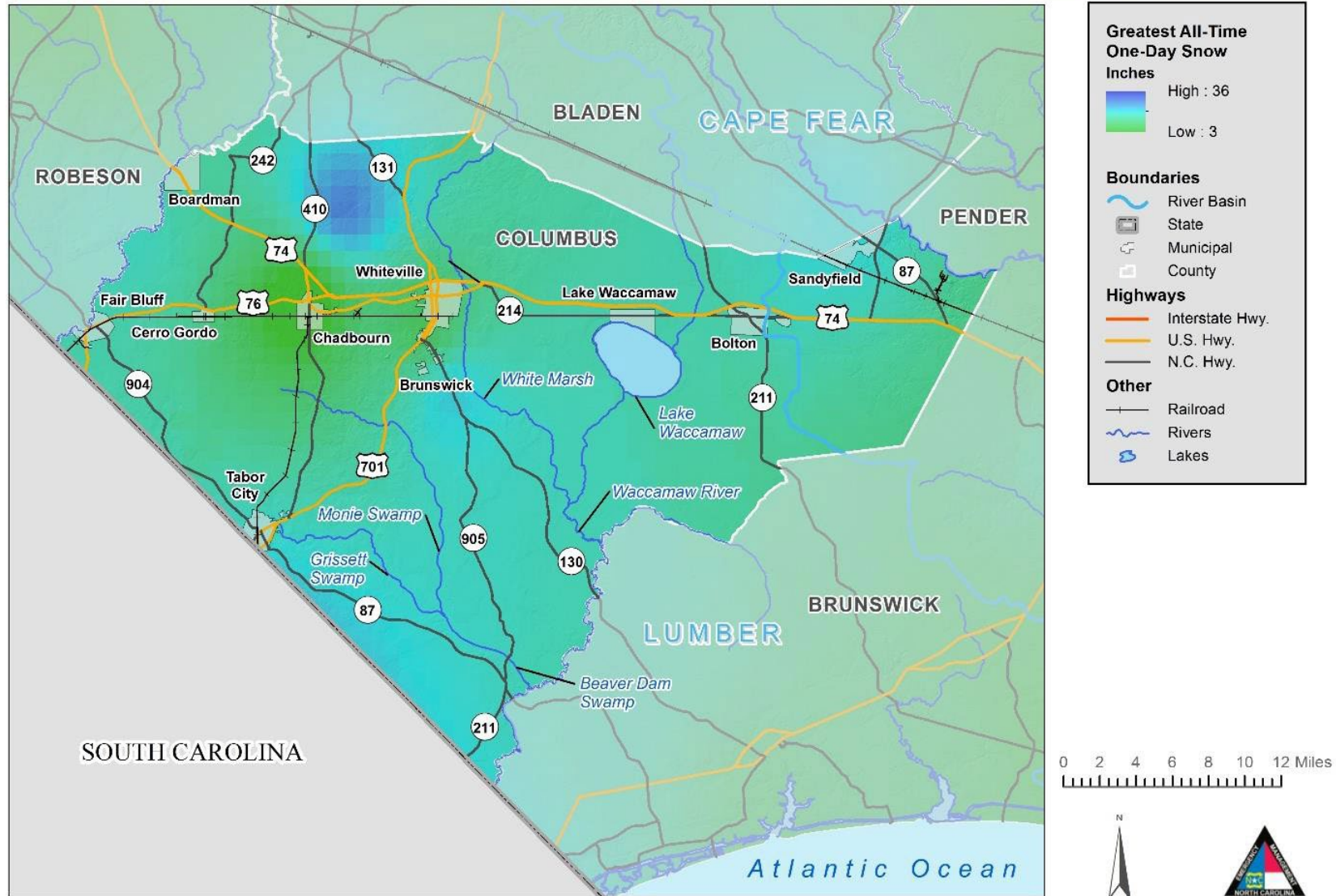


Figure 5-115: Severe Winter Storm Hazard Areas – Columbus County

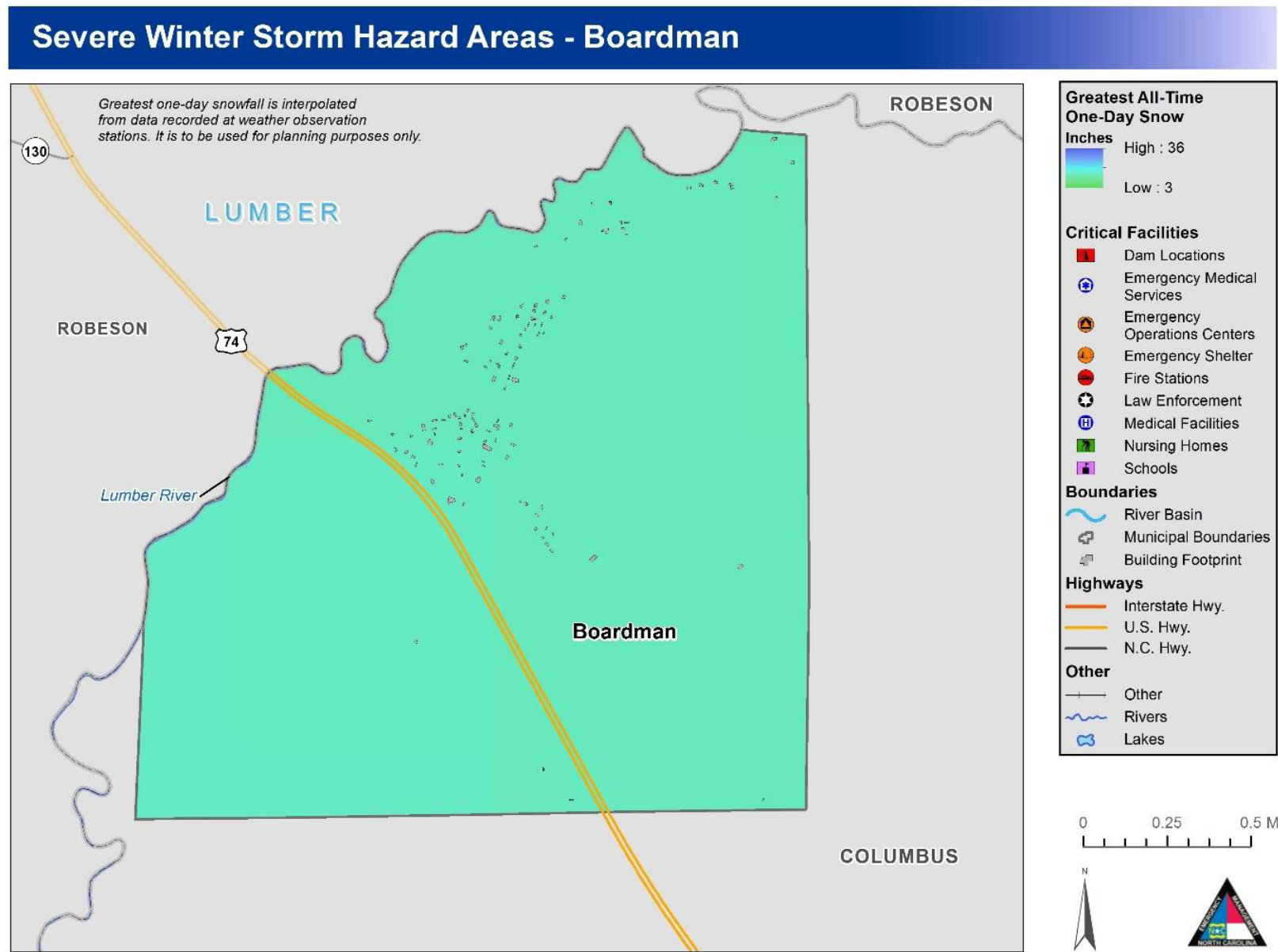


Figure 5-116: Severe Winter Storm Hazard Areas - Boardman



## Severe Winter Storm Hazard Areas - Bolton

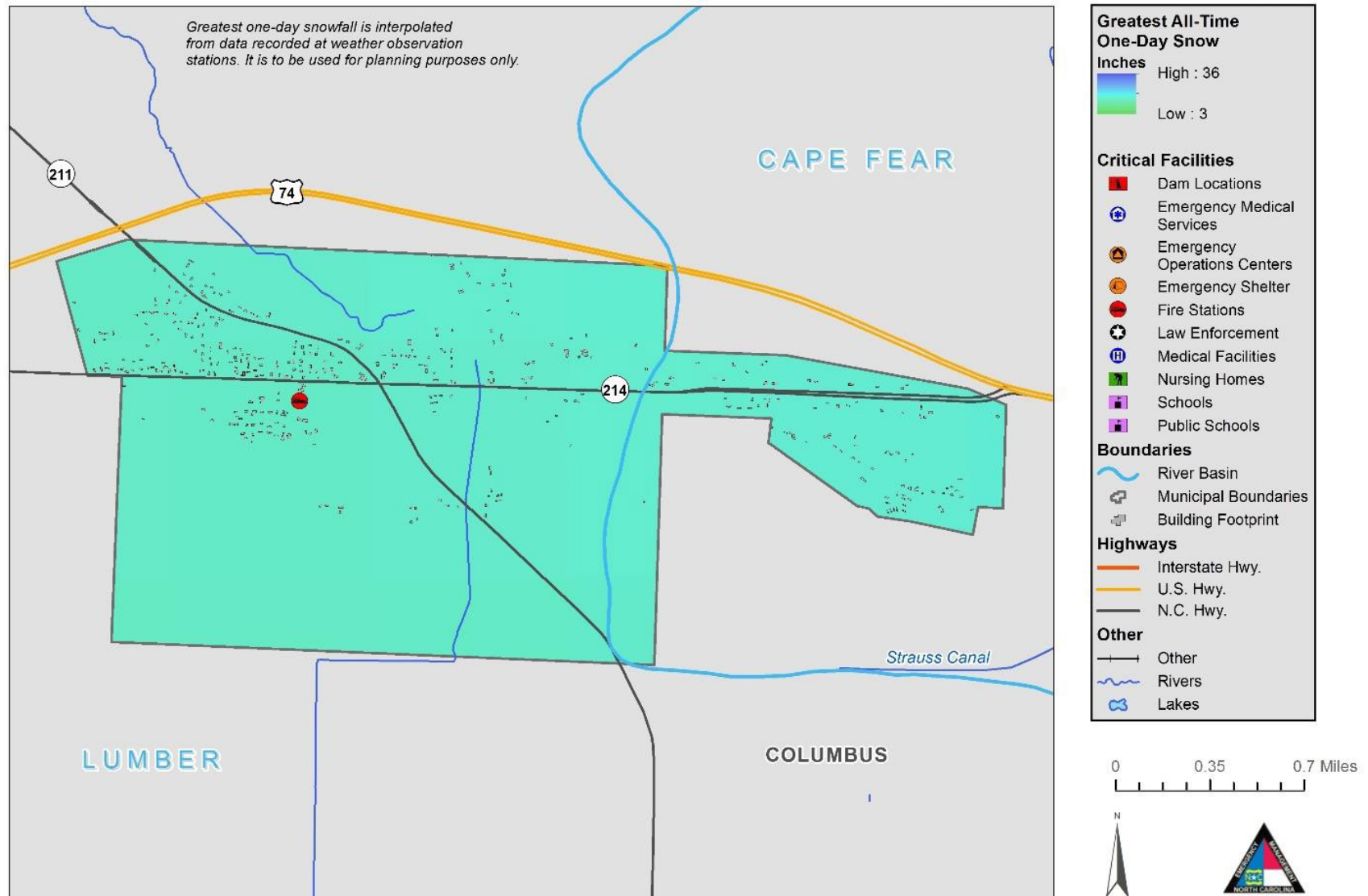


Figure 5-117: Severe Winter Storm Hazard Areas - Bolton



## Severe Winter Storm Hazard Areas - Brunswick

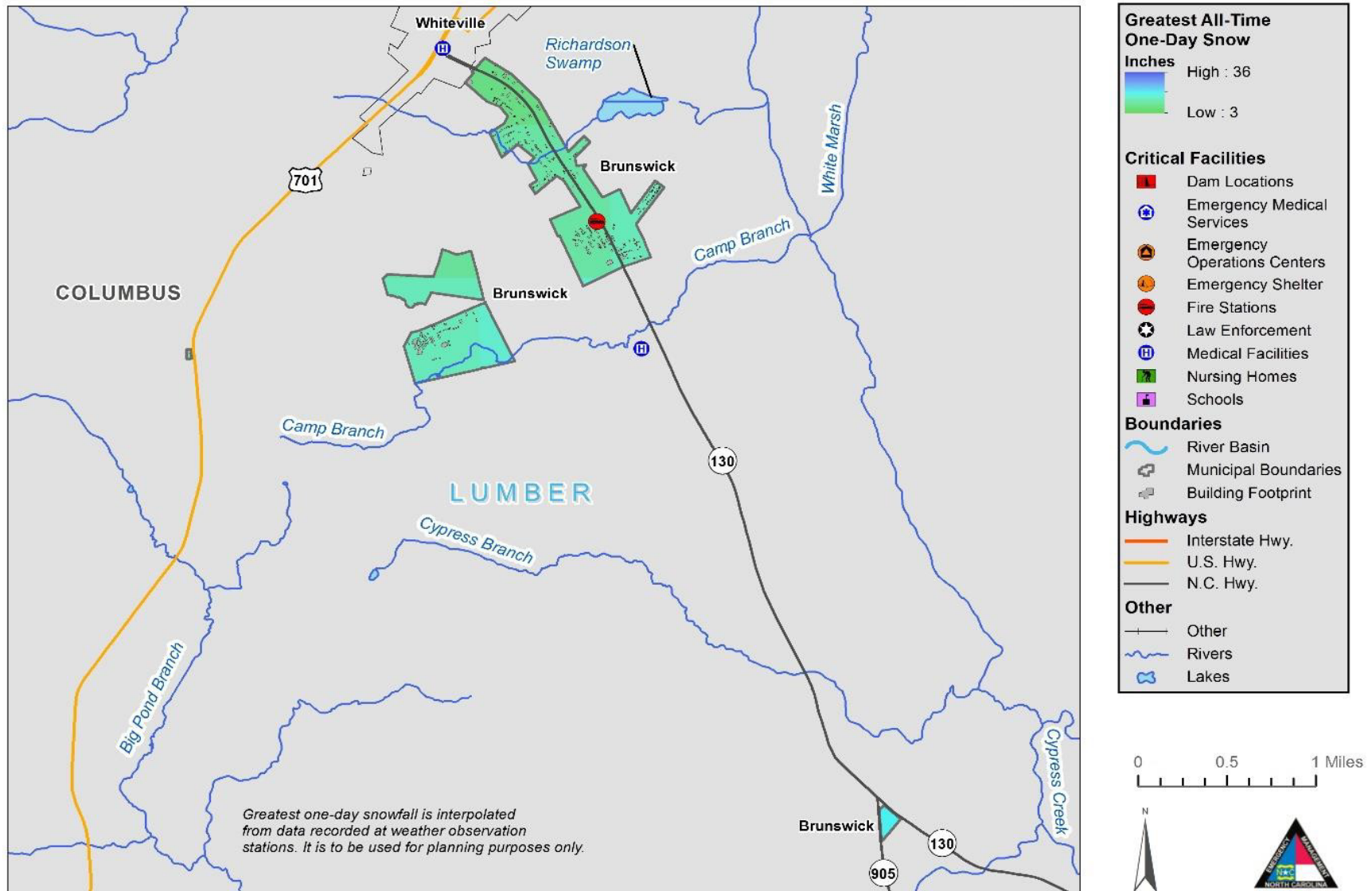


Figure 5-118: Severe Winter Storm Hazard Areas - Brunswick

## Severe Winter Storm Hazard Areas - Cerro Gordo

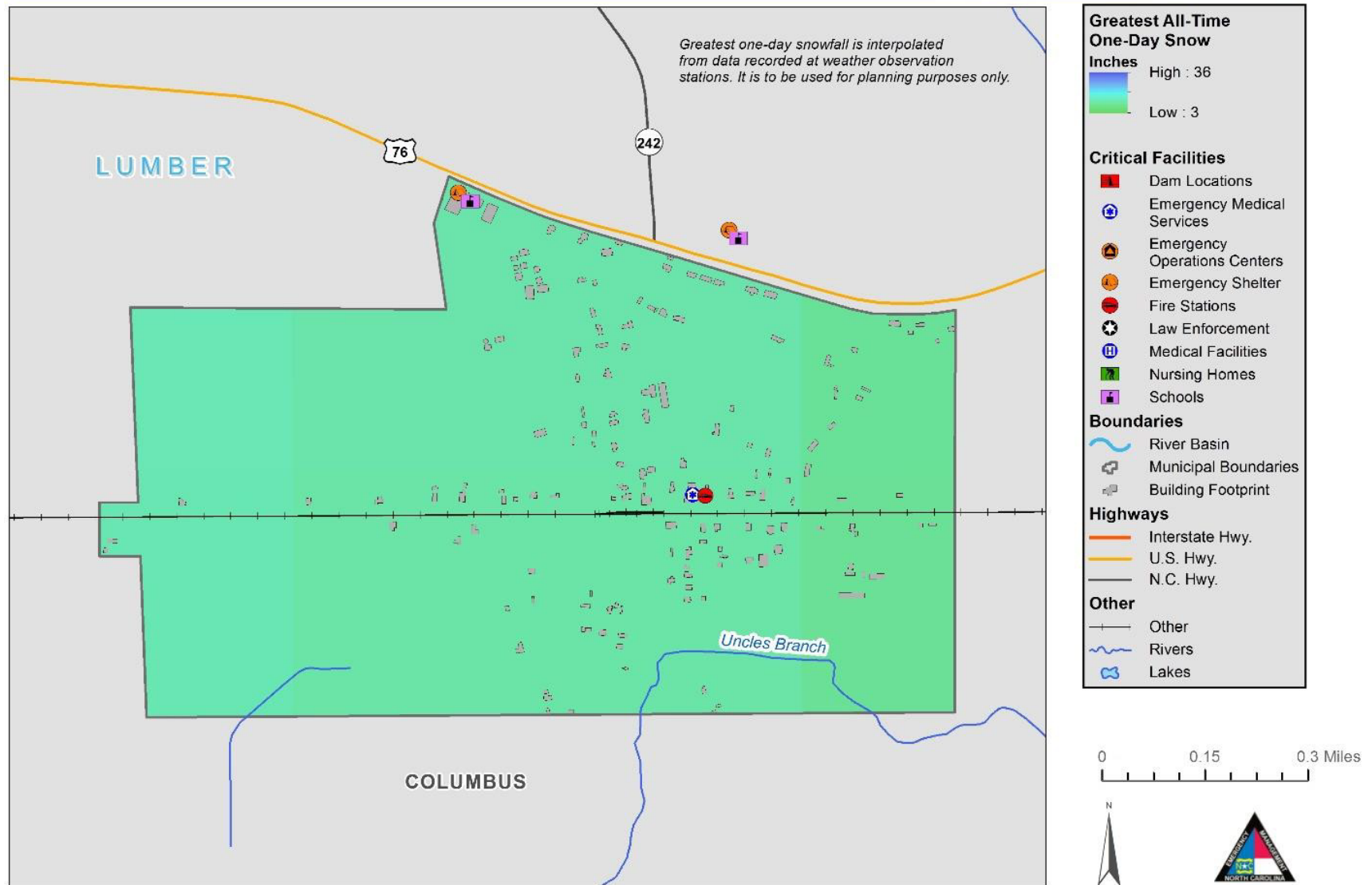


Figure 5-119: Severe Winter Storm Hazard Areas – Cerro Gordo

## Severe Winter Storm Hazard Areas - Chadbourn

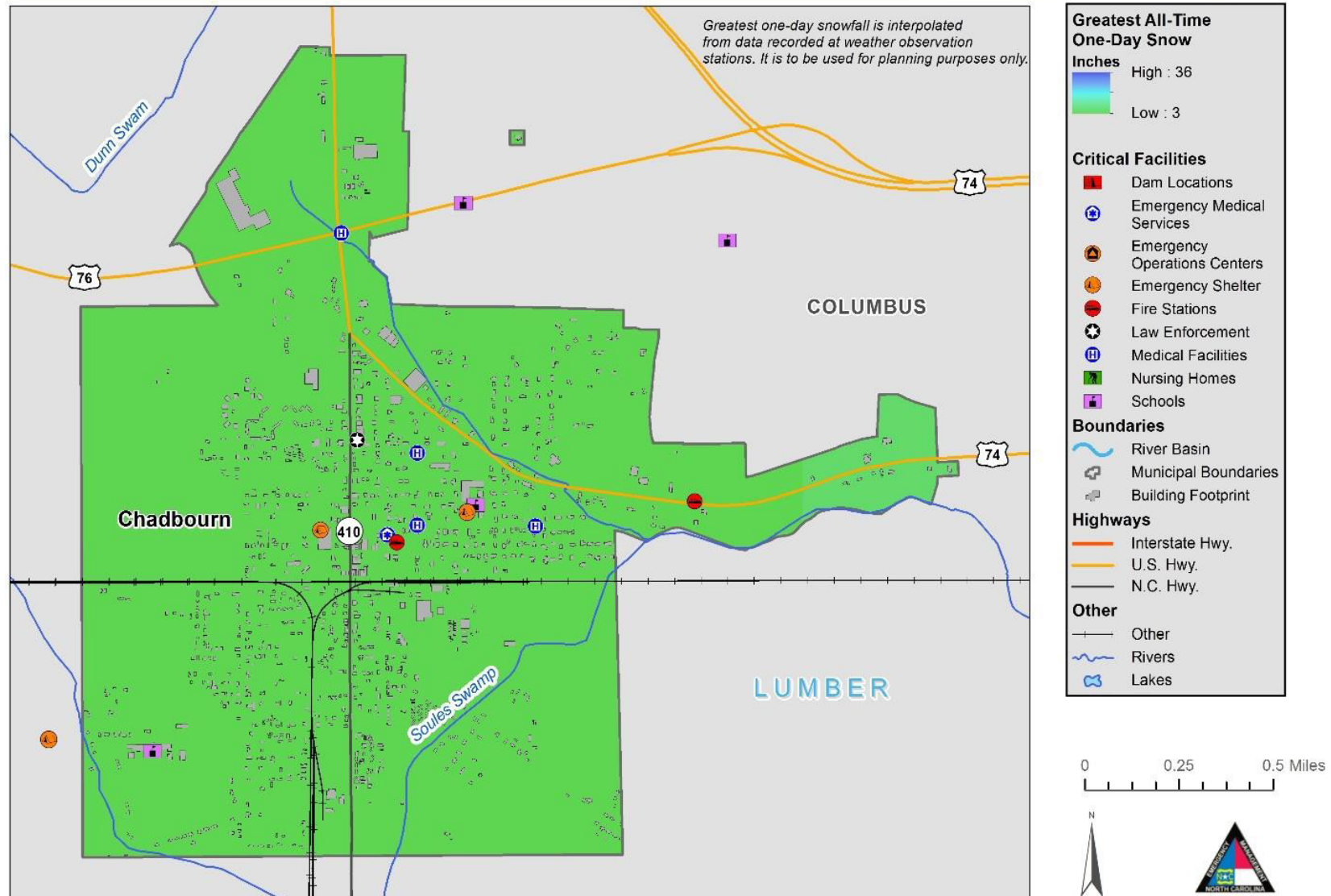


Figure 5-120: Severe Winter Storm Hazard Areas - Chadbourn



## Severe Winter Storm Hazard Areas - Fair Bluff

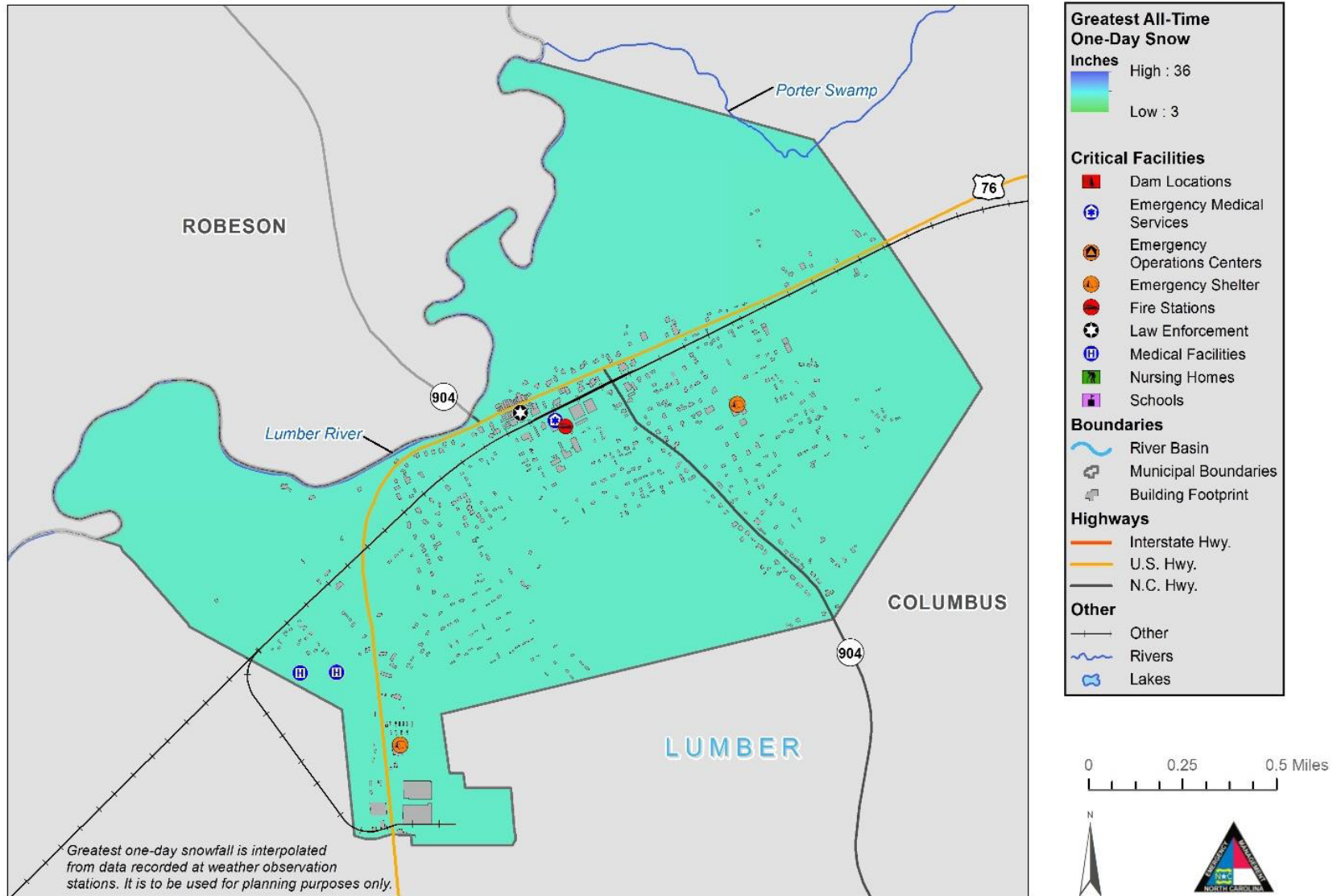


Figure 5-121: Severe Winter Storm Hazard Areas – Fair Bluff



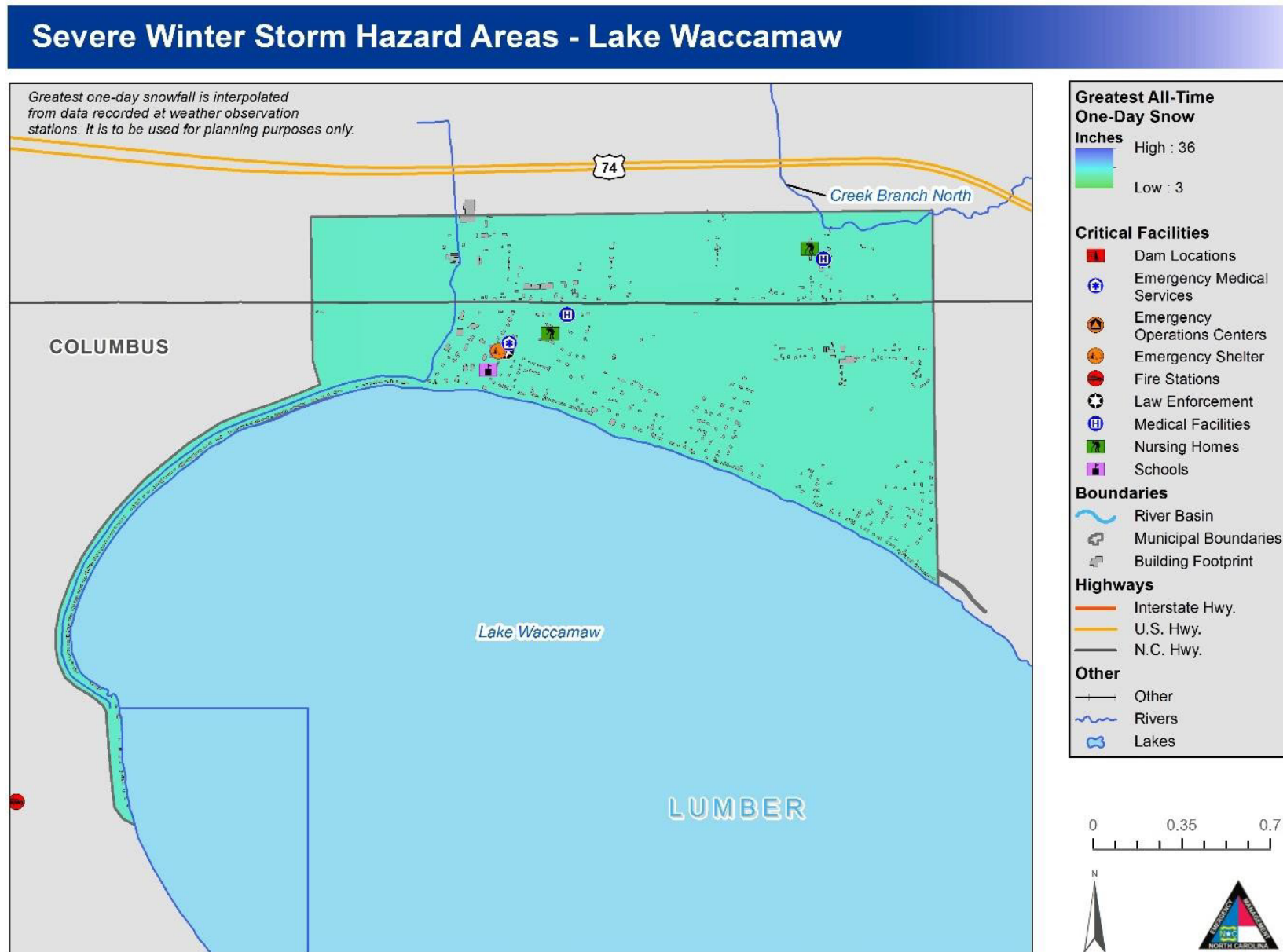


Figure 5-122: Severe Winter Storm Hazard Areas – Lake Waccamaw

## Severe Winter Storm Hazard Areas - Sandyfield

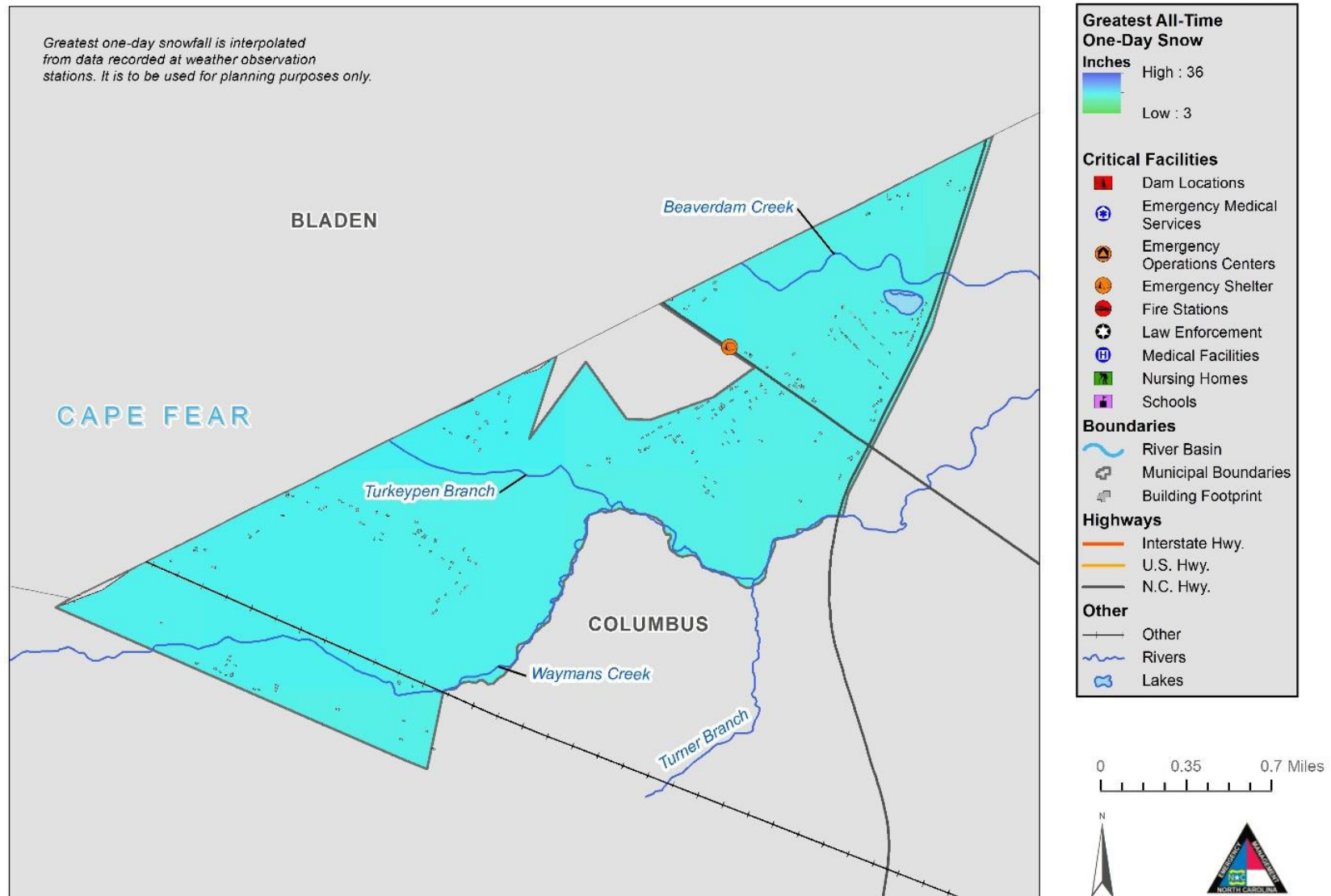
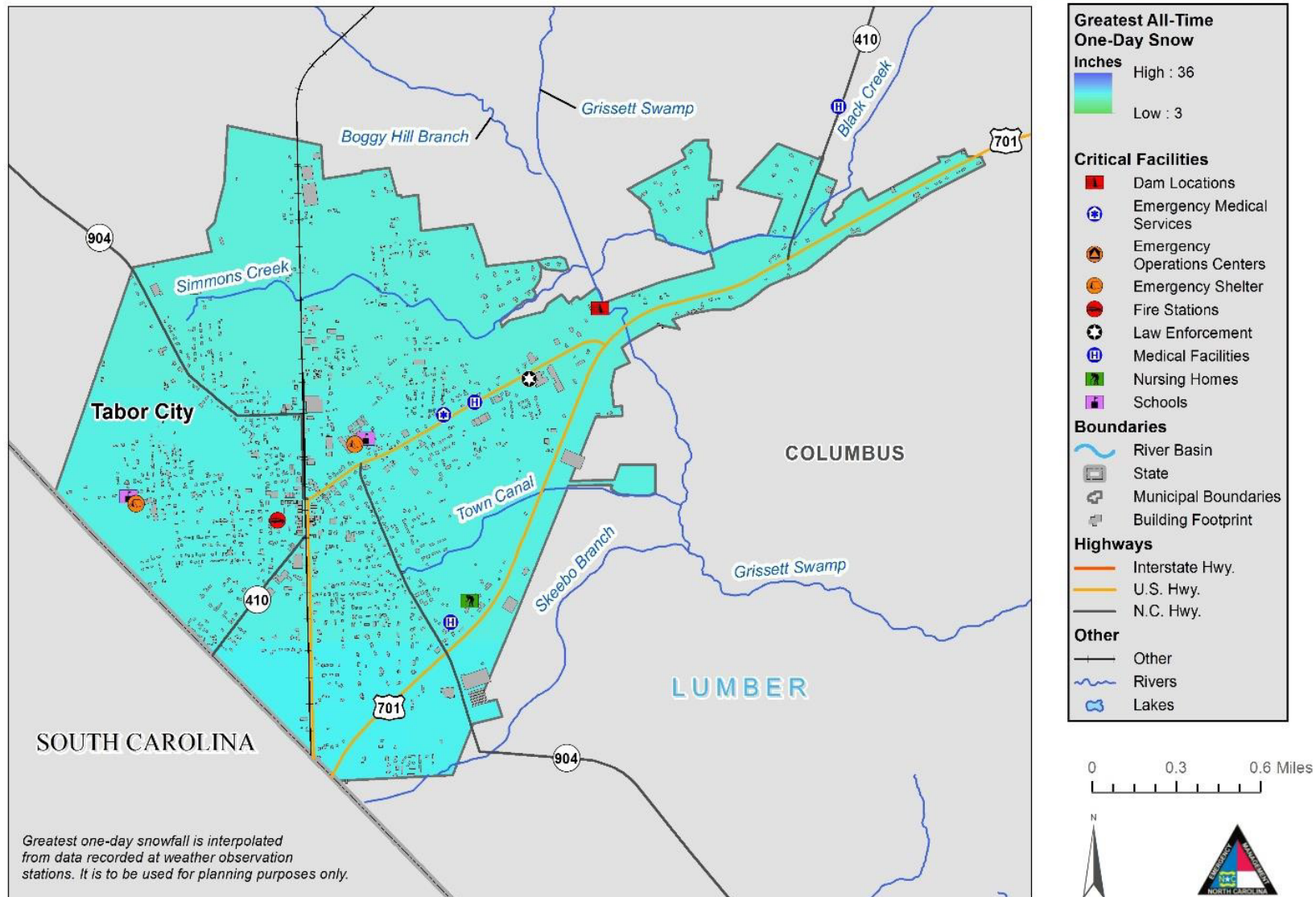


Figure 5-123: Severe Winter Storm Hazard Areas - Sandyfield

## Severe Winter Storm Hazard Areas - Tabor City



Greatest one-day snowfall is interpolated from data recorded at weather observation stations. It is to be used for planning purposes only.



## Severe Winter Storm Hazard Areas - Whiteville

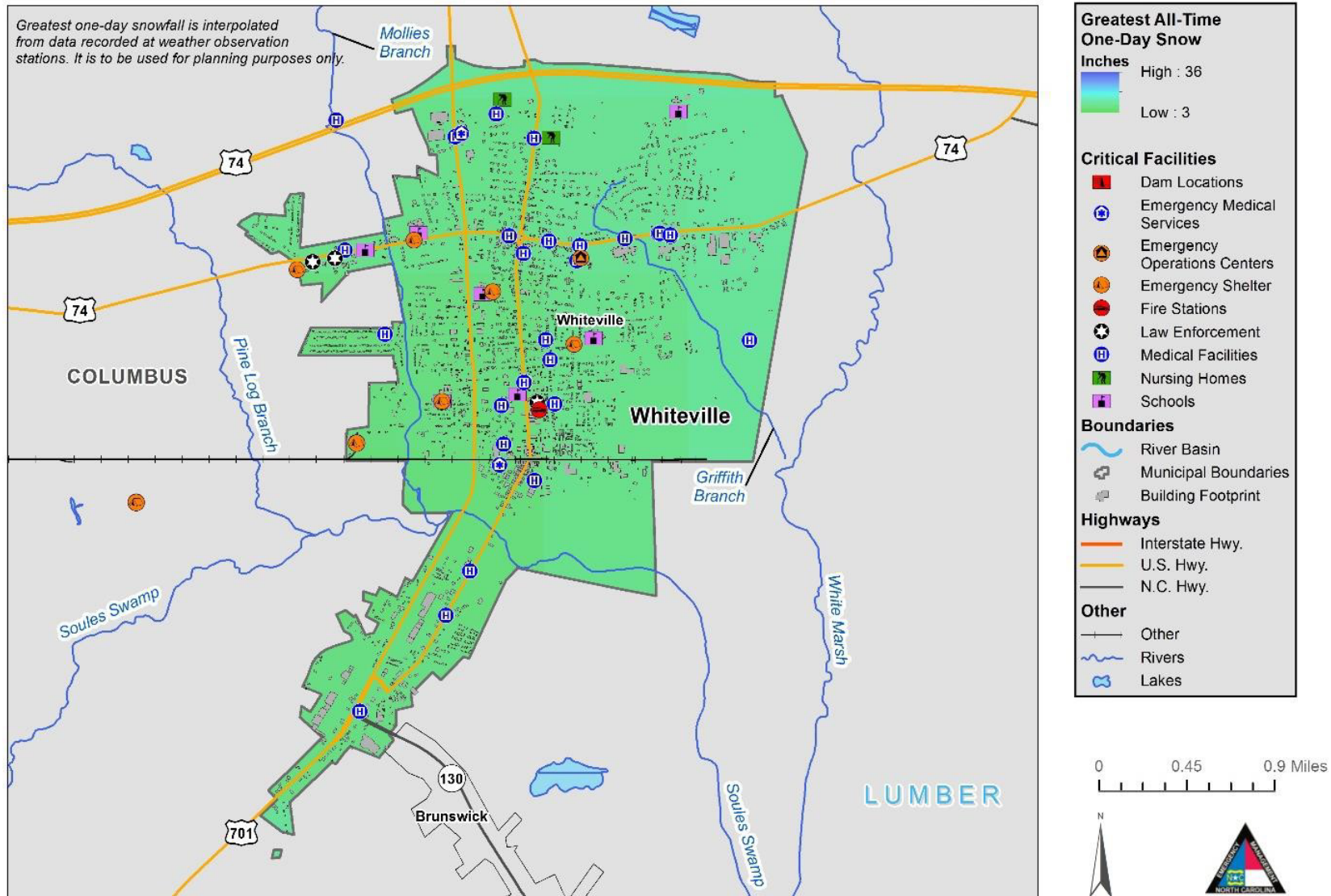


Figure 5-125: Severe Winter Storm Hazard Areas - Whiteville



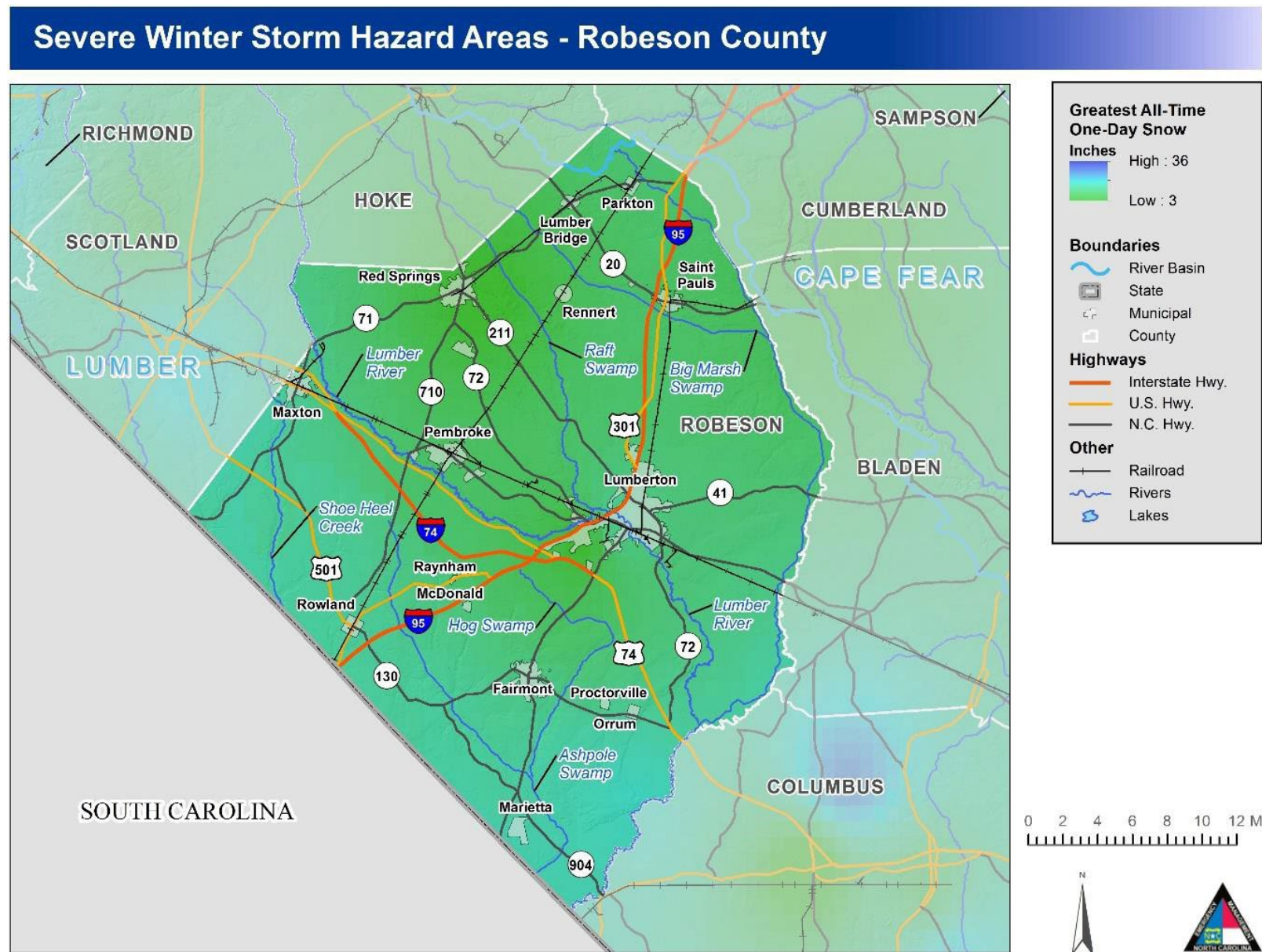


Figure 5-126: Severe Winter Storm Hazard Areas – Robeson County

## Severe Winter Storm Hazard Areas - Fairmont

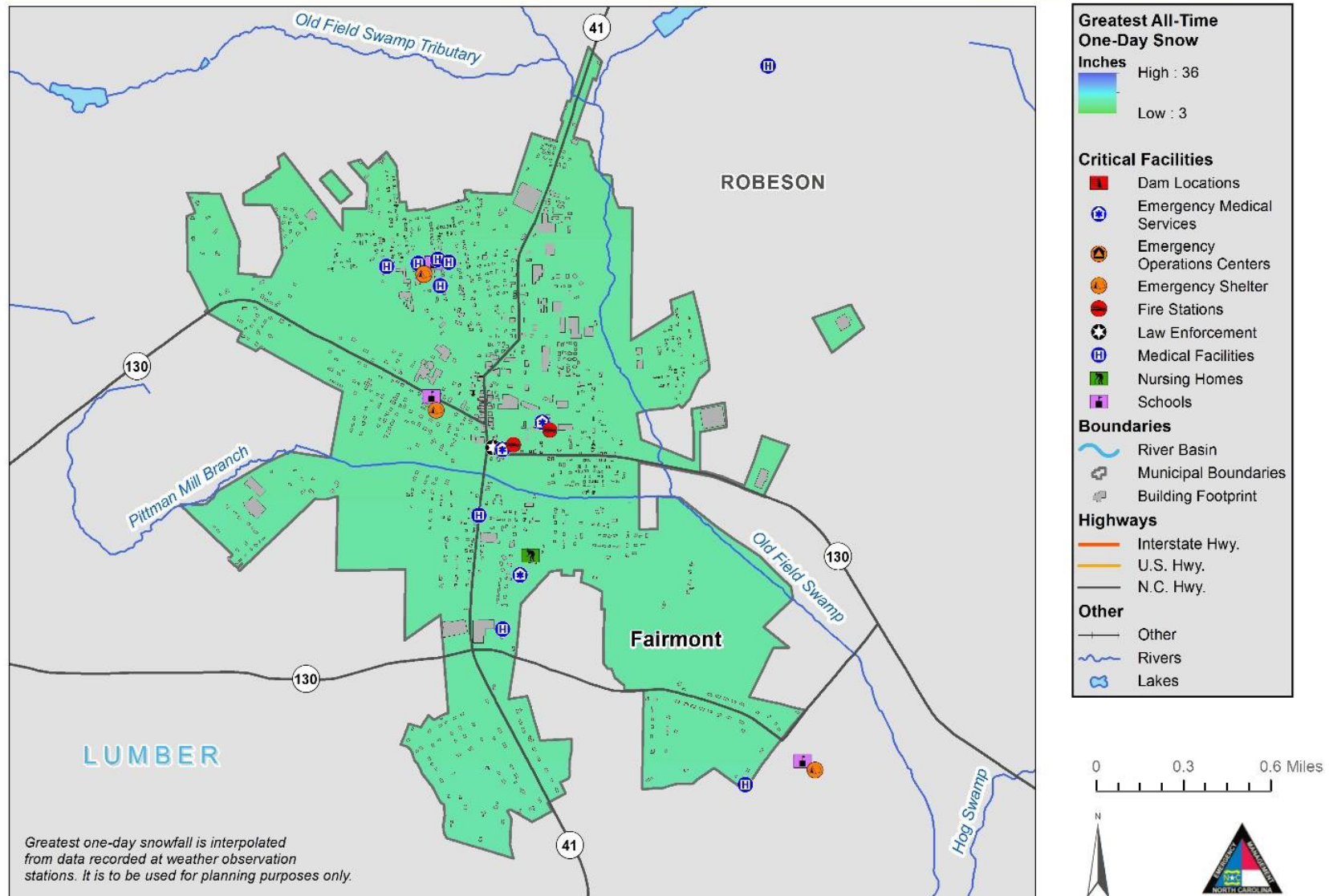


Figure 5-127: Severe Winter Storm Hazard Areas - Fairmont

## Severe Winter Storm Hazard Areas - Lumber Bridge

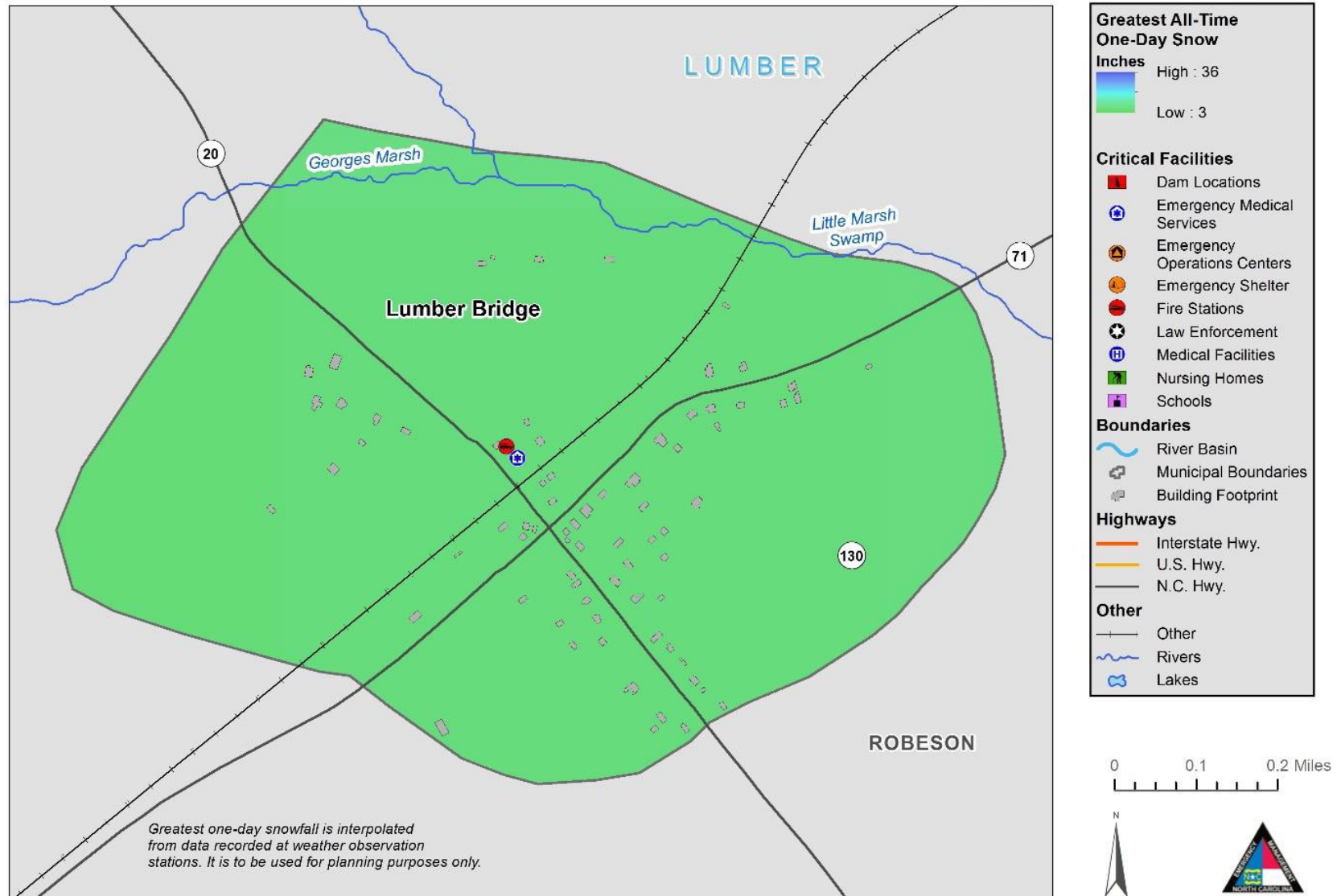


Figure 5-128: Severe Winter Storm Hazard Areas – Lumber Bridge



## Severe Winter Storm Hazard Areas - Lumberton

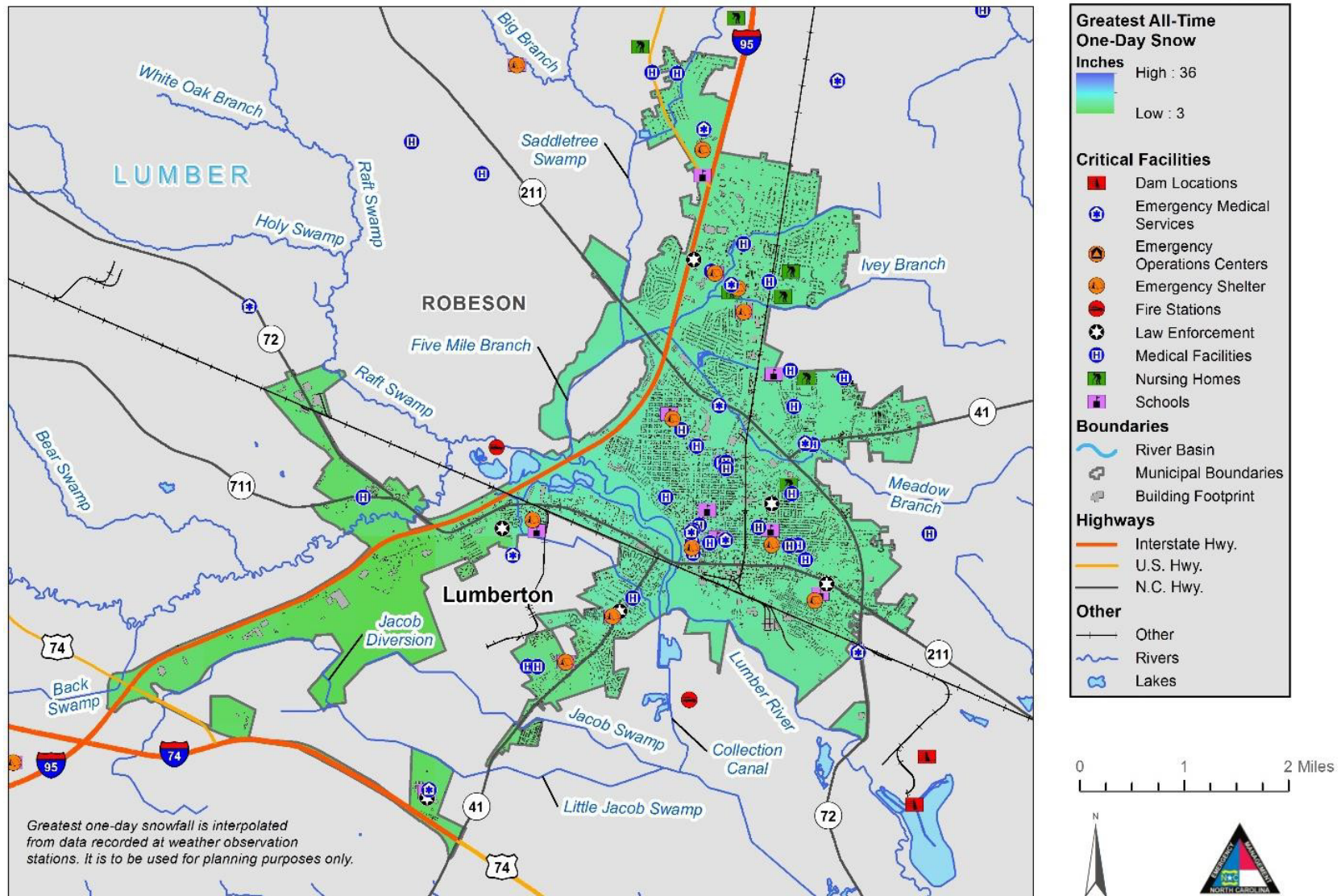


Figure 5-129: Severe Winter Storm Hazard Areas - Lumberton



## Severe Winter Storm Hazard Areas - Marietta

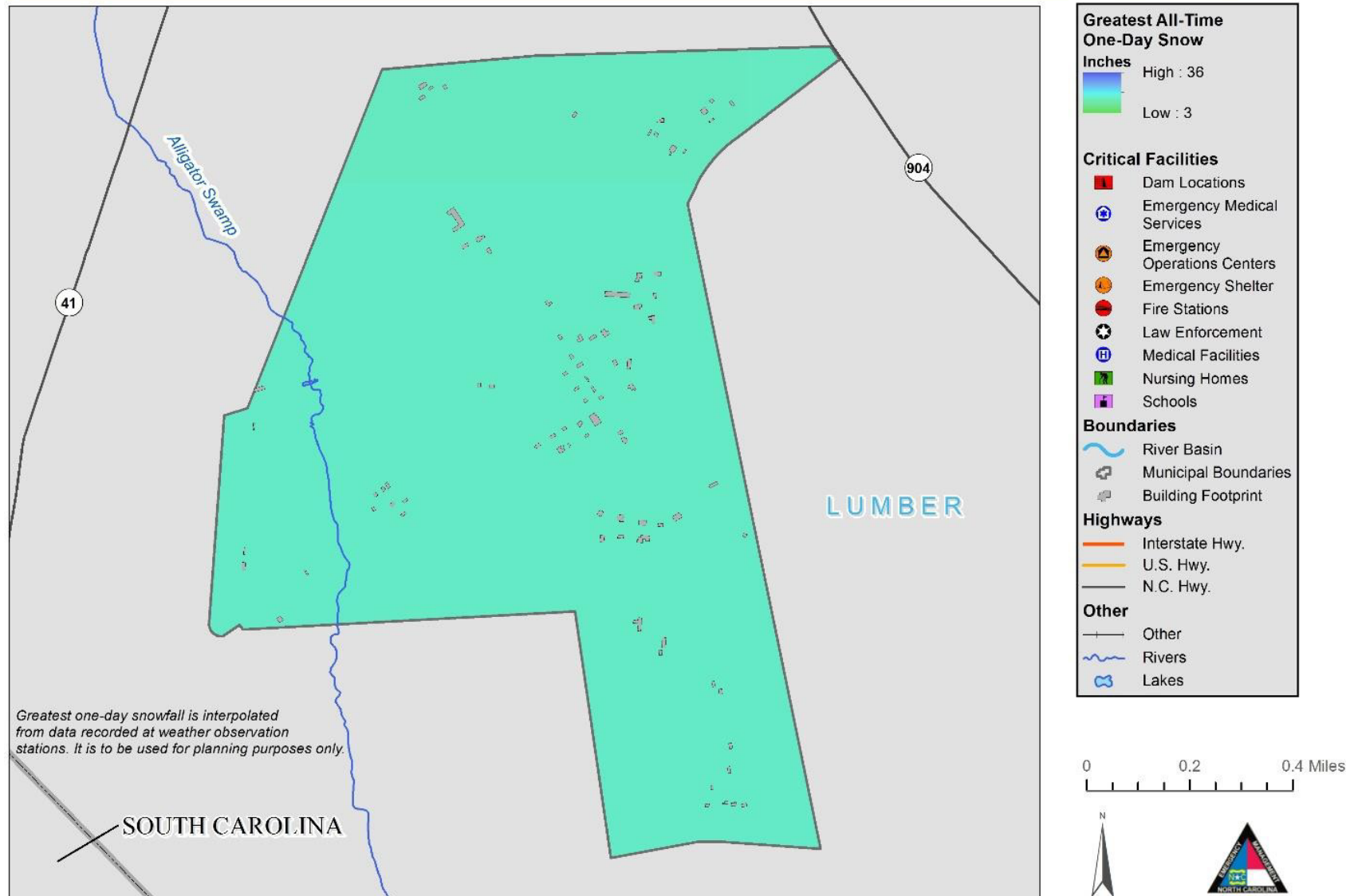


Figure 5-130: Severe Winter Storm Hazard Areas - Marietta

## Severe Winter Storm Hazard Areas - Maxton

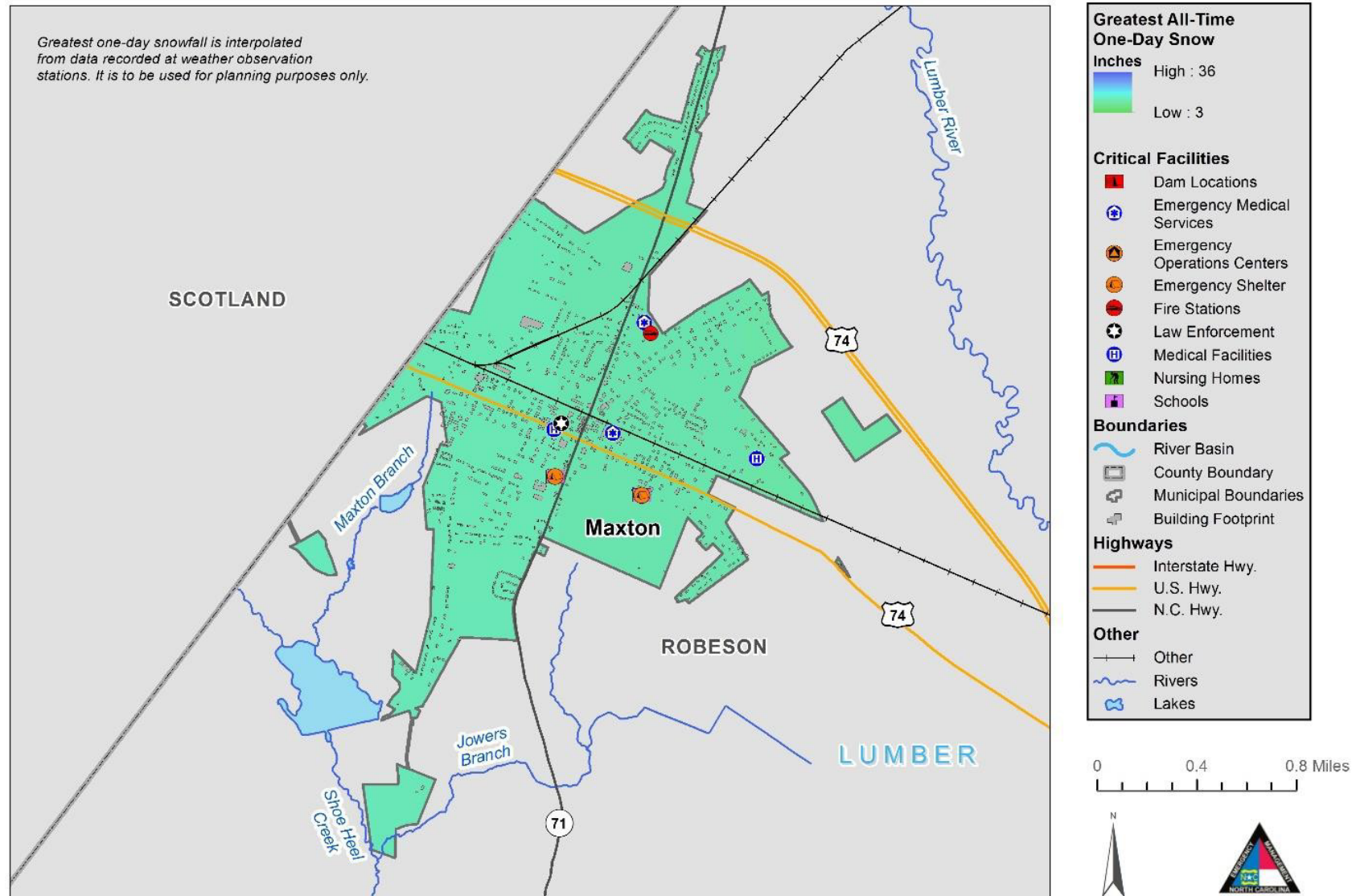


Figure 5-131: Severe Winter Storm Hazard Areas – Maxton

## Severe Winter Storm Hazard Areas - McDonald

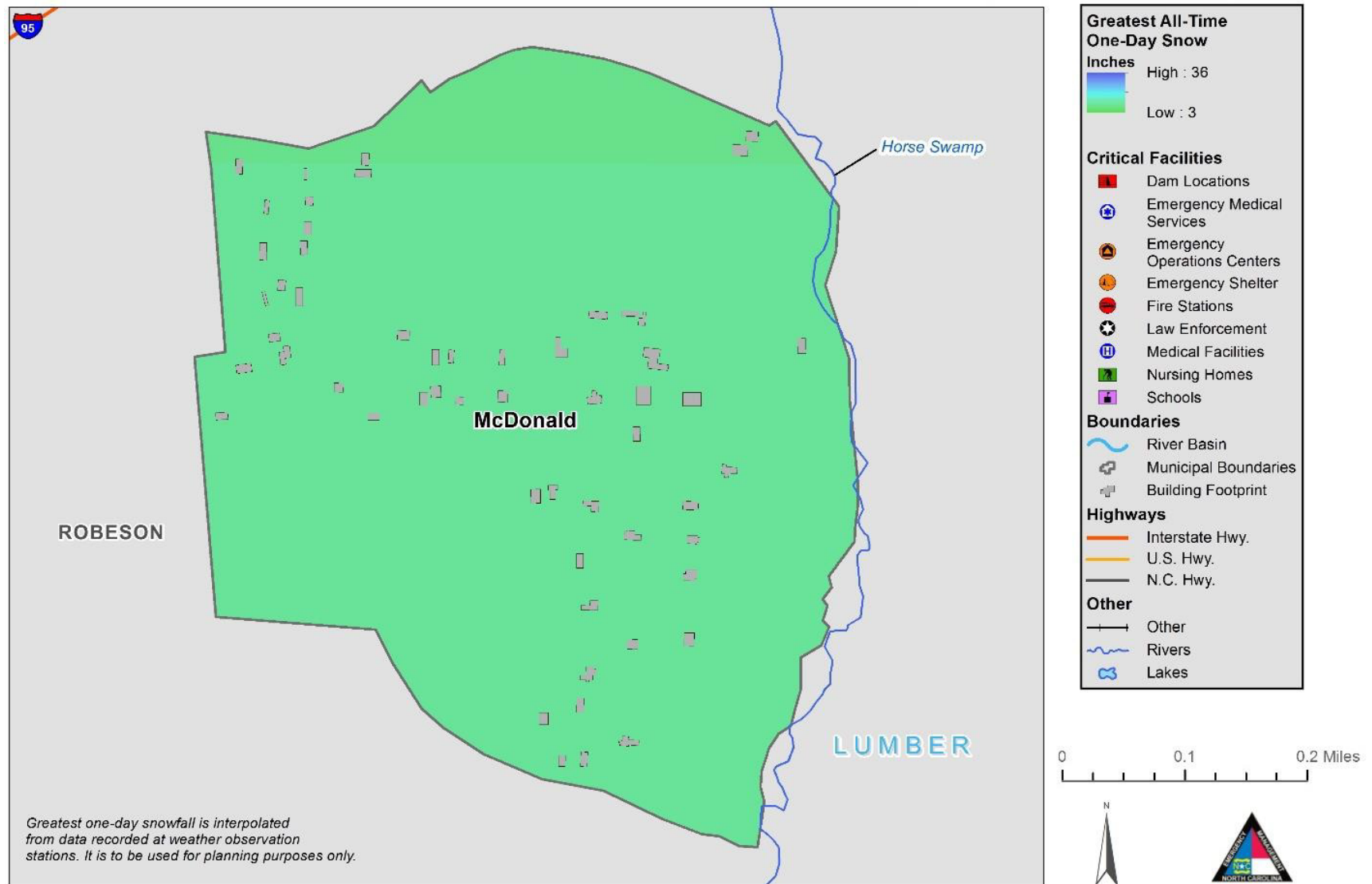


Figure 5-132: Severe Winter Storm Hazard Areas - McDonald

## Severe Winter Storm Hazard Areas - Orrum

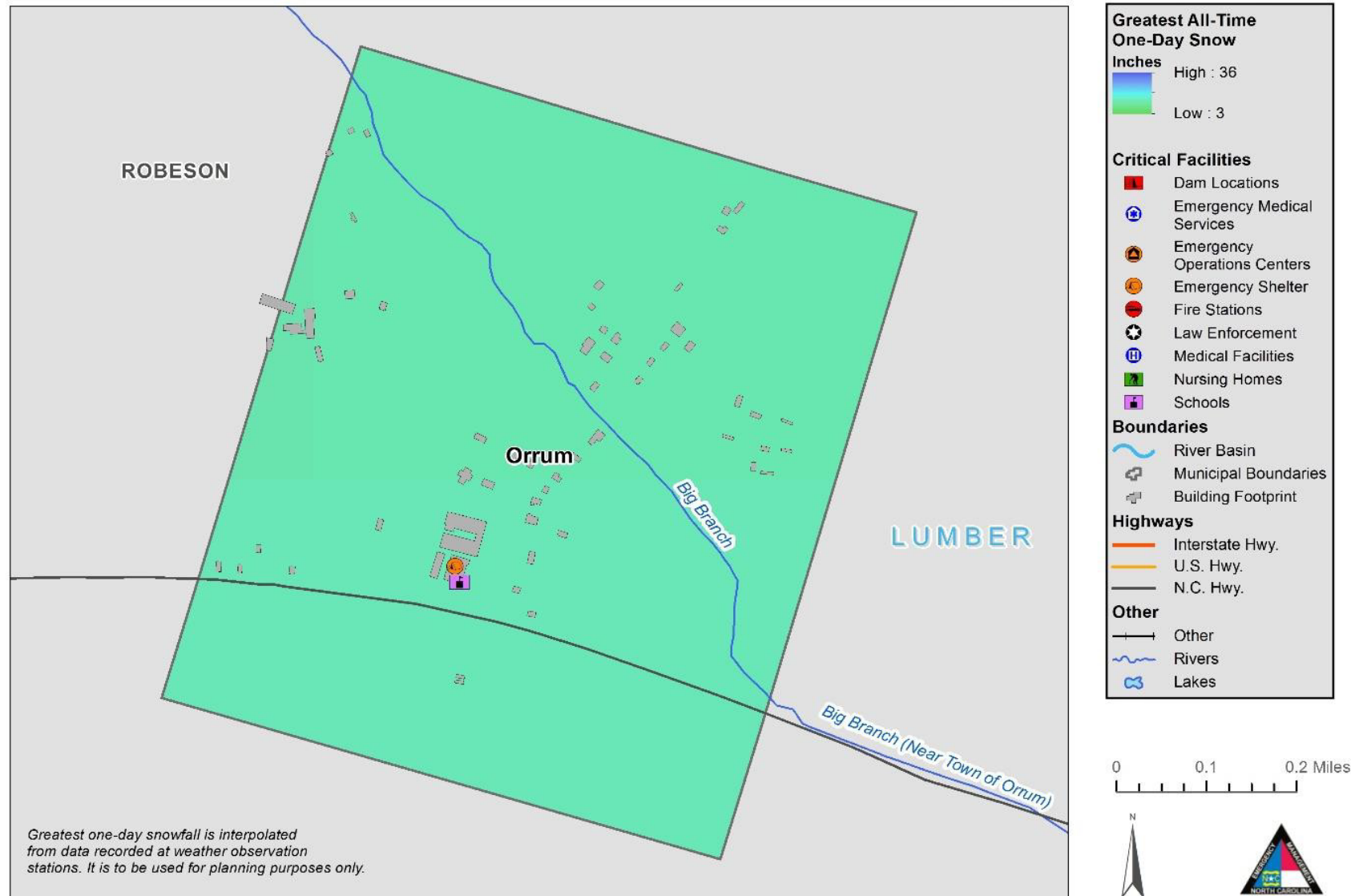


Figure 5-133: Severe Winter Storm Hazard Areas - Orrum



## Severe Winter Storm Hazard Areas - Parkton

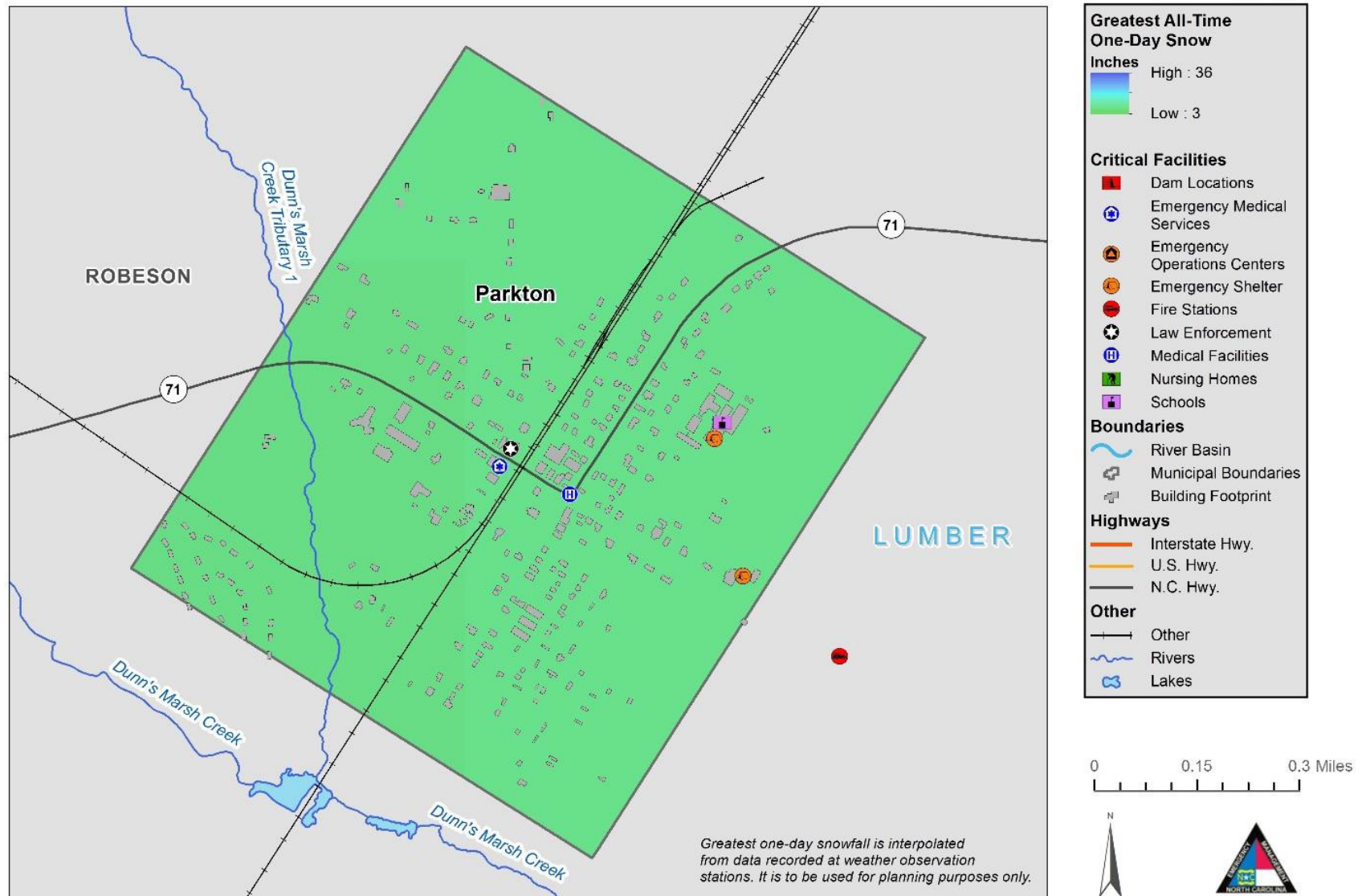


Figure 5-134: Severe Winter Storm Hazard Areas - Parkton

## Severe Winter Storm Hazard Areas - Pembroke

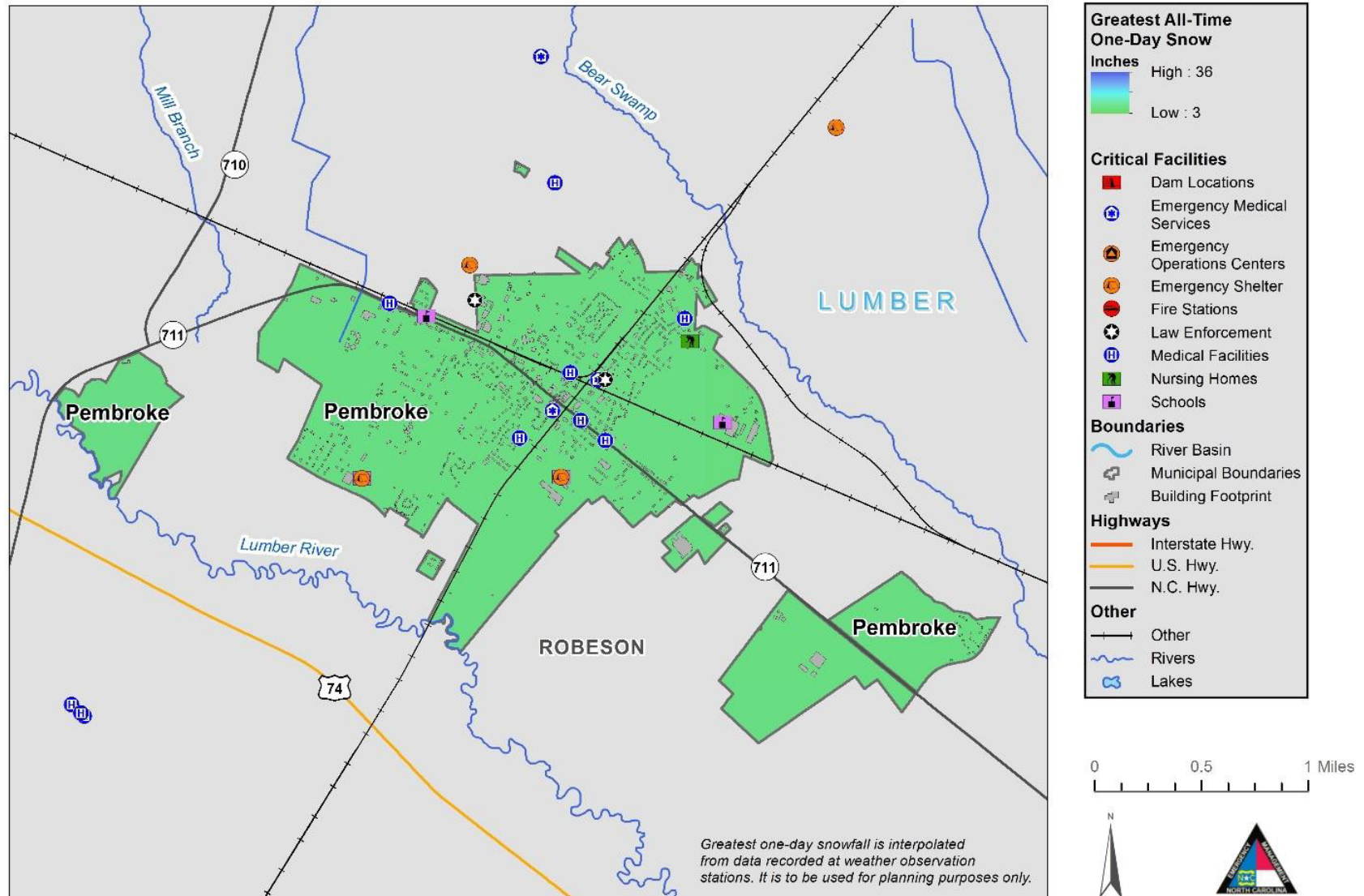


Figure 5-135: Severe Winter Storm Hazard Areas - Pembroke

## Severe Winter Storm Hazard Areas - Proctorville

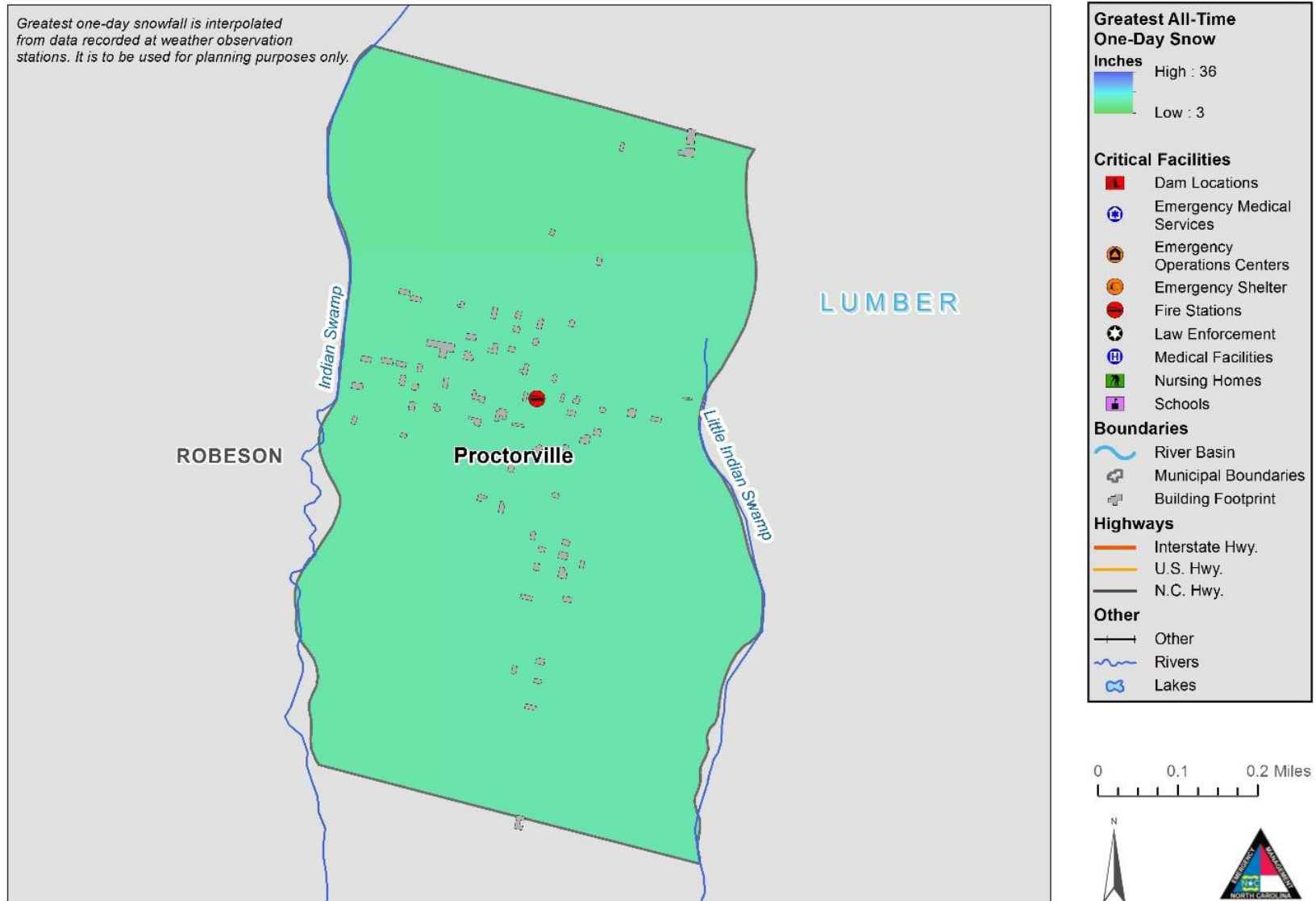


Figure 5-136: Severe Winter Storm Hazard Areas - Proctorville

## Severe Winter Storm Hazard Areas - Raynham

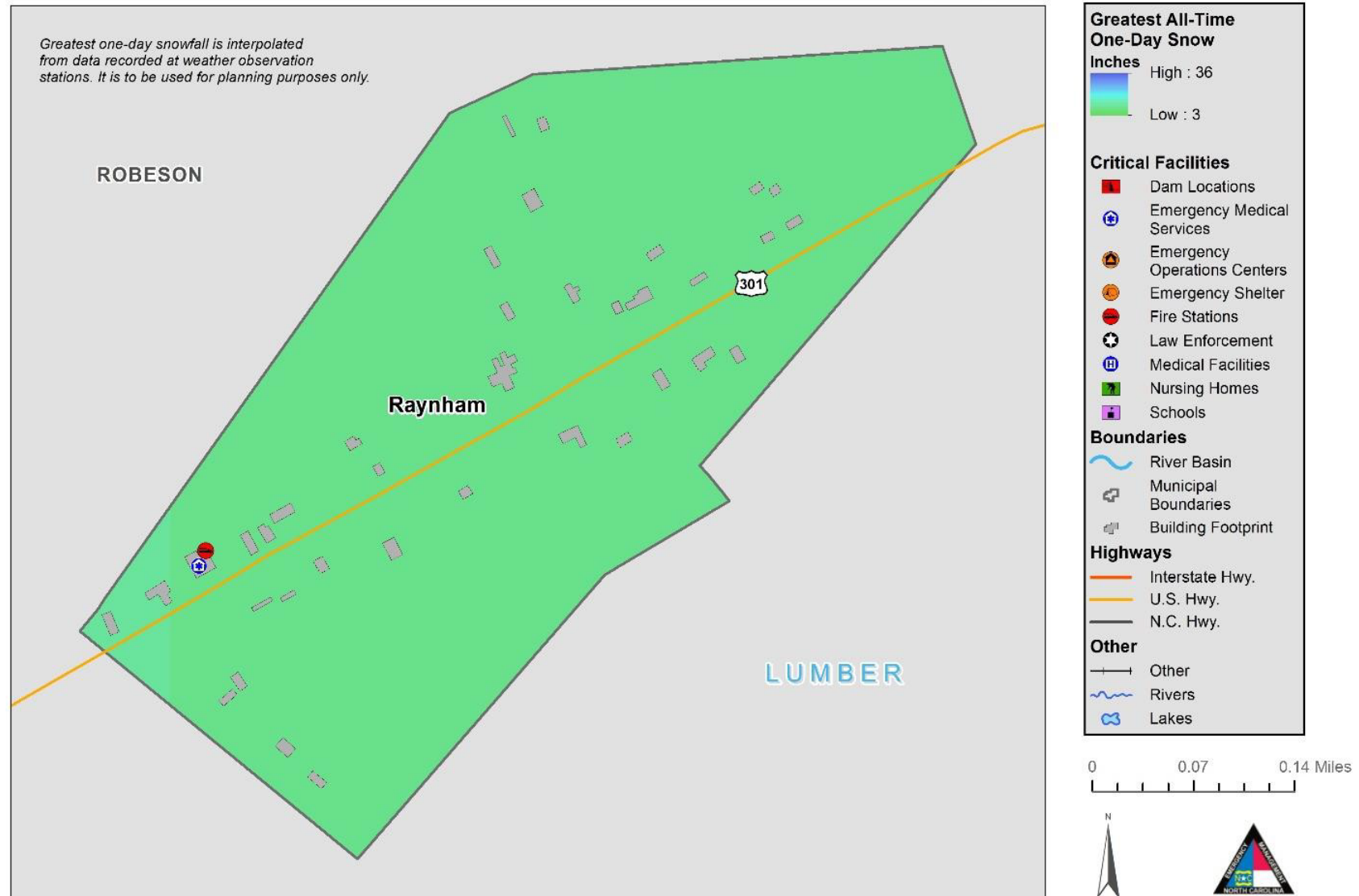
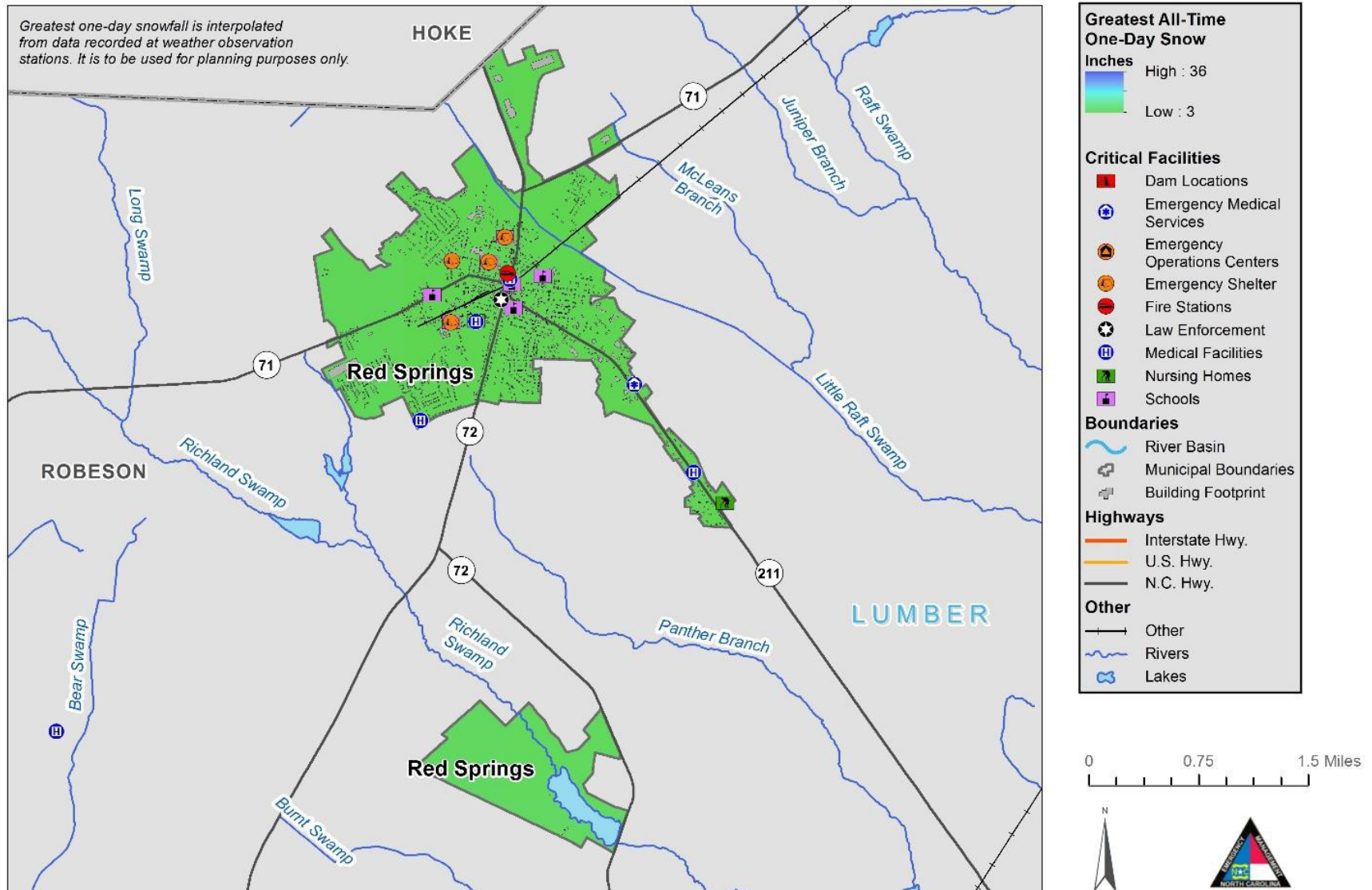


Figure 5-137: Severe Winter Storm Hazard Areas - Raynham



## Severe Winter Storm Hazard Areas - Red Springs



## Severe Winter Storm Hazard Areas - Rennert

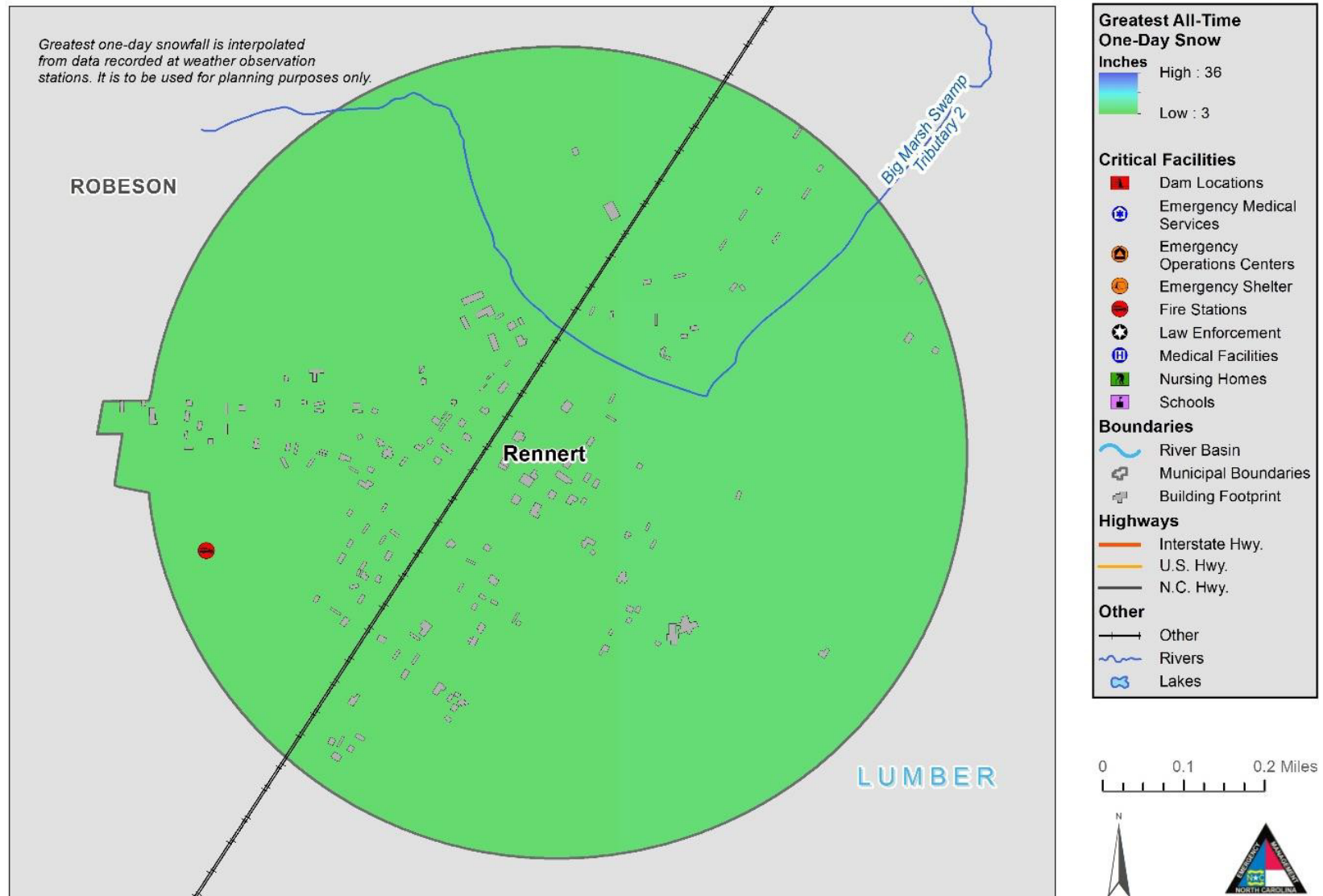


Figure 5-139: Severe Winter Storm Hazard Areas - Rennert

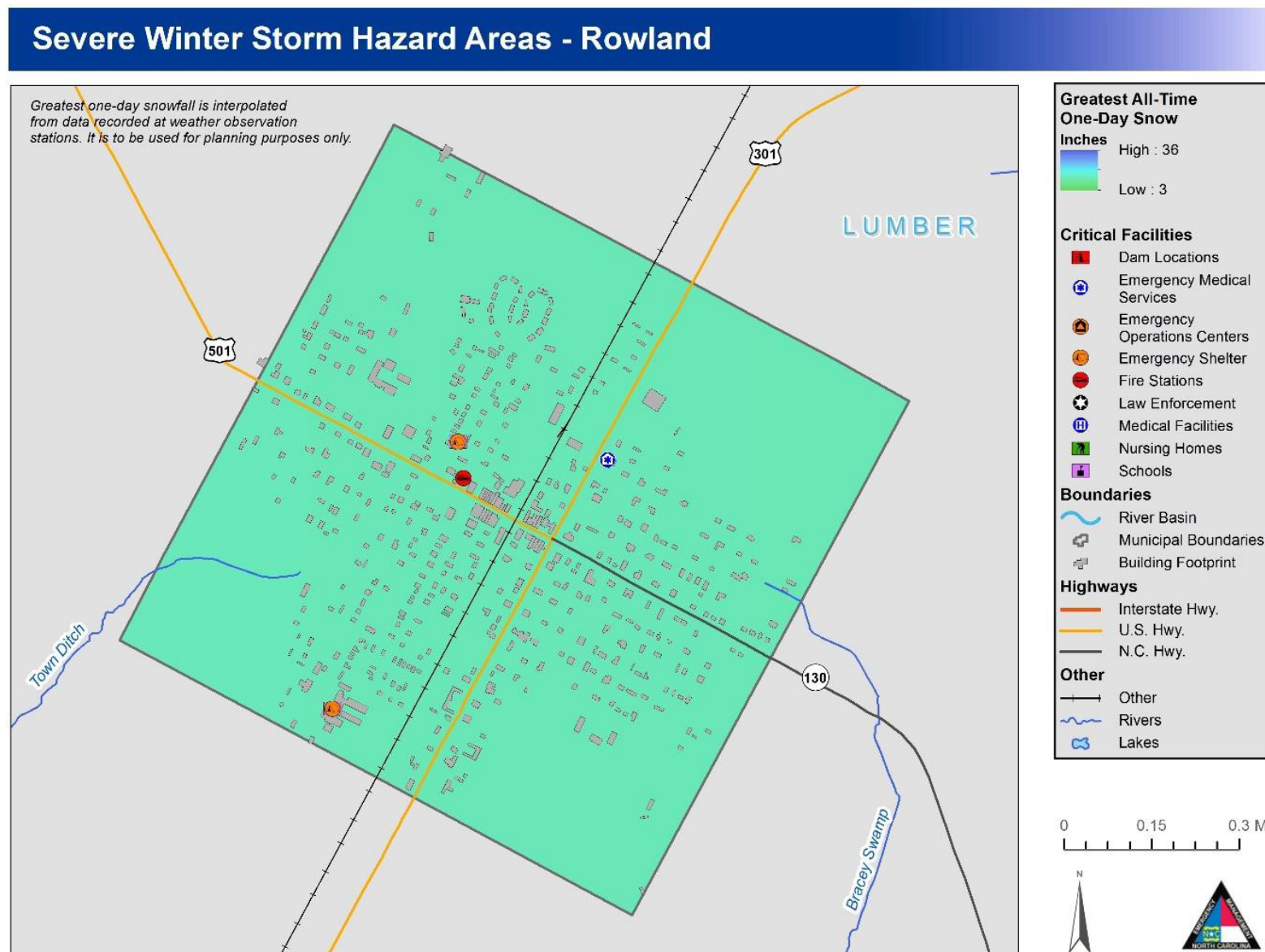


Figure 5-140: Severe Winter Storm Hazard Areas - Rowland



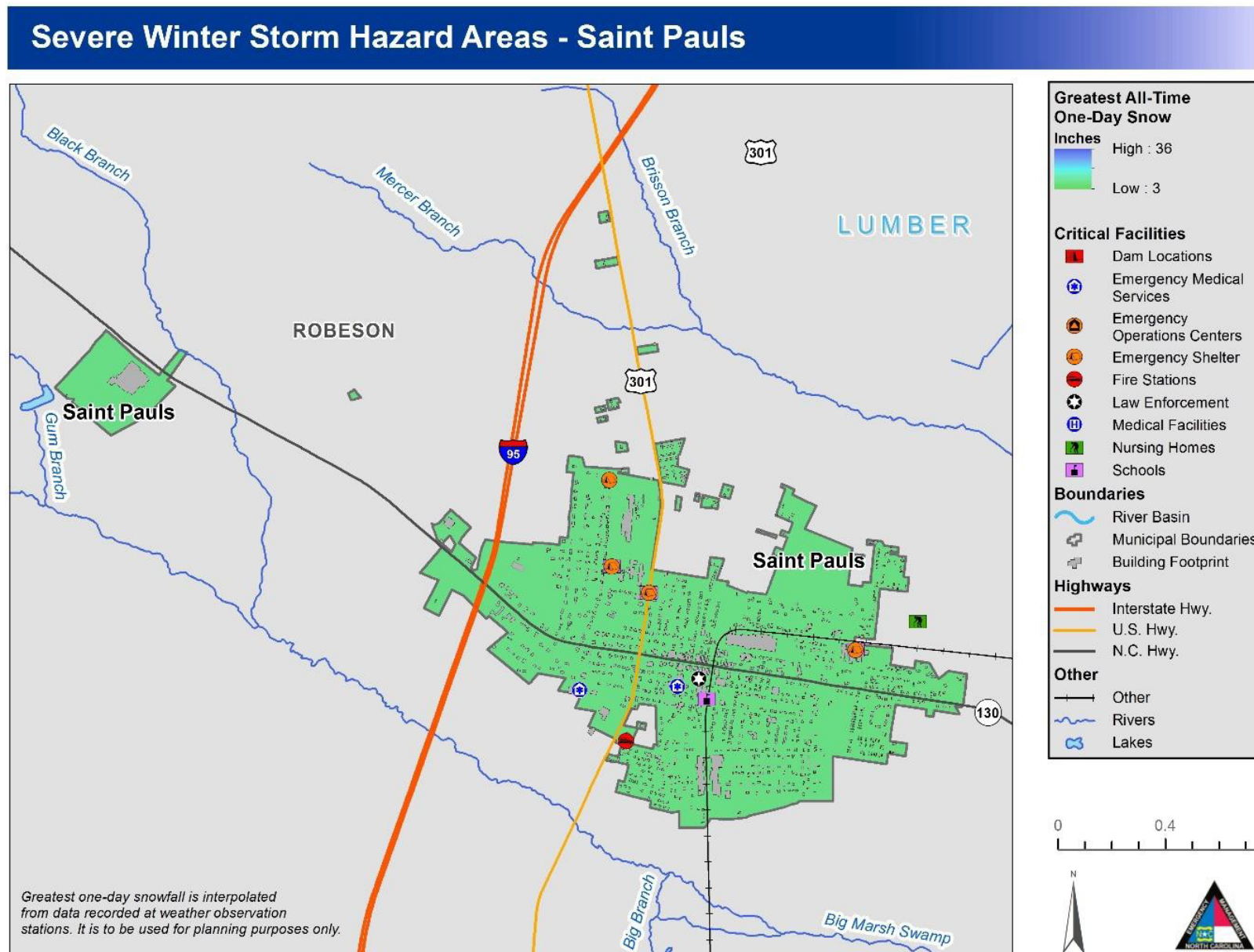


Figure 5-141: Severe Winter Storm Hazard Areas – Saint Pauls



The table below shows the worst recorded events based on maximum snowfall for the region.

**Table 5-25: NCEI Winter Weather Extent by County**

| Community       | Number of Days with Winter Weather Occurrences July 1950- Present | Source            | Maximum Snowfall Data |
|-----------------|-------------------------------------------------------------------|-------------------|-----------------------|
| Bladen County   | 75                                                                | NCEI Storm Events | 8 inches (1942)       |
| Columbus County | 75                                                                | NCEI Storm Events | 15 inches (1973)      |
| Robeson County  | 75                                                                | NCEI Storm Events | 12 inches (1912)      |

### 5.12.3 Past Occurrences

According to NCEI, the Region has experienced 30 winter storm events since 1996, reported in **Table 5-26**. These events are reported to have caused one injury due to icy road conditions.

**Table 5-26: Winter Storm Events in the Region (1996-2025)**

| Location        | Date       | Type           | Deaths | Injuries | Property Damage | Crop Damage |
|-----------------|------------|----------------|--------|----------|-----------------|-------------|
| Robeson (Zone)  | 01/17/2000 | Heavy Snow     | 0      | 0        | 0.00K           | 0.00K       |
| Columbus (Zone) | 01/18/2000 | Heavy Snow     | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 01/18/2000 | Heavy Snow     | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 01/22/2000 | Winter Weather | 0      | 0        | 0.00K           | 0.00K       |
| Columbus (Zone) | 01/22/2000 | Winter Weather | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 01/22/2000 | Winter Weather | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 01/25/2000 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 01/25/2000 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |
| Columbus (Zone) | 01/25/2000 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 12/03/2000 | Winter Storm   | 0      | 0        | 20.00K          | 0.00K       |
| Columbus (Zone) | 01/02/2002 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 01/02/2002 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 01/02/2002 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 12/04/2002 | Ice Storm      | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 01/23/2003 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 01/23/2003 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |
| Columbus (Zone) | 01/23/2003 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 02/17/2003 | Ice Storm      | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 02/17/2003 | Ice Storm      | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 01/25/2004 | Ice Storm      | 0      | 0        | 1.500M          | 0.00K       |

| Location        | Date       | Type           | Deaths | Injuries | Property Damage | Crop Damage |
|-----------------|------------|----------------|--------|----------|-----------------|-------------|
| Bladen (Zone)   | 01/25/2004 | Ice Storm      | 0      | 0        | 1.000M          | 0.00K       |
| Robeson (Zone)  | 01/26/2004 | Ice Storm      | 0      | 0        | 3.000M          | 0.00K       |
| Bladen (Zone)   | 01/26/2004 | Ice Storm      | 0      | 0        | 2.500M          | 0.00K       |
| Columbus (Zone) | 01/26/2004 | Ice Storm      | 0      | 0        | 6.000M          | 0.00K       |
| Robeson (Zone)  | 02/17/2004 | Winter Weather | 0      | 0        | 0.00K           | 0.00K       |
| Columbus (Zone) | 02/17/2004 | Winter Weather | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 02/17/2004 | Winter Weather | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 02/26/2004 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 02/26/2004 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 12/26/2004 | Winter Weather | 0      | 0        | 30.00K          | 0.00K       |
| Columbus (Zone) | 12/26/2004 | Winter Weather | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 12/26/2004 | Winter Weather | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 04/08/2007 | Frost/freeze   | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 04/08/2007 | Frost/freeze   | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 01/20/2009 | Heavy Snow     | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 01/20/2009 | Heavy Snow     | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 02/04/2009 | Winter Weather | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 01/30/2010 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 01/30/2010 | Ice Storm      | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 02/12/2010 | Heavy Snow     | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 02/12/2010 | Heavy Snow     | 0      | 0        | 0.00K           | 0.00K       |
| Columbus (Zone) | 02/12/2010 | Heavy Snow     | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 12/26/2010 | Heavy Snow     | 0      | 1        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 12/26/2010 | Heavy Snow     | 0      | 0        | 0.00K           | 0.00K       |
| Columbus (Zone) | 12/26/2010 | Heavy Snow     | 0      | 0        | 5.00K           | 0.00K       |
| Robeson (Zone)  | 01/10/2011 | Heavy Snow     | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 01/10/2011 | Heavy Snow     | 0      | 0        | 0.00K           | 0.00K       |
| Columbus (Zone) | 01/10/2011 | Heavy Snow     | 0      | 0        | 0.00K           | 0.00K       |
| Bladen (Zone)   | 01/28/2014 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |
| Columbus (Zone) | 01/28/2014 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 01/28/2014 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |
| Robeson (Zone)  | 02/11/2014 | Winter Storm   | 0      | 0        | 0.00K           | 0.00K       |

| Location        | Date       | Type           | Deaths   | Injuries | Property Damage | Crop Damage  |
|-----------------|------------|----------------|----------|----------|-----------------|--------------|
| Bladen (Zone)   | 02/11/2014 | Winter Storm   | 0        | 0        | 0.00K           | 0.00K        |
| Columbus (Zone) | 02/11/2014 | Winter Storm   | 0        | 0        | 0.00K           | 0.00K        |
| Bladen (Zone)   | 01/09/2015 | Winter Weather | 0        | 0        | 30.00K          | 0.00K        |
| Bladen (Zone)   | 02/16/2015 | Ice Storm      | 0        | 0        | 0.00K           | 0.00K        |
| Robeson (Zone)  | 02/16/2015 | Ice Storm      | 0        | 0        | 0.00K           | 0.00K        |
| Columbus (Zone) | 02/24/2015 | Winter Weather | 0        | 0        | 0.00K           | 0.00K        |
| Robeson (Zone)  | 02/24/2015 | Winter Weather | 0        | 0        | 0.00K           | 0.00K        |
| Bladen (Zone)   | 02/24/2015 | Winter Weather | 0        | 0        | 0.00K           | 0.00K        |
| Robeson (Zone)  | 01/22/2016 | Winter Weather | 0        | 0        | 0.00K           | 0.00K        |
| Columbus (Zone) | 03/16/2017 | Frost/freeze   | 0        | 0        | 0.00K           | 0.00K        |
| Robeson (Zone)  | 03/16/2017 | Frost/freeze   | 0        | 0        | 0.00K           | 0.00K        |
| Bladen (Zone)   | 03/16/2017 | Frost/freeze   | 0        | 0        | 0.00K           | 0.00K        |
| Columbus (Zone) | 03/16/2017 | Frost/freeze   | 0        | 0        | 0.00K           | 0.00K        |
| Columbus (Zone) | 03/17/2017 | Frost/freeze   | 0        | 0        | 0.00K           | 0.00K        |
| Bladen (Zone)   | 03/17/2017 | Frost/freeze   | 0        | 0        | 0.00K           | 0.00K        |
| Robeson (Zone)  | 03/17/2017 | Frost/freeze   | 0        | 0        | 0.00K           | 0.00K        |
| Robeson (Zone)  | 01/03/2018 | Winter Storm   | 0        | 0        | 0.00K           | 0.00K        |
| Bladen (Zone)   | 01/21/2022 | Winter Storm   | 0        | 0        | 0.00K           | 0.00K        |
| Robeson (Zone)  | 01/21/2022 | Winter Weather | 0        | 0        | 0.00K           | 0.00K        |
| Columbus (Zone) | 01/21/2022 | Winter Storm   | 0        | 0        | 0.00K           | 0.00K        |
| <b>Totals:</b>  | --         | --             | <b>0</b> | <b>1</b> | <b>14.085M</b>  | <b>0.00K</b> |

Source: NCEI Storm Events Database

#### 5.12.4 Probability of Future Occurrences

The probability of future winter weather/storms is shown in the table below, by jurisdiction.

##### Definitions for Descriptors Used for Probability of Future Hazard Occurrences

- Unlikely: Less than 1% annual probability of hazard
- Possible: Between 1% and 10% annual probability of hazard
- Likely: Between 10% and 100% annual probability of hazard
- Highly Likely: 100% annual probability of hazard

| Jurisdiction                          | Probability of Future Occurrence |
|---------------------------------------|----------------------------------|
| Bladen County (Unincorporated Area)   | Likely                           |
| Columbus County (Unincorporated Area) | Likely                           |

| Jurisdiction                         | Probability of Future Occurrence |
|--------------------------------------|----------------------------------|
| Robeson County (Unincorporated Area) | Likely                           |
| City of Lumberton                    | Likely                           |
| City of Whiteville                   | Likely                           |
| Town of Bladenboro                   | Likely                           |
| Town of Boardman                     | Likely                           |
| Town of Bolton                       | Likely                           |
| Town of Brunswick                    | Likely                           |
| Town of Cerro Gordo                  | Likely                           |
| Town of Chadbourn                    | Likely                           |
| Town of Clarkton                     | Likely                           |
| Town of Dublin                       | Likely                           |
| Town of East Arcadia                 | Likely                           |
| Town of Elizabethtown                | Likely                           |
| Town of Fair Bluff                   | Likely                           |
| Town of Fairmont                     | Likely                           |
| Town of Lake Waccamaw                | Likely                           |
| Town of Lumber Bridge                | Likely                           |
| Town of Marietta                     | Likely                           |
| Town of Maxton                       | Likely                           |
| Town of Mcdonald                     | Likely                           |
| Town of Orrum                        | Likely                           |
| Town of Parkton                      | Likely                           |
| Town of Pembroke                     | Likely                           |
| Town of Proctorville                 | Likely                           |
| Town of Raynham                      | Likely                           |
| Town of Red Springs                  | Likely                           |
| Town of Rennert                      | Likely                           |
| Town of Rowland                      | Likely                           |
| Town of Saint Pauls                  | Likely                           |
| Town of Sandyfield                   | Likely                           |
| Town of Tabor City                   | Likely                           |
| Town of Tar Heel                     | Likely                           |
| Town of White Lake                   | Likely                           |



### 5.12.5 Consequence and Impact Analysis (Vulnerability)

#### Changing Future Conditions

According to recent findings from NOAA, average winter temperatures in urban hubs throughout North Carolina have been noted at 2 to 4 degrees Fahrenheit above the normal average, which is defined as the 30-year Climate Normals data published from 1991 to 2020<sup>24</sup>. The increased atmospheric moisture of warmer conditions year-round can also intensify the regional water cycle. Air holds about 4% more water vapor for each additional degree Fahrenheit increase in temperature – thereby increasing the likelihood of warmer and wetter conditions in future winter seasons<sup>25</sup>.

#### People

Winter storms are recognized as deceptive killers because most deaths are indirectly related to the storm event. The leading cause of death during winter storms is from automobile or other transportation accidents. Exhaustion and heart attacks caused by overexertion are the two most likely causes of winter storm-related deaths.

Power outages during very cold winter storm conditions can result in a potentially dangerous situation. Elderly people account for the largest percentage of hypothermia victims. In addition, if the power is out for an extended period, residents are forced to find alternative means to heat their homes. The danger arises from carbon monoxide released from improperly ventilated heating sources such as space or kerosene heaters, furnaces, and blocked chimneys. House fires also occur more frequently in the winter due to lack of proper safety precautions when using an alternative heating source.

#### First Responders

Adverse impact expected to be severe for unprotected personnel and moderate to light for trained, equipped, and protected personnel.

Fire suppression during winter storms may present a great danger because water supplies may freeze, and it may be difficult for firefighting equipment to get to the fire.

Clearing ice- or snow-covered roads is also a problem; with limited equipment in North Carolina due to the relative infrequency of events, priority is given to main thoroughfares, and secondary roads are largely untouched during the initial hours after a storm has passed.

#### Continuity of Operations

Winter storm events can result in a loss of power which may impact operations. Downed trees, power lines and icy road conditions may prevent access to critical facilities and/or emergency equipment.

#### Built Environment

Localized impact to facilities and infrastructure in the areas of the incident. Power lines and roads most adversely affected. Following a winter weather event in 2018, all jurisdictions in Columbus County closed schools or released students early. During the same event, Tabor City's Atlantic Corporation delayed the start of operations to ensure the safety of its employees<sup>26</sup>.

#### Economy

Local economy and finances may be adversely affected, depending on damage. Utility companies will strive to restore power as quickly as possible; however, businesses without power may be forced to close for an

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<sup>24</sup> NOAA Winter 2022 Climate Report (<https://www.ncei.noaa.gov/access/monitoring/monthly-report/national/202202>)

<sup>25</sup> U.S. Climate Resilience Toolkit, Southeast (<https://toolkit.climate.gov/regions/southeast>)

<sup>26</sup> <https://www.tabor-loris.com/2018/01/03/public-school-closings-set-others-pondered-as-winter-storm-nears/>

extended period, resulting in financial losses for the local economy.

### **Natural Environment**

Winter storm events may include ice or snow accumulation on trees which can cause large limbs, or even whole trees, to snap and potentially fall on residential homes, cars, or power lines. This potential for winter debris creates a dangerous environment to be outside in; significant injury may occur if a large limb snaps while a local resident is out driving or walking underneath it.

### 5.13 Hazard Profile Summary

**Table 5-27** summarizes the results from the hazard profiles based on risk assessment findings as described in the above sections and input from the HMPC. For each hazard profiled in this chapter, this table includes the likelihood of future occurrence as it relates to significance for the Region.

**Table 5-27: Summary of Hazard Profile Probabilities**

| Hazard                                               | Likelihood of Future Occurrence |
|------------------------------------------------------|---------------------------------|
| Cybersecurity                                        | Likely                          |
| Dam/Levee Failure                                    | Unlikely                        |
| Drought                                              | Highly Likely                   |
| Earthquake                                           | Possible                        |
| Excessive Heat                                       | Likely                          |
| Hurricane/Tropical Storm                             | Likely                          |
| Infectious Disease                                   | Possible                        |
| Inland Flooding                                      | Likely                          |
| Severe Weather (Thunderstorm Wind, Lightning & Hail) | Highly Likely                   |
| Tornado                                              | Likely                          |
| Wildfire                                             | Likely                          |
| Winter Storm                                         | Likely                          |

A vulnerability assessment is provided in the following chapter for priority hazards based on available data.

## SECTION 6: VULNERABILITY ASSESSMENT

Section 6 identifies and quantifies the vulnerability of the jurisdictions within the Bladen-Columbus-Robeson Region to the priority hazards identified in Sections 4 and 5. It consists of the following subsections:

- ◆ 6.1 Methodology
- ◆ 6.2 Asset Inventory
- ◆ 6.3 Hazard Vulnerability Results
- ◆ 6.4 Hazard Vulnerability Conclusions

### 644 CFR Subsection D §201.6(c)(2)(ii)

[The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. Plans approved after October 1, 2008, must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of:

- (A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.
- (B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate; and
- (C): Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

This section builds upon the information provided in Section 4 and Section 5 by compiling an inventory of assets in the Bladen-Columbus-Robeson Region coupled with an assessment of their vulnerability to identified hazards. The primary objective of the vulnerability assessment is to quantify exposure across jurisdictions and assess potential losses related to each hazard. In doing so, each county and their participating jurisdictions may better understand the unique risks posed by hazards and be better prepared to evaluate and prioritize specific hazard mitigation actions moving forward.

This section begins with an explanation of the methodology used for the vulnerability assessment. It is then followed by a summary of the regional asset inventory and assessments organized by hazard type. The remainder of this section focuses on the main takeaways of the assessment process.

The Mitigation Action Committee (MAC) conducted the vulnerability assessment to prioritize hazards and assess the impact that each hazard would have on the region. The vulnerability assessment quantifies, to the extent feasible using best available data, assets at risk to natural hazards and estimates potential losses.

### 6.1 Methodology

Vulnerability assessments utilize a variety of methodologies to demonstrate the most accurate picture of hazard risk as possible. The vulnerability assessment first describes the total vulnerability and values at risk and then discusses vulnerability by hazard. Data resources used to support this assessment included the following:

- FEMA National Risk Index (NRI)
- U.S. Census Bureau Decennial and American Community Survey (ACS)
- NCEM IRISK/Risk Management Tool (RMT)
- North Carolina State Hazard Mitigation Plan



## Vulnerability Assessment

- NC OneMap layers
- County GIS data

A stochastic risk assessment methodology was used to analyze hazards of concern outside the scope of hazard models and GIS risk assessments. This involves the consideration of annualized loss estimates and impacts of current and future buildings and populations. Annualized loss is the estimated long-term weighted average value of losses to property in any single year in a specified geographic area (i.e., municipal jurisdiction or county). This methodology is applied primarily to hazards that do not have geographically definable boundaries and are therefore excluded from spatial analysis through GIS.

Most of the hazards assessed in this plan are considered natural and have the potential to affect all current and future buildings and all populations. For all hazards, annualized expected loss estimates were determined using the best available data related to historical losses as per the National Risk Index (NRI) developed by the Federal Emergency Management Agency (FEMA). Where available, GIS-based analysis along with data from the Risk Management Tool (RMT)<sup>1</sup> developed by North Carolina Emergency Management (NCEM) supplemented the vulnerability assessment process.

Each natural hazard that is included in the FEMA National Risk Index also has associated risk values, risk scores, and risk ratings which are representative of the county or census tracts vulnerability to a natural hazard compared to other communities at the same level. To represent the risk more thoroughly to natural hazards that a community has compared to other communities at the same level, the NRI will be used to represent a community-based risk comparison outlined with risk values, ratings, and scores which are described below in **Table 6-1**. For more information about NRI calculations and methodology, please refer to the NRI Technical Documentation<sup>2</sup>.

**Table 6-1: NRI Overview from the NRI Technical Documentation**

| Term                        | Definition or Equation                                                                                                                                    |                                                                                                                                                                                                                        |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Annualized Frequency</b> | Number of Recorded Events / Period of Record                                                                                                              |                                                                                                                                                                                                                        |
| <b>Historic Loss Ratio</b>  | <b>LRB</b> = Loss / Exposure                                                                                                                              |                                                                                                                                                                                                                        |
|                             | <b>Loss</b>                                                                                                                                               | Loss, by consequence type (Building, population, or agriculture), experienced from each hazard occurrence documented in the data source                                                                                |
|                             | <b>Exposure</b>                                                                                                                                           | The total value, by consequence type (Building, population number, or agriculture), estimated to be exposed to the hazard occurrence in USD, or in population number or Population equivalent for population exposure. |
| <b>Social Vulnerability</b> | The susceptibility of social Groups to the adverse impacts of natural hazards including disproportionate death, injury, loss, or disruption of livelihood |                                                                                                                                                                                                                        |

<sup>1</sup> **NOTE: All data references from the NCEM RMT are considered planning estimates** that may not reflect current growth trends or the full extent of regional vulnerability. Supplemental use of more recent data sources is recommended.

<sup>2</sup> Casey Zuzak et al., "National Risk Index: Technical Documentation" (Washington, DC: Federal Emergency Management Agency, March 2023), [https://www.fema.gov/sites/default/files/documents/fema\\_national-risk-index\\_technical-documentation.pdf](https://www.fema.gov/sites/default/files/documents/fema_national-risk-index_technical-documentation.pdf).

## Vulnerability Assessment

| Term                              | Definition or Equation                                                                                                                                                                                                 |                                                                                                                                                 |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   | <b>Data Source</b>                                                                                                                                                                                                     | Center for Disease Control and Prevention (CDC) / Agency for Toxic Substances and Disease Registry (ATSDR) Social Vulnerability Index (SVI)     |
| <b>Community Resilience</b>       | The ability of a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions.                                                               |                                                                                                                                                 |
|                                   | <b>Data Source</b>                                                                                                                                                                                                     | University of South Carolina's Hazards and Vulnerability Research Institute (HVRI)'s Baseline Resilience Indicators for Communities (HVRI BRIC) |
| <b>Expected Annual Loss (EAL)</b> | Represents the average economic loss in dollars resulting from natural hazards each year. It is calculated for each hazard type and quantifies loss for relevant consequence types: buildings, people, and agriculture |                                                                                                                                                 |
|                                   | <b>Equation</b>                                                                                                                                                                                                        | Exposure X Annualized Frequency X Historic Loss Ratio                                                                                           |
|                                   | <b>Score</b>                                                                                                                                                                                                           | Percentile of EAL when compared to other communities and labeled based on Risk Rating Percentile Descriptions below.                            |
| <b>Risk Value</b>                 | Values for Risk and EAL in dollars, representing the community's average economic loss from natural hazards each year.                                                                                                 |                                                                                                                                                 |
| <b>Risk Score</b>                 | Scores represent the national percentile ranking of the community's component value compared to all other communities at the same level, at the county or census tract level.                                          |                                                                                                                                                 |
| <b>Risk Rating</b>                | Ratings in one of five qualitative categories that describe the community's component value in comparison to all the other communities at the same level. These range from "Very Low" to "Very High."                  |                                                                                                                                                 |
|                                   | <b>Very High</b>                                                                                                                                                                                                       | 80 <sup>th</sup> to 100 <sup>th</sup> percentile                                                                                                |
|                                   | <b>Relatively High</b>                                                                                                                                                                                                 | 60 <sup>th</sup> to 80 <sup>th</sup> percentile                                                                                                 |
|                                   | <b>Relatively Moderate</b>                                                                                                                                                                                             | 40 <sup>th</sup> to 60 <sup>th</sup> percentile                                                                                                 |
|                                   | <b>Relatively Low</b>                                                                                                                                                                                                  | 20 <sup>th</sup> to 40 <sup>th</sup> percentile                                                                                                 |
|                                   | <b>Very Low</b>                                                                                                                                                                                                        | 0 <sup>th</sup> to 20 <sup>th</sup> percentile                                                                                                  |

Source: FEMA National Risk Index

The values in **Table 6-2** display FEMA NRI findings for each county in the Bladen-Columbus-Robeson Region as of 2025. This information includes average overall risk profiles, average risk value, expected annual loss (EAL) value, social vulnerability, and community resilience indicators. More details regarding these variables can be found in the table above or through the NRI Technical Documentation.

**Table 6-2: FEMA NRI Categories for the Region**

| FEMA NRI Category           | Bladen County       | Columbus County     | Robeson County      |
|-----------------------------|---------------------|---------------------|---------------------|
| <b>Risk Index Score</b>     | 90.9                | 91.12               | 94.37               |
| <b>Risk Index Rating</b>    | Relatively Moderate | Relatively Moderate | Relatively Moderate |
| <b>Risk Value</b>           | \$48,818,940        | \$50,677,084        | \$84,413,050        |
| <b>EAL Value</b>            | \$34,179,117        | \$33,997,589        | \$51,821,642        |
| <b>Social Vulnerability</b> | Very High           | Very High           | Very High           |
| <b>Community Resilience</b> | Relatively Low      | Relatively Low      | Very Low            |

Source: FEMA National Risk Index

The numeric identifiers shown in **Table 6-3** are the Federal Information Processing Standards (FIPS)  
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codes assigned to each county of the region and census tract numbers defined by the U.S. Census Bureau to compile geographic statistics related to population, demographics, housing, and other key variables. These identifiers were used to source available data for each county and jurisdiction.

**Table 6-3: County FIPS Codes and Jurisdiction Census Tracts in the Region**

| Jurisdiction                         | Census Tract Numbers                                                                           |
|--------------------------------------|------------------------------------------------------------------------------------------------|
| <b>Bladen County (FIPS: 37017)</b>   |                                                                                                |
| Bladenboro                           | 950501, 950502                                                                                 |
| Clarkton                             | 950601                                                                                         |
| Dublin                               | 950301                                                                                         |
| East Arcadia                         | 950602, 930100                                                                                 |
| Elizabethtown                        | 950200, 950401, 950402                                                                         |
| Tar Heel                             | 950302                                                                                         |
| White Lake                           | 950102                                                                                         |
| Unincorporated Area                  | 950101                                                                                         |
| <b>Columbus County (FIPS: 37047)</b> |                                                                                                |
| Boardman                             | 930500, 961500, 961601, 961602                                                                 |
| Bolton                               | 930200                                                                                         |
| Brunswick                            | 931000, 931302                                                                                 |
| Chadbourn                            | 930700, 930900                                                                                 |
| Fair Bluff                           | 930600                                                                                         |
| Lake Waccamaw                        | 930300                                                                                         |
| Tabor City                           | 931201, 931202                                                                                 |
| Whiteville                           | 930800                                                                                         |
| Unincorporated Area                  | 930400, 931100, 931301                                                                         |
| <b>Robeson County (FIPS: 37155)</b>  |                                                                                                |
| Fairmont                             | 961700                                                                                         |
| Lumber Bridge                        | 960204                                                                                         |
| Lumberton                            | 960601, 960602, 960701, 960702, 960801, 960802, 960900, 961000, 961100, 961200, 961301, 961302 |
| Marietta                             | 961900                                                                                         |
| Maxton                               | 962001, 962002                                                                                 |
| McDonald                             | 961802                                                                                         |
| Parkton                              | 960203                                                                                         |
| Pembroke                             | 960502, 960503, 961801                                                                         |
| Red Springs                          | 960301, 960302, 960402                                                                         |
| Rennert                              | 960202                                                                                         |
| Saint Pauls                          | 960101, 960102                                                                                 |
| Unincorporated Area                  | 960403, 960404, 960501, 961400                                                                 |

Source: U.S. Census Bureau

## 6.2 Asset Inventory

Each participating jurisdiction assisted in the identification of assets to be used for analysis to determine what assets may be potentially at risk to the hazards covered in the Plan. These assets are defined broadly as anything that is important to the function and character of the community. For the purposes of this Vulnerability Assessment, the individual types of assets include:

- Population
- Parcels and Buildings
- Critical Facilities
- Infrastructure
- Historic Properties

Although all assets may be affected by certain hazards (such as hail or tornadoes), some assets are more vulnerable because of their location (e.g., 100-year floodplain), certain physical characteristics (e.g., slab-on-grade construction), or socioeconomic uses (e.g., major employers).

### 6.2.1 Population

The population counts shown in **Table 6-4** are derived from 2023 American Community Survey data, and other U.S. Census data sources, and includes a breakdown of two subpopulations assumed to be at greater risk to natural hazards than the general population: elderly (ages 65 and older) and children (under the age of 5).

**Table 6-4: Population Counts with Vulnerable Population Breakdown**

| Jurisdiction           | Census Population (Estimate) <sup>3</sup> | Percentage of Population 65 years and over (Estimate) <sup>4</sup> | Percentage of Population 5 years and under (Estimate) <sup>5</sup> |
|------------------------|-------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|
| <b>Bladen County</b>   |                                           |                                                                    |                                                                    |
| Town of Bladenboro     | 2,181                                     | 12.3%                                                              | 4.9%                                                               |
| Town of Clarkton       | 875                                       | 20.9%                                                              | 7.8%                                                               |
| Town of Dublin         | 482                                       | 22.8%                                                              | 3.3%                                                               |
| Town of East Arcadia   | 313                                       | 17.9%                                                              | 0.0%                                                               |
| Town of Elizabethtown  | 3,294                                     | 26.9%                                                              | 7.5%                                                               |
| Town of Tar Heel       | 72                                        | 41.7%                                                              | 0.0%                                                               |
| Town of White Lake     | 961                                       | 32.4%                                                              | 2.4%                                                               |
| Unincorporated Area    | 21,413                                    | --                                                                 | --                                                                 |
| <b>Subtotal Bladen</b> | <b>29,591</b>                             | <b>23.2%</b>                                                       | <b>4.9%</b>                                                        |

<sup>3</sup> U.S. Census Bureau, U.S. Department of Commerce. "Total Population." American Community Survey, ACS 5-Year Estimates Detailed Tables, Table B01003, 2023, [https://data.census.gov/table/ACSDT5Y2023.B01003?q=Bladen+County,+North+Carolina&t=Population+Total:Populations+and+People&g=050XX00US37017\\$1600000,37047,37047\\$1600000,37155,37155\\$1600000\\_160XX00US3766740&moe=false](https://data.census.gov/table/ACSDT5Y2023.B01003?q=Bladen+County,+North+Carolina&t=Population+Total:Populations+and+People&g=050XX00US37017$1600000,37047,37047$1600000,37155,37155$1600000_160XX00US3766740&moe=false).

<sup>4</sup> U.S. Census Bureau, U.S. Department of Commerce. (2023). Age and Sex. American Community Survey, ACS 5-Year Estimates Subject Tables, Table S0101. [https://data.census.gov/table/ACSST5Y2023.S0101?q=Bladen+County,+North+Carolina&g=050XX00US37017\\$1600000,37047,37047\\$1600000,37155,37155\\$1600000\\_160XX00US3766740&moe=false](https://data.census.gov/table/ACSST5Y2023.S0101?q=Bladen+County,+North+Carolina&g=050XX00US37017$1600000,37047,37047$1600000,37155,37155$1600000_160XX00US3766740&moe=false).

<sup>5</sup> Same as above



## Vulnerability Assessment

| Jurisdiction             | Census Population (Estimate) <sup>3</sup> | Percentage of Population 65 years and over (Estimate) <sup>4</sup> | Percentage of Population 5 years and under (Estimate) <sup>5</sup> |
|--------------------------|-------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|
| <b>Columbus County</b>   |                                           |                                                                    |                                                                    |
| City of Whiteville       | 4,721                                     | 20.2%                                                              | 8.1%                                                               |
| Town of Boardman         | 211                                       | 12.3%                                                              | 5.7%                                                               |
| Town of Bolton           | 469                                       | 17.3%                                                              | 3.2%                                                               |
| Town of Brunswick        | 981                                       | 7.1%                                                               | 1.8%                                                               |
| Town of Cerro Gordo      | 335                                       | 24.5%                                                              | 0.0%                                                               |
| Town of Chadbourn        | 1,347                                     | 15.9%                                                              | 2.0%                                                               |
| Town of Fair Bluff       | 513                                       | 23.0%                                                              | 7.4%                                                               |
| Town of Lake Waccamaw    | 1,666                                     | 31.5%                                                              | 1.7%                                                               |
| Town of Sandyfield       | 683                                       | 12.4%                                                              | 2.6%                                                               |
| Town of Tabor City       | 3,695                                     | 21.4%                                                              | 5.8%                                                               |
| Unincorporated Area      | 35,832                                    | --                                                                 | --                                                                 |
| <b>Subtotal Columbus</b> | <b>50,453</b>                             | <b>20.4%</b>                                                       | <b>5.2%</b>                                                        |
| <b>Robeson County</b>    |                                           |                                                                    |                                                                    |
| City of Lumberton        | 19,220                                    | 16.8%                                                              | 8.3%                                                               |
| Town of Fairmont         | 2,326                                     | 23.4%                                                              | 7.0%                                                               |
| Town of Lumber Bridge    | 65                                        | 26.2%                                                              | 0.0%                                                               |
| Town of Marietta         | 130                                       | 33.1%                                                              | 3.1%                                                               |
| Town of Maxton           | 2,398                                     | 17.1%                                                              | 11.3%                                                              |
| Town of McDonald         | 99                                        | 27.3%                                                              | 2.0%                                                               |
| Town of Orrum            | 56                                        | 28.6%                                                              | 0.0%                                                               |
| Town of Parkton          | 515                                       | 19.2%                                                              | 5.8%                                                               |
| Town of Pembroke         | 2,823                                     | 13.1%                                                              | 11.3%                                                              |
| Town of Proctorville     | 128                                       | 26.6%                                                              | 3.9%                                                               |
| Town of Raynham          | 35                                        | 40.0%                                                              | 0.0%                                                               |
| Town of Red Springs      | 3,107                                     | 18.6%                                                              | 7.9%                                                               |
| Town of Rennert          | 267                                       | 11.6%                                                              | 3.7%                                                               |
| Town of Rowland          | 972                                       | 28.0%                                                              | 2.8%                                                               |
| Town of Saint Pauls      | 2,628                                     | 19.1%                                                              | 10.0%                                                              |
| Unincorporated Area      | 80,420                                    | --                                                                 | --                                                                 |
| <b>Subtotal Robeson</b>  | <b>116,858</b>                            | <b>6.8%</b>                                                        | <b>15.8%</b>                                                       |
| <b>Total Plan Area</b>   | <b>196,902</b>                            | <b>12.8%</b>                                                       | <b>11.5%</b>                                                       |

The vulnerability statistics shown in **Table 6-5** are derived from 2023 American Community Survey data, and other U.S. Census data sources, and includes three representative subpopulations considered to be highly vulnerable from among the general population: individuals with a disability, housing occupants without access to a vehicle, and housing occupants residing in mobile homes or other types of housing.

Table 6-5: Vulnerability Characteristics of the Region

| Jurisdiction             | Percentage of Individuals with a Disability <sup>6</sup> | Estimate of Occupied Households without Access to a Vehicle <sup>7</sup> | Estimate of Occupied Housing that are Mobile Homes or Other type of Housing <sup>8</sup> |
|--------------------------|----------------------------------------------------------|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <b>Bladen County</b>     |                                                          |                                                                          |                                                                                          |
| Town of Bladenboro       | 15.5%                                                    | 4.7%                                                                     | 14.7%                                                                                    |
| Town of Clarkton         | 14.0%                                                    | 10.3%                                                                    | 11.9%                                                                                    |
| Town of Dublin           | 26.6%                                                    | 0.0%                                                                     | 16.7%                                                                                    |
| Town of East Arcadia     | 24.9%                                                    | 13.4%                                                                    | 22.0%                                                                                    |
| Town of Elizabethtown    | 17.6%                                                    | 14.4%                                                                    | 1.4%                                                                                     |
| Town of Tar Heel         | 8.3%                                                     | 7.1%                                                                     | 21.4%                                                                                    |
| Town of White Lake       | 17.4%                                                    | 0.0%                                                                     | 28.1%                                                                                    |
| <b>Subtotal Bladen</b>   | <b>15.5%</b>                                             | <b>6.7%</b>                                                              | <b>31.1%</b>                                                                             |
| <b>Columbus County</b>   |                                                          |                                                                          |                                                                                          |
| City of Whiteville       | 17.7%                                                    | 12.7%                                                                    | 8.3%                                                                                     |
| Town of Boardman         | 20.4%                                                    | 28.0%                                                                    | 61.0%                                                                                    |
| Town of Bolton           | 23.9%                                                    | 10.4%                                                                    | 16.6%                                                                                    |
| Town of Brunswick        | 14.7%                                                    | 14.5%                                                                    | 20.6%                                                                                    |
| Town of Cerro Gordo      | 2.7%                                                     | 2.0%                                                                     | 16.9%                                                                                    |
| Town of Chadbourn        | 16.3%                                                    | 20.5%                                                                    | 22.5%                                                                                    |
| Town of Fair Bluff       | 25.5%                                                    | 0.9%                                                                     | 41.6%                                                                                    |
| Town of Lake Waccamaw    | 13.6%                                                    | 5.2%                                                                     | 5.0%                                                                                     |
| Town of Sandyfield       | 42.6%                                                    | 1.8%                                                                     | 64.4%                                                                                    |
| Town of Tabor City       | 28.2%                                                    | 4.7%                                                                     | 2.9%                                                                                     |
| <b>Subtotal Columbus</b> | <b>16.7%</b>                                             | <b>5.3%</b>                                                              | <b>29.6%</b>                                                                             |
| <b>Robeson County</b>    |                                                          |                                                                          |                                                                                          |
| City of Lumberton        | 15.6%                                                    | 12.9%                                                                    | 5.0%                                                                                     |
| Town of Fairmont         | 20.7%                                                    | 17.8%                                                                    | 4.8%                                                                                     |
| Town of Lumber Bridge    | 6.2%                                                     | 0.0%                                                                     | 11.4%                                                                                    |
| Town of Marietta         | 20.0%                                                    | 2.0%                                                                     | 23.5%                                                                                    |

<sup>6</sup> U.S. Census Bureau, U.S. Department of Commerce. (2023). Disability Characteristics. American Community Survey, ACS 5-Year Estimates Subject Tables, Table S1810.  
[https://data.census.gov/table/ACSST5Y2023.S1810?q=Bladen+County,+North+Carolina&t=Disability&g=050XX00US37017\\$1600000,37047,37047\\$1600000,37155,37155\\$1600000\\_160XX00US3766740&moe=false](https://data.census.gov/table/ACSST5Y2023.S1810?q=Bladen+County,+North+Carolina&t=Disability&g=050XX00US37017$1600000,37047,37047$1600000,37155,37155$1600000_160XX00US3766740&moe=false).

<sup>7</sup> U.S. Census Bureau, U.S. Department of Commerce. (2023). Physical Housing Characteristics for Occupied Housing Units. American Community Survey, ACS 5-Year Estimates Subject Tables, Table S2504.  
[https://data.census.gov/table/ACSST5Y2023.S2504?q=Bladen+County,+North+Carolina&t=Housing&g=050XX00US37017\\$1600000,37047,37047\\$1600000,37155,37155\\$1600000\\_160XX00US3766740&moe=false](https://data.census.gov/table/ACSST5Y2023.S2504?q=Bladen+County,+North+Carolina&t=Housing&g=050XX00US37017$1600000,37047,37047$1600000,37155,37155$1600000_160XX00US3766740&moe=false).

<sup>8</sup> Same as above

## Vulnerability Assessment

| Jurisdiction            | Percentage of Individuals with a Disability <sup>6</sup> | Estimate of Occupied Households without Access to a Vehicle <sup>7</sup> | Estimate of Occupied Housing that are Mobile Homes or Other type of Housing <sup>8</sup> |
|-------------------------|----------------------------------------------------------|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Town of Maxton          | 19.9                                                     | 18.6%                                                                    | 8.1%                                                                                     |
| Town of McDonald        | 16.2%                                                    | 5.1%                                                                     | 7.7%                                                                                     |
| Town of Orrum           | 28.6%                                                    | 20.0%                                                                    | 40.0%                                                                                    |
| Town of Parkton         | 19.5%                                                    | 2.9%                                                                     | 7.7%                                                                                     |
| Town of Pembroke        | 14.8%                                                    | 14.2%                                                                    | 7.0%                                                                                     |
| Town of Proctorville    | 16.4%                                                    | 0.0%                                                                     | 8.3%                                                                                     |
| Town of Raynham         | 22.9%                                                    | 0.0%                                                                     | 21.1%                                                                                    |
| Town of Red Springs     | 24.9%                                                    | 17.7%                                                                    | 0.0%                                                                                     |
| Town of Rennert         | 36.0%                                                    | 2.2%                                                                     | 33.1%                                                                                    |
| Town of Rowland         | 29.0%                                                    | 11.2%                                                                    | 4.9%                                                                                     |
| Town of Saint Pauls     | 16.9%                                                    | 12.6%                                                                    | 10.9%                                                                                    |
| <b>Subtotal Robeson</b> | <b>17.8%</b>                                             | <b>8.0%</b>                                                              | <b>37.9%</b>                                                                             |

### 6.2.2 Parcels and Buildings

The parcel counts, building counts, and building values shown in **Table 6-6** represent the estimated built environment inventories used for risk assessment analysis. This includes the total number of parcels and total assessed value of improvements (buildings) that may be exposed to the identified hazards.

**Table 6-6: Regional Estimates of Improved Parcels and Property**

| Jurisdiction           | Estimated Number of Parcels | Estimated Total Assessed Value of Parcels | Estimated Number of Buildings | Estimated Total Assessed Value of Improvements |
|------------------------|-----------------------------|-------------------------------------------|-------------------------------|------------------------------------------------|
| <b>Bladen County</b>   |                             |                                           |                               |                                                |
| Town of Bladenboro     | 1,276                       | \$94,831,760                              | 993                           | \$78,194,080                                   |
| Town of Clarkton       | 540                         | \$41,762,810                              | 398                           | \$36,805,660                                   |
| Town of Dublin         | 278                         | \$21,303,320                              | 164                           | \$18,452,850                                   |
| Town of East Arcadia   | 453                         | \$13,117,400                              | 279                           | \$9,507,870                                    |
| Town of Elizabethtown  | 2,498                       | \$297,950,150                             | 1,826                         | \$235,051,700                                  |
| Town of Tar Heel       | 180                         | \$8,848,650                               | 85                            | \$7,149,030                                    |
| Town of White Lake     | 1,535                       | \$256,591,720                             | 2,424                         | \$115,310,360                                  |
| Unincorporated Area    | 26,575                      | \$1,893,472,170                           | 18,418                        | \$1,210,956,350                                |
| <b>Subtotal Bladen</b> | <b>33,335</b>               | <b>\$2,627,877,980</b>                    | <b>24,587</b>                 | <b>\$1,711,427,900</b>                         |
| <b>Columbus County</b> |                             |                                           |                               |                                                |
| City of Whiteville     | 3,738                       | \$379,314,876                             | 2,600                         | \$326,316,400                                  |
| Town of Boardman       | 236                         | \$11,371,100                              | 122                           | \$4,343,800                                    |
| Town of Bolton         | 627                         | \$227,265,080                             | 355                           | \$15,012,100                                   |
| Town of Brunswick      | 354                         | \$12,947,000                              | 291                           | \$12,777,600                                   |

## Vulnerability Assessment

| Jurisdiction             | Estimated Number of Parcels | Estimated Total Assessed Value of Parcels | Estimated Number of Buildings | Estimated Total Assessed Value of Improvements |
|--------------------------|-----------------------------|-------------------------------------------|-------------------------------|------------------------------------------------|
| Town of Cerro Gordo      | 214                         | \$4,030,287                               | 172                           | \$7,068,900                                    |
| Town of Chadbourn        | 1,619                       | \$47,771,579                              | 1,141                         | \$61,086,600                                   |
| Town of Fair Bluff       | 925                         | \$18,394,497                              | 650                           | \$25,758,800                                   |
| Town of Lake Waccamaw    | 1,135                       | \$110,024,308                             | 643                           | \$71,922,800                                   |
| Town of Sandyfield       | 513                         | \$111,387,932                             | 234                           | \$12,459,400                                   |
| Town of Tabor City       | 2,514                       | \$121,059,166                             | 1,563                         | \$99,744,900                                   |
| Unincorporated Area      | 38,699                      | \$10,030,005,864                          | 30,464                        | \$1,358,177,700                                |
| <b>Subtotal Columbus</b> | <b>50,574</b>               | <b>\$11,073,571,689</b>                   | <b>38,235</b>                 | <b>\$1,994,669,000</b>                         |
| <b>Robeson County</b>    |                             |                                           |                               |                                                |
| City of Lumberton        | 9,748                       | \$1,635,117,415                           | 8,445                         | \$1,257,097,915                                |
| Town of Fairmont         | 1,861                       | \$118,256,100                             | 1,101                         | \$96,186,800                                   |
| Town of Lumber Bridge    | 119                         | \$7,160,700                               | 74                            | \$5,120,600                                    |
| Town of Marietta         | 128                         | \$7,642,500                               | 87                            | \$5,756,600                                    |
| Town of Maxton           | 1,352                       | \$90,260,000                              | 960                           | \$71,425,400                                   |
| Town of McDonald         | 107                         | \$4,126,000                               | 58                            | \$3,124,500                                    |
| Town of Orrum            | 80                          | \$6,237,400                               | 59                            | \$4,868,500                                    |
| Town of Parkton          | 444                         | \$37,496,900                              | 314                           | \$31,100,600                                   |
| Town of Pembroke         | 1,204                       | \$296,092,300                             | 935                           | \$240,407,400                                  |
| Town of Proctorville     | 162                         | \$6,189,700                               | 69                            | \$5,019,300                                    |
| Town of Raynham          | 64                          | \$3,719,800                               | 37                            | \$2,318,200                                    |
| Town of Red Springs      | 2,102                       | \$184,139,600                             | 1,631                         | \$147,213,700                                  |
| Town of Rennert          | 234                         | \$9,788,500                               | 168                           | \$6,684,700                                    |
| Town of Rowland          | 739                         | \$43,044,200                              | 513                           | \$33,892,500                                   |
| Town of Saint Pauls      | 1,263                       | \$163,162,400                             | 1,137                         | \$131,356,400                                  |
| Unincorporated Area      | 59,279                      | \$3,539,199,201                           | 45,027                        | \$2,504,905,651                                |
| <b>Subtotal Robeson</b>  | <b>78,886</b>               | <b>\$6,151,632,716</b>                    | <b>60,615</b>                 | <b>\$4,546,478,766</b>                         |
| <b>Total Plan Area</b>   | <b>162,795</b>              | <b>\$19,853,082,385</b>                   | <b>123,437</b>                | <b>\$8,252,575,666</b>                         |

Source: NC OneMap, GIS Analysis

Since the previous regional hazard mitigation was approved, the counties of the Bladen-Columbus-Robeson Region have experienced some extent of growth based on NC Office of State Budget and Management (OSBM) estimates from 2020 to 2030<sup>9</sup>. This is especially true for Bladen County (+6.4% change) and Columbus County (+6.4%), whereas Robeson County (+0.1% change) may have a slower pace of local population growth.

**Table 6-7** shows the number of housing building units constructed since both 2010 and 1970 compared to recently updated 2023 totals by jurisdiction according to the U.S. Census Bureau.

<sup>9</sup> NC OSBM County Population Growth 2020-2030. (2024). <https://www.osbm.nc.gov/facts-figures/population-demographics/state-demographer/countystate-population-projections/population-growth-2020-2030>



Table 6-7: Regional Housing Building Counts

| Jurisdiction             | Total Housing Units (2023) | Units Built 2010 Or Later | % Building Stock Built Post-2010 | Units Built 1970 Or Later | % Building Stock Built Post-1970 |
|--------------------------|----------------------------|---------------------------|----------------------------------|---------------------------|----------------------------------|
| <b>Bladen County</b>     |                            |                           |                                  |                           |                                  |
| Town of Bladenboro       | 844                        | 36                        | 4.3%                             | 452                       | 53.6%                            |
| Town of Clarkton         | 312                        | 0                         | 0.0%                             | 221                       | 70.8%                            |
| Town of Dublin           | 179                        | 3                         | 1.7%                             | 76                        | 42.5%                            |
| Town of East Arcadia     | 138                        | 35                        | 25.4%                            | 120                       | 87.0%                            |
| Town of Elizabethtown    | 2,000                      | 128                       | 6.4%                             | 1,362                     | 68.1%                            |
| Town of Tar Heel         | 55                         | 4                         | 7.3%                             | 29                        | 52.7%                            |
| Town of White Lake       | 1,094                      | 108                       | 9.9%                             | 844                       | 77.1%                            |
| Unincorporated Area      | 10,650                     | 1,223                     | 11.5%                            | 8,142                     | 76.5%                            |
| <b>Subtotal Bladen</b>   | <b>15,272</b>              | <b>1,537</b>              | <b>10.1%</b>                     | <b>11,246</b>             | <b>73.6%</b>                     |
| <b>Columbus County</b>   |                            |                           |                                  |                           |                                  |
| City of Whiteville       | 2,111                      | 181                       | 8.6%                             | 1,123                     | 53.2%                            |
| Town of Boardman         | 87                         | 7                         | 8.0%                             | 52                        | 59.8%                            |
| Town of Bolton           | 193                        | 4                         | 2.1%                             | 98                        | 50.8%                            |
| Town of Brunswick        | 160                        | 12                        | 7.5%                             | 100                       | 62.5%                            |
| Town of Cerro Gordo      | 165                        | 3                         | 1.8%                             | 113                       | 68.5%                            |
| Town of Chadbourn        | 807                        | 39                        | 4.8%                             | 448                       | 55.5%                            |
| Town of Fair Bluff       | 418                        | 48                        | 11.5%                            | 298                       | 71.3%                            |
| Town of Lake Waccamaw    | 951                        | 38                        | 4.0%                             | 724                       | 76.1%                            |
| Town of Sandyfield       | 265                        | 17                        | 6.4%                             | 234                       | 88.3%                            |
| Town of Tabor City       | 1,214                      | 50                        | 4.1%                             | 550                       | 45.3%                            |
| Unincorporated Area      | 17,189                     | 1,147                     | 6.7%                             | 12,693                    | 73.8%                            |
| <b>Subtotal Columbus</b> | <b>23,560</b>              | <b>1,546</b>              | <b>6.6%</b>                      | <b>16,433</b>             | <b>69.7%</b>                     |
| <b>Robeson County</b>    |                            |                           |                                  |                           |                                  |
| City of Lumberton        | 8,385                      | 564                       | 6.7%                             | 5,038                     | 60.1%                            |
| Town of Fairmont         | 1,133                      | 8                         | 0.7%                             | 507                       | 44.7%                            |
| Town of Lumber Bridge    | 48                         | 2                         | 4.2%                             | 22                        | 45.8%                            |
| Town of Marietta         | 62                         | 0                         | 0.0%                             | 29                        | 46.8%                            |
| Town of Maxton           | 1,092                      | 60                        | 5.5%                             | 746                       | 68.3%                            |
| Town of McDonald         | 40                         | 0                         | 0.0%                             | 12                        | 30.0%                            |
| Town of Orrum            | 38                         | 0                         | 0.0%                             | 24                        | 63.2%                            |
| Town of Parkton          | 240                        | 11                        | 4.6%                             | 130                       | 54.2%                            |
| Town of Pembroke         | 1,322                      | 231                       | 17.5%                            | 966                       | 73.1%                            |
| Town of Proctorville     | 60                         | 0                         | 0.0%                             | 21                        | 35.0%                            |
| Town of Raynham          | 23                         | 0                         | 0.0%                             | 14                        | 60.9%                            |
| Town of Red Springs      | 1,442                      | 50                        | 3.5%                             | 678                       | 47.0%                            |
| Town of Rennert          | 153                        | 6                         | 3.9%                             | 72                        | 47.1%                            |
| Town of Rowland          | 550                        | 6                         | 1.1%                             | 272                       | 49.5%                            |
| Town of Saint Pauls      | 1,047                      | 15                        | 1.4%                             | 492                       | 47.0%                            |

## Vulnerability Assessment

| Jurisdiction            | Total Housing Units (2023) | Units Built 2010 Or Later | % Building Stock Built Post-2010 | Units Built 1970 Or Later | % Building Stock Built Post-1970 |
|-------------------------|----------------------------|---------------------------|----------------------------------|---------------------------|----------------------------------|
| Unincorporated Area     | 33,239                     | 3,542                     | 10.7%                            | 28,154                    | 84.7%                            |
| <b>Subtotal Robeson</b> | <b>48,874</b>              | <b>4,495</b>              | <b>9.2%</b>                      | <b>37,177</b>             | <b>76.1%</b>                     |
| <b>Total Plan Area</b>  | <b>87,706</b>              | <b>7,578</b>              | <b>8.6%</b>                      | <b>64,856</b>             | <b>73.9%</b>                     |

Source: U.S. Census Bureau

### 6.2.3 Critical Facilities

Critical facilities are defined by FEMA as specific assets of the built environment that provide services essential for life, safety, and economic viability. Common examples include fire stations, police stations, medical care facilities, schools, emergency operations centers (EOCs), and other important community assets/buildings. Critical facilities vary by jurisdiction. It should be noted that this listing is not all-inclusive for assets in the Bladen-Columbus-Robeson Region, but it is anticipated that it will be expanded during future updates as more georeferenced data becomes available for GIS analysis.

**Table 6-8** below identifies regional critical facilities including fire stations, EMS stations, police stations, EOCs, schools, and licensed medical care facilities based on authoritative NC OneMap datasets<sup>10</sup>. Local governments at the county level provided a large share of this data.

**Table 6-8: Regional Critical Facility Inventory**

| Jurisdiction           | EOC      | Fire/EMS Stations | Police Stations | Schools   | Medical Care Facilities |
|------------------------|----------|-------------------|-----------------|-----------|-------------------------|
| <b>Bladen County</b>   |          |                   |                 |           |                         |
| Town of Bladenboro     | 0        | 1                 | 1               | 2         | 2                       |
| Town of Clarkton       | 0        | 2                 | 1               | 1         | 1                       |
| Town of Dublin         | 0        | 1                 | 0               | 2         | 1                       |
| Town of East Arcadia   | 0        | 1                 | 0               | 0         | 0                       |
| Town of Elizabethtown  | 1        | 3                 | 4               | 2         | 16                      |
| Town of Tar Heel       | 0        | 2                 | 0               | 1         | 0                       |
| Town of White Lake     | 0        | 1                 | 1               | 0         | 0                       |
| Unincorporated Area    | 0        | 12                | 1               | 9         | 13                      |
| <b>Subtotal Bladen</b> | <b>1</b> | <b>23</b>         | <b>8</b>        | <b>17</b> | <b>33</b>               |
| <b>Columbus County</b> |          |                   |                 |           |                         |
| City of Whiteville     | 1        | 3                 | 3               | 4         | 38                      |
| Town of Boardman       | 0        | 0                 | 0               | 0         | 0                       |
| Town of Bolton         | 0        | 1                 | 0               | 0         | 0                       |
| Town of Brunswick      | 0        | 1                 | 0               | 0         | 0                       |
| Town of Cerro Gordo    | 0        | 1                 | 0               | 1         | 0                       |
| Town of Chadbourn      | 0        | 1                 | 1               | 2         | 4                       |
| Town of Fair Bluff     | 0        | 1                 | 1               | 0         | 2                       |

<sup>10</sup> NC OneMap: <https://www.nconemap.gov/>

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| Jurisdiction             | EOC      | Fire/EMS Stations | Police Stations | Schools    | Medical Care Facilities |
|--------------------------|----------|-------------------|-----------------|------------|-------------------------|
| Town of Lake Waccamaw    | 0        | 2                 | 2               | 1          | 2                       |
| Town of Sandyfield       | 0        | 1                 | 0               | 0          | 0                       |
| Town of Tabor City       | 0        | 2                 | 1               | 2          | 2                       |
| Unincorporated Area      | 0        | 25                | 0               | 19         | 13                      |
| <b>Subtotal Columbus</b> | <b>1</b> | <b>38</b>         | <b>8</b>        | <b>29</b>  | <b>61</b>               |
| <b>Robeson County</b>    |          |                   |                 |            |                         |
| City of Lumberton        | 1        | 8                 | 6               | 12         | 40                      |
| Town of Fairmont         | 0        | 3                 | 1               | 2          | 10                      |
| Town of Lumber Bridge    | 0        | 1                 | 0               | 0          | 0                       |
| Town of Marietta         | 0        | 0                 | 0               | 0          | 0                       |
| Town of Maxton           | 0        | 2                 | 1               | 2          | 4                       |
| Town of McDonald         | 0        | 0                 | 0               | 0          | 0                       |
| Town of Orrum            | 0        | 0                 | 1               | 1          | 0                       |
| Town of Parkton          | 0        | 1                 | 1               | 1          | 1                       |
| Town of Pembroke         | 0        | 2                 | 2               | 3          | 9                       |
| Town of Proctorville     | 0        | 1                 | 0               | 0          | 0                       |
| Town of Raynham          | 0        | 1                 | 0               | 0          | 0                       |
| Town of Red Springs      | 0        | 2                 | 1               | 5          | 5                       |
| Town of Rennert          | 0        | 1                 | 0               | 0          | 0                       |
| Town of Rowland          | 0        | 3                 | 1               | 2          | 0                       |
| Town of Saint Pauls      | 0        | 2                 | 1               | 3          | 2                       |
| Unincorporated Area      | 0        | 24                | 0               | 26         | 52                      |
| <b>Subtotal Robeson</b>  | <b>1</b> | <b>51</b>         | <b>15</b>       | <b>57</b>  | <b>123</b>              |
| <b>Total Plan Area</b>   | <b>3</b> | <b>112</b>        | <b>31</b>       | <b>103</b> | <b>217</b>              |

Source: NC OneMap

The remaining tables in this section (**Table 6-9** to **Table 6-12**) show related lists of preidentified critical facilities broken down by type, name, and location, as well as the flood hazard zones that affect each facility based on authoritative NC OneMap datasets. These lists are not all inclusive and only account for the information provided by municipalities using georeferenced data and updated municipal boundaries.

**Table 6-9: EMS Facilities and Flood Hazard Zones<sup>11</sup>**

| Name                                                                  | Address                       | City     | Zip   | County | Facility Description                | Designated Flood Zone |
|-----------------------------------------------------------------------|-------------------------------|----------|-------|--------|-------------------------------------|-----------------------|
| Hickory Grove Volunteer Fire Department Incorporated Of Bladen County | 136 State Highway 210 West    | Garland  | 28441 | Bladen | Ambulance And Fire Service Combined | X                     |
| Lisbon Volunteer Fire Department Incorporated                         | 2585 White Plains Church Road | Clarkton | 28433 | Bladen | Ambulance And Fire Service Combined | X                     |

<sup>11</sup> NC Emergency Medical Services. (2023). NC OneMap.

[https://www.nconemap.gov/datasets/e43a159e4f584a3b8d5ffb797abc48a9\\_0/explore](https://www.nconemap.gov/datasets/e43a159e4f584a3b8d5ffb797abc48a9_0/explore)

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| Name                                                               | Address                       | City          | Zip   | County   | Facility Description                            | Designated Flood Zone              |
|--------------------------------------------------------------------|-------------------------------|---------------|-------|----------|-------------------------------------------------|------------------------------------|
| Dublin Volunteer Fire Department                                   | 324 3rd Street                | Dublin        | 28332 | Bladen   | Ambulance And Fire Service Combined             | X                                  |
| Tar Heel Rural Volunteer Fire Department Incorporated              | 269 Tar Heel Ferry Road       | Tar Heel      | 28392 | Bladen   | Ambulance And Fire Service Combined             | X                                  |
| Tobermory Volunteer Fire Department Incorporated                   | 1759 Pages Lake Road          | Saint Pauls   | 28384 | Bladen   | Ambulance And Fire Service Combined             | X                                  |
| Kelly Volunteer Fire Department                                    | 18628 State Highway 53        | Kelly         | 28448 | Bladen   | Ambulance And Fire Service Combined             | AE                                 |
| Elizabethtown Fire Department                                      | 401 West Swanzy Street        | Elizabethtown | 28337 | Bladen   | Ambulance And Fire Service Combined             | X                                  |
| Carvers Creek Volunteer Fire Department Incorporated               | 2029 South Elwell Ferry Road  | Council       | 28434 | Bladen   | Ambulance And Fire Service Combined             | X                                  |
| Tar Heel Volunteer Rescue Squad                                    | State Highway 87              | Tar Heel      | 28392 | Bladen   | Rescue Services, Medical                        | X                                  |
| White Lake-Bladen County Water Rescue                              | 612 State Highway 53 East     | Elizabethtown | 28337 | Bladen   | Rescue Services, Medical                        | X                                  |
| Bladenboro Rescue Squad                                            | 12896 State Highway 242       | Bladenboro    | 28320 | Bladen   | Rescue Services, Medical                        | X                                  |
| Clarkton Rescue Squad                                              | Southwest Railroad Street     | Clarkton      | 28433 | Bladen   | Rescue Services, Medical                        | X                                  |
| Dupont-Fayetteville Works                                          | 22828 State Highway 87        | Fayetteville  | 28306 | Bladen   | Fire Fighting Services As A Commercial Activity | X                                  |
| Elizabethtown Rescue Squad                                         | 201 Mercer Mill Road          | Elizabethtown | 28337 | Bladen   | Rescue Services, Medical                        | X                                  |
| Ammon Volunteer Fire Department                                    | 13084 State Highway 242 North | Elizabethtown | 28337 | Bladen   | Ambulance And Fire Service Combined             | X                                  |
| Columbus County Emergency Medical Services                         | 205 West Main Street          | Whiteville    | 28472 | Columbus | Ambulance Services, Air Or Ground               | 0.2 PCT ANNUAL CHANCE FLOOD HAZARD |
| Fair Bluff Fire Department And Rescue Squad Incorporated Station 8 | 185 Mcneill Road              | Fair Bluff    | 28439 | Columbus | Fire And Rescue Service                         | X                                  |
| Nakina Fire And Rescue Squad Incorporated                          | 214 Ramsey Ford Road          | Nakina        | 28455 | Columbus | Fire And Rescue Service                         | AE                                 |
| Fair Bluff Fire And Rescue Squad                                   | 653 Railroad Street           | Fair Bluff    | 28439 | Columbus | Fire And Rescue Service                         | AE                                 |
| Whiteville Rescue Squad                                            | 106 Flowers Pridgen Road      | Whiteville    | 28472 | Columbus | Rescue Services, Medical                        | X                                  |
| Tabor City Emergency Services                                      | 609 East 5th Street           | Tabor City    | 28463 | Columbus | Ambulance Services, Air Or Ground               | X                                  |
| Chadbourn-Klondyke Fire And Rescue                                 | 204 North Wilson Street       | Chadbourn     | 28431 | Columbus | Fire And Rescue Service                         | X                                  |



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| Name                                                       | Address                              | City          | Zip   | County   | Facility Description                | Designated Flood Zone |
|------------------------------------------------------------|--------------------------------------|---------------|-------|----------|-------------------------------------|-----------------------|
| Columbus Transport Incorporated                            | 2629 Joe Brown Highway South         | Chadbourn     | 28431 | Columbus | Ambulance Services, Air Or Ground   | X                     |
| Buckhead Volunteer Fire And Rescue Department Incorporated | 6810 Old Lake Road                   | Bolton        | 28423 | Columbus | Fire And Rescue Service             | X                     |
| Amera-Tech Of North Carolina Incorporated                  | 784 Jacobs Road                      | Bolton        | 28423 | Columbus | Ambulance Services, Air Or Ground   | X                     |
| Carolinas Medical Response Incorporated                    | 7683 Sidney Cherry Grove Road        | Tabor City    | 28463 | Columbus | Ambulance Services, Air Or Ground   | X                     |
| Lake Waccamaw Fire Department And Rescue Squad             | 203 Flemington Drive                 | Lake Waccamaw | 28450 | Columbus | Fire And Rescue Service             | X                     |
| International Paper Company                                | 865 John Riegel Road                 | Riegelwood    | 28456 | Columbus | Ambulance Services, Air Or Ground   | X                     |
| Acme-Delco-Riegelwood Fire And Rescue Squad                | 100 John Riegel Road                 | Riegelwood    | 28456 | Columbus | Fire And Rescue Service             | X                     |
| Cerro Gordo Volunteer Fire And Rescue Squad Incorporated   | 75 East Railroad Street              | Cerro Gordo   | 28430 | Columbus | Fire And Rescue Service             | X                     |
| Smiths Volunteer Fire Department                           | 2906 Oxedine School Road             | Maxton        | 28364 | Robeson  | Ambulance And Fire Service Combined | X                     |
| Robeson Community College Emergency Services Education     | 5160 Fayetteville Road               | Lumberton     | 28360 | Robeson  | Fire Fighter Training Schools       | X                     |
| Queheel Fire Department                                    | 108 East Rockingham Road             | Maxton        | 28364 | Robeson  | Ambulance And Fire Service Combined | X                     |
| Pembroke Rural Volunteer Fire Department Incorporated      | 1398 Prospect Road                   | Pembroke      | 28372 | Robeson  | Ambulance And Fire Service Combined | X                     |
| Raynham - Mcdonald Volunteer Fire Department               | 5900 United States Highway 301 South | Rowland       | 28383 | Robeson  | Ambulance And Fire Service Combined | X                     |
| Lumber Bridge Volunteer Fire Department Incorporated       | 303 West Main Street                 | Lumber Bridge | 28357 | Robeson  | Ambulance And Fire Service Combined | X                     |
| Fairmon Department Of Public Safety - Fire Division        | 421 South Main Street                | Fairmont      | 28340 | Robeson  | Ambulance And Fire Service Combined | X                     |
| Fairmont Rural Fire Department Incorporated                | 203 Mulberry Street                  | Fairmont      | 28340 | Robeson  | Ambulance And Fire Service Combined | X                     |
| Smyrna Township Volunteer Fire Department                  | 2910 Wire Grass Road                 | Lumberton     | 28358 | Robeson  | Ambulance And Fire Service Combined | X                     |
| Allenton Volunteer Fire Department Incorporated            | 6815 State Highway 211 East          | Lumberton     | 28358 | Robeson  | Ambulance And Fire Service Combined | X                     |
| Robeson County Search And Rescue Team                      | 108 West 8th Street                  | Lumberton     | 28358 | Robeson  | Rescue Services, Medical            | X                     |

### Vulnerability Assessment

| Name                                                                    | Address                      | City        | Zip   | County  | Facility Description                | Designated Flood Zone |
|-------------------------------------------------------------------------|------------------------------|-------------|-------|---------|-------------------------------------|-----------------------|
| North Carolina Division Of Forest Resources District 6 - Robeson County | 848 Smyrna Church Road       | Lumberton   | 28358 | Robeson | Firefighting, Forest                | X                     |
| Maxton Rescue Squad                                                     | 108 East Central Street      | Maxton      | 28364 | Robeson | Rescue Services, Medical            | X                     |
| Rowland Rescue Squad                                                    | North Bond Street            | Rowland     | 28383 | Robeson | Rescue Services, Medical            | X                     |
| Raft Swamp Fire Department                                              | 2809 West State Highway 72   | Lumberton   | 28360 | Robeson | Ambulance And Fire Service Combined | X                     |
| Pembroke Fire Department                                                | 102 West Fourth Street       | Pembroke    | 28372 | Robeson | Ambulance And Fire Service Combined | X                     |
| Saint Pauls City Fire Department                                        | 585 West Mclean Street       | Saint Pauls | 28384 | Robeson | Ambulance And Fire Service Combined | X                     |
| Lumberton Fire Department Station 2                                     | 1000 South Roberts Avenue    | Lumberton   | 28358 | Robeson | Ambulance And Fire Service Combined | X                     |
| Lumberton Fire Department Station 4                                     | 501 Bailey Road              | Lumberton   | 28358 | Robeson | Ambulance And Fire Service Combined | X                     |
| Lumberton Fire Department Station 3                                     | 801 Dunn Road                | Lumberton   | 28358 | Robeson | Ambulance And Fire Service Combined | AE                    |
| Red Springs Rescue Squad                                                | 927 East 4th Avenue          | Red Springs | 28377 | Robeson | Rescue Services, Medical            | X                     |
| Lumberton Fire Department                                               | 600 North Cedar Street       | Lumberton   | 28358 | Robeson | Ambulance And Fire Service Combined | X                     |
| South Robeson Rescue Unit                                               | 1001 Walnut Street           | Fairmont    | 28340 | Robeson | Rescue Services, Medical            | X                     |
| American Medical Response                                               | 2507 East Elizabethtown Road | Lumberton   | 28358 | Robeson | Ambulance Services, Air Or Ground   | X                     |
| Saint Pauls Emergency Response Unit                                     | 217 West Blue Street         | Saint Pauls | 28384 | Robeson | Ambulance Services, Air Or Ground   | X                     |
| Pembroke Rescue Squad                                                   | 210 Union Chapel Road        | Pembroke    | 28372 | Robeson | Rescue Services, Medical            | X                     |
| Parkton Rescue Squad                                                    | 28 West 2nd Street           | Parkton     | 28371 | Robeson | Rescue Services, Medical            | X                     |
| Lumberton Rescue Unit                                                   | 2391 North Roberts Avenue    | Lumberton   | 28358 | Robeson | Rescue Services, Medical            | X                     |
| Robeson County Emergency Medical Services                               | 176 Legend Road              | Lumberton   | 28358 | Robeson | Ambulance Services, Air Or Ground   | X                     |
| Northwoods Fire Department                                              | 344 Sherwood Road            | Lumberton   | 28358 | Robeson | Ambulance And Fire Service Combined | X                     |

Source: GIS Analysis

**Table 6-10: Fire Station Facilities and Flood Hazard Zones<sup>12</sup>**

| Fire Department Name                                           | Station Address             | Station City  | Station County | Station Zip Code | Flood Hazard Zone |
|----------------------------------------------------------------|-----------------------------|---------------|----------------|------------------|-------------------|
| Bay Tree Lakes Volunteer Fire Department, Inc.                 | 12717 NC Hwy 41 E           | Harrells      | Bladen         | 28444            | X                 |
| Bladenboro Fire Department                                     | 519 West Seaboard Street    | Bladenboro    | Bladen         | 28320            | X                 |
| Carvers Creek Volunteer Fire Department, Inc.                  | 2095 S. Elwell Ferry Rd     | Council       | Bladen         | 28434            | X                 |
| Clarkton Fire Department                                       | 205 West Peach St           | Clarkton      | Bladen         | 28433            | X                 |
| Dublin Fire Department                                         | 324 3rd St                  | Dublin        | Bladen         | 28332            | X                 |
| Elizabethtown Fire Department                                  | 300 East Broad St           | Elizabethtown | Bladen         | 28337            | X                 |
| Elizabethtown Fire Department                                  | 401 West Swanzy St.         | Elizabethtown | Bladen         | 28337            | X                 |
| Hickory Grove Volunteer Fire Department, Inc. of Bladen County | 136 W NC 210 Hwy            | Garland       | Bladen         | 28441            | X                 |
| Kelly Volunteer Fire Department, Inc.                          | 18628 NC 53 E               | Kelly         | Bladen         | 28448            | AE                |
| Kelly Volunteer Fire Department, Inc.                          | 18933 Highway 210           | Ivanhoe       | Bladen         | 28447            | X                 |
| Tar Heel Fire/Rescue Inc.                                      | 269 Tar Heel Ferry Rd       | Tar Heel      | Bladen         | 28392            | X                 |
| Tar Heel Fire/Rescue Inc.                                      | 1759 Pages Lake Rd          | Saint Pauls   | Bladen         | 28384            | X                 |
| The Ammon Volunteer Fire Department, Inc.                      | 13084 NC 242 N              | Elizabethtown | Bladen         | 28337            | X                 |
| The East Arcadia Volunteer Fire Department, Inc.               | 1665 East Arcadia Rd        | Riegelwood    | Bladen         | 28456            | X                 |
| The Lisbon Volunteer Fire Department, Inc.                     | 2585 White Plains Church Rd | Council       | Bladen         | 28434            | X                 |
| White Lake Fire Department, Inc.                               | 1859 White Lake Dr          | Elizabethtown | Bladen         | 28337            | X                 |
| White Oak Fire Department, Inc.                                | 10838 Hwy 53 West           | White Oak     | Bladen         | 28399            | X                 |
| Acme-Delco-Riegelwood Fire-Rescue, Inc.                        | 100 John Riegel Road        | Riegelwood    | Columbus       | 28456            | X                 |
| Acme-Delco-Riegelwood Fire-Rescue, Inc.                        | 4328 Livingston Chapel Road | Delco         | Columbus       | 28436            | X                 |
| Acme-Delco-Riegelwood Fire-Rescue, Inc.                        | 1795 Woodyard Rd            | Riegelwood    | Columbus       | 28456            | X                 |
| Bolton Volunteer Fire and Rescue Department, Inc.              | 225 9th St.                 | Bolton        | Columbus       | 28423            | X                 |
| Brunswick Volunteer Fire Department, Inc.                      | 1465 Vinson Blvd            | Brunswick     | Columbus       | 28424            | X                 |
| Brunswick Volunteer Fire Department, Inc.                      | 626 Sunset Terrace Ave      | Whiteville    | Columbus       | 28424            | X                 |
| Buckhead Volunteer Fire Department and Rescue Squad, Inc.      | 6810 Old Lake Rd            | Bolton        | Columbus       | 28423            | X                 |
| Cerro Gordo Volunteer Fire Department and Rescue Squad         | 75 Railroad E               | Cerro Gordo   | Columbus       | 28430            | X                 |

<sup>12</sup> NC Fire Stations. (2024). NC OneMap.
[https://www.nconemap.gov/datasets/6f4fe0c55b0d4cbb92877e461d698c29\\_0/explore?location=34.621175%2C-80.017373%2C6.48](https://www.nconemap.gov/datasets/6f4fe0c55b0d4cbb92877e461d698c29_0/explore?location=34.621175%2C-80.017373%2C6.48)

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| Fire Department Name                                            | Station Address            | Station City  | Station County | Station Zip Code | Flood Hazard Zone |
|-----------------------------------------------------------------|----------------------------|---------------|----------------|------------------|-------------------|
| Evergreen Volunteer Fire Dept.                                  | 7606 Old 74 Hwy            | Evergreen     | Columbus       | 28438            | X                 |
| Evergreen Volunteer Fire Dept.                                  | 850 Rossie O'Berry Rd      | Whiteville    | Columbus       | 28472            | X                 |
| Fair Bluff Fire Department and Rescue Squad, Inc.               | 152 Main St.               | Fair Bluff    | Columbus       | 28439            | X                 |
| Fair Bluff Fire Department and Rescue Squad, Inc.               | 185 Mc Neill Rd            | Fair Bluff    | Columbus       | 28439            | X                 |
| Hallsboro Voluntary Fire Department, Inc.                       | 754 Hallsboro Rd S         | Hallsboro     | Columbus       | 28442            | X                 |
| Klondyke-Chadbourn Volunteer Fire & Rescue, Inc.                | 204 North Wilson Street    | Chadbourn     | Columbus       | 28431            | X                 |
| Lake Waccamaw Fire and Rescue Department                        | 203 Flemington Dr.         | Lake Waccamaw | Columbus       | 28450            | X                 |
| Lake Waccamaw Fire and Rescue Department                        | 1741 Dupree Landing Rd.    | Lake Waccamaw | Columbus       | 28450            | X                 |
| Nakina Fire & Rescue Squad, Inc.                                | 214 Ramsey Ford Rd.        | Nakina        | Columbus       | 28455            | AE                |
| Nakina Fire & Rescue Squad, Inc.                                | 18032 Seven Creeks Hwy.    | Tabor City    | Columbus       | 28463            | X                 |
| North Whiteville Volunteer Fire Department                      | 747 Peacock Rd             | Whiteville    | Columbus       | 28472            | X                 |
| Old Dock/Cypress Creek Volunteer Fire Department and Auxiliary  | 10635 New Britton Hwy E    | Whiteville    | Columbus       | 28472            | X                 |
| Old Dock/Cypress Creek Volunteer Fire Department and Auxiliary  | 51 Crusoe Island Rd.       | Whiteville    | Columbus       | 28472            | X                 |
| Roseland Volunteer Fire Department, Inc.                        | 9527 Claredon Chadbourn Rd | Chadbourn     | Columbus       | 28431            | X                 |
| St. James Volunteer Fire Department, Inc.                       | 3203 Old Northeast Rd      | Lake Waccamaw | Columbus       | 28450            | X                 |
| Tabor City Fire Department                                      | 113 W 4th St               | Tabor City    | Columbus       | 28463            | X                 |
| Tabor City Fire Department                                      | 6819 Swamp Fox Hwy E       | Tabor City    | Columbus       | 28463            | X                 |
| White Marsh - Welches Creek Community Volunteer Fire Department | 45 Millie-Christine Rd.    | Whiteville    | Columbus       | 28472            | X                 |
| Whiteville Fire Dept.                                           | 120 E Columbus St          | Whiteville    | Columbus       | 28472            | X                 |
| Williams Township Community Volunteer Fire Department           | 1655 F.M. Cartret Rd       | Whiteville    | Columbus       | 28472            | X                 |
| Williams Township Community Volunteer Fire Department           | 8000 Lebanon Church Rd     | Clarendon     | Columbus       | 28432            | X                 |
| Allenton Volunteer Fire Department, Inc.                        | 6815 NC 211 East           | Lumberton     | Robeson        | 28358            | X                 |
| Allenton Volunteer Fire Department, Inc.                        | 3937 Willoughby Road       | Lumberton     | Robeson        | 28358            | AE                |
| Big Marsh Volunteer Fire Department of Robeson County, Inc.     | 456 S Fifth St.            | Saint Pauls   | Robeson        | 28384            | X                 |
| Britts Township Volunteer Fire Department, Inc.                 | 9529 NC 72 E               | Lumberton     | Robeson        | 28358            | X                 |
| Burnt Swamp- Philadelphus Rural Fire Department                 | 54 Fire Department Rd      | Red Springs   | Robeson        | 28377            | X                 |
| Deep Branch Fire/Rescue Inc.                                    | 3129 Deep Branch Rd        | Lumberton     | Robeson        | 28360            | X                 |



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| Fire Department Name                               | Station Address          | Station City  | Station County | Station Zip Code | Flood Hazard Zone |
|----------------------------------------------------|--------------------------|---------------|----------------|------------------|-------------------|
| East Howellsville Volunteer Fire Department, Inc.  | 1000 Pridgen Rd          | Lumberton     | Robeson        | 28358            | X                 |
| Evans Cross Road Voluntary Fire Department, Inc.   | 3440 Elrod Rd.           | Maxton        | Robeson        | 28364            | X                 |
| Fairmont Fire Department                           | 103 Cottage St.          | Fairmont      | Robeson        | 28340            | X                 |
| Fairmont Rural Fire Department, Incorporated       | 203 Mulberry St          | Fairmont      | Robeson        | 28340            | X                 |
| Lumber Bridge Volunteer Fire Department, Inc.      | 303 W. Main St.          | Lumber Bridge | Robeson        | 28357            | X                 |
| Lumberton Fire Department                          | 600 North Cedar St       | Lumberton     | Robeson        | 28358            | X                 |
| Lumberton Fire Department                          | 801 Dunn Rd              | Lumberton     | Robeson        | 28358            | AE                |
| Northwood's Fire & Rescue Department, Incorporated | 344 Sherwood Rd.         | Lumberton     | Robeson        | 28358            | X                 |
| Northwood's Fire & Rescue Department, Incorporated | 4213 Martin Rd           | Lumberton     | Robeson        | 28358            | X                 |
| Orrum Township Volunteer Fire Department, Inc.     | 102 North Main St.       | Proctorville  | Robeson        | 28375            | X                 |
| Orrum Township Volunteer Fire Department, Inc.     | 7049 S. Creek Rd.        | Orrum         | Robeson        | 28369            | X                 |
| Parkton Fire and Rescue, Inc                       | 2704 Parkton Tobmory Rd. | Parkton       | Robeson        | 28371            | X                 |
| Pembroke Fire Dept.                                | 203 S. Main St.          | Pembroke      | Robeson        | 28372            | X                 |
| Pembroke Rural Voluntary Fire Department, Inc.     | 1398 Prospect Rd.        | Pembroke      | Robeson        | 28372            | X                 |
| Pine Terrace Volunteer Fire Dept.                  | 1292 Alamac Rd           | Lumberton     | Robeson        | 28358            | AE                |
| Prospect Volunteer Fire Department, Inc.           | 4345 Prospect Rd         | Maxton        | Robeson        | 28364            | X                 |
| Queheel Fire Department                            | 108 East Rockingham Road | Maxton        | Robeson        | 28364            | X                 |
| Queheel Fire Department                            | 11388 US HWY 501         | Maxton        | Robeson        | 28364            | X                 |
| Raft Swamp Fire and Rescue Department, Inc.        | 2809 NC 72 Hwy West      | Lumberton     | Robeson        | 28360            | X                 |
| Raynham-Mcdonald Volunteer Fire Dept.              | 5900 S Hwy 301           | Rowland       | Robeson        | 28383            | X                 |
| Red Springs Fire Department                        | 133 N . Main St.         | Red Springs   | Robeson        | 28377            | X                 |
| Rennert Volunteer Fire Department                  | 9896 Rennert Rd          | Shannon       | Robeson        | 28386            | X                 |
| Rowland Rural Fire Department, Inc.                | 401 N Bond St.           | Rowland       | Robeson        | 28383            | X                 |
| Rowland Rural Fire Department, Inc.                | 204 W Main St.           | Rowland       | Robeson        | 28383            | X                 |
| Saddletree Volunteer Fire Department, Inc.         | 76 Rozier Church Rd.     | Lumberton     | Robeson        | 28360            | X                 |
| Shannon Volunteer Fire Department, Inc.            | 14592 NC Hwy 71 N        | Shannon       | Robeson        | 28386            | X                 |
| Smiths Volunteer Fire Department                   | 2906 Oxendine School Rd  | Maxton        | Robeson        | 28364            | X                 |
| Smyrna Township Volunteer Fire Department          | 2910 Wiregrass Rd        | Lumberton     | Robeson        | 28358            | X                 |
| St. Pauls Fire Department                          | 585 W. McLean St.        | St. Pauls     | Robeson        | 28384            | X                 |
| Whitehouse Volunteer Fire Department, Incorporated | 14759 Hwy 41 S           | Fairmont      | Robeson        | 28340            | X                 |

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| Fire Department Name                               | Station Address | Station City | Station County | Station Zip Code | Flood Hazard Zone |
|----------------------------------------------------|-----------------|--------------|----------------|------------------|-------------------|
| Whitehouse Volunteer Fire Department, Incorporated | 1022 Gerald Rd. | Fairmont     | Robeson        | 28340            | X                 |

Source: GIS Analysis

**Table 6-11: Law Enforcement Facilities and Flood Hazard Zones<sup>13</sup>**

| Law Enforcement Location Name                                                               | Address                              | City          | Zip Code | County   | Law Enforcement Type                                         | Flood Hazard Zone |
|---------------------------------------------------------------------------------------------|--------------------------------------|---------------|----------|----------|--------------------------------------------------------------|-------------------|
| North Carolina Department Of Environment And Natural Resources Division Of Forest Resources | 4578 State Highway 242 North         | Elizabethtown | 28337    | Bladen   | Park Police                                                  | X                 |
| Town Of White Lake Police Department                                                        | 1823 White Lake Drive                | White Lake    | 28337    | Bladen   | Police Departments (Except American Indian Or Alaska Native) | X                 |
| Bladen County Sheriffs Department                                                           | 201 East King Street                 | Elizabethtown | 28337    | Bladen   | Sheriffs' Offices (Except Court Functions Only)              | X                 |
| North Carolina Division Of Parks - Singletary Lake State Park                               | 6707 State Highway 53 East           | Kelly         | 28448    | Bladen   | Park Police                                                  | X                 |
| North Carolina State Highway Patrol Troop B District 5 - Substation                         | 3467 United States Highway 701 South | Clarkton      | 28433    | Bladen   | Highway Patrols, Police                                      | X                 |
| Bladenboro Police Department                                                                | 306 South Main Street                | Bladenboro    | 28320    | Bladen   | Police Departments (Except American Indian Or Alaska Native) | X                 |
| Elizabethtown Police Department                                                             | 805 West Broad Street                | Elizabethtown | 28337    | Bladen   | Police Departments (Except American Indian Or Alaska Native) | X                 |
| North Carolina Division Of Parks - Jones Lake State Park                                    | 4117 State Highway 242 North         | Elizabethtown | 28337    | Bladen   | Park Police                                                  | X                 |
| North Carolina State Highway Patrol Troop B District V                                      | 917 Washington Street                | Whiteville    | 28472    | Columbus | Highway Patrols, Police                                      | X                 |
| Chadbourn Police Department                                                                 | 602 North Brown Street               | Chadbourn     | 28431    | Columbus | Police Departments (Except American Indian Or Alaska Native) | X                 |
| Tabor City Police Department                                                                | 1108 East 5th Street                 | Tabor City    | 28463    | Columbus | Police Departments (Except American Indian Or Alaska Native) | X                 |
| Columbus County Sheriffs Department                                                         | 805 Washington Street                | Whiteville    | 28472    | Columbus | Sheriffs' Offices (Except Court Functions Only)              | X                 |
| City Of Fair Bluff Police Department                                                        | 1175 Main Street                     | Fair Bluff    | 28439    | Columbus | Police Departments (Except American Indian Or Alaska Native) | Ae                |

<sup>13</sup> State of North Carolina. (2023). Law Enforcement Locations [Dataset]. In NC OneMap.

<https://www.nconemap.gov/search?groupIds=2b0fd568b5234936a139f67a7ccdb014>

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| Law Enforcement Location Name                                                | Address                              | City          | Zip Code | County   | Law Enforcement Type                                         | Flood Hazard Zone |
|------------------------------------------------------------------------------|--------------------------------------|---------------|----------|----------|--------------------------------------------------------------|-------------------|
| North Carolina Division Of Parks - Lake Waccamaw State Park                  | 1866 State Park Drive                | Lake Waccamaw | 28450    | Columbus | Park Police                                                  | X                 |
| Whiteville Police Department                                                 | 117 East Columbus Street             | Whiteville    | 28472    | Columbus | Police Departments (Except American Indian Or Alaska Native) | X                 |
| Town Of Lake Waccamaw Police Department                                      | 205 Flemington Drive                 | Lake Waccamaw | 28450    | Columbus | Police Departments (Except American Indian Or Alaska Native) | X                 |
| Saint Pauls Police Department                                                | 210 1/2 West Blue Street             | Saint Pauls   | 28384    | Robeson  | Police Departments (Except American Indian Or Alaska Native) | X                 |
| City Of Lumberton Police Department                                          | 1305 Godwin Avenue                   | Lumberton     | 28358    | Robeson  | Police Departments (Except American Indian Or Alaska Native) | X                 |
| Robeson County Sheriffs Department / Robeson County Detention Center         | 120 Legend Road                      | Lumberton     | 28358    | Robeson  | Sheriffs' Offices (Except Court Functions Only)              | X                 |
| Parkton Police Department                                                    | 28 David Parnell Street              | Parkton       | 28371    | Robeson  | Police Departments (Except American Indian Or Alaska Native) | X                 |
| Lumberton Police Department - East Lumberton Station                         | 1608 East 5th Street                 | Lumberton     | 28358    | Robeson  | Police Departments (Except American Indian Or Alaska Native) | X                 |
| North Carolina State Highway Patrol Troop B District VII                     | 4650 Kahn Drive                      | Lumberton     | 28358    | Robeson  | Highway Patrols, Police                                      | X                 |
| Lumberton Police Department - West Lumberton Station                         | 2411 Buchanan Street                 | Lumberton     | 28358    | Robeson  | Police Departments (Except American Indian Or Alaska Native) | AE                |
| City Of Fairmont Police Department                                           | 421 South Main Street                | Fairmont      | 28340    | Robeson  | Police Departments (Except American Indian Or Alaska Native) | X                 |
| University Of North Carolina At Pembroke Police And Public Safety Department | 1 University Drive                   | Pembroke      | 28372    | Robeson  | Police Departments (Except American Indian Or Alaska Native) | X                 |
| City Of Rowland Police Department                                            | 206 West Main Street                 | Rowland       | 28383    | Robeson  | Police Departments (Except American Indian Or Alaska Native) | X                 |
| City Of Pembroke Police Department                                           | 100 Union Chapel Road                | Pembroke      | 28372    | Robeson  | Police Departments (Except American Indian Or Alaska Native) | X                 |
| North Carolina Division Of Parks - Lumber River State Park                   | 2819 Princess Ann Road               | Orrum         | 28369    | Robeson  | Park Police                                                  | X                 |
| Maxton Police Department                                                     | 105 North Florence Street            | Maxton        | 28364    | Robeson  | Police Departments (Except American Indian Or Alaska Native) | X                 |
| Red Springs Police Department                                                | 218 South Main Street                | Red Springs   | 28377    | Robeson  | Police Departments (Except American Indian Or Alaska Native) | X                 |
| Lumberton Police Department - South Lumberton Station                        | 1408 Martin Luther King Junior Drive | Lumberton     | 28358    | Robeson  | Police Departments (Except American Indian Or Alaska Native) | AE                |

**Table 6-12: Medical Facilities and Flood Hazard Zones<sup>14</sup>**

| Facility Type          | Facility                                    | Address                | City        | Zip Code | County  | License Number | Licensee                             | Flood Hazard Zone |
|------------------------|---------------------------------------------|------------------------|-------------|----------|---------|----------------|--------------------------------------|-------------------|
| Cardiac Rehabilitation | FirstHealth of the Carolinas Cardiac Rehab  | 923 West 3rd Street    | Pembroke    | 28372    | Robeson | CRP0099        | FirstHealth of the Carolinas         | X                 |
| Cardiac Rehabilitation | Southeastern Cardiopulmonary Rehabilitation | 4895 Fayetteville Road | Lumberton   | 28359    | Robeson | CRP0045        | Southeastern Regional Medical Center | X                 |
| Family Care            | Ada's Family Care Home                      | 135 North Main Street  | Red Springs | 28377    | Robeson | FCL-078-022    | Elzerder Holt                        | X                 |
| Family Care            | Bren Care Family Care Home #1               | PO Box 3696            | Pembroke    | 28372    | Robeson | FCL-078-026    | Alfreida Brooks & William Brooks     | X                 |
| Family Care            | Bren Care Family Care Home #2               | PO Box 3696            | Pembroke    | 28372    | Robeson | FCL-078-027    | Alfreida Brooks & William Brooks     | X                 |
| Family Care            | Country Living Family Care Home             | PO Box 270             | Pembroke    | 28372    | Robeson | FCL-078-029    | Andetra M. Kochera                   | X                 |
| Family Care            | Dial's Family Care Home                     | 1685 Canal Road        | Pembroke    | 28372    | Robeson | FCL-078-010    | Ilene Dial                           | X                 |
| Family Care            | Dial's Family Care Home #2                  | 1685 Canal Road        | Pembroke    | 28372    | Robeson | FCL-078-012    | Ilene Dial                           | X                 |
| Family Care            | Dial's Family Care Home #3                  | 1685 Canal Road        | Pembroke    | 28372    | Robeson | FCL-078-013    | Ilene Dial                           | X                 |
| Family Care            | Glezen Family Care Home                     | P O Box 863            | Lumberton   | 28358    | Robeson | FCL-078-001    | Gloria Glezen                        | X                 |
| Family Care            | Glezen Family Care Home #2                  | PO Box 863             | Lumberton   | 0        | Robeson | FCL-078-002    | Gloria Glezen                        | X                 |
| Family Care            | Home Place Family Care Home #1              | 1685 Canal Road        | Pembroke    | 28372    | Robeson | FCL-078-033    | Ilene Dial                           | X                 |
| Family Care            | Home Place Family Care Home #2              | 1685 Canal Street      | Pembroke    | 27372    | Robeson | FCL-078-032    | Ilene Dial                           | X                 |
| Family Care            | Mt. Olive Family Care Home #2               | 305 Jackson Street     | Fairmont    | 28340    | Robeson | FCL-078-015    | Willie E. & Joan P. Spruill          | X                 |
| Family Care            | Nick's Family Care Home                     | 527 Woods Road         | Pembroke    | 28372    | Robeson | FCL-078-030    | Andria Nikol Johnson                 | X                 |
| Family Care            | Personal Touch Family Care Home             | 2610 Hwy. 130 West     | Rowland     | 28383    | Robeson | FCL-078-018    | Edna L. Chavis                       | X                 |

<sup>14</sup> State of North Carolina & NC OneMap. (2023). Medical Facilities [Dataset]. In NC One Map. <https://www.nconemap.gov/datasets/nconemap::medical-facilities/about>  
2025 Bladen-Columbus-Robeson Regional Hazard Mitigation Plan



## Vulnerability Assessment

| Facility Type | Facility                           | Address                         | City         | Zip Code | County  | License Number | Licensee                                          | Flood Hazard Zone |
|---------------|------------------------------------|---------------------------------|--------------|----------|---------|----------------|---------------------------------------------------|-------------------|
| Family Care   | Personal Touch Family Care Home #2 | 2610 Hwy 130 West               | Rowland      | 28383    | Robeson | FCL-078-019    | Edna L. Chavis                                    | X                 |
| Family Care   | Prather Family Care Home           | 8572 Old Red Springs Road       | Red Springs  | 28377    | Robeson | FCL-078-011    | Betty J. Prather                                  | X                 |
| Family Care   | Quality Family Care Home - Robeson | 200 Lakeside Drive              | Lumberton    | 28360    | Robeson | FCL-078-017    | Christine B. Thornhill                            | X                 |
| Family Care   | Sampson's Family Care Home         | P O Box 2895                    | Pembroke     | 28372    | Robeson | FCL-078-028    | Lesia S. Hammonds                                 | X                 |
| Family Care   | Sarah's Family Care Home           | 2133 Preston Road               | Maxton       | 28364    | Robeson | FCL-078-035    | Elizabeth Locklear                                | X                 |
| Family Care   | Stewart's TLC Family Home          | P O Box 2192                    | Lumberton    | 0        | Robeson | FCL-078-006    | Treva Stewart                                     | X                 |
| Family Care   | Williamson Family Care Home #2     | 887 Tar Heel Road               | Lumberton    | 0        | Robeson | FCL-078-009    | Patricia Meraz                                    | X                 |
| Home Care     | Advantage Home Care                | P. O. Box 1828                  | Lumberton    | 28359    | Robeson | HC1240         | Consolidated Health Services, Inc.                | X                 |
| Home Care     | Community Home Care & Hospice      | 5301 Morganton Road             | Fayetteville | 28314    | Robeson | HOS2060        | Carrolton Home Care, Inc.                         | X                 |
| Home Care     | Companion Home Care - UNIMED       | PO Box 1231                     | Lumberton    | 28358    | Robeson | HC1978         | Companion Home Care - UNIMED                      | X                 |
| Home Care     | Companion Home Care-UNIMED         | 2101 C Pine Street              | Lumberton    | 28358    | Robeson | HC1604         | Charles Graham                                    | X                 |
| Home Care     | Family Alternatives, Inc.          | P. O. Box 963                   | Lumberton    | 28359    | Robeson | HC1652         | Family Alternatives, Inc.                         | X                 |
| Home Care     | HealthKeeperz                      | P. O. Box 1030                  | Pembroke     | 28372    | Robeson | HC1185         | Tender Loving Care Home Health Care Agency, Inc.  | X                 |
| Home Care     | Interim HealthCare                 | P. O. Box 2249                  | Whiteville   | 0        | Robeson | HC0261         | Interim HealthCare of the Eastern Carolinas, Inc. | X                 |
| Home Care     | Liberty Home Care                  | 103 South Florence Street       | Maxton       | 28364    | Robeson | HC0352         | Liberty Home Care II, LLC                         | X                 |
| Home Care     | Liberty Home Care                  | 2409 Elm Street                 | Lumberton    | 28358    | Robeson | HC1178         | Liberty Home Care, L.L.C.                         | X                 |
| Home Care     | Native Angels HomeCare, Inc        | 4701 Fayetteville Road, Suite C | Pembroke     | 28372    | Robeson | HC1960         | Native Angls-Bobbie Ghaffar                       | X                 |
| Home Care     | Pelham Home Health                 | PO Box 9754                     | Fayetteville | 28311    | Robeson | HC2268         | Pelham Home Health, Inc.                          | X                 |

## Vulnerability Assessment

| Facility Type     | Facility                              | Address                 | City        | Zip Code | County  | License Number | Licensee                             | Flood Hazard Zone |
|-------------------|---------------------------------------|-------------------------|-------------|----------|---------|----------------|--------------------------------------|-------------------|
| Home Care         | Robeson County Home Health Agency     | 460 Country Club Road   | Lumberton   | 28360    | Robeson | HC0526         | Robeson County Health Department     | X                 |
| Home Care         | Southeastern Home Health              | 2002 North Cedar Street | Lumberton   | 28358    | Robeson | HC0235         | Southeastern Regional Medical Center | X                 |
| Home Care         | Southeastern Personal Care            | 2002 N. Cedar Street    | Lumberton   | 28358    | Robeson | HC1264         | Southeastern Regional Medical Center | X                 |
| Home Care         | We Care For You Home Care Corporation | 1549 Hwy 211 West       | Lumberton   | 28358    | Robeson | HC1961         | Anissa Emanuel-Bullard               | X                 |
| Home For The Aged | Green Manor Rest Home                 | P. O. Drawer 299        | Parkton     | 28371    | Robeson | HAL-078-003    | Major and Mrs. David R. Green        | X                 |
| Home For The Aged | Greystone Manor, LLC                  | PO Box 392              | Red Springs | 28377    | Robeson | HAL-078-015    | E & J Health Care, LLC               | X                 |
| Home For The Aged | Hermitage Retirement Center           | 550 Bailey Road         | Lumberton   | 28359    | Robeson | HAL-078-004    | Lumberton Health Care, Inc.          | AE                |
| Home For The Aged | Hope Village                          | 104 Hope Lane           | Red Springs | 28377    | Robeson | HAL-078-005    | E & J Health Care, LLC               | X                 |
| Home For The Aged | Johnson's Retirement Home             | PO Box 925              | Pembroke    | 28372    | Robeson | HAL-078-034    | Thomas Junior Johnson                | X                 |
| Home For The Aged | Leisure Living Care Home              | 550 Waters Road         | Salisbury   | 28146    | Robeson | HAL-078-006    | Metro Corp Affiliates, Ltd.          | X                 |
| Home For The Aged | Rosemont Rest Home, Inc.              | PO Box 2804             | Pembroke    | 28372    | Robeson | HAL-078-020    | Rosemont Rest Home, Inc.             | X                 |
| Home For The Aged | Spring Village Rest Home              | P O Box 472             | St. Pauls   | 28384    | Robeson | HAL-078-016    | Tammie C. Taylor                     | X                 |
| Home For The Aged | The Meadows of Fairmont, Inc.         | P.O. Box 1321           | Kinston     | 28501    | Robeson | HAL-078-031    | The Meadows of Fairmont, Inc.        | X                 |
| Home For The Aged | Trio Senior Living #2                 | 941 Goins Road          | Pembroke    | 28372    | Robeson | HAL-078-023    | Trio Health Care, LLC                | X                 |
| Home For The Aged | Trio Senior Living #3                 | 941 Goins Rd            | Pembroke    | 28372    | Robeson | HAL-078-024    | Trio Health Care, LLC                | X                 |
| Home For The Aged | Trio Senior Living #4                 | 941 Goins Road          | Pembroke    | 28372    | Robeson | HAL-078-025    | Trio Health Care, Inc.               | X                 |
| Hospice           | Advantage Hospice                     | P. O. Box 1828          | Lumberton   | 28359    | Robeson | HOS1301        | Consolidated Health Services, Inc.   | X                 |
| Hospice           | Hospice of Robeson                    | 2002 N. Cedar Street    | Lumberton   | 28358    | Robeson | HOS1599        | Health Horizons, Inc.                | X                 |
| Hospital          | Southeastern Regional Medical Center  | P O Box 1408            | Lumberton   | 28359    | Robeson | H0064          | Southeastern Regional Medical Center | X                 |

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| Facility Type       | Facility                          | Address                        | City         | Zip Code | County  | License Number | Licensee                                     | Flood Hazard Zone |
|---------------------|-----------------------------------|--------------------------------|--------------|----------|---------|----------------|----------------------------------------------|-------------------|
| Mental Health Homes | Angelo's Care Home, Inc.          | 10091 US Highway 74 West       | Maxton       | 28364    | Robeson | MHL-078-138    | Angelo's Care Home, Inc.                     | X                 |
| Mental Health Homes | Beryl Alexander House             | 2121 Turner PL. P.O. Box 3047  | Lumberton    | 28359    | Robeson | MHL-078-034    | Robeson County Group Home, Inc.              | X                 |
| Mental Health Homes | Brian Hunt Home                   | P.O. Box 963                   | Lumberton    | 28359    | Robeson | MHL-078-118    | Brian R. Hunt                                | X                 |
| Mental Health Homes | Cameron Home                      | P.O. Box 963                   | Lumberton    | 28359    | Robeson | MHL-078-002    | Fred and Sherry Cameron                      | X                 |
| Mental Health Homes | Cardinal Group Home Inc.          | 177 Cardinal Avenue            | Lumberton    | 28360    | Robeson | MHL-078-142    | Jason Hartman Hammonds                       | X                 |
| Mental Health Homes | Cedar Street Residential          | 801 Wilson Street              | Whiteville   | 28472    | Robeson | MHL-078-095    | Community Innovations, Inc.                  | X                 |
| Mental Health Homes | Cliffridge                        | 3508 Cliffridge Dr.            | Lumberton    | 28358    | Robeson | MHL-078-109    | BJ Professional Services, Inc.               | X                 |
| Mental Health Homes | Corbel Residential                | 483 Creek Rd.                  | Orrum        | 28369    | Robeson | MHL-078-069    | Community Innovations, Inc.                  | X                 |
| Mental Health Homes | Eastbrook                         | 15235 Airport Road             | Maxton       | 28364    | Robeson | MHL-078-010    | RHA Health Services, Inc.                    | X                 |
| Mental Health Homes | Evergreen Rehabilitation Center   | 20513 U.S. Highway 301N        | St. Pauls    | 28384    | Robeson | MHL-078-124    | Green Manor Rest Homes, Inc.                 | X                 |
| Mental Health Homes | Forest House                      | 801 Wilson Street              | Whiteville   | 28472    | Robeson | MHL-078-089    | Community Innovations, Inc.                  | X                 |
| Mental Health Homes | Generations Health Services       | PO Box 849                     | Pembroke     | 28372    | Robeson | MHL-078-135    | Agyenim Akuamoah-Boateng, MS, CRC, CCAS, LPC | X                 |
| Mental Health Homes | Grace Court                       | 3750 Meadow View Road Apt. A-1 | Lumberton    | 28358    | Robeson | MHL-078-111    | First Image, Inc.                            | X                 |
| Mental Health Homes | Green Tree Supervised Living Home | 801 Wilson Street              | Whiteville   | 28472    | Robeson | MHL-078-122    | Community Innovations, Inc.                  | X                 |
| Mental Health Homes | Higher Praise Children's Home 1   | PO Box 25639                   | Fayetteville | 28314    | Robeson | MHL-078-141    | Higher Praise Corporation                    | X                 |
| Mental Health Homes | Hunt Home                         | P.O. Box 963                   | Lumberton    | 28359    | Robeson | MHL-078-088    | R.M. and Carolyn Hunt                        | X                 |
| Mental Health Homes | Jackson Home                      | 408 Jackson Street             | Fairmont     | 28340    | Robeson | MHL-078-139    | John and Glenda Jackson                      | X                 |

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| Facility Type       | Facility                                       | Address                 | City        | Zip Code | County  | License Number | Licensee                                          | Flood Hazard Zone |
|---------------------|------------------------------------------------|-------------------------|-------------|----------|---------|----------------|---------------------------------------------------|-------------------|
| Mental Health Homes | Johnson Center Home for Children & Adolescents | PO Box 844              | Red Springs | 28377    | Robeson | MHL-078-143    | Hattie Johnson & Sheila Ferguson                  | X                 |
| Mental Health Homes | Jones & JJ Group Home                          | 108 Sun Road            | Lumberton   | 28358    | Robeson | MHL-078-103    | Jones & JJ's Group Home                           | X                 |
| Mental Health Homes | Jones and JJ's Group Home #2                   | PO Box 508              | Lumberton   | 28358    | Robeson | MHL-078-140    | Thomas Jones Jr., Ruby Jones and Thomas Jones III | X                 |
| Mental Health Homes | Jones Therapeutic Home                         | P.O. Box 963            | Lumberton   | 28359    | Robeson | MHL-078-115    | Jerry and Avis Jones                              | X                 |
| Mental Health Homes | Killens Home                                   | P.O. Box 963            | Lumberton   | 28359    | Robeson | MHL-078-072    | Robert and Earlie Killens                         | X                 |
| Mental Health Homes | Livingston Home                                | 2235 Old Stage Road     | Fairmont    | 28340    | Robeson | MHL-078-067    | Thomas & Lela Livingston                          | X                 |
| Mental Health Homes | Locklear Home                                  | 3089 Norment Road       | Lumberton   | 28358    | Robeson | MHL-078-068    | Mrs. Jessie Locklear                              | X                 |
| Mental Health Homes | Lumberton Health Center                        | 901 N. Chestnut Street  | Lumberton   | 28364    | Robeson | MHL-078-079    | Robeson Health Care Corporation                   | X                 |
| Mental Health Homes | Mask Therapeutic Home                          | 106 S Wilkinson Dr.     | St. Pauls   | 28384    | Robeson | MHL-078-117    | Maria Mask                                        | X                 |
| Mental Health Homes | McArthur Home                                  | 1488 Turkey Branch Road | Fairmont    | 28340    | Robeson | MHL-078-113    | Catherine McArthur                                | X                 |
| Mental Health Homes | New Life Community Group Home                  | 1900 Hilly Branch Road  | Lumberton   | 28357    | Robeson | MHL-078-130    | Mary T. Hill                                      | X                 |
| Mental Health Homes | Our House                                      | 204 W. MLK Jr. Drive    | Maxton      | 28364    | Robeson | MHL-078-045    | Robeson Health Care Corporation                   | X                 |
| Mental Health Homes | Palmer Prevention, Inc.                        | PO Box 8                | Lumberton   | 28359    | Robeson | MHL-078-137    | Palmer Prevention, Inc.                           | AH                |
| Mental Health Homes | Pembroke Home                                  | 801 Wilson Street       | Whiteville  | 28472    | Robeson | MHL-078-129    | Community Innovations, Inc.                       | X                 |
| Mental Health Homes | Register Home                                  | 116 West 8th Street     | Lumberton   | 28358    | Robeson | MHL-078-019    | Mr. and Mrs. William (Bill) Register              | X                 |
| Mental Health Homes | Rennert Home                                   | PO Box 398              | Shannon     | 28386    | Robeson | MHL-078-120    | W F B Health Care, Inc.                           | X                 |
| Mental Health Homes | Robeson County Day Reporting Center            | 120 West Sixth Street   | Lumberton   | 28358    | Robeson | MHL-078-119    | Robeson County Criminal Justice Partnership       | X                 |
| Mental Health Homes | Robeson County Group Home #1                   | PO Box 3047             | Lumberton   | 28359    | Robeson | MHL-078-061    | Robeson County Group Home, Inc.                   | X                 |



## Vulnerability Assessment

| Facility Type       | Facility                                            | Address                  | City       | Zip Code | County  | License Number | Licensee                                             | Flood Hazard Zone |
|---------------------|-----------------------------------------------------|--------------------------|------------|----------|---------|----------------|------------------------------------------------------|-------------------|
| Mental Health Homes | Robeson County Group Home II-Fairmont               | 104 E. Gertrude St.      | Fairmont   | 28340    | Robeson | MHL-078-036    | Robeson County Group Home, Inc.                      | X                 |
| Mental Health Homes | Robeson County Mental Health Center                 | P.O. Box 2096            | Lumberton  | 28359    | Robeson | MHL-078-003    | Southeastern Regional Mental Health Center           | X                 |
| Mental Health Homes | Robeson Health Care Corp./Julian T. Pierce Health C | P.O. Box 1629            | Pembroke   | 28372    | Robeson | MHL-078-064    | Robeson Health Care Corporation                      | X                 |
| Mental Health Homes | Robeson Health Care Corp./Our House 2nd Step Bldg.  | P.O. Box 2883            | Pembroke   | 28372    | Robeson | MHL-078-062    | Robeson Health Care Corporation                      | X                 |
| Mental Health Homes | Robeson Health Care Corp./S. Robeson Medical Clinic | 1212 South Walnut Street | Fairmont   | 28340    | Robeson | MHL-078-063    | Robeson Health Care Corporation                      | X                 |
| Mental Health Homes | Robeson Health Care Corp/Maxton Medical Center      | 610 E. MLK Jr. Drive     | Maxton     | 28364    | Robeson | MHL-078-127    | Robeson Health Care Corp.                            | X                 |
| Mental Health Homes | Robeson Health Care Corporation Maxton Family Cente | 204 W. MLK, Jr. Drive    | Maxton     | 28364    | Robeson | MHL-078-128    | Robeson Health Care Corporation                      | X                 |
| Mental Health Homes | Rockford House                                      | 1012 West Blvd.          | Laurinburg | 28352    | Robeson | MHL-078-133    | Coordinated Health Services                          | X                 |
| Mental Health Homes | Singletary Home                                     | P.O. Box 963             | Lumberton  | 28359    | Robeson | MHL-078-059    | Family Alternatives, Inc.                            | X                 |
| Mental Health Homes | Substance Abuse Services-Lumberton                  | 308 East 6th Street      | Lumberton  | 28358    | Robeson | MHL-078-033    | Robeson Family Counseling Center Inc. A Carenet INC. | X                 |
| Mental Health Homes | The Atkinson Home                                   | PO Box 963               | Lumberton  | 28359    | Robeson | MHL-078-093    | Larry and Judy Atkinson                              | X                 |
| Mental Health Homes | The Hill Home                                       | P.O. Box 963             | Lumberton  | 28359    | Robeson | MHL-078-096    | James and Mary Hill                                  | X                 |
| Mental Health Homes | The Jones Home                                      | 112 Dallas Street        | Lumberton  | 28358    | Robeson | MHL-078-116    | Thomas and Ruby Jones                                | X                 |
| Mental Health Homes | The Laura Campbell Home                             | PO Box 963               | Lumberton  | 28359    | Robeson | MHL-078-114    | Laura Campbell                                       | X                 |
| Mental Health Homes | The Linda McBride Home                              | P.O. Box 963             | Lumberton  | 28359    | Robeson | MHL-078-074    | Linda McBride                                        | X                 |
| Mental Health Homes | The Locklear Home                                   | 59 National Avenue       | Robeson    | 28359    | Robeson | MHL-078-106    | Kay Neal Locklear                                    | AE                |

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| Facility Type         | Facility                                         | Address                      | City          | Zip Code | County  | License Number | Licensee                                   | Flood Hazard Zone |
|-----------------------|--------------------------------------------------|------------------------------|---------------|----------|---------|----------------|--------------------------------------------|-------------------|
| Mental Health Homes   | The McLaurin Home                                | 305 McLaughlin Street        | Maxton        | 28364    | Robeson | MHL-078-099    | James and Geraldine McLaurin               | X                 |
| Mental Health Homes   | The Regan Home                                   | PO Box 963                   | Lumberton     | 28358    | Robeson | MHL-078-097    | Gloria Regan                               | X                 |
| Mental Health Homes   | The Rita and Terry Locklear Home                 | PO Box 963                   | Lumberton     | 28359    | Robeson | MHL-078-126    | Rita and Terry Locklear                    | X                 |
| Mental Health Homes   | Thompson Home                                    | P.O. Box 963                 | Lumberton     | 28359    | Robeson | MHL-078-056    | Annie Ruth Thompson                        | X                 |
| Mental Health Homes   | Todd Home                                        | PO Box 963                   | Lumberton     | 28359    | Robeson | MHL-078-050    | Earl and Elaine Todd                       | X                 |
| Mental Health Homes   | Wakulla I & II                                   | 15235 Airport Road           | Maxton        | 28364    | Robeson | MHL-078-029    | RHA/North Carolina MR, Inc.                | X                 |
| Mental Health Homes   | Watson Home                                      | 929 North Old Stage Road     | St. Pauls     | 28384    | Robeson | MHL-078-134    | Lots of Love                               | X                 |
| Mental Health Homes   | Westside Residential                             | Rt 1 Box 10 Creek Road       | Orrum         | 28369    | Robeson | MHL-078-049    | Community Innovations, Inc.                | X                 |
| Mental Health Homes   | Willie Drake Home                                | 404 Martin Luther King Drive | Maxton        | 28364    | Robeson | MHL-078-092    | Willie Howard Drake, Jr.                   | X                 |
| Mental Health Homes   | Wilson Home                                      | P.O. Box 963                 | Lumberton     | 28359    | Robeson | MHL-078-112    | Vivian Wilson/Family Alternatives, Inc.    | X                 |
| Mental Health Homes   | Youth Enrichment Services-Bridgecrest Group Home | P.O. Box 180                 | Lumber Bridge | 28357    | Robeson | MHL-078-009    | Southeastern Regional Mental Health        | X                 |
| Mental Health Homes   | Youth Enrichment Services-Meadowbrook Group Home | P.O. Box 488                 | Maxton        | 28364    | Robeson | MHL-078-014    | Southeastern Regional Mental Health Center | X                 |
| Mental Health Homes   | Youth Enrichment Services-Timberwood Group Home  | 1407 East Fifth Street       | Lumberton     | 28358    | Robeson | MHL-078-011    | Southeastern Regional Mental Health        | X                 |
| Nursing Home Facility | Beverly Healthcare Lumberton                     | 1555 Willis Avenue           | Lumberton     | 0        | Robeson | NH0289         | Moderncare of Lumberton, Inc.              | X                 |
| Nursing Home Facility | GlenFlora                                        | 5701 Fayetteville Road       | Lumberton     | 0        | Robeson | NH0533         | North Carolina Cancer Institute, Inc.      | X                 |
| Nursing Home Facility | IHS of Lumberton                                 | 1170 Linkhaw Road            | Lumberton     | 0        | Robeson | NH0472         | IHS Acquisition XXXIII, Inc.               | X                 |

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| Facility Type          | Facility                                     | Address                      | City          | Zip Code | County   | License Number | Licensee                                            | Flood Hazard Zone |
|------------------------|----------------------------------------------|------------------------------|---------------|----------|----------|----------------|-----------------------------------------------------|-------------------|
| Nursing Home Facility  | SunBridge Care & Rehabilitation for Pembroke | 310 East Wardell Drive       | Pembroke      | 0        | Robeson  | NH0518         | Retirement Care Associates, Inc.                    | X                 |
| Nursing Home Facility  | Wesley Pines Retirement Community            | 1000 Wesley Pines Road       | Lumberton     | 0        | Robeson  | NH0240         | The United Methodist Retirement Homes, Incorporated | X                 |
| Nursing Pool           | Mega Force Staffing                          | P. O. Box 53449              | Fayetteville  | 28305    | Robeson  | NP1513         | The Mega Force Staffing Group, Inc.                 | X                 |
| Cardiac Rehabilitation | Cardiac Rehabilitation Program               | 500 Jefferson Street         | Whiteville    | 28472    | Columbus | CRP0087        | Columbus County Hospital, Inc.                      | X                 |
| Family Care            | Fair Bluff Rest Home #1                      | P O Box 128                  | Lake Waccamaw | 28450    | Columbus | FCL-024-005    | Waterside, Inc.                                     | X                 |
| Family Care            | Fair Bluff Rest Home #2                      | P O Box 128                  | Lake Waccamaw | 28450    | Columbus | FCL-024-006    | Waterside, Inc.                                     | X                 |
| Family Care            | Mt. Olive Family Care Home                   | 305 Jackson Street           | Fairmont      | 28340    | Columbus | FCL-024-002    | Willie E. and Joan P. Spruill                       | X                 |
| Home Care              | American HomePatient                         | 5200 Maryland Way, Suite 400 | Brentwood     | 37027    | Columbus | HC2283         | American HomePatient, Inc.                          | X                 |
| Home Care              | AssistedCare, Inc.                           | PO Box 7665                  | Wilmington    | 28406    | Columbus | HC2132         | AssistedCare, Inc.                                  | X                 |
| Home Care              | Assisting Angels, Inc.                       | P.O. Box 673                 | Whiteville    | 28472    | Columbus | HC2192         | Assisting Angels, Incorporated                      | X                 |
| Home Care              | Carolinas Home Care Agency, Inc.             | P. O. Box 1723               | Whiteville    | 28472    | Columbus | HC1183         | Carolinas Home Care Agency, Inc.                    | X                 |
| Home Care              | Columbus County Department of Aging          | P O Box 1187                 | Whiteville    | 28472    | Columbus | HC0755         | Columbus County Department of Aging                 | X                 |
| Home Care              | Columbus County Home Health                  | P O Box 810                  | Whiteville    | 28472    | Columbus | HC0492         | Columbus County Health Department                   | X                 |
| Home Care              | Evergreen Health Services, Inc.              | PO Box 425                   | Whiteville    | 28472    | Columbus | HC2037         | Evergreen Behavioral Mangement, Inc.                | AE                |
| Home Care              | Healthkeeperz                                | PO Box 457                   | Whiteville    | 28472    | Columbus | HC2126         | Tender Loving Care Home Health Agency, Inc.         | X                 |
| Home Care              | Heartland Home Care Agency, Inc.             | P. O. Box 494                | Chadbourn     | 28431    | Columbus | HC1562         | Heartland Home Care Agency, Inc.                    | X                 |
| Home Care              | Home Medical Systems, Inc.                   | 1347 South Madison Street    | Whiteville    | 28472    | Columbus | HC1036         | Home Medical System, Inc.                           | X                 |
| Home Care              | Interim HealthCare                           | P. O. Box 2249               | Whiteville    | 0        | Columbus | HC0209         | Interim HealthCare of the Eastern Carolinas, Inc.   | X                 |

## Vulnerability Assessment

| Facility Type       | Facility                                          | Address                    | City        | Zip Code | County   | License Number | Licensee                                  | Flood Hazard Zone |
|---------------------|---------------------------------------------------|----------------------------|-------------|----------|----------|----------------|-------------------------------------------|-------------------|
| Home Care           | Liberty Home Care                                 | 46 McNeill Plaza           | Whiteville  | 28472    | Columbus | HC0320         | Liberty Home Care                         | X                 |
| Home Care           | Liberty Medical Specialties, Inc.                 | P. O. Box 339              | Whiteville  | 28472    | Columbus | HC1256         | Liberty Medical Specialties, Inc.         | X                 |
| Home Care           | New Directions Home Health Care                   | PO Box 1442                | Whiteville  | 28472    | Columbus | HC2120         | New Directions Home Health Care           | X                 |
| Home Care           | Palliative Care Center of Lower Cape Fear Hospice | 725-A Wellington Avenue    | Wilmington  | 28401    | Columbus | HC2122         | Lower Cape Fear Hospice, Inc.             | X                 |
| Home Care           | Priority Home Care Agency, Inc.                   | 3586 Andrew Jackson Hwy SW | Chadbourn   | 28431    | Columbus | HC1937         | Priority Home Care Agency                 | X                 |
| Home Care           | Twin States' Helping Hands                        | 808 Smyrna Road            | Whiteville  | 28472    | Columbus | HC2200         | Cynthia W. Price                          | X                 |
| Home Care           | Well Care Health Services, Inc.                   | 112 Washington Street      | Whiteville  | 28472    | Columbus | HC1273         | Well Care Health Services, Inc.           | X                 |
| Home For The Aged   | Pinedale Residential Center of Tabor City         | P O Box 95                 | Tabor City  | 28463    | Columbus | HAL-024-003    | Columbus County Adult Care, LLC           | X                 |
| Home For The Aged   | The Meadows of Lake Waccamaw                      | PO Box 1321                | Kinston     | 28501    | Columbus | HAL-024-007    | The Meadows of Lake Waccamaw              | X                 |
| Hospice             | Carolina Hospice and Palliative Care              | 30 McNeil Plaza            | Whiteville  | 28472    | Columbus | HOS2007        | Carolina Hospice and Palliative Care, LLC | X                 |
| Hospice             | Lower Cape Fear Hospice, Inc.                     | 725-A Wellington Avenue    | Wilmington, | 0        | Columbus | HOS0417        | Lower Cape Fear Hospice, Incorporated     | X                 |
| Hospital            | Columbus County Hospital, Inc.                    | 500 Jefferson St           | Whiteville  | 28472    | Columbus | H0045          | Columbus County Hospital, Inc.            | X                 |
| Mental Health Homes | Bill Parker Day Activity Center                   | 801 Wilson Street          | Whiteville  | 28472    | Columbus | MHL-024-022    | Community Innovations, Inc.               | X                 |
| Mental Health Homes | Bridgeton Place                                   | PO Box 786                 | Whiteville  | 28472    | Columbus | MHL-024-017    | Columbus Group Homes, Inc.                | X                 |
| Mental Health Homes | Burkhead Street                                   | 801 Wilson Street          | Whiteville  | 28472    | Columbus | MHL-024-044    | Community Innovations, Inc.               | X                 |
| Mental Health Homes | Carroll House                                     | P.O. Box 786               | Whiteville  | 28472    | Columbus | MHL-024-014    | Columbus Group Homes, Inc.                | X                 |



## Vulnerability Assessment

| Facility Type       | Facility                               | Address                           | City         | Zip Code | County   | License Number | Licensee                                         | Flood Hazard Zone |
|---------------------|----------------------------------------|-----------------------------------|--------------|----------|----------|----------------|--------------------------------------------------|-------------------|
| Mental Health Homes | Coburn House                           | 213 S. Madison Street, Suite 100  | Whiteville   | 28472    | Columbus | MHL-024-033    | Southeastern Regional Area MH/DD/SAS Authority   | X                 |
| Mental Health Homes | Columbus House                         | PO Box 786                        | Whiteville   | 28472    | Columbus | MHL-024-015    | Columbus Group Homes, Inc.                       | X                 |
| Mental Health Homes | Columbus Industries                    | 207 W. Walter Street/P.O. Box 563 | Whiteville   | 28472    | Columbus | MHL-024-025    | Columbus Co. Industries/Southeastern Regional MH | X                 |
| Mental Health Homes | David and David House                  | 801 Wilson Street                 | Whiteville   | 28472    | Columbus | MHL-024-035    | Community Innovations, Inc.                      | X                 |
| Mental Health Homes | Deerfield Residential                  | 801 Wilson Street                 | Whiteville   | 28472    | Columbus | MHL-024-036    | Community Innovations, Inc.                      | X                 |
| Mental Health Homes | Evergreen Health Services              | PO Box 425                        | Whiteville   | 28472    | Columbus | MHL-024-049    | Evergreen Behavioral Management, Inc.            | AE                |
| Mental Health Homes | Fair Bluff Residential                 | 801 Wilson Street                 | Whiteville   | 28472    | Columbus | MHL-024-041    | Community Innovations, Inc.                      | X                 |
| Mental Health Homes | Goremont                               | 11337 Joe Brown Hwy South         | Tabor City   | 28403    | Columbus | MHL-024-026    | The Asbury Homes, Inc.                           | X                 |
| Mental Health Homes | GP Road                                | 2838 Georgia Pacific Rd.          | Whiteville   | 28472    | Columbus | MHL-024-043    | Community Innovations, Inc.                      | X                 |
| Mental Health Homes | Guardian Light, Inc.                   | PO Box 1877                       | Whiteville   | 28472    | Columbus | MHL-024-056    | Robertha Powers                                  | X                 |
| Mental Health Homes | Harper Home                            | 801 Wilson Street                 | Whiteville   | 28472    | Columbus | MHL-024-046    | Community Innovations, Inc.                      | X                 |
| Mental Health Homes | Home of Hope                           | 2873 Georgia Pacific Road         | Whiteville   | 28472    | Columbus | MHL-024-051    | Doris Faye Redwine                               | X                 |
| Mental Health Homes | Jean Street                            | 801 Wilson Street                 | Whiteville   | 28472    | Columbus | MHL-024-013    | Community Innovations, Inc.                      | AE                |
| Mental Health Homes | Lee Street Residential                 | 801 Wilson Street                 | Whiteville   | 28472    | Columbus | MHL-024-039    | Community Innovations, Inc.                      | X                 |
| Mental Health Homes | Riverside Residential                  | 801 Wilson Street                 | Whiteville   | 28439    | Columbus | MHL-024-021    | Community Innovations, Inc.                      | X                 |
| Mental Health Homes | Roseview Home for Children             | PO Box 1852                       | Fayetteville | 28302    | Columbus | MHL-024-052    | Woodbridge Alternative, Inc.                     | X                 |
| Mental Health Homes | Rouse Counseling & Consulting Services | 805 North Franklin St. Ofc.# 208  | Whiteville   | 28472    | Columbus | MHL-024-053    | Rickie G. Rouse                                  | X                 |

## Vulnerability Assessment

| Facility Type         | Facility                                            | Address                   | City          | Zip Code | County   | License Number | Licensee                                          | Flood Hazard Zone |
|-----------------------|-----------------------------------------------------|---------------------------|---------------|----------|----------|----------------|---------------------------------------------------|-------------------|
| Mental Health Homes   | Southeastern Community Support Center               | 801 Wilson Street         | Whiteville    | 28472    | Columbus | MHL-024-029    | Community Innovations, Inc.                       | AE                |
| Mental Health Homes   | Southeastern Regional MH/DD/SAS Columbus Center     | 306 Jefferson Street      | Whiteville    | 28472    | Columbus | MHL-024-005    | Southeastern Regional Area MH/DD/SAS Authority    | X                 |
| Mental Health Homes   | Southwood                                           | 801 Wilson Street         | Whiteville    | 28472    | Columbus | MHL-024-018    | Community Innovations, Inc.                       | X                 |
| Mental Health Homes   | Stanley Home                                        | P.O. Box 963              | Lumberton     | 28358    | Columbus | MHL-024-002    | Ben and Lottie Stanley                            | X                 |
| Mental Health Homes   | Strawberry House                                    | 801 Wilson Street         | Whiteville    | 28472    | Columbus | MHL-024-019    | Community Innovations, Inc.                       | X                 |
| Mental Health Homes   | The Franklin Street House                           | PO Box 425                | Whiteville    | 28472    | Columbus | MHL-024-054    | Evergreen Behavioral Management                   | X                 |
| Mental Health Homes   | The Gore House                                      | PO Box 425                | Whiteville    | 28472    | Columbus | MHL-024-055    | Evergreen Behavioral Management                   | X                 |
| Mental Health Homes   | Wilmington Treatment Center -Outpatient Srv. Whitev | 805 N. Franklin Street    | Whiteville    | 28472    | Columbus | MHL-024-038    | Wilmington Treatment Center, Inc.                 | X                 |
| Nursing Home Facility | Liberty Commons Nursing and Rehab Columbus          | 1402 Pinckney Street      | Whiteville    | 28472    | Columbus | NH0283         | Century Care Center, Inc.                         | X                 |
| Nursing Home Facilit  | Premier Living and Rehab Center                     | 106 Cameron Street        | Lake Waccamaw | 0        | Columbus | NH0246         | Premier Living and Rehab Center                   | X                 |
| Nursing Home Facility | Shoreland Health Care and Retirement Center, Inc.   | 200 Flowers-Pridgen Drive | Whiteville    | 0        | Columbus | NH0510         | Shoreland Health Care and Retirement Center, Inc. | X                 |
| Nursing Pool          | Home Care Plus, P.A.                                | P O Box 512               | Whiteville    | 28472    | Columbus | NP0883         | Home Care Plus, P.A.                              | X                 |
| Nursing Pool          | Liberty Nursing Services, LLC                       | 30 McNeil Plaza           | Whiteville    | 28472    | Columbus | NP2095         | Liberty Nursing Services, LLC                     | X                 |
| Family Care           | A & C Family Care                                   | 3053 Burney Road          | Bladenboro    | 28320    | Bladen   | FCL-009-020    | Angela Watts Mclean                               | X                 |
| Family Care           | Bridgers Family Care Home                           | 19 Poe Elkins Road        | Clarkton      | 28433    | Bladen   | FCL-009-018    | Betty L. Bridgers                                 | X                 |
| Family Care           | Canady Home Care                                    | P. O. Box 674             | Elizabethton  | 28337    | Bladen   | FCL-009-002    | CFC/SLI Canady Family Care                        | X                 |
| Family Care           | Eastland Home                                       | PO Box 152                | Tar Heel      | 28392    | Bladen   | FCL-009-004    | Bowen L. Blackwell                                | X                 |
| Family Care           | McLean Family Care Home                             | 83 Esterville Road        | Elizabethton  | 28337    | Bladen   | FCL-009-005    | Esther A. McLean                                  | X                 |

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| Facility Type     | Facility                                          | Address                   | City          | Zip Code | County | License Number | Licensee                                          | Flood Hazard Zone |
|-------------------|---------------------------------------------------|---------------------------|---------------|----------|--------|----------------|---------------------------------------------------|-------------------|
| Family Care       | McLean Family Care Home #2                        | 83 Estherville Road       | Elizabethtown | 28337    | Bladen | FCL-009-006    | Esther A. McLean                                  | X                 |
| Family Care       | McLean Family Care Home #3                        | 83 Esterville Road        | Elizabethtown | 28337    | Bladen | FCL-009-007    | Esther McLean                                     | X                 |
| Family Care       | Oak Grove Family Care Home                        | P.O. Box 772              | Bladenboro    | 28320    | Bladen | FCL-009-008    | Evelyn Todd                                       | X                 |
| Family Care       | Oak Grove Family Care Home #2                     | P O Box 772               | Bladenboro    | 28320    | Bladen | FCL-009-017    | Pamela Ward                                       | X                 |
| Family Care       | Sassafras Family Care Home                        | 659 Sassafras Road        | Bladenboro    | 28320    | Bladen | FCL-009-014    | Rosalind Todd                                     | X                 |
| Home Care         | AmeriCare                                         | 1302-A South 16th Street  | Wilmington    | 28403    | Bladen | HC1336         | AmeriCare of N. C., Inc.                          | X                 |
| Home Care         | AssistedCare, Inc.                                | P. O. Box 7665            | Wilmington,   | 28337    | Bladen | HC1431         | AssistedCare, Inc.                                | X                 |
| Home Care         | BJ Professional Services, Inc.                    | 1206 Twisted Hickory Road | Elizabethtown | 28337    | Bladen | HC1580         | BJ Professional Services, Inc.                    | X                 |
| Home Care         | Bladen County Home Health Agency                  | P O Box 189               | Elizabethtown | 28337    | Bladen | HC0481         | Bladen County Home Health Agency                  | X                 |
| Home Care         | Health Care Connections Home Care                 | P.O. Box 777              | Reaford       | 28320    | Bladen | HC2259         | Health Care Connections, Inc.                     | X                 |
| Home Care         | Interim HealthCare                                | P. O. Box 2249            | Whiteville    | 28472    | Bladen | HC0920         | Interim HealthCare of the Eastern Carolinas, Inc. | X                 |
| Home Care         | Palliative Care Center of Lower Cape Fear Hospice | 725-A Wellington Avenue   | Wilmington    | 28337    | Bladen | HC2123         | Lower Cape Fear Hospice, Inc.                     | X                 |
| Home Care         | PSA Healthcare                                    | 310 Technology Parkway    | Norcross      | 30092    | Bladen | HC0593         | Pediatric Services of America, Inc.               | X                 |
| Home Care         | Southeastern Personal Care                        | PO Box 425                | Elizabethtown | 28337    | Bladen | HC0534         | Southeastern Regional Medical Center              | X                 |
| Home For The Aged | Bladen Lakes Residential Care                     | P. O. Box 17056           | Asheville     | 28816    | Bladen | HAL-009-003    | Southern Heritage, Inc.                           | X                 |
| Home For The Aged | Cape Fear Manor                                   | P. O. Box 489             | Clarkton      | 28433    | Bladen | HAL-009-001    | Cape Fear Manor, Inc.                             | X                 |
| Hospice           | Community Home Care & Hospice                     | 5301 Morganton Road       | Fayetteville  | 28314    | Bladen | HOS1945        | Carrolton Home Care, Inc.                         | X                 |
| Hospice           | Lower Cape Fear Hospice, Inc.                     | 725-A Wellington Avenue   | Wilmington    | 0        | Bladen | HOS0415        | Lower Cape Fear Hospice, Inc.                     | X                 |

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| Facility Type         | Facility                                           | Address            | City          | Zip Code | County | License Number | Licensee                            | Flood Hazard Zone |
|-----------------------|----------------------------------------------------|--------------------|---------------|----------|--------|----------------|-------------------------------------|-------------------|
| Hospital              | Bladen County Hospital                             | P O Box 398        | Elizabethtown | 28337    | Bladen | H0154          | County of Bladen                    | X                 |
| Mental Health Homes   | Bladen County Group Home I (Millbranch)            | P.O. Box 963       | Lumberton     | 28359    | Bladen | MHL-009-012    | Family Alternatives, Inc.           | X                 |
| Mental Health Homes   | Bladen County Group Home II (Riverwood)            | P.O. Box 963       | Lumberton     | 28539    | Bladen | MHL-009-013    | Family Alternatives, Inc.           | X                 |
| Mental Health Homes   | Bladen Opportunities Unlimited                     | PO Box 2859        | Elizabethtown | 28337    | Bladen | MHL-009-004    | Southeastern Regional MH/DD/SAS     | X                 |
| Mental Health Homes   | Cypress House                                      | PO Box 2165        | Elizabethtown | 28337    | Bladen | MHL-009-007    | Southeastern Regional Mental Health | X                 |
| Mental Health Homes   | Midlake Residential                                | 801 Wilson Street  | Whiteville    | 28472    | Bladen | MHL-009-010    | P.C. Contract Management Services   | AE                |
| Mental Health Homes   | Northridge Residential                             | 801 Wilson Street  | Whiteville    | 28472    | Bladen | MHL-009-009    | Community Innovations, Inc.         | X                 |
| Mental Health Homes   | Southeastern Regional MH/DD/SAS Center-Bladen Coun | P.O. Box 1176      | Elizabethtown | 28337    | Bladen | MHL-009-005    | Southeastern Regional MH/DD/SAS     | X                 |
| Nursing Home Facility | Elizabethtown Nursing Center, Inc.                 | 208 Mercer Road    | Elizabethtown | 0        | Bladen | NH0328         | Elizabethtown Nursing Center, Inc.  | X                 |
| Nursing Home Facility | SunBridge Care & Rehabilitation for Elizabethtown  | 804 Popular Street | Elizabethtown | 28337    | Bladen | NH0420         | Retirement Care Associates, Inc.    | X                 |

Source: GIS Analysis



**Table 6-13** below identifies an expanded count of regional critical facilities by jurisdiction as originally reported through the NCEM Risk Management Tool. These numbers are considered planning estimates and remain subject to change upon future review. The top line of this table also indicates applicable Community Lifeline categories as developed by FEMA. These eight core categories include: (1) Safety and Security; (2) Food, Hydration, and Shelter; (3) Health and Medical; (4) Energy; (5) Communications; (6) Transportation; (7) Hazardous Materials; and (8) Water Systems.

**Table 6-13: Expanded Regional Critical Facility Inventory by FEMA Lifelines**

| FEMA Lifeline <sup>15</sup> | Food           | Comms             | Hazmat    | Shelter      | Comms     | Transportation | Safety   | Safety     | Medical    | Transportation | Energy     | Safety             | Water      | N/A          |
|-----------------------------|----------------|-------------------|-----------|--------------|-----------|----------------|----------|------------|------------|----------------|------------|--------------------|------------|--------------|
| Location                    | Food & Farming | Banking & Finance | Chemical  | Commercial   | Comms     | Manufacturing  | Defense  | Government | Healthcare | Transportation | Energy     | Emergency Services | Water      | Total        |
| <b>Bladen County</b>        |                |                   |           |              |           |                |          |            |            |                |            |                    |            |              |
| Town of Bladenboro          | 63             | 2                 | 8         | 132          | 0         | 15             | 0        | 18         | 6          | 9              | 2          | 2                  | 1          | 258          |
| Town of Clarkton            | 5              | 2                 | 4         | 59           | 0         | 12             | 0        | 11         | 6          | 2              | 0          | 1                  | 1          | 103          |
| Town of Dublin              | 4              | 1                 | 1         | 25           | 0         | 12             | 0        | 5          | 2          | 3              | 0          | 1                  | 0          | 54           |
| Town of East Arcadia        | 6              | 0                 | 0         | 8            | 0         | 2              | 0        | 9          | 0          | 1              | 0          | 1                  | 0          | 27           |
| Town of Elizabethtown       | 26             | 8                 | 12        | 267          | 0         | 62             | 0        | 58         | 27         | 25             | 3          | 4                  | 1          | 493          |
| Town of Tar Heel            | 0              | 1                 | 6         | 16           | 0         | 0              | 0        | 1          | 0          | 0              | 0          | 0                  | 0          | 24           |
| Town of White Lake          | 18             | 0                 | 0         | 160          | 0         | 3              | 0        | 26         | 0          | 0              | 0          | 1                  | 1          | 209          |
| Unincorporated Area         | 2,343          | 0                 | 22        | 714          | 3*        | 221            | 0        | 130        | 23         | 63             | 20*        | 12*                | 15*        | 3,563        |
| <b>Subtotal Bladen</b>      | <b>2,465</b>   | <b>14</b>         | <b>53</b> | <b>1,381</b> | <b>3*</b> | <b>327</b>     | <b>0</b> | <b>258</b> | <b>64</b>  | <b>103</b>     | <b>25*</b> | <b>22*</b>         | <b>19*</b> | <b>4,731</b> |
| <b>Columbus County</b>      |                |                   |           |              |           |                |          |            |            |                |            |                    |            |              |
| City of Whiteville          | 1              | 16                | 0         | 460          | 1         | 6              | 0        | 66         | 44         | 54             | 1          | 5                  | 0          | 654          |
| Town of Boardman            | 0              | 0                 | 0         | 13           | 0         | 1              | 0        | 0          | 0          | 0              | 0          | 0                  | 0          | 14           |
| Town of Bolton              | 0              | 0                 | 0         | 33           | 0         | 3              | 0        | 6          | 0          | 4              | 0          | 1                  | 0          | 47           |
| Town of Brunswick           | 2              | 0                 | 0         | 26           | 0         | 4              | 0        | 28         | 0          | 1              | 0          | 1                  | 0          | 62           |
| Town of Cerro Gordo         | 0              | 0                 | 0         | 17           | 0         | 1              | 0        | 8          | 0          | 0              | 0          | 1                  | 1          | 28           |
| Town of Chadbourn           | 0              | 3                 | 0         | 167          | 0         | 9              | 0        | 14         | 11         | 20             | 0          | 2                  | 0          | 226          |
| Town of Fair Bluff          | 10             | 2                 | 0         | 87           | 0         | 7              | 0        | 6          | 3          | 3              | 0          | 3                  | 0          | 121          |

<sup>15</sup> FEMA Community Lifelines. (2024). <https://www.fema.gov/emergency-managers/practitioners/lifelines>

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| FEMA Lifeline <sup>15</sup> | Food           | Comms             | Hazmat    | Shelter      | Comms     | Transportation | Safety   | Safety     | Medical    | Transportation | Energy    | Safety             | Water     | N/A           |
|-----------------------------|----------------|-------------------|-----------|--------------|-----------|----------------|----------|------------|------------|----------------|-----------|--------------------|-----------|---------------|
| Location                    | Food & Farming | Banking & Finance | Chemical  | Commercial   | Comms     | Manufacturing  | Defense  | Government | Healthcare | Transportation | Energy    | Emergency Services | Water     | Total         |
| Town of Lake Waccamaw       | 1              | 1                 | 0         | 88           | 0         | 4              | 0        | 1          | 5          | 5              | 0         | 2                  | 0         | 107           |
| Town of Sandyfield          | 0              | 0                 | 0         | 14           | 0         | 0              | 0        | 3          | 0          | 0              | 0         | 0                  | 0         | 17            |
| Town of Tabor City          | 5              | 3                 | 0         | 207          | 0         | 22             | 0        | 21         | 3          | 19             | 0         | 2                  | 0         | 282           |
| Unincorporated Area         | 675            | 17                | 2         | 1,121        | 0         | 288            | 0        | 164        | 26         | 137            | 2         | 17                 | 0         | 2,449         |
| <b>Subtotal Columbus</b>    | <b>694</b>     | <b>42</b>         | <b>2</b>  | <b>2,233</b> | <b>1</b>  | <b>345</b>     | <b>0</b> | <b>317</b> | <b>92</b>  | <b>243</b>     | <b>3</b>  | <b>34</b>          | <b>1</b>  | <b>4,007</b>  |
| <b>Robeson County</b>       |                |                   |           |              |           |                |          |            |            |                |           |                    |           |               |
| City of Lumberton           | 26             | 27                | 0         | 1,058        | 0         | 124            | 1        | 144        | 110        | 181            | 9         | 0                  | 5         | 1,685         |
| Town of Fairmont            | 20             | 6                 | 0         | 176          | 0         | 21             | 0        | 13         | 11         | 18             | 1         | 0                  | 0         | 266           |
| Town of Lumber Bridge       | 0              | 0                 | 0         | 10           | 0         | 1              | 0        | 1          | 0          | 2              | 0         | 0                  | 0         | 14            |
| Town of Marietta            | 10             | 0                 | 0         | 3            | 0         | 1              | 0        | 1          | 0          | 0              | 0         | 0                  | 0         | 15            |
| Town of Maxton              | 17             | 1                 | 0         | 106          | 0         | 11             | 0        | 13         | 5          | 9              | 0         | 0                  | 0         | 162           |
| Town of McDonald            | 0              | 0                 | 0         | 5            | 0         | 1              | 0        | 0          | 0          | 0              | 0         | 0                  | 0         | 6             |
| Town of Orrum               | 0              | 0                 | 0         | 5            | 0         | 2              | 0        | 1          | 0          | 0              | 0         | 0                  | 0         | 8             |
| Town of Parkton             | 2              | 0                 | 0         | 30           | 0         | 0              | 0        | 4          | 3          | 8              | 0         | 0                  | 0         | 47            |
| Town of Pembroke            | 39             | 7                 | 0         | 144          | 1         | 10             | 0        | 69         | 19         | 15             | 0         | 0                  | 0         | 305           |
| Town of Proctorville        | 0              | 0                 | 0         | 6            | 0         | 0              | 0        | 1          | 0          | 0              | 0         | 0                  | 0         | 7             |
| Town of Raynham             | 0              | 0                 | 0         | 5            | 0         | 0              | 0        | 1          | 0          | 0              | 0         | 0                  | 0         | 6             |
| Town of Red Springs         | 29             | 5                 | 0         | 184          | 0         | 14             | 0        | 21         | 20         | 40             | 2         | 0                  | 1         | 316           |
| Town of Rennert             | 0              | 0                 | 0         | 15           | 0         | 4              | 0        | 1          | 0          | 0              | 0         | 0                  | 0         | 20            |
| Town of Rowland             | 0              | 2                 | 0         | 79           | 0         | 20             | 0        | 7          | 5          | 5              | 0         | 0                  | 0         | 118           |
| Town of Saint Pauls         | 0              | 5                 | 0         | 161          | 0         | 19             | 0        | 19         | 12         | 26             | 2         | 0                  | 0         | 244           |
| Unincorporated Area         | 3,268          | 1                 | 0         | 1,394        | 4*        | 389            | 0        | 125        | 35         | 201            | 10        | 48*                | 6         | 5,429         |
| <b>Subtotal Robeson</b>     | <b>3,411</b>   | <b>54</b>         | <b>0</b>  | <b>3,381</b> | <b>5*</b> | <b>617</b>     | <b>1</b> | <b>421</b> | <b>220</b> | <b>505</b>     | <b>24</b> | <b>48*</b>         | <b>12</b> | <b>8,699</b>  |
| <b>Total Plan Area</b>      | <b>6,570</b>   | <b>110</b>        | <b>55</b> | <b>6,995</b> | <b>9</b>  | <b>1,289</b>   | <b>1</b> | <b>996</b> | <b>376</b> | <b>851</b>     | <b>52</b> | <b>104</b>         | <b>32</b> | <b>17,386</b> |

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Source: NCEM RMT, Local governments

\*\*Certain facility totals for Bladen County & Robeson County were revised without jurisdictions specified and have been assigned under the “Unincorporated Area” total even if some are municipal facilities. This level of detail will be addressed in future plan updates.

### 6.2.4 Infrastructure

Certain North Carolina Department of Transportation (NCDOT) infrastructure elements as shown in **Table 6-14** were identified for analysis based on flood hazard type. In terms of regional transportation, CSX Transportation and RJ Corman Railroad Company/Carolina Lines (Columbus County) run through the counties of the planning region. General aviation airports include Curtis L. Brown Jr. Field in Elizabethtown (Bladen County), Columbus County Municipal Airport in Whiteville, and Lumberton Municipal Airport in Lumberton (Robeson County). Major roadways serving the region include Interstate 74, Interstate 95, U.S. Route 301, U.S. Route 501, U.S. Route 701, U.S. Route 74, and U.S. Route 76 among various state highways.

**Table 6-14: NCDOT Structures and Flood Hazard Zones<sup>16</sup>**

| County   | Structure Type  | Flood Hazard Type |     |    |    |     |
|----------|-----------------|-------------------|-----|----|----|-----|
|          |                 | A                 | AE  | AH | X  | N/A |
| Bladen   | Bridge          |                   | 59  |    | 22 | 3   |
|          | Cantilever Sign |                   |     |    | 2  |     |
|          | Culvert         |                   | 6   |    | 8  |     |
|          | Pipe            | 1                 | 10  |    | 13 |     |
| Columbus | Bridge          |                   | 135 |    | 28 | 1   |
|          | Culvert         |                   | 21  |    | 6  |     |
|          | Overhead Sign   |                   |     |    | 1  |     |
|          | Pipe            |                   | 20  |    | 15 |     |
| Robeson  | Bridge          |                   | 163 |    | 67 | 1   |
|          | Cantilever Sign |                   |     |    | 2  |     |
|          | Culvert         |                   | 33  |    | 5  |     |
|          | Overhead Sign   |                   |     |    | 19 |     |
|          | Pipe            |                   | 21  | 1  | 1  |     |

Source: NCDOT

Additionally, the FEMA Resilience Analysis & Planning Tool (RAPT) reports as of 2025 that Bladen County contains 3 wastewater treatment plants and 18 power plants<sup>17</sup>, Columbus County contains 4 wastewater treatment plants and 20 power plants, and Robeson County contains 5 wastewater treatment plants and 51 power plants among other regional infrastructure assets. Documentation for the RAPT application and its associated planning information and tools are available online<sup>18</sup>.

### 6.2.5 Historic Properties

Historic property counts including districts, buildings, and other cultural resources as shown in **Table 6-15** were derived from a combination of sources consisting of the National Register of Historic Places (NRHP; administered by the National Park Service) and participating jurisdictions. The subsequent table in this section (**Table 6-16**) shows a related list of preidentified historic properties broken down by type, name, and location, as well as the flood hazard zones that may affect each facility.

<sup>16</sup> NC Department of Transportation [NCDOT]. (2024). GIS Data Layers [Dataset]. In Connect NCDOT. <https://connect.ncdot.gov/resources/gis/Pages/GIS-Data-Layers.aspx>

<sup>17</sup> Bladen County directly reported figures: 19 water wells/treatment plants and 25 power/energy facilities

<sup>18</sup> FEMA RAPT. (2025). <https://www.fema.gov/about/reports-and-data/resilience-analysis-planning-tool>



**Table 6-15: Regional Historic Property Counts<sup>19</sup>**

| County                | Flood Hazard Zone                | Type of Historic Property |          |          |           |          |           |           |          |          |
|-----------------------|----------------------------------|---------------------------|----------|----------|-----------|----------|-----------|-----------|----------|----------|
|                       |                                  | DOE                       | DOEHD    | LHD      | NR        | NRHD     | SL        | SLDOE     | SLDOED   | SLHD     |
| Bladen                | AE                               | 4                         |          |          |           |          |           |           |          |          |
|                       | X                                | 7                         |          |          | 14        |          | 6         | 3         |          | 1        |
|                       | <b>Bladen Total</b>              | <b>11</b>                 |          |          | <b>14</b> |          | <b>6</b>  | <b>3</b>  |          | <b>1</b> |
| Columbus              | 0.2 % Annual Chance Flood Hazard |                           |          |          |           |          |           |           |          |          |
|                       | AE                               |                           |          |          |           |          | 2         |           |          | 1        |
|                       | X                                | 6                         | 1        | 1        | 6         | 1        | 47        | 5         |          | 2        |
| <b>Columbus Total</b> |                                  | <b>6</b>                  | <b>1</b> | <b>1</b> | <b>6</b>  | <b>1</b> | <b>49</b> | <b>5</b>  |          | <b>3</b> |
| Robeson               | 0.2 % Annual Chance Flood Hazard |                           |          |          |           |          |           |           |          |          |
|                       | AE                               |                           | 1        |          |           |          |           |           |          |          |
|                       | AH                               |                           |          |          |           |          |           |           |          |          |
|                       | X                                | 10                        | 2        |          | 20        | 4        | 18        | 2         | 1        | 5        |
| <b>Robeson Total</b>  |                                  | <b>10</b>                 | <b>3</b> |          | <b>20</b> | <b>4</b> | <b>18</b> | <b>2</b>  | <b>1</b> | <b>5</b> |
| <b>Grand Total</b>    |                                  | <b>27</b>                 | <b>4</b> | <b>1</b> | <b>40</b> | <b>5</b> | <b>73</b> | <b>10</b> | <b>1</b> | <b>9</b> |

Source: National Register of Historic Places (NRHP)

**DOE**= Individual "Determination of Eligibility" in environmental review work and eligible under Section 106 of the National Historic Preservation Act of 1966, **DOEHD**= Center Point of a Determined Eligible Historic District, **LHD** = Center point of a local historic district, **NR**= Boundary of National Register Historic District or Individually Listed Resource, **NRHD**= National Register Historic District, **SL**= Places that the National Register Advisory Committee has identified as potentially eligible for the Register, **SLDOE**= On the Study List and Determined Eligible, **SLDOEHD**= Center point of district that is both on the Study List and Determined Eligible, **SLHD**= Center point for Study List historic district.

**Table 6-16: Regional Historic Properties and Flood Hazard Zones<sup>20</sup>**

| Site ID | NCHP Status | Site Name                                     | Site Description                           | County | City        | Flood Hazard Zone |
|---------|-------------|-----------------------------------------------|--------------------------------------------|--------|-------------|-------------------|
| BL0238  | SL          | Shipman House                                 | 1842 Greek Revival house                   | Bladen | Abbotts     | X                 |
| BL0265  | DOE         | Farm                                          |                                            | Bladen | Bethel      | X                 |
| BL0262  | SL          | Bladenboro Farm Life School                   |                                            | Bladen | Bladenboro  | X                 |
| BL0010  | DOE         | Annie Wooten McAuley House (Approximate site) |                                            | Bladen | Brown Marsh | X                 |
| BL0001  | NR          | Brown Marsh Presbyterian Church               | 1828 frame church                          | Bladen | Brown Marsh | X                 |
| BL0033  | NR          | Clarkton Depot                                | 1915 frame depot                           | Bladen | Brown Marsh | X                 |
| BL0023  | NR          | John Hector Clark House                       | 1865 1-story, board and batten frame house | Bladen | Brown Marsh | X                 |

<sup>19</sup> North Carolina Historic Preservation Office & North Carolina Department of Natural and Cultural Resources. (2019). HPOWEB 2.0 (2.0) [Dataset]. NC Historic Preservation Office.

<https://nc.maps.arcgis.com/home/item.html?id=d2d04d8d7e03403f889419526e682529>

<sup>20</sup> North Carolina Historic Preservation Office & North Carolina Department of Natural and Cultural Resources. (2019). HPOWEB 2.0 (2.0) [Dataset]. NC Historic Preservation Office.

<https://nc.maps.arcgis.com/home/item.html?id=d2d04d8d7e03403f889419526e682529>

| Site ID | NCHP Status | Site Name                                            | Site Description                                                              | County | City          | Flood Hazard Zone |
|---------|-------------|------------------------------------------------------|-------------------------------------------------------------------------------|--------|---------------|-------------------|
| BL0162  | SLHD        | Clarkton Historic District                           | c. 1866-1926 RR, commercial, and residential                                  | Bladen | Brown Marsh   | X                 |
| BL0154  | DOE         | Carvers Creek AME Zion Church and Cemetery           | c. 1909 1-story front gable aisled nave Gothic Revival Church w/ brick veneer | Bladen | Carvers Creek | X                 |
| BL0233  | DOE         | Spring Hill (Robeson-Stevens House)                  | 1839 1-story, hip-roof, frame Greek Revival House w/barn                      | Bladen | Carvers Creek | X                 |
| BL0389  | DOE         | Bridge No. 17                                        | 1957-1958 prestressed concrete stringer/multi-beam (DOT 080017)               | Bladen | Carvers Creek | AE                |
| BL0235  | DOE         | Cape Fear Lock & Dam #1                              | 1915 dam                                                                      | Bladen | Carvers Creek | AE                |
| BL0003  | NR          | Oakland Plantation                                   | 18th C. Georgian 2-story brick house                                          | Bladen | Carvers Creek | X                 |
| BL0153  | NR          | Carvers Creek Methodist Church                       | 1859 1-story Greek Revival frame church                                       | Bladen | Carvers Creek | X                 |
| BL0264  | SLDOE       | East Arcadia Elementary School                       | 1920s frame 3-room school based on Rosenwald plan                             | Bladen | Carvers Creek | X                 |
| BL0141  | NR          | South River Presbyterian Church                      | 1855 Greek Revival frame church                                               | Bladen | Cypress Creek | X                 |
| BL0244  | SL          | Stewart-Cromartie-Liles House                        | Late 18th C. Federal house                                                    | Bladen | Cypress Creek | X                 |
| BL0215  | DOE         | Thomas McDowell House                                | c. 1850 house with 2-story porch                                              | Bladen | Elizabethtown | X                 |
| BL0229  | DOE         | Porter-Allen House                                   | c. 1850 Greek Revival house                                                   | Bladen | Elizabethtown | X                 |
| BL0266  | DOE         | Elizabethtown National Guard Armory                  | 1963 Alt-A Type Armory                                                        | Bladen | Elizabethtown | X                 |
| BL0260  | DOE         | Cape Fear Lock & Dam # 2                             | 1917 dam                                                                      | Bladen | Elizabethtown | AE                |
| BL0140  | NR          | Trinity Methodist Church                             | 1848 gable front frame church                                                 | Bladen | Elizabethtown | X                 |
| BL0263  | NR          | Bladen County Training School (Elizabethtown School) | c. 1927 brick-veneered 10-room Rosenwald School                               | Bladen | Elizabethtown | X                 |
| BL0212  | SL          | John McDowell House                                  | 1854 frame Greek Revival house                                                | Bladen | Elizabethtown | X                 |
| BL0259  | SL          | C.W. Greene House                                    | 1938 2 1/2-story frame house with elaborate windows                           | Bladen | Elizabethtown | X                 |
| BL0252  | SLDOE       | Sheriff W. H. White House (Approximate site)         | c. 1851 log house                                                             | Bladen | Elizabethtown | X                 |
| BL0206  | SLDOE       | McDonald-Russ House                                  | c. 1860 1-story side gable Greek Revival house                                | Bladen | Elizabethtown | X                 |
| BL0261  | DOE         | William O. Huske Lock & Dam                          | 1934 dam                                                                      | Bladen | Hollow        | AE                |
| BL0243  | NR          | Gilmore-Patterson Farm                               | 1868 & later farm                                                             | Bladen | Hollow        | X                 |

| Site ID | NCHP Status | Site Name                                         | Site Description                                                                                      | County   | City         | Flood Hazard Zone |
|---------|-------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------|--------------|-------------------|
| BL0004  | NR          | Purdie House and Purdie Methodist Church          | c. 1845 Greek Revival frame chapel                                                                    | Bladen   | Hollow       | X                 |
| BL0006  | NR          | Walnut Grove                                      | 1850 Greek Revival 2-story frame house                                                                | Bladen   | Hollow       | X                 |
| BL0139  | NR          | Desserette                                        | 1840s Greek Revival 2-story frame house                                                               | Bladen   | White Oak    | X                 |
| BL0002  | NR          | Harmony Hall                                      | 18th C. Georgian 2-story frame house                                                                  | Bladen   | White Oak    | X                 |
| BL0138  | NR          | Mount Horeb Presbyterian Church and Cemetery      | 1845 1-story temple form frame church                                                                 | Bladen   | Whites Creek | X                 |
| BL0256  | SL          | White Plains Presbyterian Church                  | 1851 frame front gable church with steeple                                                            | Bladen   | Whites Creek | X                 |
| CB0024  | SL          | Hallsboro School                                  | 1927 Colonial Revival                                                                                 | Columbus | Bogue        | X                 |
| CB0026  | SL          | Pierce and Company Store I                        | 19th-20th C. Trad/Vern                                                                                | Columbus | Bogue        | X                 |
| CB0025  | SL          | Pierce and Company Store II                       | 19th-20th C. Trad/Vern                                                                                | Columbus | Bogue        | X                 |
| CB0021  | SL          | Henry Jackson Smith House                         | 1856 Federal/Greek Revival                                                                            | Columbus | Bogue        | X                 |
| CB0029  | SL          | Wyche House-Wychewood                             | 1882 Queen Anne                                                                                       | Columbus | Bogue        | X                 |
| CB0028  | SL          | Hallsboro School and Teacherage                   |                                                                                                       | Columbus | Bogue        | X                 |
| CB0030  | SL          | Smith-Powell House                                | 1806 Federal                                                                                          | Columbus | Bogue        | X                 |
| CB0092  | SL          | Gore House                                        | 19th-20th C. Trad/Vern                                                                                | Columbus | Bug Hill     | X                 |
| CB0056  | SL          | Prokos House                                      |                                                                                                       | Columbus | Cerro Gordo  | X                 |
| CB0004  | SL          | Cerro Gordo Colored School                        |                                                                                                       | Columbus | Cerro Gordo  | X                 |
| CB0067  | SLDOE       | Cerro Gordo School                                | 1926 1-story Classical Revival brick school w/ hip roof auditorium surrounded by flat roof classrooms | Columbus | Cerro Gordo  | X                 |
| CB1366  | NR          | Westside High School                              | 1948 1-story flat roof brick Miscellaneous Modernist school for Black children                        | Columbus | Chadbourn    | X                 |
| CB0117  | SL          | Atlantic Coast Line Passenger Station (Chadbourn) |                                                                                                       | Columbus | Chadbourn    | X                 |
| CB0118  | SL          | Atlantic Coast Line Freight Depot                 |                                                                                                       | Columbus | Chadbourn    | X                 |
| CB0121  | SL          | Robert E. Lee Brown House (Approximate site)      |                                                                                                       | Columbus | Chadbourn    | X                 |
| CB0125  | SL          | Chadbourn Commercial Block                        |                                                                                                       | Columbus | Chadbourn    | X                 |
| CB0126  | SL          | Chadbourn Jail and Town Office                    |                                                                                                       | Columbus | Chadbourn    | X                 |
| CB1368  | SL          | WVOE Radio Station                                |                                                                                                       | Columbus | Chadbourn    | AE                |

| Site ID | NCHP Status | Site Name                                      | Site Description                                                                                      | County   | City           | Flood Hazard Zone |
|---------|-------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------|----------------|-------------------|
| CB0119  | SL          | Herman Blake House and Farm (Approximate site) |                                                                                                       | Columbus | Chadbourn      | X                 |
| CB0120  | SL          | Joseph A. Brown House (Approximate site)       |                                                                                                       | Columbus | Chadbourn      | X                 |
| CB0131  | DOEH D      | Fair Bluff Historic District                   |                                                                                                       | Columbus | Fair Bluff     | X                 |
| CB0002  | NR          | Powell House (Trading Post)                    | 1803 1-story frame building                                                                           | Columbus | Fair Bluff     | X                 |
| CB0139  | SL          | Augustus Smith House                           |                                                                                                       | Columbus | Fair Bluff     | X                 |
| CB0075  | SL          | Fronis Strickland House                        | c. 1916-1930 bungalow                                                                                 | Columbus | Fair Bluff     | X                 |
| CB0089  | DOE         | Hill General Store                             | Crit C; ER 02-9360; CB Co Rpt #290                                                                    | Columbus | Lees           | X                 |
| CB0148  | DOE         | Old Dock Elementary School                     | 1936/1945 Colonial Revival School                                                                     | Columbus | Lees           | X                 |
| CB0144  | SLDOE       | Calvin C. Gore House                           |                                                                                                       | Columbus | Lees           | X                 |
| CB0182  | DOE         | Christ the King Catholic Church                | 1950 1-story front-gable brick-veneer Modernist church                                                | Columbus | Ransom         | X                 |
| CB0184  | DOE         | Acme Presbyterian Church                       | 1954 A-frame, steel, brick & concrete-block Modernist church                                          | Columbus | Ransom         | X                 |
| CB0190  | DOE         | Wesley United Methodist Church                 | 1958 1-story front gable brick-veneer concrete block Modernist church                                 | Columbus | Ransom         | X                 |
| CB0110  | NR          | Black Rock Plantation House                    | c. 1840 2-story side gable frame Federal I-house                                                      | Columbus | Ransom         | X                 |
| CB0006  | SL          | Acme-Delco School                              | 1926 Colonial Revival                                                                                 | Columbus | Ransom         | X                 |
| CB0007  | SL          | Acme Store                                     | 19th-20th C. Trad/Vern                                                                                | Columbus | Ransom         | X                 |
| CB0011  | SLDOE       | Weyman Methodist Church                        | 1886 1-story cross gable frame T-plan church                                                          | Columbus | Ransom         | X                 |
| CB1365  | DOE         | Tabor City Elementary School                   | 1927 1-story Classical Revival brick school w/ hip roof auditorium surrounded by flat roof classrooms | Columbus | South Williams | X                 |
| CB1364  | LHD         | Tabor City Commercial Local Historic District  | c. 1908-1963 commercial hub of logging and agricultural products                                      | Columbus | South Williams | X                 |
| CB0146  | NRHD        | Tabor City Commercial Historic District        | c. 1908-1963 commercial hub of logging and agricultural products                                      | Columbus | South Williams | X                 |
| CB0051  | SL          | Benton House                                   |                                                                                                       | Columbus | Tatums         | X                 |
| CB0050  | SL          | Ashley Benton House                            | 1866-1885 Trad/Vern                                                                                   | Columbus | Tatums         | X                 |
| CB0049  | SL          | Caulder House                                  | c. 1826-1865 Greek Revival                                                                            | Columbus | Tatums         | X                 |
| CB0003  | NR          | Lake Waccamaw Depot                            | 1900 board/batten 1-story frame depot                                                                 | Columbus | Waccamaw       | X                 |
| CB0016  | SL          | Mt. Zion AME Church                            | 1913 Trad/Vern                                                                                        | Columbus | Waccamaw       | X                 |
| CB0018  | SL          | Stephens House                                 |                                                                                                       | Columbus | Waccamaw       | X                 |



| Site ID | NCHP Status | Site Name                                      | Site Description                                                                                                              | County   | City          | Flood Hazard Zone |
|---------|-------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------|---------------|-------------------|
| CB0036  | SL          | James Samuel Elkins House                      | c. 1826-1885 Greek Revival                                                                                                    | Columbus | Welch Creek   | X                 |
| CB0042  | SL          | Wooten House                                   |                                                                                                                               | Columbus | Western Prong | X                 |
| CB0001  | NR          | Columbus County Courthouse                     | 1809 Neoclassical Revival 2-story                                                                                             | Columbus | Whiteville    | X                 |
| CB0130  | NR          | Dr. Neil M. and Nancy Elizabeth Culbreth House | c. 1880 frame 2-story Italianate house                                                                                        | Columbus | Whiteville    | X                 |
| CB0031  | SL          | Jackson Brothers Lumber Company Office         | 1925 2-story 5-bay brick building w/ quoins, beltcourse, exterior end chimney & several later modifications                   | Columbus | Whiteville    | X                 |
| CB0032  | SL          | Thompson House                                 | 19th-20th C. Trad/Vern                                                                                                        | Columbus | Whiteville    | X                 |
| CB0033  | SL          | Dan Prevatte House                             | c. 1916-1930 1-story flat roof irregularly-massed brick Craftsman w/ crenelated parapet & large additions                     | Columbus | Whiteville    | X                 |
| CB0141  | SL          | White-Baldwin House                            | c. 1823; 1890 2-story side gable frame double pile Italianate house w/ weatherboard siding                                    | Columbus | Whiteville    | X                 |
| CB0142  | SL          | Whiteville Atlantic Coast Line Railroad Depot  | c. 1903 1-story hip roof brick building w/ blind gabled dormers & brackets supporting the wide roof                           | Columbus | Whiteville    | X                 |
| CB0145  | SL          | Bank of Whiteville                             | 1906 2-story parapet roof brick Classical Revival building w/ smooth stucco finish & faux marble trim                         | Columbus | Whiteville    | X                 |
| CB0310  | SL          | St. James African Methodist Episcopal Church   | c. 1915 1-story front gable concrete masonry unit Gothic Revival church                                                       | Columbus | Whiteville    | AE                |
| CB0138  | SL          | Oscar and Annie Pinder High House              | c. 1914 2-story 3-bay double pile hip roof frame Colonial Revival house w/ 1-story hip roof porch supported by Tuscan columns | Columbus | Whiteville    | X                 |
| CB0387  | SL          | Richard Clay and Ella Burwell Carson House     | c. 1915 1 1/2-story hip roof frame Craftsman-Colonial Revival bungalow w/ wood shingle siding                                 | Columbus | Whiteville    | X                 |
| CB0375  | SL          | John Albert and Martha Cameron Guiton House    | c. 1950 1-story front gable brick Colonial Revival house                                                                      | Columbus | Whiteville    | X                 |
| CB0610  | SL          | Belton S. and Christine W. Thompson House      | c. 1956 2-story side gable brick Colonial Revival house                                                                       | Columbus | Whiteville    | X                 |

| Site ID | NCHP Status | Site Name                                        | Site Description                                                                                    | County   | City       | Flood Hazard Zone |
|---------|-------------|--------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------|------------|-------------------|
| CB1159  | SL          | Nancy Mercer Smith House                         | 1963 2-story hip roof French Eclectic brick house                                                   | Columbus | Whiteville | X                 |
| CB1160  | SL          | Dr. Samuel H. and Betty Thomas Whitehead House   | 1968 1-story cross gable brick Mission/Spanish Colonial Revival Ranch                               | Columbus | Whiteville | X                 |
| CB0502  | SL          | McKenzie Mortuary                                | 1940 1 1/2-story cross gable brick Tudor Revival building                                           | Columbus | Whiteville | X                 |
| CB1163  | SL          | Peacock Funeral Home                             | c. 1964 1-story front gable brick Miscellaneous Modernist building                                  | Columbus | Whiteville | X                 |
| CB0622  | SL          | Waccamaw Bank & Trust Headquarters               | 1967-1969 3-story flat roof steel frame & concrete Miscellaneous Modernist building                 | Columbus | Whiteville | X                 |
| CB1166  | SL          | Floyd Johnson Health Center                      | 1956 1-story flat roof brick Miscellaneous Modernist building                                       | Columbus | Whiteville | X                 |
| CB0732  | SL          | St. Mark African Methodist Episcopal Zion Church | 1915; 1974 1-story front gable brick aisled nave Gothic Revival church                              | Columbus | Whiteville | X                 |
| CB0614  | SL          | Grace Episcopal Church                           | 1959 1-story front gable brick aisled nave Miscellaneous Modernist church                           | Columbus | Whiteville | X                 |
| CB0107  | SL          | Dr. Isaac and Margaret McDaniel Jackson House    | c. 1890 2-story double pile hip roof frame Queen Anne-Colonial Revival house w/ weatherboard siding | Columbus | Whiteville | X                 |
| CB0203  | SLDOE       | Beth Israel Center (Whiteville Hebrew Center)    | 1959 1-story flat roof concrete block Modernist building w/ brick veneer                            | Columbus | Whiteville | X                 |
| CB0204  | SLDOE       | Titus and Mary Fae McMillan Williamson House     | c. 1954 1-story flat roof concrete block Modernist house w/ brick veneer                            | Columbus | Whiteville | X                 |
| CB1153  | SLHD        | Principals Row Historic District                 |                                                                                                     | Columbus | Whiteville | X                 |
| CB1162  | SLHD        | Richardson Millpond Historic District            | c. 1850, 1926, 1957                                                                                 | Columbus | Whiteville | AE                |
| CB1158  | SLHD        | Whiteville Historic District                     |                                                                                                     | Columbus | Whiteville | X                 |
| RB0482  | DOE         | Evander Pittman House                            | c. 1850 1 1/2-story frame Italianate/Greek Revival house                                            | Robeson  | Back Swamp | X                 |
| RB0725  | DOE         | Hilly Branch Baptist Church                      | 1952 2-story cruciform Gothic Revival church                                                        | Robeson  | Back Swamp | X                 |
| RB0728  | DOE         | Back Swamp Baptist Church                        | 1942 2-story cross gable brick-veneered frame Gothic Revival church                                 | Robeson  | Back Swamp | X                 |
| RB0540  | NRHD        | Fairmont Commercial Historic District            | 1898-1960 1- & 2-story brick building commercial district                                           | Robeson  | Fairmont   | X                 |

| Site ID | NCHP Status | Site Name                                                 | Site Description                                                                     | County  | City      | Flood Hazard Zone |
|---------|-------------|-----------------------------------------------------------|--------------------------------------------------------------------------------------|---------|-----------|-------------------|
| RB0693  | DOE         | Jennings Cotton Mill                                      | 1910-1911, 1920s, 1960s 1-story brick mill                                           | Robeson | Lumberton | X                 |
| RB0694  | DOE         | Jennings Cotton Mill School/Store                         | c. 1911 2-story hip roof tan brick building                                          | Robeson | Lumberton | X                 |
| RB0695  | DOE         | Cooper House                                              | 1936 1-story flat roof Spanish Mission stone house w/ outbuildings                   | Robeson | Lumberton | X                 |
| RB0696  | DOE         | Wilson House                                              | c. 1935 1-story hip roof brick Art Moderne/Minimal Traditional house w/ outbuildings | Robeson | Lumberton | X                 |
| RB0737  | DOEH D      | Tanglewood Historic District                              | Lumberton's premier mid-twentieth century residential development                    | Robeson | Lumberton | X                 |
| RB0723  | DOEH D      | Lumberton Commercial Historic District Boundary Expansion |                                                                                      | Robeson | Lumberton | AE                |
| RB0480  | NR          | Baker Sanatorium                                          | 1920 3-story brick Mission style                                                     | Robeson | Lumberton | X                 |
| RB0532  | NR          | Alfred Rowland House                                      | c. 1880 2-story frame Greek Revival/Italianate; 2-story por                          | Robeson | Lumberton | X                 |
| RB0001  | NR          | Luther Henry Caldwell House                               | 1894 Queen Anne 2-story frame house                                                  | Robeson | Lumberton | X                 |
| RB0193  | NR          | United States Post Office (Lumberton)                     | 1931 Beaux Art building                                                              | Robeson | Lumberton | X                 |
| RB0177  | NR          | Planters Building                                         | 1925-26 Classical Revival 5-story commercial building                                | Robeson | Lumberton | X                 |
| RB0144  | NR          | Carolina Theatre                                          | 1927-28 Renaissance style brick theater                                              | Robeson | Lumberton | X                 |
| RB0652  | NR          | Robeson County Agricultural Building                      | 1937 2-story brick Colonial Revival public building                                  | Robeson | Lumberton | X                 |
| RB0476  | NRHD        | LUMBERTON COMMERCIAL HISTORIC DISTRICT                    | Late 19th - early 20th C. commercial district                                        | Robeson | Lumberton | X                 |
| RB0515  | SL          | Burney's Tourist Home                                     | c. 1916/1930s 2-story frame side gable                                               | Robeson | Lumberton | X                 |
| RB0592  | SL          | Lawrence-Johnson House                                    | 1918-1919 brick 2-story Georgian Revial                                              | Robeson | Lumberton | X                 |
| RB0180  | SL          | Pure Oil Filling Station                                  | 1947 English cottage style, original color and windows                               | Robeson | Lumberton | X                 |
| RB0651  | SL          | Dr. John H. Hayswood House                                |                                                                                      | Robeson | Lumberton | X                 |
| RB0167  | SL          | McLeod Building                                           | 1879, 1905 3-story brick commercial building                                         | Robeson | Lumberton | X                 |
| RB0653  | SLDOE       | Lumberton Water Treatment Plant                           | 1946 2-story brick modernist-influenced plant and tanks                              | Robeson | Lumberton | X                 |
| RB0484  | NRHD        | MAXTON HISTORIC DISTRICT                                  | 1880s-1940s railroad town commercial and residential                                 | Robeson | Maxton    | X                 |

| Site ID | NCHP Status | Site Name                                                  | Site Description                                                                         | County  | City         | Flood Hazard Zone |
|---------|-------------|------------------------------------------------------------|------------------------------------------------------------------------------------------|---------|--------------|-------------------|
| RB0425  | SL          | St. George Methodist Church                                | 1885/1950 concrete block veneer Gothic Revival                                           | Robeson | Maxton       | X                 |
| RB0415  | SL          | Gilbert B. Patterson House                                 | c. 1911 2-story frame NeoClassical                                                       | Robeson | Maxton       | X                 |
| RB0495  | SL          | Patterson Building                                         | c. 1911 brick 2-story flat-iron building with round tower                                | Robeson | Maxton       | X                 |
| RB0311  | SL          | Currie and Patterson Building                              | c. 1910 2-story pressed brick veneer commercial building                                 | Robeson | Maxton       | X                 |
| RB0511  | SL          | St. Pauls Methodist Episcopal Church                       | 1906 rusticated concrete block picturesque church                                        | Robeson | Maxton       | X                 |
| RB0427  | SL          | St. Matthews A.M.E. Church                                 | 1923 brick Gothic Revival                                                                | Robeson | Maxton       | X                 |
| RB0412  | SL          | Thomas B. Pace House                                       | c. 1904 2-story frame Colonial Revival                                                   | Robeson | Maxton       | X                 |
| RB0306  | SL          | Angus H. Currie House                                      | c. 1896 2-story frame Victorian house                                                    | Robeson | Maxton       | X                 |
| RB0369  | SL          | Eliza and Lane McEachin House                              | c. 1909 2-story frame Colonial Revival house                                             | Robeson | Maxton       | X                 |
| RB0531  | NR          | W. R. Surles Memorial Library                              | 1952 small brick front gable library                                                     | Robeson | Orrum        | X                 |
| RB0481  | SL          | Henry McMillan House                                       | c. 1900 2-story frame Queen Anne                                                         | Robeson | Parkton      | X                 |
| RB0483  | SLDOE D     | Parkton Depot (Original site)                              |                                                                                          | Robeson | Parkton      | X                 |
| RB0479  | NR          | (former) Pembroke High School                              | 1939 WPA 1-story brick school                                                            | Robeson | Pembroke     | X                 |
| RB0004  | NR          | Old Main, Pembroke State University                        | 1923 2-story brick building with portico                                                 | Robeson | Pembroke     | X                 |
| RB0005  | SLHD        | Pembroke State University Historic District                | 1950 1-story brick classroom 1951 concrete bldg. 1952 res.                               | Robeson | Pembroke     | X                 |
| RB----  | DOE         | House                                                      | c. 1860 2-story side gable Greek Revival house w/ 2-story entry porch                    | Robeson | Philadelphus | X                 |
| RB0006  | NR          | Philadelphus Presbyterian Church                           | 1858-1861 Greek Revival church                                                           | Robeson | Philadelphus | X                 |
| RB0518  | DOE         | Red Springs National Guard Armory                          | 1953 1-story flat roof high bay drill hall flanked by 1-story units on east & west sides | Robeson | Red Springs  | X                 |
| RB0655  | DOEH D      | Red Springs Cotton Mill and Mill Village Historic District | 1918 brick textile mill, 30 1920s 1-story frame houses in 4 designs                      | Robeson | Red Springs  | X                 |
| RB0003  | NR          | Flora MacDonald College                                    | 1900-1910 Neoclassical main building; Hook & Rogers, architects                          | Robeson | Red Springs  | X                 |
| RB0100  | SL          | St. Stephens Episcopal Church                              | 1910 brick Gothic Revival                                                                | Robeson | Red Springs  | X                 |
| RB0488  | SLHD        | Flora MacDonald College Historic District                  | c. 1886-1930 College                                                                     | Robeson | Red Springs  | X                 |
| RB0486  | SLHD        | Vance Street Historic District                             | c. 1892-1905 Romanesque Revival,                                                         | Robeson | Red Springs  | X                 |

| Site ID | NCHP Status | Site Name                                      | Site Description                                                                          | County  | City        | Flood Hazard Zone |
|---------|-------------|------------------------------------------------|-------------------------------------------------------------------------------------------|---------|-------------|-------------------|
|         |             |                                                | Tudor Revival, Queen Anne                                                                 |         |             |                   |
| RB0487  | SLHD        | South Main Street Historic District            | c. 1883-1920 Col. Revival, Late Victorian, Neoclassical., Craftsma                        | Robeson | Red Springs | X                 |
| RB0485  | SLHD        | Red Springs Commercial Historic District       | c. 1896-1900 commercial                                                                   | Robeson | Red Springs | X                 |
| RB0530  | NR          | Centenary Methodist Church                     | 1885, 1903 frame church                                                                   | Robeson | Rowland     | X                 |
| RB0131  | NR          | Ashpole Presbyterian Church                    | 1860 Greek Revival temple form frame church                                               | Robeson | Rowland     | X                 |
| RB0465  | NR          | Rowland Depot                                  | 1925 brick hip-roof depot                                                                 | Robeson | Rowland     | X                 |
| RB0514  | NRHD        | ROWLAND MAIN STREET HISTORIC DISTRICT          | 1891-1954 railroad town commercial district                                               | Robeson | Rowland     | X                 |
| RB0647  | NR          | Humphrey-Williams Plantation Boundary Increase | 1846 2-story frame Greek Revival house and lands                                          | Robeson | Saddletree  | X                 |
| RB0002  | NR          | Humphrey-Williams House                        | 1846 2-story frame Greek Revival house                                                    | Robeson | Saddletree  | X                 |
| RB0529  | SL          | Dr. Stephen B. Rozier House                    | 1886 2-story frame Italianate/Gothic Revival/Greek Revival                                | Robeson | Saddletree  | X                 |
| RB0537  | SLDOE       | Centre Presbyterian Church                     | c. 1813 frame front gable church with steeple and cemetery                                | Robeson | Smiths      | X                 |
| RB0678  | DOE         | House                                          | c. 1880-1890 2-story side gable frame l-house w/ Classical Revival details & outbuildings | Robeson | St. Pauls   | X                 |
| RB0520  | NR          | Kenneth McKinnon House                         | c. 1840 Greek Revival 2-story frame house w/enaged porch                                  | Robeson | St. Pauls   | X                 |
| RB0007  | NR          | Williams-Powell House                          | c. 1830 2-story frame Federal/Greek Revival house                                         | Robeson | Sterlings   | X                 |
| RB0536  | NR          | Asbury Methodist Church                        | 1861 Greek Revival frame church                                                           | Robeson | Union       | X                 |
| RB0656  | SL          | Adam Clark Oliver House                        | c. 1872 1 1/2-story frame Queen Anne house                                                | Robeson | Whitehouse  | X                 |

Source: National Register of Historic Places (NRHP)

**DOE**= Individual "Determination of Eligibility" in environmental review work and eligible under Section 106 of the National Historic Preservation Act of 1966, **DOEHD**= Center Point of a Determined Eligible Historic District, **LHD** = Center point of a local historic district, **NR**= Boundary of National Register Historic District or Individually Listed Resource, **NRHD**= National Register Historic District, **SL**= Places that the National Register Advisory Committee has identified as potentially eligible for the Register, **SLDOE**= On the Study List and Determined Eligible, **SLDOEHD**= Center point of district that is both on the Study List and Determined Eligible, **SLHD**= Center point for Study List historic district.



## 6.3 Hazard Vulnerability Results

### 6.3.1 Dam/Levee Failure

There is a fundamental limitation in the data available for vulnerability assessment for the dam/levee failure hazard in the planning area. Some of the dam structures that are of particular concern are smaller, privately owned, and unregulated dams for which limited GIS data or risk inventories are currently available. These are the facilities that could and likely would cause the most damage and disruption should a failure occur.

Any mitigation actions developed for this hazard therefore should be based on addressing data limitations, education and awareness programs, routine maintenance procedures, and/or any jurisdiction-specific concerns that may be addressable through an appropriate mitigation project. It is also important to note that the North Carolina Department of Environmental Quality (NCDEQ) oversees the statewide Dam Safety Program to reduce the overall risk of this hazard and ensure implementation of Emergency Action Plans (EAP) for future reference. The U.S. Army Corps of Engineers (USACE) also maintains the National Inventory of Dams (NID) at the federal level.

**Table 6-17** is sourced from NCDEQ Dam Safety Program data as of July 2024 and provides key high-hazard dam details by county jurisdiction relevant to dam failure hazard vulnerability in the Bladen-Columbus-Robeson Region.

**Table 6-17: Regional High-Hazard Dams**

| Dam Name                               | NID ID  | EAP | Condition<br>(as of July 2024) | Owner<br>Type | Max<br>Capacity<br>(acre-feet) | Max<br>Discharge<br>(ft <sup>3</sup> /s) | River/Stream    |
|----------------------------------------|---------|-----|--------------------------------|---------------|--------------------------------|------------------------------------------|-----------------|
| <b>Bladen County</b>                   |         |     |                                |               |                                |                                          |                 |
| Happy Valley Pond Dam                  | NC05104 | N   | Poor                           | Private       | 44                             | N/A                                      | Baldwin Branch  |
| <b>Columbus County</b>                 |         |     |                                |               |                                |                                          |                 |
| Holtrachem Stormwater Waste Lagoon Dam | NC01195 | Y   | Satisfactory                   | Private       | N/A                            | N/A                                      | Cape Fear River |
| Lake Tabor Dam                         | NC01196 | Y   | Satisfactory                   | Local Gov     | 1,700                          | N/A                                      | Grissett Swamp  |
| South Bay Dike                         | NC05701 | Y   | Satisfactory                   | Private       | 2,700                          | 0                                        | Cape Fear River |
| <b>Robeson County</b>                  |         |     |                                |               |                                |                                          |                 |
| Cultural Center Lake Dam               | NC01077 | Y   | Poor                           | Private       | 956                            | 2,619                                    | Gum Swamp       |
| Weatherspoon Cooling Lake Dam          | NC01078 | Y   | Fair                           | Utility       | 994                            | 149                                      | Lumber River    |
| Weatherspoon 1979 Ash Basin Dam        | NC05948 | Y   | Fair                           | Utility       | 932                            | N/A                                      | Lumber River    |
| Lumberton City Flood Gate              | NC06452 | N   | N/A                            | Local Gov     | N/A                            | N/A                                      | Lumber River    |

Source: NCDEQ, July 2024

### 6.3.2 Drought

Drought is a normal part of nearly all climate regions, including areas with high and low average rainfall. Drought is the consequence of a natural reduction in the amount of precipitation expected over an extended period, usually a season or more in length. High temperatures, high winds, and low humidity are common factors that can exacerbate drought conditions. Additionally, human actions and demands for water resources can hasten drought-related impacts.

Droughts are slow-onset hazards, but, over time, can have very damaging effects on regional agriculture, water supplies, outdoor recreation, ecosystems, and wildlife. If drought conditions extend over a number of years, the direct and indirect economic impacts can be significant as well. Drought may also lead to more severe wildfires.

A total of 33 drought events have been reported in the region by the National Centers for Environmental Information (NCEI) between January 1995 and January 2025 with no damages reported. However, it should be noted that a significant amount of actual economic losses may be underreported by NCEI based on the locations, dates, and hazard events in question. Major droughts have the potential to cause millions of dollars in property and crop damage.

Additionally, the North Carolina Resilience Exchange<sup>21</sup> notes that Bladen County has experienced roughly 118 weeks of severe drought between January 2000 and October 2023 with the latest severe drought happening in 2022 as per records from October 2023. Columbus County has experienced 101 weeks of severe drought between January 2000 and October 2023 with the latest severe drought happening in 2022. Robeson County has experienced 111 weeks of severe drought between January 2000 and October 2023 with the latest severe drought happening in 2022.

The frequency, duration, and intensity of droughts could increase in tandem with other changing trends including higher average temperatures, higher rates of evapotranspiration, and/or higher risk of excessive heat events such as heat waves. As of 2025, the FEMA NRI rates the drought hazard risk index as relatively moderate for Bladen County (87.02/100), relatively moderate for Columbus County (83.96/100), and relatively moderate for Robeson County (95.07/100).

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<sup>21</sup> North Carolina Resilience Exchange. (2025). <https://www.resilienceexchange.nc.gov/understand-your-vulnerabilities>

### 6.3.3 Earthquake

Vulnerability for earthquakes for the area is considered, in relative terms, to be limited should a significant earthquake event occur. According to FEMA earthquake hazard mapping, the Bladen-Columbus-Robeson Region falls between Seismic Design Category (SDC) B and C which indicates that the shaking of moderate to strong intensity could be possible<sup>22</sup>. Earthquakes of this scale could have the greatest impact on older buildings with poor construction standards.

It is generally assumed that all existing populations and future populations are at risk from earthquake hazards as well. Timely sheltering and evacuations of elderly individuals, young individuals, disabled individuals, and individuals requiring specialized care or equipment are of critical importance to reducing risk in a severe earthquake situation. All critical facilities should still be considered at risk to at least some damage, as a minimum standard, should an event occur as well. As of 2025, the FEMA NRI rates the earthquake hazard risk index as very low for Bladen County (65/100), relatively low for Columbus County (75.95/100), and relatively low for Robeson County (86.32/100).

**Table 6-18** and **Table 6-19** below detail estimated building and population vulnerability to earthquake events at a regional scale. This data was sourced from the RMT planning application and uses a return period, or average time between event occurrences, of 500 years.

**Table 6-18: Regional Estimated Building Vulnerability to Earthquakes (500-year)**

| Jurisdiction          | Pre-Firm Buildings at Risk | Residential Buildings at Risk |             | Commercial Buildings at Risk |             | Public Buildings at Risk |           | Total Buildings at Risk |             |
|-----------------------|----------------------------|-------------------------------|-------------|------------------------------|-------------|--------------------------|-----------|-------------------------|-------------|
|                       |                            | Number                        | Damages     | Number                       | Damages     | Number                   | Damages   | Number                  | Damages     |
| Bladen County         |                            |                               |             |                              |             |                          |           |                         |             |
| Town of Bladenboro    | 12                         | 1,693                         | \$173,569   | 206                          | \$230,876   | 43                       | \$129,432 | 1,942                   | \$533,878   |
| Town of Clarkton      | 12                         | 365                           | \$42,543    | 79                           | \$206,579   | 19                       | \$49,042  | 463                     | \$298,164   |
| Town of Dublin        | 0                          | 144                           | \$12,920    | 40                           | \$55,153    | 13                       | \$28,607  | 197                     | \$96,681    |
| Town of East Arcadia  | 0                          | 231                           | \$14,797    | 14                           | \$1,363     | 13                       | \$7,905   | 258                     | \$24,065    |
| Town of Elizabethtown | 0                          | 2,320                         | \$259,847   | 371                          | \$703,371   | 112                      | \$212,285 | 2,803                   | \$1,175,503 |
| Town of Tar Heel      | 0                          | 71                            | \$5,775     | 13                           | \$7,648     | 5                        | \$6,851   | 89                      | \$20,274    |
| Town of White Lake    | 0                          | 2,085                         | \$133,690   | 177                          | \$63,707    | 31                       | \$25,488  | 2,293                   | \$222,884   |
| Unincorporated Area   | 114                        | 15,812                        | \$1,332,273 | 3,099                        | \$1,485,013 | 407                      | \$517,868 | 19,318                  | \$3,335,153 |
| Subtotal Bladen       | 138                        | 22,721                        | \$1,975,414 | 3,999                        | \$2,753,710 | 643                      | \$977,478 | 27,363                  | \$5,706,602 |
| Columbus County       |                            |                               |             |                              |             |                          |           |                         |             |
| City of Whiteville    | 2,344                      | 1,887                         | \$297,049   | 536                          | \$1,052,023 | 121                      | \$361,961 | 2,544                   | \$1,711,033 |
| Town of Boardman      | 123                        | 121                           | \$15,364    | 8                            | \$3,294     | 6                        | \$9,370   | 135                     | \$28,029    |
| Town of Bolton        | 333                        | 368                           | \$36,529    | 28                           | \$17,582    | 19                       | \$20,183  | 415                     | \$74,294    |
| Town of Brunswick     | 263                        | 202                           | \$27,589    | 28                           | \$33,542    | 34                       | \$40,932  | 264                     | \$102,064   |
| Town of Cerro Gordo   | 156                        | 167                           | \$29,478    | 11                           | \$8,319     | 15                       | \$33,208  | 193                     | \$71,004    |
| Town of Chadbourn     | 988                        | 913                           | \$131,940   | 186                          | \$296,928   | 40                       | \$128,475 | 1,139                   | \$557,343   |
| Town of Fair Bluff    | 581                        | 556                           | \$101,365   | 102                          | \$111,580   | 19                       | \$56,701  | 677                     | \$269,646   |

<sup>22</sup> FEMA Earthquake Hazard Maps. (2020). <https://www.fema.gov/emergency-managers/risk-management/earthquake/hazard-maps>

| Jurisdiction             | Pre-Firm Buildings at Risk | Residential Buildings at Risk |                     | Commercial Buildings at Risk |                     | Public Buildings at Risk |                    | Total Buildings at Risk |                     |
|--------------------------|----------------------------|-------------------------------|---------------------|------------------------------|---------------------|--------------------------|--------------------|-------------------------|---------------------|
|                          |                            | Number                        | Damages             | Number                       | Damages             | Number                   | Damages            | Number                  | Damages             |
| Town of Lake Waccamaw    | 657                        | 788                           | \$96,480            | 85                           | \$101,122           | 24                       | \$24,009           | 897                     | \$221,612           |
| Town of Sandyfield       | 171                        | 215                           | \$16,171            | 8                            | \$6,517             | 9                        | \$5,015            | 232                     | \$27,703            |
| Town of Tabor City       | 1,293                      | 1,182                         | \$266,884           | 239                          | \$543,381           | 46                       | \$239,813          | 1,467                   | \$1,050,079         |
| Unincorporated Area      | 25,416                     | 28,256                        | \$3,859,007         | 1,977                        | \$2,075,249         | 461                      | \$1,308,970        | 30,694                  | \$7,243,225         |
| <b>Subtotal Columbus</b> | <b>6,909</b>               | <b>6,399</b>                  | <b>\$1,018,849</b>  | <b>1,231</b>                 | <b>\$2,174,288</b>  | <b>333</b>               | <b>\$919,667</b>   | <b>7,963</b>            | <b>\$4,112,807</b>  |
| <b>Robeson County</b>    |                            |                               |                     |                              |                     |                          |                    |                         |                     |
| City of Lumberton        | 6,250                      | 8,845                         | \$1,596,697         | 1,167                        | \$3,761,758         | 259                      | \$908,663          | 10,271                  | \$6,267,118         |
| Town of Fairmont         | 1,519                      | 1,314                         | \$315,305           | 185                          | \$500,858           | 48                       | \$254,927          | 1,547                   | \$1,071,089         |
| Town of Lumber Bridge    | 82                         | 68                            | \$7,136             | 11                           | \$4,433             | 3                        | \$2,399            | 82                      | \$13,968            |
| Town of Marietta         | 87                         | 72                            | \$13,552            | 11                           | \$6,930             | 4                        | \$16,900           | 87                      | \$37,383            |
| Town of Maxton           | 1,247                      | 1,102                         | \$280,389           | 106                          | \$129,249           | 40                       | \$109,989          | 1,248                   | \$519,627           |
| Town of McDonald         | 58                         | 52                            | \$15,087            | 2                            | \$3,758             | 4                        | \$4,723            | 58                      | \$23,568            |
| Town of Orrum            | 58                         | 51                            | \$8,391             | 3                            | \$3,717             | 4                        | \$19,041           | 58                      | \$31,150            |
| Town of Parkton          | 312                        | 270                           | \$24,008            | 27                           | \$30,658            | 16                       | \$22,006           | 313                     | \$76,672            |
| Town of Pembroke         | 1,814                      | 1,554                         | \$454,024           | 180                          | \$584,850           | 85                       | \$325,402          | 1,819                   | \$1,364,276         |
| Town of Proctorville     | 68                         | 61                            | \$12,161            | 1                            | \$391               | 6                        | \$16,474           | 68                      | \$29,027            |
| Town of Raynham          | 37                         | 31                            | \$5,765             | 1                            | \$1,142             | 5                        | \$19,973           | 37                      | \$26,881            |
| Town of Red Springs      | 2,172                      | 1,897                         | \$399,625           | 227                          | \$461,581           | 54                       | \$147,648          | 2,178                   | \$1,008,855         |
| Town of Rennert          | 190                        | 175                           | \$17,624            | 9                            | \$8,554             | 6                        | \$13,916           | 190                     | \$40,093            |
| Town of Rowland          | 530                        | 424                           | \$116,526           | 89                           | \$192,489           | 17                       | \$45,736           | 530                     | \$354,752           |
| Town of Saint Pauls      | 1,584                      | 1,369                         | \$244,046           | 172                          | \$360,014           | 45                       | \$102,177          | 1,586                   | \$706,237           |
| Unincorporated Area      | 40,116                     | 35,427                        | \$4,858,410         | 4,371                        | \$3,163,776         | 516                      | \$1,604,646        | 40,314                  | \$9,626,832         |
| <b>Subtotal Robeson</b>  | <b>56,124</b>              | <b>52,712</b>                 | <b>\$8,368,746</b>  | <b>6,562</b>                 | <b>\$9,214,158</b>  | <b>1,112</b>             | <b>\$3,614,620</b> | <b>60,386</b>           | <b>\$21,197,528</b> |
| <b>Total Plan Area</b>   | <b>63,171</b>              | <b>81,832</b>                 | <b>\$11,363,009</b> | <b>11,792</b>                | <b>\$14,142,156</b> | <b>2,088</b>             | <b>\$5,511,765</b> | <b>95,712</b>           | <b>\$31,016,937</b> |

Source: NCEM Risk Management Tool (RMT)

**Table 6-19: Regional Estimated Population Vulnerability to Earthquakes (500-year)**

| Jurisdiction           | Elderly at Risk | Children at Risk | Total at Risk |
|------------------------|-----------------|------------------|---------------|
| <b>Bladen County</b>   |                 |                  |               |
| Town of Bladenboro     | 205             | 36               | 747           |
| Town of Clarkton       | 11              | 1                | 44            |
| Town of Dublin         | 10              | 3                | 51            |
| Town of East Arcadia   | 8               | 3                | 43            |
| Town of Elizabethtown  | 807             | 306              | 3,781         |
| Town of Tar Heel       | 2               | 1                | 8             |
| Town of White Lake     | 63              | 6                | 195           |
| Unincorporated Area    | 5,626           | 1,212            | 25,148        |
| <b>Subtotal Bladen</b> | <b>6,732</b>    | <b>1,568</b>     | <b>30,017</b> |

| Jurisdiction             | Elderly at Risk | Children at Risk | Total at Risk  |
|--------------------------|-----------------|------------------|----------------|
| <b>Columbus County</b>   |                 |                  |                |
| City of Whiteville       | 227             | 86               | 1,212          |
| Town of Boardman         | 37              | 4                | 119            |
| Town of Bolton           | 10              | 3                | 66             |
| Town of Brunswick        | 15              | 4                | 80             |
| Town of Cerro Gordo      | 5               | 2                | 29             |
| Town of Chadbourne       | 51              | 14               | 249            |
| Town of Fair Bluff       | 16              | 7                | 86             |
| Town of Lake Waccamaw    | 43              | 7                | 128            |
| Town of Sandyfield       | 32              | 5                | 202            |
| Town of Tabor City       | 96              | 28               | 557            |
| Unincorporated Area      | 10,093          | 2,607            | 48,731         |
| <b>Subtotal Columbus</b> | <b>10,625</b>   | <b>2,767</b>     | <b>51,459</b>  |
| <b>Robeson County</b>    |                 |                  |                |
| City of Lumberton        | 2,546           | 1,305            | 16,293         |
| Town of Fairmont         | 208             | 47               | 1,058          |
| Town of Lumber Bridge    | 25              | 3                | 128            |
| Town of Marietta         | 10              | 2                | 42             |
| Town of Maxton           | 218             | 88               | 1,261          |
| Town of McDonald         | 3               | 1                | 13             |
| Town of Orrum            | 3               | 1                | 15             |
| Town of Parkton          | 15              | 5                | 97             |
| Town of Pembroke         | 345             | 209              | 4,341          |
| Town of Proctorville     | 2               | 1                | 12             |
| Town of Raynham          | 1               | 1                | 7              |
| Town of Red Springs      | 491             | 218              | 3,029          |
| Town of Rennert          | 17              | 9                | 127            |
| Town of Rowland          | 10              | 2                | 42             |
| Town of Saint Pauls      | 118             | 63               | 711            |
| Unincorporated Area      | 10,198          | 4,278            | 66,869         |
| <b>Subtotal Robeson</b>  | <b>14,210</b>   | <b>6,233</b>     | <b>94,045</b>  |
| <b>Total Plan Area</b>   | <b>31,567</b>   | <b>10,568</b>    | <b>175,521</b> |

Source: NCEM RMT

**Table 6-20** below provides counts and estimated damages across 250-year to 2,500-year return period earthquake events based on probabilistic scenarios for Critical Infrastructure and Key Resources (CIKR) buildings. Loss data was provided by NCEM's IHRM Program. These estimates include structural, contents and inventory losses for agricultural, commercial, education, government, industrial, religious, and residential building occupancy types. Because there are many sectors and events, the table is sorted by sector and then by event. Totals across all sectors are shown at the bottom of the table.

The loss ratio is the loss estimate divided by the total potential exposure (i.e., total of improved and



contents value for all buildings located within the 100-year floodplain) and displayed as a percentage of loss. FEMA considers loss ratios greater than 10% to be significant and an indicator a community may have more difficulties recovering from an event. These loss estimates do not include income losses, such as lost wages, rental expenses, relocation costs, etc. that can occur following an earthquake. All future structures and infrastructure built in the region will be vulnerable to seismic events and may also experience damage not accounted for in these estimated losses.

**Table 6-20: Earthquake Event CIKR Building Counts and Estimated Damages (250 to 2500-Year)**

| Sector                  | Event     | Number of Buildings at Risk | Estimated Damages |
|-------------------------|-----------|-----------------------------|-------------------|
| Commercial Facilities   | 2000 Year | 197,140                     | \$2,940,270,631   |
| Commercial Facilities   | 2500 Year | 197,140                     | \$3,813,023,282   |
| Communications          | 250 Year  | 129                         | \$103,196         |
| Communications          | 500 Year  | 215                         | \$800,204         |
| Communications          | 750 Year  | 227                         | \$1,882,578       |
| Communications          | 1000 Year | 227                         | \$3,145,265       |
| Communications          | 1500 Year | 227                         | \$5,746,446       |
| Communications          | 2000 Year | 227                         | \$8,711,044       |
| Communications          | 2500 Year | 227                         | \$11,481,813      |
| Critical Manufacturing  | 250 Year  | 57,777                      | \$43,865,115      |
| Critical Manufacturing  | 500 Year  | 61,745                      | \$214,953,350     |
| Critical Manufacturing  | 750 Year  | 61,917                      | \$409,497,832     |
| Critical Manufacturing  | 1000 Year | 61,924                      | \$616,126,953     |
| Critical Manufacturing  | 1500 Year | 61,924                      | \$1,009,312,111   |
| Critical Manufacturing  | 2000 Year | 61,924                      | \$1,400,234,752   |
| Critical Manufacturing  | 2500 Year | 61,924                      | \$1,745,883,839   |
| Defense Industrial Base | 250 Year  | 57                          | \$368,022         |
| Defense Industrial Base | 500 Year  | 74                          | \$1,722,806       |
| Defense Industrial Base | 750 Year  | 77                          | \$3,559,806       |
| Defense Industrial Base | 1000 Year | 77                          | \$5,484,337       |
| Defense Industrial Base | 1500 Year | 77                          | \$9,111,029       |
| Defense Industrial Base | 2000 Year | 77                          | \$12,499,356      |
| Defense Industrial Base | 2500 Year | 77                          | \$15,639,134      |
| Emergency Services      | 250 Year  | 1,337                       | \$716,995         |
| Emergency Services      | 500 Year  | 2,548                       | \$4,672,274       |
| Emergency Services      | 750 Year  | 2,560                       | \$10,688,717      |
| Emergency Services      | 1000 Year | 2,561                       | \$17,555,374      |
| Emergency Services      | 1500 Year | 2,561                       | \$31,484,845      |
| Emergency Services      | 2000 Year | 2,561                       | \$46,853,133      |
| Emergency Services      | 2500 Year | 2,561                       | \$61,759,027      |
| Energy                  | 250 Year  | 1,660                       | \$26,628,397      |

| Sector                       | Event     | Number of Buildings at Risk | Estimated Damages |
|------------------------------|-----------|-----------------------------|-------------------|
| Energy                       | 500 Year  | 1,772                       | \$114,925,250     |
| Energy                       | 750 Year  | 1,778                       | \$235,531,048     |
| Energy                       | 1000 Year | 1,779                       | \$351,179,031     |
| Energy                       | 1500 Year | 1,779                       | \$589,600,992     |
| Energy                       | 2000 Year | 1,779                       | \$826,673,337     |
| Energy                       | 2500 Year | 1,779                       | \$1,011,922,605   |
| Food and Agriculture         | 250 Year  | 95,110                      | \$1,986,491       |
| Food and Agriculture         | 500 Year  | 152,014                     | \$15,138,603      |
| Food and Agriculture         | 750 Year  | 152,162                     | \$33,664,583      |
| Food and Agriculture         | 1000 Year | 152,163                     | \$53,664,365      |
| Food and Agriculture         | 1500 Year | 152,163                     | \$97,450,238      |
| Food and Agriculture         | 2000 Year | 152,163                     | \$142,614,510     |
| Food and Agriculture         | 2500 Year | 152,163                     | \$187,529,219     |
| Government Facilities        | 250 Year  | 29,738                      | \$15,853,610      |
| Government Facilities        | 500 Year  | 38,626                      | \$92,941,382      |
| Government Facilities        | 750 Year  | 38,750                      | \$200,168,405     |
| Government Facilities        | 1000 Year | 38,750                      | \$331,114,310     |
| Government Facilities        | 1500 Year | 38,750                      | \$617,536,881     |
| Government Facilities        | 2000 Year | 38,750                      | \$949,296,399     |
| Government Facilities        | 2500 Year | 38,750                      | \$1,267,811,728   |
| Healthcare and Public Health | 250 Year  | 11,168                      | \$9,462,825       |
| Healthcare and Public Health | 500 Year  | 13,537                      | \$51,854,171      |
| Healthcare and Public Health | 750 Year  | 13,596                      | \$107,421,024     |
| Healthcare and Public Health | 1000 Year | 13,597                      | \$172,223,146     |
| Healthcare and Public Health | 1500 Year | 13,597                      | \$302,594,563     |
| Healthcare and Public Health | 2000 Year | 13,597                      | \$445,492,233     |
| Healthcare and Public Health | 2500 Year | 13,597                      | \$573,662,103     |
| Information Technology       | 250 Year  | 3                           | \$593             |
| Information Technology       | 500 Year  | 3                           | \$3,674           |
| Information Technology       | 750 Year  | 3                           | \$7,542           |
| Information Technology       | 1000 Year | 3                           | \$11,553          |
| Information Technology       | 1500 Year | 3                           | \$20,158          |
| Information Technology       | 2000 Year | 3                           | \$29,349          |
| Information Technology       | 2500 Year | 3                           | \$38,644          |
| National Monuments and Icons | 500 Year  | 2                           | \$1,192           |
| National Monuments and Icons | 750 Year  | 2                           | \$3,048           |
| National Monuments and Icons | 1000 Year | 2                           | \$5,087           |
| National Monuments and Icons | 1500 Year | 2                           | \$10,443          |

| Sector                                | Event           | Number of Buildings at Risk | Estimated Damages      |
|---------------------------------------|-----------------|-----------------------------|------------------------|
| National Monuments and Icons          | 2000 Year       | 2                           | \$16,253               |
| National Monuments and Icons          | 2500 Year       | 2                           | \$21,524               |
| Nuclear Reactors, Materials and Waste | 500 Year        | 63                          | \$154,870              |
| Nuclear Reactors, Materials and Waste | 750 Year        | 65                          | \$371,541              |
| Nuclear Reactors, Materials and Waste | 1000 Year       | 65                          | \$623,654              |
| Nuclear Reactors, Materials and Waste | 1500 Year       | 65                          | \$1,168,874            |
| Nuclear Reactors, Materials and Waste | 2000 Year       | 65                          | \$1,702,194            |
| Nuclear Reactors, Materials and Waste | 2500 Year       | 65                          | \$2,169,793            |
| Other                                 | 250 Year        | 9                           | \$24,451               |
| Other                                 | 500 Year        | 12                          | \$96,631               |
| Other                                 | 750 Year        | 12                          | \$192,611              |
| Other                                 | 1000 Year       | 12                          | \$305,413              |
| Other                                 | 1500 Year       | 12                          | \$515,477              |
| Other                                 | 2000 Year       | 12                          | \$699,556              |
| Other                                 | 2500 Year       | 12                          | \$805,266              |
| Postal and Shipping                   | 250 Year        | 231                         | \$13,355               |
| Postal and Shipping                   | 500 Year        | 246                         | \$106,630              |
| Postal and Shipping                   | 750 Year        | 246                         | \$248,722              |
| Postal and Shipping                   | 1000 Year       | 246                         | \$406,356              |
| Postal and Shipping                   | 1500 Year       | 246                         | \$730,148              |
| Postal and Shipping                   | 2000 Year       | 246                         | \$1,093,517            |
| Postal and Shipping                   | 2500 Year       | 246                         | \$1,399,474            |
| Transportation Systems                | 250 Year        | 31,921                      | \$17,815,924           |
| Transportation Systems                | 500 Year        | 36,670                      | \$100,960,199          |
| Transportation Systems                | 750 Year        | 36,806                      | \$203,834,597          |
| Transportation Systems                | 1000 Year       | 36,806                      | \$323,546,623          |
| Transportation Systems                | 1500 Year       | 36,806                      | \$562,327,262          |
| Transportation Systems                | 2000 Year       | 36,806                      | \$827,970,238          |
| Transportation Systems                | 2500 Year       | 36,806                      | \$1,070,193,902        |
| Water                                 | 250 Year        | 1,286                       | \$22,555,969           |
| Water                                 | 500 Year        | 1,366                       | \$80,554,011           |
| Water                                 | 750 Year        | 1,366                       | \$154,856,513          |
| Water                                 | 1000 Year       | 1,366                       | \$227,981,188          |
| Water                                 | 1500 Year       | 1,366                       | \$378,980,753          |
| Water                                 | 2000 Year       | 1,366                       | \$508,554,474          |
| Water                                 | 2500 Year       | 1,366                       | \$626,920,156          |
| <b>All Categories</b>                 | <b>250 Year</b> | <b>400,498</b>              | <b>\$202,063,685</b>   |
| <b>All Categories</b>                 | <b>500 Year</b> | <b>510,122</b>              | <b>\$1,023,312,693</b> |

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| Sector         | Event     | Number of Buildings at Risk | Estimated Damages |
|----------------|-----------|-----------------------------|-------------------|
| All Categories | 750 Year  | 512,237                     | \$2,083,820,291   |
| All Categories | 1000 Year | 512,315                     | \$3,269,866,612   |
| All Categories | 1500 Year | 512,315                     | \$5,696,190,770   |
| All Categories | 2000 Year | 512,315                     | \$8,248,498,071   |
| All Categories | 2500 Year | 512,315                     | \$10,565,042,295  |

Source: GIS Analysis

### 6.3.4 Hurricane/Tropical Storm

Historical evidence indicates that the Bladen-Columbus-Robeson Region faces significant risks from hurricane and tropical storm hazards, mostly due to the location of North Carolina along the Atlantic coastline. According to 2022 state summary data from the National Oceanic and Atmospheric Administration (NOAA), a storm at hurricane strength makes landfall in North Carolina roughly once every 3 years<sup>23</sup>. A hurricane-level event has the potential to impact many existing and future buildings, critical facilities, and populations in the region. In recent years, there have been numerous major disaster declarations in the region due to hurricanes and tropical storms. Some of these declarations include Hurricane Fran (1996), Hurricane Bonnie (1998), Hurricane Floyd & Irene (1999), Hurricane Isabel (2003), Tropical Storm Frances (2004), Hurricane Irene (2011), Hurricane Matthew (2016), Hurricane Florence (2018), and Hurricane Dorian (2019).

Numerous secondary or compounding hazards such as erosion, flooding, tornadoes, and high winds tend to result from hurricanes or tropical storms. These intense cyclonic hazards often leave behind a severe degree of aftermath including numerous fatalities, road closures, water contamination, gas leaks, extensive debris clean-up, and extended power outages. These cumulative effects often make damage estimates difficult to track through calculations. It is assumed that all existing populations and future populations are at risk from hurricanes and tropical storm hazards. Timely sheltering and evacuations of elderly individuals, young individuals, disabled individuals, and individuals requiring specialized care or equipment are of critical importance to reducing risk during a severe hurricane.

All critical facilities of the region are assumed to be at risk from hurricanes and tropical storm hazards as well. Although some buildings may perform better than others due to construction, age, and other factors, determining individual building response is beyond the scope of this plan. However, this plan will consider mitigation actions for vulnerable structures, including critical facilities, to reduce the impacts of hurricane hazards (e.g., strong wind). As of 2025, the FEMA NRI rates the hurricane hazard risk index as relatively moderate for Bladen County (94.8/100), relatively moderate for Columbus County (94.89/100), and relatively high for Robeson County (96.1/100).

**Table 6-21** and **Table 6-22** below detail estimated building and population vulnerability to hurricane wind events at a regional scale. This data was sourced from the RMT planning application and uses a return period, or average time between event occurrences, of 100 years.

**Table 6-21: Regional Estimated Building Vulnerability to Hurricane Winds (100-year)**

| Jurisdiction          | Pre-Firm Buildings at Risk | Residential Buildings at Risk |              | Commercial Buildings at Risk |             | Public Buildings at Risk |             | Total Buildings at Risk |              |
|-----------------------|----------------------------|-------------------------------|--------------|------------------------------|-------------|--------------------------|-------------|-------------------------|--------------|
|                       |                            | Number                        | Damages      | Number                       | Damages     | Number                   | Damages     | Number                  | Damages      |
| Bladen County         |                            |                               |              |                              |             |                          |             |                         |              |
| Town of Bladenboro    | 12                         | 1,693                         | \$12,812,865 | 206                          | \$3,383,907 | 43                       | \$1,537,657 | 1,942                   | \$17,734,430 |
| Town of Clarkton      | 333                        | 368                           | \$6,727,899  | 28                           | \$553,886   | 19                       | \$456,292   | 415                     | \$7,738,076  |
| Town of Dublin        | 0                          | 144                           | \$1,040,984  | 40                           | \$463,493   | 13                       | \$685,298   | 197                     | \$2,189,775  |
| Town of East Arcadia  | 0                          | 231                           | \$2,603,932  | 14                           | \$48,099    | 13                       | \$341,726   | 258                     | \$2,993,757  |
| Town of Elizabethtown | 0                          | 2,320                         | \$13,708,502 | 371                          | \$7,347,341 | 112                      | \$2,130,995 | 2,803                   | \$23,186,838 |

<sup>23</sup> NOAA National Centers for Environmental Information (NCEI) State Climate Summaries. (2022). <https://statesummaries.ncics.org/chapter/nc/>



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| Jurisdiction             | Pre-Firm Buildings at Risk | Residential Buildings at Risk |                      | Commercial Buildings at Risk |                      | Public Buildings at Risk |                     | Total Buildings at Risk |                        |
|--------------------------|----------------------------|-------------------------------|----------------------|------------------------------|----------------------|--------------------------|---------------------|-------------------------|------------------------|
|                          |                            | Number                        | Damages              | Number                       | Damages              | Number                   | Damages             | Number                  | Damages                |
| Town of Tar Heel         | 0                          | 71                            | \$651,072            | 13                           | \$55,699             | 5                        | \$47,306            | 89                      | \$754,077              |
| Town of White Lake       | 0                          | 2,085                         | \$9,283,088          | 177                          | \$1,587,830          | 31                       | \$243,829           | 2,293                   | \$11,114,747           |
| Unincorporated Area      | 114                        | 15,812                        | \$111,474,414        | 3,099                        | \$13,744,762         | 407                      | \$9,551,302         | 19,318                  | \$134,770,478          |
| <b>Subtotal Bladen</b>   | <b>459</b>                 | <b>22,724</b>                 | <b>\$158,302,756</b> | <b>3,948</b>                 | <b>\$27,185,017</b>  | <b>643</b>               | <b>\$14,994,405</b> | <b>27,315</b>           | <b>\$200,482,178</b>   |
| <b>Columbus County</b>   |                            |                               |                      |                              |                      |                          |                     |                         |                        |
| City of Whiteville       | 2,344                      | 1,887                         | \$28,809,696         | 536                          | \$19,184,674         | 121                      | \$6,018,245         | 2,544                   | \$54,012,615           |
| Town of Boardman         | 123                        | 121                           | \$705,768            | 8                            | \$18,411             | 6                        | \$59,458            | 135                     | \$783,637              |
| Town of Bolton           | 333                        | 368                           | \$6,727,899          | 28                           | \$553,886            | 19                       | \$456,292           | 415                     | \$7,738,076            |
| Town of Brunswick        | 263                        | 202                           | \$6,969,687          | 28                           | \$491,706            | 34                       | \$788,798           | 264                     | \$8,250,191            |
| Town of Cerro Gordo      | 156                        | 167                           | \$1,404,428          | 11                           | \$72,429             | 15                       | \$315,275           | 193                     | \$1,792,132            |
| Town of Chadbourn        | 988                        | 913                           | \$7,563,238          | 186                          | \$2,863,684          | 40                       | \$1,506,576         | 1,139                   | \$11,933,497           |
| Town of Fair Bluff       | 581                        | 556                           | \$2,308,403          | 102                          | \$437,312            | 19                       | \$279,414           | 677                     | \$3,025,129            |
| Town of Lake Waccamaw    | 657                        | 788                           | \$17,453,371         | 85                           | \$2,481,594          | 24                       | \$572,772           | 897                     | \$20,507,737           |
| Town of Sandyfield       | 171                        | 215                           | \$2,914,082          | 8                            | \$193,862            | 9                        | \$245,390           | 232                     | \$3,353,334            |
| Town of Tabor City       | 1,289                      | 1,179                         | \$30,145,029         | 238                          | \$9,356,260          | 46                       | \$2,551,641         | 1,463                   | \$42,052,929           |
| Unincorporated Area      | 25,382                     | 28,223                        | \$425,367,848        | 1,974                        | \$39,294,398         | 460                      | \$25,441,956        | 30,657                  | \$490,104,202          |
| <b>Subtotal Columbus</b> | <b>32,287</b>              | <b>34,619</b>                 | <b>\$530,369,449</b> | <b>3,204</b>                 | <b>\$74,948,216</b>  | <b>793</b>               | <b>\$38,235,817</b> | <b>38,616</b>           | <b>\$643,553,479</b>   |
| <b>Robeson County</b>    |                            |                               |                      |                              |                      |                          |                     |                         |                        |
| City of Lumberton        | 6,250                      | 8,845                         | \$64,942,287         | 1,167                        | \$28,009,138         | 259                      | \$7,016,327         | 10,271                  | \$99,967,752           |
| Town of Fairmont         | 1,519                      | 1,314                         | \$16,455,624         | 185                          | \$4,082,549          | 48                       | \$1,591,517         | 1,547                   | \$22,129,689           |
| Town of Lumber Bridge    | 82                         | 68                            | \$147,836            | 11                           | \$39,533             | 3                        | \$3,200             | 82                      | \$190,569              |
| Town of Marietta         | 87                         | 72                            | \$433,517            | 11                           | \$56,127             | 4                        | \$168,126           | 87                      | \$657,771              |
| Town of Maxton           | 1,247                      | 1,102                         | \$3,262,742          | 106                          | \$352,331            | 40                       | \$270,850           | 1,248                   | \$3,885,923            |
| Town of McDonald         | 58                         | 52                            | \$348,804            | 2                            | \$21,135             | 4                        | \$33,048            | 58                      | \$402,988              |
| Town of Orrum            | 58                         | 51                            | \$230,423            | 3                            | \$13,907             | 4                        | \$199,691           | 58                      | \$444,020              |
| Town of Parkton          | 312                        | 270                           | \$490,291            | 27                           | \$127,857            | 16                       | \$43,454            | 313                     | \$661,602              |
| Town of Pembroke         | 1,814                      | 1,554                         | \$6,682,955          | 180                          | \$1,464,680          | 85                       | \$1,028,247         | 1,819                   | \$9,175,881            |
| Town of Proctorville     | 68                         | 61                            | \$526,960            | 1                            | \$3,949              | 6                        | \$89,934            | 68                      | \$620,843              |
| Town of Raynham          | 37                         | 31                            | \$83,215             | 1                            | \$4,410              | 5                        | \$56,135            | 37                      | \$143,759              |
| Town of Red Springs      | 2,172                      | 1,897                         | \$6,219,034          | 227                          | \$2,434,378          | 54                       | \$307,978           | 2,178                   | \$8,961,390            |
| Town of Rennert          | 190                        | 175                           | \$270,024            | 9                            | \$38,697             | 6                        | \$28,995            | 190                     | \$337,717              |
| Town of Rowland          | 529                        | 424                           | \$2,188,283          | 88                           | \$520,664            | 17                       | \$61,767            | 529                     | \$2,770,715            |
| Town of Saint Pauls      | 1,584                      | 1,369                         | \$4,431,777          | 172                          | \$850,917            | 45                       | \$203,569           | 1,586                   | \$5,486,263            |
| Unincorporated Area      | 40,100                     | 35,414                        | \$119,858,262        | 4,369                        | \$15,588,934         | 515                      | \$7,902,526         | 40,298                  | \$143,349,722          |
| <b>Subtotal Robeson</b>  | <b>56,107</b>              | <b>52,699</b>                 | <b>\$226,572,034</b> | <b>6,559</b>                 | <b>\$53,609,206</b>  | <b>1,111</b>             | <b>\$19,005,364</b> | <b>60,369</b>           | <b>\$299,186,604</b>   |
| <b>Total Plan Area</b>   | <b>88,853</b>              | <b>110,042</b>                | <b>\$915,244,239</b> | <b>13,711</b>                | <b>\$155,742,439</b> | <b>2,547</b>             | <b>\$72,235,586</b> | <b>126,300</b>          | <b>\$1,143,222,261</b> |

Source: NCEM RMT

Table 6-22: Regional Estimated Population Vulnerability to Hurricane Winds (100-year)

| Jurisdiction             | Elderly at Risk | Children at Risk | Total at Risk |
|--------------------------|-----------------|------------------|---------------|
| <b>Bladen County</b>     |                 |                  |               |
| Town of Bladenboro       | 205             | 36               | 747           |
| Town of Clarkton         | 11              | 1                | 44            |
| Town of Dublin           | 10              | 3                | 51            |
| Town of East Arcadia     | 8               | 3                | 43            |
| Town of Elizabethtown    | 807             | 306              | 3,781         |
| Town of Tar Heel         | 2               | 1                | 8             |
| Town of White Lake       | 63              | 6                | 195           |
| Unincorporated Area      | 5,626           | 1,212            | 25,148        |
| <b>Subtotal Bladen</b>   | <b>6,732</b>    | <b>1,568</b>     | <b>30,017</b> |
| <b>Columbus County</b>   |                 |                  |               |
| City of Whiteville       | 227             | 86               | 1,212         |
| Town of Boardman         | 37              | 4                | 119           |
| Town of Bolton           | 10              | 3                | 66            |
| Town of Brunswick        | 15              | 4                | 80            |
| Town of Cerro Gordo      | 5               | 2                | 29            |
| Town of Chadbourn        | 51              | 14               | 249           |
| Town of Fair Bluff       | 16              | 7                | 86            |
| Town of Lake Waccamaw    | 43              | 7                | 128           |
| Town of Sandyfield       | 32              | 5                | 202           |
| Town of Tabor City       | 96              | 28               | 556           |
| Unincorporated Area      | 10,081          | 2,604            | 48,674        |
| <b>Subtotal Columbus</b> | <b>10,613</b>   | <b>2,764</b>     | <b>51,401</b> |
| <b>Robeson County</b>    |                 |                  |               |
| City of Lumberton        | 2,546           | 1,305            | 16,293        |
| Town of Fairmont         | 208             | 47               | 1,058         |
| Town of Lumber Bridge    | 25              | 3                | 128           |
| Town of Marietta         | 10              | 2                | 42            |
| Town of Maxton           | 218             | 88               | 1,261         |
| Town of McDonald         | 3               | 1                | 13            |
| Town of Orrum            | 3               | 1                | 15            |
| Town of Parkton          | 15              | 5                | 97            |
| Town of Pembroke         | 345             | 209              | 4,341         |
| Town of Proctorville     | 2               | 1                | 12            |
| Town of Raynham          | 1               | 1                | 7             |
| Town of Red Springs      | 491             | 218              | 3,029         |
| Town of Rennert          | 17              | 9                | 127           |
| Town of Rowland          | 10              | 2                | 42            |
| Town of Saint Pauls      | 118             | 63               | 711           |

| Jurisdiction            | Elderly at Risk | Children at Risk | Total at Risk  |
|-------------------------|-----------------|------------------|----------------|
| Unincorporated Area     | 10,194          | 4,276            | 66,844         |
| <b>Subtotal Robeson</b> | <b>14,206</b>   | <b>6,231</b>     | <b>94,020</b>  |
| <b>Total Plan Area</b>  | <b>31,551</b>   | <b>10,563</b>    | <b>175,438</b> |

Source: NCEM RMT

### 6.3.5 Inland Flooding

Historical information indicates that the Bladen-Columbus-Robeson Region is vulnerable to inland flooding events. The inland flooding hazard accounts for the 100-year floodplain (1% annual chance event) and 500-year floodplain (0.2% annual chance) based on effective floodplain mapping products. Building-specific risk and mitigation information can be assessed directly through the North Carolina Flood Risk Information System (FRIS) and similar resources provided by the North Carolina Floodplain Mapping Program (NCFMP)<sup>24</sup>.

A total of 151 flood and flash flood events have been reported in the region by the National Centers for Environmental Information (NCEI) between January 1995 and January 2025, resulting in over \$52.9 million in property damage and \$10.2 million in crop damage (not adjusted for inflation)<sup>25</sup>. Planning estimates from the NCEM RMT application have previously assessed that over 6,900 commercial facilities, 880 critical manufacturing facilities, 500 transportation facilities, 500 government facilities, and 65 energy facilities among other sectors of the region may be at risk of a 100-year flood. Collectively, the estimated total damage between these industry sectors is approximately \$1 billion.

**Every jurisdiction in the Bladen-Columbus-Robeson Region is vulnerable to flooding in some form and will require continued mitigation support to reduce overall impact.** A flood has the potential to impact many existing and future buildings, facilities, and populations in the region, though some areas are at a higher risk than others. All types of structures in a floodplain are at risk, though elevated structures will inherently carry reduced risk through above-code design. As of 2025, the FEMA NRI rates the riverine flooding hazard risk index as relatively moderate for Bladen County (87.27/100), relatively moderate for Columbus County (86.29/100), and relatively moderate for Robeson County (79.67/100).

As noted, the floodplains used in this analysis include the 100-year and 500-year FEMA-regulated floodplain boundaries. It is certainly possible that more severe events could occur beyond these boundaries, or urban (flash) flooding could impact additional structures in unexpected ways. Such site-specific vulnerability determinations should be considered during future updates of this plan. Furthermore, areas subject to repetitive flooding should be analyzed for potential mitigation actions.

**Table 6-23** and **Table 6-24** below detail estimated building and population vulnerability to riverine flooding events at a regional scale. This data was sourced from the RMT planning application and uses a return period, or average time between event occurrences, of 100 years.

<sup>24</sup> NC FRIS: <https://fris.nc.gov/> and NCFMP: <https://flood.nc.gov/>

<sup>25</sup> NOAA NCEI Storm Events Database. (2025). <https://www.ncdc.noaa.gov/stormevents>

Table 6-23: Regional Estimated Building Vulnerability to Riverine Flooding (100-year)

| Jurisdiction          | Pre-Firm Buildings at Risk | Residential Buildings at Risk |              | Commercial Buildings at Risk |             | Public Buildings at Risk |             | Total Buildings at Risk |              |
|-----------------------|----------------------------|-------------------------------|--------------|------------------------------|-------------|--------------------------|-------------|-------------------------|--------------|
|                       |                            | Number                        | Damages      | Number                       | Damages     | Number                   | Damages     | Number                  | Damages      |
| Bladen County         |                            |                               |              |                              |             |                          |             |                         |              |
| Town of Bladenboro    | 0                          | 62                            | \$210,912    | 21                           | \$54,327    | 1                        | \$23,248    | 84                      | \$288,488    |
| Town of Clarkton      | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Dublin        | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of East Arcadia  | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Elizabethtown | 0                          | 21                            | \$295,907    | 20                           | \$126,188   | 4                        | \$98,317    | 45                      | \$520,412    |
| Town of Tar Heel      | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of White Lake    | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Unincorporated Area   | 3                          | 792                           | \$6,469,709  | 67                           | \$554,575   | 9                        | \$301,477   | 868                     | \$7,325,761  |
| Subtotal Bladen       | 3                          | 875                           | \$6,976,528  | 108                          | \$735,090   | 14                       | \$423,042   | 997                     | \$8,134,661  |
| Columbus County       |                            |                               |              |                              |             |                          |             |                         |              |
| City of Whiteville    | 119                        | 97                            | \$168,546    | 28                           | \$41,540    | 0                        | \$0         | 125                     | \$210,086    |
| Town of Boardman      | 18                         | 18                            | \$20,164     | 0                            | \$0         | 0                        | \$0         | 18                      | \$20,164     |
| Town of Bolton        | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Brunswick     | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Cerro Gordo   | 1                          | 4                             | \$2,817      | 0                            | \$0         | 0                        | \$0         | 4                       | \$2,817      |
| Town of Chadbourn     | 2                          | 2                             | \$2,274      | 0                            | \$0         | 0                        | \$0         | 2                       | \$2,274      |
| Town of Fair Bluff    | 166                        | 135                           | \$286,965    | 49                           | \$118,638   | 2                        | \$68,627    | 186                     | \$474,230    |
| Town of Lake Waccamaw | 78                         | 97                            | \$127,702    | 0                            | \$0         | 0                        | \$0         | 97                      | \$127,702    |
| Town of Sandyfield    | 1                          | 1                             | \$1,984      | 0                            | \$0         | 0                        | \$0         | 1                       | \$1,984      |
| Town of Tabor City    | 35                         | 37                            | \$72,683     | 3                            | \$1,651     | 0                        | \$0         | 40                      | \$74,334     |
| Unincorporated Area   | 392                        | 462                           | \$984,660    | 5                            | \$24,564    | 1                        | \$40,375    | 468                     | \$1,049,599  |
| Subtotal Columbus     | 812                        | 853                           | \$1,667,795  | 85                           | \$186,393   | 3                        | \$109,002   | 941                     | \$1,963,190  |
| Robeson County        |                            |                               |              |                              |             |                          |             |                         |              |
| City of Lumberton     | 1,446                      | 2,405                         | \$25,641,157 | 186                          | \$7,416,032 | 34                       | \$1,596,849 | 2,625                   | \$34,654,038 |
| Town of Fairmont      | 26                         | 26                            | \$17,199     | 0                            | \$0         | 0                        | \$0         | 26                      | \$17,199     |
| Town of Lumber Bridge | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Marietta      | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Maxton        | 10                         | 10                            | \$36,700     | 0                            | \$0         | 0                        | \$0         | 10                      | \$36,700     |
| Town of McDonald      | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Orrum         | 1                          | 1                             | \$407        | 0                            | \$0         | 0                        | \$0         | 1                       | \$407        |
| Town of Parkton       | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Pembroke      | 32                         | 32                            | \$173,717    | 0                            | \$0         | 0                        | \$0         | 32                      | \$173,717    |
| Town of Proctorville  | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Raynham       | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Red Springs   | 17                         | 17                            | \$166,323    | 0                            | \$0         | 0                        | \$0         | 17                      | \$166,323    |
| Town of Rennert       | 23                         | 24                            | \$97,167     | 0                            | \$0         | 0                        | \$0         | 24                      | \$97,167     |
| Town of Rowland       | 1                          | 0                             | \$0          | 0                            | \$0         | 1                        | \$13,360    | 1                       | \$13,360     |
| Town of Saint Pauls   | 2                          | 3                             | \$9,320      | 0                            | \$0         | 0                        | \$0         | 3                       | \$9,320      |

| Jurisdiction            | Pre-Firm Buildings at Risk | Residential Buildings at Risk |                     | Commercial Buildings at Risk |                    | Public Buildings at Risk |                    | Total Buildings at Risk |                     |
|-------------------------|----------------------------|-------------------------------|---------------------|------------------------------|--------------------|--------------------------|--------------------|-------------------------|---------------------|
|                         |                            | Number                        | Damages             | Number                       | Damages            | Number                   | Damages            | Number                  | Damages             |
| Unincorporated Area     | 3,119                      | 3,223                         | \$9,374,745         | 64                           | \$523,757          | 5                        | \$94,236           | 3,292                   | \$9,992,738         |
| <b>Subtotal Robeson</b> | <b>4,677</b>               | <b>5,741</b>                  | <b>\$35,516,735</b> | <b>250</b>                   | <b>\$7,939,789</b> | <b>40</b>                | <b>\$1,704,445</b> | <b>6,031</b>            | <b>\$45,160,969</b> |
| <b>Total Plan Area</b>  | <b>5,492</b>               | <b>7,469</b>                  | <b>\$44,161,058</b> | <b>443</b>                   | <b>\$8,861,272</b> | <b>57</b>                | <b>\$2,236,489</b> | <b>7,969</b>            | <b>\$55,258,820</b> |

Source: NCEM RMT

**Table 6-24: Regional Estimated Population Vulnerability to Riverine Flooding (100-year)**

| Jurisdiction             | Elderly at Risk | Children at Risk | Total at Risk |
|--------------------------|-----------------|------------------|---------------|
| <b>Bladen County</b>     |                 |                  |               |
| Town of Bladenboro       | 7               | 1                | 27            |
| Town of Clarkton         | 0               | 0                | 0             |
| Town of Dublin           | 0               | 0                | 0             |
| Town of East Arcadia     | 0               | 0                | 0             |
| Town of Elizabethtown    | 7               | 3                | 34            |
| Town of Tar Heel         | 0               | 0                | 0             |
| Town of White Lake       | 0               | 0                | 0             |
| Unincorporated Area      | 281             | 61               | 1,257         |
| <b>Subtotal Bladen</b>   | <b>295</b>      | <b>65</b>        | <b>1,318</b>  |
| <b>Columbus County</b>   |                 |                  |               |
| City of Whiteville       | 12              | 4                | 62            |
| Town of Boardman         | 6               | 1                | 18            |
| Town of Bolton           | 0               | 0                | 0             |
| Town of Brunswick        | 0               | 0                | 0             |
| Town of Cerro Gordo      | 0               | 0                | 1             |
| Town of Chadbourn        | 0               | 0                | 1             |
| Town of Fair Bluff       | 4               | 2                | 21            |
| Town of Lake Waccamaw    | 5               | 1                | 16            |
| Town of Sandyfield       | 0               | 0                | 1             |
| Town of Tabor City       | 3               | 1                | 17            |
| Unincorporated Area      | 165             | 43               | 796           |
| <b>Subtotal Columbus</b> | <b>195</b>      | <b>52</b>        | <b>933</b>    |
| <b>Robeson County</b>    |                 |                  |               |
| City of Lumberton        | 689             | 353              | 4,409         |
| Town of Fairmont         | 4               | 1                | 21            |
| Town of Lumber Bridge    | 0               | 0                | 0             |
| Town of Marietta         | 0               | 0                | 0             |
| Town of Maxton           | 2               | 1                | 11            |
| Town of McDonald         | 0               | 0                | 0             |
| Town of Orrum            | 0               | 0                | 0             |
| Town of Parkton          | 0               | 0                | 0             |



| Jurisdiction            | Elderly at Risk | Children at Risk | Total at Risk |
|-------------------------|-----------------|------------------|---------------|
| Town of Pembroke        | 7               | 4                | 89            |
| Town of Proctorville    | 0               | 0                | 0             |
| Town of Raynham         | 0               | 0                | 0             |
| Town of Red Springs     | 4               | 2                | 27            |
| Town of Rennert         | 2               | 1                | 17            |
| Town of Rowland         | 0               | 0                | 0             |
| Town of Saint Pauls     | 0               | 0                | 2             |
| Unincorporated Area     | 927             | 389              | 6,079         |
| <b>Subtotal Robeson</b> | <b>1,635</b>    | <b>751</b>       | <b>10,655</b> |
| <b>Total Plan Area</b>  | <b>2,125</b>    | <b>868</b>       | <b>12,906</b> |

Source: NCEM RMT

Additionally, **Table 6-25** and **Table 6-26** below detail estimated building and population vulnerability to riverine flooding events at a regional scale. This data was sourced from the RMT planning application and uses a return period, or average time between event occurrences, of 500 years.

**Table 6-25: Regional Estimated Building Vulnerability to Riverine Flooding (500-year)**

| Jurisdiction          | Pre-Firm Buildings at Risk | Residential Buildings at Risk |              | Commercial Buildings at Risk |             | Public Buildings at Risk |             | Total Buildings at Risk |              |
|-----------------------|----------------------------|-------------------------------|--------------|------------------------------|-------------|--------------------------|-------------|-------------------------|--------------|
|                       |                            | Number                        | Damages      | Number                       | Damages     | Number                   | Damages     | Number                  | Damages      |
| Bladen County         |                            |                               |              |                              |             |                          |             |                         |              |
| Town of Bladenboro    | 1                          | 80                            | \$257,985    | 30                           | \$246,905   | 3                        | \$120,310   | 113                     | \$625,199    |
| Town of Clarkton      | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Dublin        | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of East Arcadia  | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Elizabethtown | 0                          | 18                            | \$342,437    | 22                           | \$553,193   | 5                        | \$210,894   | 45                      | \$1,106,524  |
| Town of Tar Heel      | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of White Lake    | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Unincorporated Area   | 0                          | 880                           | \$17,260,681 | 104                          | \$1,892,533 | 19                       | \$928,560   | 1,003                   | \$20,081,774 |
| Subtotal Bladen       | 1                          | 978                           | \$17,861,103 | 156                          | \$2,692,631 | 27                       | \$1,259,764 | 1,161                   | \$21,813,497 |
| Columbus County       |                            |                               |              |                              |             |                          |             |                         |              |
| City of Whiteville    | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Boardman      | 9                          | 9                             | \$21,525     | 0                            | \$0         | 0                        | \$0         | 9                       | \$21,525     |
| Town of Bolton        | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Brunswick     | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Cerro Gordo   | 0                          | 1                             | \$501        | 0                            | \$0         | 0                        | \$0         | 1                       | \$501        |
| Town of Chadbourn     | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Fair Bluff    | 25                         | 26                            | \$50,701     | 2                            | \$39,735    | 0                        | \$0         | 28                      | \$90,436     |
| Town of Lake Waccamaw | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Sandyfield    | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |
| Town of Tabor City    | 0                          | 0                             | \$0          | 0                            | \$0         | 0                        | \$0         | 0                       | \$0          |

## Vulnerability Assessment

| Jurisdiction             | Pre-Firm Buildings at Risk | Residential Buildings at Risk |                      | Commercial Buildings at Risk |                     | Public Buildings at Risk |                    | Total Buildings at Risk |                      |
|--------------------------|----------------------------|-------------------------------|----------------------|------------------------------|---------------------|--------------------------|--------------------|-------------------------|----------------------|
|                          |                            | Number                        | Damages              | Number                       | Damages             | Number                   | Damages            | Number                  | Damages              |
| Unincorporated Area      | 26                         | 39                            | \$86,692             | 0                            | \$0                 | 0                        | \$0                | 39                      | \$86,692             |
| <b>Subtotal Columbus</b> | <b>60</b>                  | <b>75</b>                     | <b>\$159,419</b>     | <b>2</b>                     | <b>\$39,735</b>     | <b>0</b>                 | <b>\$0</b>         | <b>77</b>               | <b>\$199,154</b>     |
| <b>Robeson County</b>    |                            |                               |                      |                              |                     |                          |                    |                         |                      |
| City of Lumberton        | 1,645                      | 2,582                         | \$82,490,981         | 319                          | \$50,950,454        | 79                       | \$5,967,727        | 2,980                   | \$139,409,162        |
| Town of Fairmont         | 36                         | 36                            | \$51,207             | 0                            | \$0                 | 0                        | \$0                | 36                      | \$51,207             |
| Town of Lumber Bridge    | 0                          | 0                             | \$0                  | 0                            | \$0                 | 0                        | \$0                | 0                       | \$0                  |
| Town of Marietta         | 0                          | 0                             | \$0                  | 0                            | \$0                 | 0                        | \$0                | 0                       | \$0                  |
| Town of Maxton           | 6                          | 6                             | \$26,279             | 0                            | \$0                 | 0                        | \$0                | 6                       | \$26,279             |
| Town of McDonald         | 0                          | 0                             | \$0                  | 0                            | \$0                 | 0                        | \$0                | 0                       | \$0                  |
| Town of Orrum            | 1                          | 1                             | \$515                | 0                            | \$0                 | 0                        | \$0                | 1                       | \$515                |
| Town of Parkton          | 1                          | 1                             | \$2,080              | 0                            | \$0                 | 0                        | \$0                | 1                       | \$2,080              |
| Town of Pembroke         | 35                         | 35                            | \$236,770            | 0                            | \$0                 | 0                        | \$0                | 35                      | \$236,770            |
| Town of Proctorville     | 0                          | 0                             | \$0                  | 0                            | \$0                 | 0                        | \$0                | 0                       | \$0                  |
| Town of Raynham          | 0                          | 0                             | \$0                  | 0                            | \$0                 | 0                        | \$0                | 0                       | \$0                  |
| Town of Red Springs      | 19                         | 19                            | \$240,601            | 0                            | \$0                 | 0                        | \$0                | 19                      | \$240,601            |
| Town of Rennert          | 36                         | 37                            | \$110,125            | 0                            | \$0                 | 0                        | \$0                | 37                      | \$110,125            |
| Town of Rowland          | 1                          | 0                             | \$0                  | 0                            | \$0                 | 1                        | \$13,360           | 1                       | \$13,360             |
| Town of Saint Pauls      | 4                          | 4                             | \$10,659             | 1                            | \$1,959             | 0                        | \$0                | 5                       | \$12,618             |
| Unincorporated Area      | 3,432                      | 3,482                         | \$21,560,586         | 140                          | \$1,805,557         | 12                       | \$585,435          | 3,634                   | \$23,951,578         |
| <b>Subtotal Robeson</b>  | <b>5,216</b>               | <b>6,203</b>                  | <b>\$104,729,803</b> | <b>460</b>                   | <b>\$52,757,970</b> | <b>92</b>                | <b>\$6,566,522</b> | <b>6,755</b>            | <b>\$164,054,295</b> |
| <b>Total Plan Area</b>   | <b>5,277</b>               | <b>7,256</b>                  | <b>\$122,750,325</b> | <b>618</b>                   | <b>\$55,490,336</b> | <b>119</b>               | <b>\$7,826,286</b> | <b>7,993</b>            | <b>\$186,066,946</b> |

Source: NCEM RMT

**Table 6-26: Regional Estimated Population Vulnerability to Riverine Flooding (500-year)**

| Jurisdiction           | Elderly at Risk | Children at Risk | Total at Risk |
|------------------------|-----------------|------------------|---------------|
| <b>Bladen County</b>   |                 |                  |               |
| Town of Bladenboro     | 10              | 2                | 36            |
| Town of Clarkton       | 0               | 0                | 0             |
| Town of Dublin         | 0               | 0                | 0             |
| Town of East Arcadia   | 0               | 0                | 0             |
| Town of Elizabethtown  | 6               | 2                | 29            |
| Town of Tar Heel       | 0               | 0                | 0             |
| Town of White Lake     | 0               | 0                | 0             |
| Unincorporated Area    | 312             | 67               | 1,397         |
| <b>Subtotal Bladen</b> | <b>328</b>      | <b>71</b>        | <b>1,462</b>  |
| <b>Columbus County</b> |                 |                  |               |
| City of Whiteville     | 0               | 0                | 0             |
| Town of Boardman       | 3               | 0                | 9             |
| Town of Bolton         | 0               | 0                | 0             |

| Jurisdiction             | Elderly at Risk | Children at Risk | Total at Risk |
|--------------------------|-----------------|------------------|---------------|
| Town of Brunswick        | 0               | 0                | 0             |
| Town of Cerro Gordo      | 0               | 0                | 0             |
| Town of Chadbourn        | 0               | 0                | 0             |
| Town of Fair Bluff       | 1               | 0                | 4             |
| Town of Lake Waccamaw    | 0               | 0                | 0             |
| Town of Sandyfield       | 0               | 0                | 0             |
| Town of Tabor City       | 0               | 0                | 0             |
| Unincorporated Area      | 14              | 4                | 67            |
| <b>Subtotal Columbus</b> | <b>18</b>       | <b>4</b>         | <b>80</b>     |
| <b>Robeson County</b>    |                 |                  |               |
| City of Lumberton        | 741             | 380              | 4,743         |
| Town of Fairmont         | 6               | 1                | 29            |
| Town of Lumber Bridge    | 0               | 0                | 0             |
| Town of Marietta         | 0               | 0                | 0             |
| Town of Maxton           | 1               | 0                | 7             |
| Town of McDonald         | 0               | 0                | 0             |
| Town of Orrum            | 0               | 0                | 0             |
| Town of Parkton          | 0               | 0                | 0             |
| Town of Pembroke         | 8               | 5                | 97            |
| Town of Proctorville     | 0               | 0                | 0             |
| Town of Raynham          | 0               | 0                | 0             |
| Town of Red Springs      | 5               | 2                | 30            |
| Town of Rennert          | 4               | 2                | 27            |
| Town of Rowland          | 0               | 0                | 0             |
| Town of Saint Pauls      | 0               | 0                | 2             |
| Unincorporated Area      | 1,002           | 420              | 6,569         |
| <b>Subtotal Robeson</b>  | <b>1,767</b>    | <b>810</b>       | <b>11,504</b> |
| <b>Total Plan Area</b>   | <b>2,113</b>    | <b>885</b>       | <b>13,046</b> |

Source: NCEM RMT

### 6.3.6 Severe Weather (Hail, Lightning, Thunderstorm Wind)

Historical information indicates that the Bladen-Columbus-Robeson Region is vulnerable to severe weather events. Such events may include a variety of hail, lightning, and thunderstorm wind hazards capable of affecting any jurisdiction. Regional risk and forecast information can be assessed directly through statewide data provided by the National Weather Service (NWS)<sup>26</sup>. The NWS has previously estimated that the United States is impacted by approximately 100,000 storms each year, of which approximately 10% of them are classified as “severe.”

A total of 1,235 severe weather events (426 hail events, 37 lightning events, 772 thunderstorm wind events) have been reported in the region by the National Centers for Environmental Information (NCEI) between January 1995 and January 2025. Collectively, these events resulted in over \$8.8 million in property damage and \$687,000 in crop damage (not adjusted for inflation)<sup>27</sup>.

It is assumed that all existing populations and future populations are at risk from severe weather hazards. Timely sheltering and evacuations of elderly individuals, young individuals, disabled individuals, and individuals requiring specialized care or equipment are of critical importance to reducing risk during severe weather.

All critical facilities of the region are assumed to be at risk from severe weather hazards as well. Although some buildings may perform better than others due to construction, age, and other factors, determining individual building response is beyond the scope of this plan. As of 2025, the FEMA NRI rates the hail hazard risk index as relatively low for Bladen County (54.37/100), very low for Columbus County (43.33/100), and relatively low for Robeson County (50.02/100). The lightning hazard is rated as relatively low for Bladen County (45.79/100), relatively moderate for Columbus County (88.55/100), and relatively moderate for Robeson County (74.1/100). The strong wind hazard is rated as relatively high for Bladen County (92.17/100), relatively high for Columbus County (92.11/100), and relatively high for Robeson County (97.61/100).

**Table 6-27** and **Table 6-28** below detail estimated building and population vulnerability to thunderstorm wind events at a regional scale. This data was sourced from the RMT planning application and uses a return period, or average time between event occurrences, of 50 years.

**Table 6-27: Regional Estimated Building Vulnerability to Thunderstorm Winds (50-year)**

| Jurisdiction          | Pre-Firm Buildings at Risk | Residential Buildings at Risk |             | Commercial Buildings at Risk |           | Public Buildings at Risk |          | Total Buildings at Risk |             |
|-----------------------|----------------------------|-------------------------------|-------------|------------------------------|-----------|--------------------------|----------|-------------------------|-------------|
|                       |                            | Number                        | Damages     | Number                       | Damages   | Number                   | Damages  | Number                  | Damages     |
| Bladen County         |                            |                               |             |                              |           |                          |          |                         |             |
| Town of Bladenboro    | 12                         | 1,693                         | \$833,753   | 206                          | \$143,393 | 43                       | \$79,880 | 1,942                   | \$1,057,026 |
| Town of Clarkton      | 12                         | 365                           | \$276,434   | 79                           | \$57,419  | 19                       | \$31,453 | 463                     | \$365,306   |
| Town of Dublin        | 0                          | 144                           | \$71,135    | 40                           | \$22,160  | 13                       | \$31,477 | 197                     | \$124,773   |
| Town of East Arcadia  | 0                          | 231                           | \$67,114    | 14                           | \$610     | 13                       | \$3,424  | 258                     | \$71,149    |
| Town of Elizabethtown | 0                          | 2,320                         | \$1,072,102 | 371                          | \$506,632 | 112                      | \$94,082 | 2,803                   | \$1,672,815 |
| Town of Tar Heel      | 0                          | 71                            | \$38,608    | 13                           | \$1,504   | 5                        | \$1,202  | 89                      | \$41,313    |
| Town of White Lake    | 0                          | 2,085                         | \$801,389   | 177                          | \$98,390  | 31                       | \$10,735 | 2,293                   | \$910,515   |

<sup>26</sup> NOAA National Weather Service. (2025). <https://www.weather.gov/rah/NC>

<sup>27</sup> NOAA NCEI Storm Events Database. (2025). <https://www.ncdc.noaa.gov/stormevents>

## Vulnerability Assessment

| Jurisdiction             | Pre-Firm Buildings at Risk | Residential Buildings at Risk |                     | Commercial Buildings at Risk |                    | Public Buildings at Risk |                    | Total Buildings at Risk |                     |
|--------------------------|----------------------------|-------------------------------|---------------------|------------------------------|--------------------|--------------------------|--------------------|-------------------------|---------------------|
|                          |                            | Number                        | Damages             | Number                       | Damages            | Number                   | Damages            | Number                  | Damages             |
| Unincorporated Area      | 114                        | 15,812                        | \$7,366,561         | 3,099                        | \$760,802          | 407                      | \$621,061          | 19,318                  | \$8,748,424         |
| <b>Subtotal Bladen</b>   | <b>138</b>                 | <b>22,721</b>                 | <b>\$10,527,096</b> | <b>3,999</b>                 | <b>\$1,590,910</b> | <b>643</b>               | <b>\$873,314</b>   | <b>27,363</b>           | <b>\$12,991,321</b> |
| <b>Columbus County</b>   |                            |                               |                     |                              |                    |                          |                    |                         |                     |
| City of Whiteville       | 2,344                      | 1,887                         | \$1,207,960         | 536                          | \$603,036          | 121                      | \$193,414          | 2,544                   | \$2,004,410         |
| Town of Boardman         | 123                        | 121                           | \$49,937            | 8                            | \$536              | 6                        | \$1,531            | 135                     | \$52,005            |
| Town of Bolton           | 333                        | 368                           | \$172,767           | 28                           | \$9,070            | 19                       | \$6,380            | 415                     | \$188,217           |
| Town of Brunswick        | 263                        | 202                           | \$141,605           | 28                           | \$7,076            | 34                       | \$15,322           | 264                     | \$164,003           |
| Town of Cerro Gordo      | 156                        | 167                           | \$84,912            | 11                           | \$3,104            | 15                       | \$10,903           | 193                     | \$98,919            |
| Town of Chadbourn        | 988                        | 913                           | \$461,388           | 186                          | \$137,337          | 40                       | \$78,273           | 1,139                   | \$676,998           |
| Town of Fair Bluff       | 581                        | 556                           | \$212,658           | 102                          | \$18,327           | 19                       | \$13,784           | 677                     | \$244,769           |
| Town of Lake Waccamaw    | 657                        | 788                           | \$395,329           | 85                           | \$42,512           | 24                       | \$8,071            | 897                     | \$445,911           |
| Town of Sandyfield       | 171                        | 215                           | \$107,611           | 8                            | \$8,823            | 9                        | \$3,144            | 232                     | \$119,577           |
| Town of Tabor City       | 1,289                      | 1,179                         | \$792,288           | 238                          | \$189,248          | 46                       | \$55,552           | 1,463                   | \$1,037,088         |
| Unincorporated Area      | 25,382                     | 28,223                        | \$15,636,906        | 1,974                        | \$1,548,181        | 460                      | \$655,485          | 30,657                  | \$17,840,573        |
| <b>Subtotal Columbus</b> | <b>32,287</b>              | <b>34,619</b>                 | <b>\$19,263,361</b> | <b>3,204</b>                 | <b>\$2,567,250</b> | <b>793</b>               | <b>\$1,041,859</b> | <b>38,616</b>           | <b>\$22,872,470</b> |
| <b>Robeson County</b>    |                            |                               |                     |                              |                    |                          |                    |                         |                     |
| City of Lumberton        | 6,250                      | 8,845                         | \$5,280,742         | 1,167                        | \$1,479,549        | 259                      | \$389,314          | 10,271                  | \$7,149,605         |
| Town of Fairmont         | 1,519                      | 1,314                         | \$878,382           | 185                          | \$182,896          | 48                       | \$58,178           | 1,547                   | \$1,119,457         |
| Town of Lumber Bridge    | 82                         | 68                            | \$48,121            | 11                           | \$5,061            | 3                        | \$554              | 82                      | \$53,737            |
| Town of Marietta         | 87                         | 72                            | \$35,109            | 11                           | \$1,409            | 4                        | \$2,795            | 87                      | \$39,313            |
| Town of Maxton           | 1,247                      | 1,102                         | \$750,676           | 106                          | \$40,209           | 40                       | \$54,512           | 1,248                   | \$845,397           |
| Town of McDonald         | 58                         | 52                            | \$42,735            | 2                            | \$2,978            | 4                        | \$4,294            | 58                      | \$50,007            |
| Town of Orrum            | 58                         | 51                            | \$8,733             | 3                            | \$444              | 4                        | \$4,187            | 58                      | \$13,364            |
| Town of Parkton          | 312                        | 270                           | \$142,004           | 27                           | \$19,909           | 16                       | \$5,718            | 313                     | \$167,631           |
| Town of Pembroke         | 1,814                      | 1,554                         | \$1,113,460         | 180                          | \$268,797          | 85                       | \$171,053          | 1,819                   | \$1,553,310         |
| Town of Proctorville     | 68                         | 61                            | \$36,999            | 1                            | \$137              | 6                        | \$2,050            | 68                      | \$39,186            |
| Town of Raynham          | 37                         | 31                            | \$17,597            | 1                            | \$577              | 5                        | \$7,142            | 37                      | \$25,316            |
| Town of Red Springs      | 2,172                      | 1,897                         | \$1,539,708         | 227                          | \$536,799          | 54                       | \$58,168           | 2,178                   | \$2,134,674         |
| Town of Rennert          | 190                        | 175                           | \$60,143            | 9                            | \$5,009            | 6                        | \$4,269            | 190                     | \$69,421            |
| Town of Rowland          | 529                        | 424                           | \$411,897           | 88                           | \$64,625           | 17                       | \$5,628            | 529                     | \$482,150           |
| Town of Saint Pauls      | 1,584                      | 1,369                         | \$900,472           | 172                          | \$140,501          | 45                       | \$30,865           | 1,586                   | \$1,071,838         |
| Unincorporated Area      | 40,100                     | 35,414                        | \$16,967,204        | 4,369                        | \$2,291,097        | 515                      | \$1,137,558        | 40,298                  | \$20,395,859        |
| <b>Subtotal Robeson</b>  | <b>56,107</b>              | <b>52,699</b>                 | <b>\$28,233,982</b> | <b>6,559</b>                 | <b>\$5,039,997</b> | <b>1,111</b>             | <b>\$1,936,285</b> | <b>60,369</b>           | <b>\$35,210,265</b> |
| <b>Total Plan Area</b>   | <b>88,532</b>              | <b>110,039</b>                | <b>\$58,024,439</b> | <b>13,762</b>                | <b>\$9,198,157</b> | <b>2,547</b>             | <b>\$3,851,458</b> | <b>126,348</b>          | <b>\$71,074,056</b> |

Source: NCEM RMT



**Table 6-28: Regional Estimated Population Vulnerability to Thunderstorm Winds (50-year)**

| Jurisdiction             | Elderly at Risk | Children at Risk | Total at Risk |
|--------------------------|-----------------|------------------|---------------|
| <b>Bladen County</b>     |                 |                  |               |
| Town of Bladenboro       | 205             | 36               | 747           |
| Town of Clarkton         | 11              | 1                | 44            |
| Town of Dublin           | 10              | 3                | 51            |
| Town of East Arcadia     | 8               | 3                | 43            |
| Town of Elizabethtown    | 807             | 306              | 3,781         |
| Town of Tar Heel         | 2               | 1                | 8             |
| Town of White Lake       | 63              | 6                | 195           |
| Unincorporated Area      | 5,626           | 1,212            | 25,148        |
| <b>Subtotal Bladen</b>   | <b>6,732</b>    | <b>1,568</b>     | <b>30,017</b> |
| <b>Columbus County</b>   |                 |                  |               |
| City of Whiteville       | 227             | 86               | 1,212         |
| Town of Boardman         | 37              | 4                | 119           |
| Town of Bolton           | 10              | 3                | 66            |
| Town of Brunswick        | 15              | 4                | 80            |
| Town of Cerro Gordo      | 5               | 2                | 29            |
| Town of Chadbourn        | 51              | 14               | 249           |
| Town of Fair Bluff       | 16              | 7                | 86            |
| Town of Lake Waccamaw    | 43              | 7                | 128           |
| Town of Sandyfield       | 32              | 5                | 202           |
| Town of Tabor City       | 96              | 28               | 556           |
| Unincorporated Area      | 10,081          | 2,604            | 48,674        |
| <b>Subtotal Columbus</b> | <b>10,613</b>   | <b>2,764</b>     | <b>51,401</b> |
| <b>Robeson County</b>    |                 |                  |               |
| City of Lumberton        | 2,546           | 1,305            | 16,293        |
| Town of Fairmont         | 208             | 47               | 1,058         |
| Town of Lumber Bridge    | 25              | 3                | 128           |
| Town of Marietta         | 10              | 2                | 42            |
| Town of Maxton           | 218             | 88               | 1,261         |
| Town of McDonald         | 3               | 1                | 13            |
| Town of Orrum            | 3               | 1                | 15            |
| Town of Parkton          | 15              | 5                | 97            |
| Town of Pembroke         | 345             | 209              | 4,341         |
| Town of Proctorville     | 2               | 1                | 12            |
| Town of Raynham          | 1               | 1                | 7             |
| Town of Red Springs      | 491             | 218              | 3,029         |
| Town of Rennert          | 17              | 9                | 127           |
| Town of Rowland          | 10              | 2                | 42            |
| Town of Saint Pauls      | 118             | 63               | 711           |

| Jurisdiction            | Elderly<br>at Risk | Children<br>at Risk | Total at<br>Risk |
|-------------------------|--------------------|---------------------|------------------|
| Unincorporated Area     | 10,194             | 4,276               | 66,844           |
| <i>Subtotal Robeson</i> | <b>14,206</b>      | <b>6,231</b>        | <b>94,020</b>    |
| <b>Total Plan Area</b>  | <b>31,551</b>      | <b>10,563</b>       | <b>175,438</b>   |

Source: NCEM RMT

### 6.3.7 Tornado

Historical information indicates that the Bladen-Columbus-Robeson Region is vulnerable to tornado events. Regional risk and forecast information can be assessed directly through statewide data provided by the National Weather Service (NWS)<sup>28</sup>. NOAA estimates that approximately 1,200 tornadoes affect the U.S. each year, with a peak season observed through the spring into summer (March to June) for states like North Carolina<sup>29</sup>.

A total of 75 tornado events have been reported in the region by the National Centers for Environmental Information (NCEI) between January 1995 and January 2025. Collectively, these events resulted in over \$13.4 million in property damage and \$13,500 in crop damage (not adjusted for inflation)<sup>30</sup>.

It is assumed that all existing populations and future populations are at risk from tornado hazards. Timely sheltering and evacuations of elderly individuals, young individuals, disabled individuals, and individuals requiring specialized care or equipment are of critical importance to reducing risk ahead of a tornado's path.

All critical facilities of the region are assumed to be at risk from tornado hazards as well. Although some buildings may perform better than others due to construction, age, and other factors, determining individual building response is beyond the scope of this plan. A tornado rated at or above EF2 on the Enhanced Fujita Scale would be expected to cause severe damage to critical facilities and other structures alike. As of 2025, the FEMA NRI rates the tornado hazard risk index as relatively moderate for Bladen County (77.16/100), relatively moderate for Columbus County (80.37/100), and relatively high for Robeson County (96.05/100).

**Table 6-29** and **Table 6-30** below detail estimated building and population vulnerability to tornado events at a regional scale. This data was sourced from the RMT planning application and uses a model intensity of EF2 (Enhanced Fujita scale).

**Table 6-29: Regional Estimated Building Vulnerability to Tornadoes (EF2)**

| Jurisdiction          | Pre-Firm Buildings at Risk | Residential Buildings at Risk |                 | Commercial Buildings at Risk |               | Public Buildings at Risk |               | Total Buildings at Risk |                 |
|-----------------------|----------------------------|-------------------------------|-----------------|------------------------------|---------------|--------------------------|---------------|-------------------------|-----------------|
|                       |                            | Number                        | Damages         | Number                       | Damages       | Number                   | Damages       | Number                  | Damages         |
| Bladen County         |                            |                               |                 |                              |               |                          |               |                         |                 |
| Town of Bladenboro    | 12                         | 1,693                         | \$158,716,309   | 206                          | \$72,216,016  | 43                       | \$43,580,800  | 1,942                   | \$274,513,125   |
| Town of Clarkton      | 12                         | 365                           | \$45,766,794    | 79                           | \$55,325,900  | 19                       | \$15,734,174  | 463                     | \$116,826,868   |
| Town of Dublin        | 0                          | 144                           | \$14,765,843    | 40                           | \$18,886,217  | 13                       | \$11,368,422  | 197                     | \$45,020,482    |
| Town of East Arcadia  | 0                          | 231                           | \$16,849,678    | 14                           | \$697,207     | 13                       | \$3,022,067   | 258                     | \$20,568,952    |
| Town of Elizabethtown | 0                          | 2,320                         | \$300,789,227   | 371                          | \$246,947,751 | 112                      | \$67,840,772  | 2,803                   | \$615,577,750   |
| Town of Tar Heel      | 0                          | 71                            | \$7,741,670     | 13                           | \$2,208,037   | 5                        | \$1,921,186   | 89                      | \$11,870,893    |
| Town of White Lake    | 0                          | 2,085                         | \$152,361,598   | 177                          | \$38,721,615  | 31                       | \$9,743,069   | 2,293                   | \$200,826,282   |
| Unincorporated Area   | 114                        | 15,812                        | \$1,477,185,611 | 3,099                        | \$699,212,104 | 407                      | \$202,195,525 | 19,318                  | \$2,378,593,240 |

<sup>28</sup> NOAA National Weather Service. (2025). <https://www.weather.gov/rah/NC>

<sup>29</sup> NOAA National Severe Storms Laboratory. (2025). <https://www.nssl.noaa.gov/education/svrwx101/tornadoes/>

<sup>30</sup> NOAA NCEI Storm Events Database. (2025). <https://www.ncdc.noaa.gov/stormevents>

## Vulnerability Assessment

| Jurisdiction             | Pre-Firm Buildings at Risk | Residential Buildings at Risk |                         | Commercial Buildings at Risk |                        | Public Buildings at Risk |                        | Total Buildings at Risk |                         |
|--------------------------|----------------------------|-------------------------------|-------------------------|------------------------------|------------------------|--------------------------|------------------------|-------------------------|-------------------------|
|                          |                            | Number                        | Damages                 | Number                       | Damages                | Number                   | Damages                | Number                  | Damages                 |
| <b>Subtotal Bladen</b>   | <b>138</b>                 | <b>22,721</b>                 | <b>\$2,174,176,730</b>  | <b>3,999</b>                 | <b>\$1,134,214,847</b> | <b>643</b>               | <b>\$355,406,015</b>   | <b>27,363</b>           | <b>\$3,663,797,592</b>  |
| <b>Columbus County</b>   |                            |                               |                         |                              |                        |                          |                        |                         |                         |
| City of Whiteville       | 2,344                      | 1,887                         | \$258,957,514           | 536                          | \$323,264,095          | 121                      | \$102,862,534          | 2,544                   | \$685,084,143           |
| Town of Boardman         | 123                        | 121                           | \$10,354,192            | 8                            | \$990,773              | 6                        | \$1,618,373            | 135                     | \$12,963,338            |
| Town of Bolton           | 333                        | 368                           | \$36,047,429            | 28                           | \$6,562,224            | 19                       | \$6,542,142            | 415                     | \$49,151,795            |
| Town of Brunswick        | 263                        | 202                           | \$25,321,918            | 28                           | \$11,394,462           | 34                       | \$12,008,477           | 264                     | \$48,724,857            |
| Town of Cerro Gordo      | 156                        | 167                           | \$16,445,119            | 11                           | \$1,757,569            | 15                       | \$5,173,752            | 193                     | \$23,376,440            |
| Town of Chadbourn        | 988                        | 913                           | \$90,772,047            | 186                          | \$76,716,908           | 40                       | \$30,002,097           | 1,139                   | \$197,491,052           |
| Town of Fair Bluff       | 581                        | 556                           | \$51,118,171            | 102                          | \$22,224,301           | 19                       | \$10,064,349           | 677                     | \$83,406,821            |
| Town of Lake Waccamaw    | 657                        | 788                           | \$102,310,721           | 85                           | \$35,638,864           | 24                       | \$8,335,862            | 897                     | \$146,285,447           |
| Town of Sandyfield       | 171                        | 215                           | \$21,641,216            | 8                            | \$2,459,371            | 9                        | \$2,144,097            | 232                     | \$26,244,684            |
| Town of Tabor City       | 1,293                      | 1,182                         | \$143,124,591           | 239                          | \$120,057,134          | 46                       | \$35,594,979           | 1,467                   | \$298,776,703           |
| Unincorporated Area      | 25,416                     | 28,256                        | \$2,905,289,055         | 1,977                        | \$695,257,684          | 461                      | \$320,979,767          | 30,694                  | \$3,921,526,506         |
| <b>Subtotal Columbus</b> | <b>32,325</b>              | <b>34,655</b>                 | <b>\$3,661,381,973</b>  | <b>3,208</b>                 | <b>\$1,296,323,385</b> | <b>794</b>               | <b>\$535,326,429</b>   | <b>38,657</b>           | <b>\$5,493,031,786</b>  |
| <b>Robeson County</b>    |                            |                               |                         |                              |                        |                          |                        |                         |                         |
| City of Lumberton        | 6,250                      | 8,845                         | \$1,160,452,408         | 1,167                        | \$1,033,521,224        | 259                      | \$238,945,322          | 10,271                  | \$2,432,918,954         |
| Town of Fairmont         | 1,519                      | 1,314                         | \$189,135,686           | 185                          | \$121,105,233          | 48                       | \$50,888,623           | 1,547                   | \$361,129,542           |
| Town of Lumber Bridge    | 82                         | 68                            | \$7,148,469             | 11                           | \$1,643,908            | 3                        | \$823,817              | 82                      | \$9,616,194             |
| Town of Marietta         | 87                         | 72                            | \$7,271,048             | 11                           | \$1,499,651            | 4                        | \$2,035,932            | 87                      | \$10,806,630            |
| Town of Maxton           | 1,247                      | 1,102                         | \$147,678,369           | 106                          | \$31,743,244           | 40                       | \$26,309,144           | 1,248                   | \$205,730,758           |
| Town of McDonald         | 58                         | 52                            | \$8,232,790             | 2                            | \$774,860              | 4                        | \$1,129,551            | 58                      | \$10,137,201            |
| Town of Orrum            | 58                         | 51                            | \$4,903,136             | 3                            | \$819,028              | 4                        | \$3,397,288            | 58                      | \$9,119,451             |
| Town of Parkton          | 312                        | 270                           | \$27,414,017            | 27                           | \$11,683,751           | 16                       | \$7,183,386            | 313                     | \$46,281,154            |
| Town of Pembroke         | 1,814                      | 1,554                         | \$220,135,092           | 180                          | \$139,573,587          | 85                       | \$107,897,634          | 1,819                   | \$467,606,313           |
| Town of Proctorville     | 68                         | 61                            | \$8,308,027             | 1                            | \$87,905               | 6                        | \$2,614,298            | 68                      | \$11,010,230            |
| Town of Raynham          | 37                         | 31                            | \$3,762,062             | 1                            | \$230,360              | 5                        | \$3,606,962            | 37                      | \$7,599,384             |
| Town of Red Springs      | 2,172                      | 1,897                         | \$290,850,238           | 227                          | \$163,606,212          | 54                       | \$36,754,996           | 2,178                   | \$491,211,446           |
| Town of Rennert          | 190                        | 175                           | \$12,045,446            | 9                            | \$2,639,772            | 6                        | \$5,058,615            | 190                     | \$19,743,833            |
| Town of Rowland          | 530                        | 424                           | \$62,505,086            | 89                           | \$36,554,364           | 17                       | \$5,962,430            | 530                     | \$105,021,880           |
| Town of Saint Pauls      | 1,584                      | 1,369                         | \$205,535,988           | 172                          | \$114,519,777          | 45                       | \$30,402,101           | 1,586                   | \$350,457,865           |
| Unincorporated Area      | 40,116                     | 35,427                        | \$3,216,529,631         | 4,371                        | \$1,144,050,726        | 516                      | \$400,265,075          | 40,314                  | \$4,760,845,431         |
| <b>Subtotal Robeson</b>  | <b>56,124</b>              | <b>52,712</b>                 | <b>\$5,571,907,493</b>  | <b>6,562</b>                 | <b>\$2,804,053,602</b> | <b>1,112</b>             | <b>\$923,275,174</b>   | <b>60,386</b>           | <b>\$9,299,236,266</b>  |
| <b>Total Plan Area</b>   | <b>88,587</b>              | <b>110,088</b>                | <b>\$11,407,466,196</b> | <b>13,769</b>                | <b>\$5,234,591,834</b> | <b>2,549</b>             | <b>\$1,814,007,618</b> | <b>126,406</b>          | <b>\$18,456,065,644</b> |

Source: NCEM RMT

**Table 6-30: Regional Estimated Population Vulnerability to Tornadoes (EF2)**

| Jurisdiction             | Elderly at Risk | Children at Risk | Total at Risk |
|--------------------------|-----------------|------------------|---------------|
| <b>Bladen County</b>     |                 |                  |               |
| Town of Bladenboro       | 205             | 36               | 747           |
| Town of Clarkton         | 11              | 1                | 44            |
| Town of Dublin           | 10              | 3                | 51            |
| Town of East Arcadia     | 8               | 3                | 43            |
| Town of Elizabethtown    | 807             | 306              | 3,781         |
| Town of Tar Heel         | 2               | 1                | 8             |
| Town of White Lake       | 63              | 6                | 195           |
| Unincorporated Area      | 5,626           | 1,212            | 25,148        |
| <b>Subtotal Bladen</b>   | <b>6,732</b>    | <b>1,568</b>     | <b>30,017</b> |
| <b>Columbus County</b>   |                 |                  |               |
| City of Whiteville       | 227             | 86               | 1,212         |
| Town of Boardman         | 37              | 4                | 119           |
| Town of Bolton           | 10              | 3                | 66            |
| Town of Brunswick        | 15              | 4                | 80            |
| Town of Cerro Gordo      | 5               | 2                | 29            |
| Town of Chadbourn        | 51              | 14               | 249           |
| Town of Fair Bluff       | 16              | 7                | 86            |
| Town of Lake Waccamaw    | 43              | 7                | 128           |
| Town of Sandyfield       | 32              | 5                | 202           |
| Town of Tabor City       | 96              | 28               | 557           |
| Unincorporated Area      | 10,093          | 2,607            | 48,731        |
| <b>Subtotal Columbus</b> | <b>10,625</b>   | <b>2,767</b>     | <b>51,459</b> |
| <b>Robeson County</b>    |                 |                  |               |
| City of Lumberton        | 2,546           | 1,305            | 16,293        |
| Town of Fairmont         | 208             | 47               | 1,058         |
| Town of Lumber Bridge    | 25              | 3                | 128           |
| Town of Marietta         | 10              | 2                | 42            |
| Town of Maxton           | 218             | 88               | 1,261         |
| Town of McDonald         | 3               | 1                | 13            |
| Town of Orrum            | 3               | 1                | 15            |
| Town of Parkton          | 15              | 5                | 97            |
| Town of Pembroke         | 345             | 209              | 4,341         |
| Town of Proctorville     | 2               | 1                | 12            |
| Town of Raynham          | 1               | 1                | 7             |
| Town of Red Springs      | 491             | 218              | 3,029         |
| Town of Rennert          | 17              | 9                | 127           |
| Town of Rowland          | 10              | 2                | 42            |
| Town of Saint Pauls      | 118             | 63               | 711           |



| Jurisdiction                   | Elderly<br>at Risk | Children<br>at Risk | Total at<br>Risk |
|--------------------------------|--------------------|---------------------|------------------|
| Unincorporated Area            | 10,198             | 4,278               | 66,869           |
| <b><i>Subtotal Robeson</i></b> | <b>14,210</b>      | <b>6,233</b>        | <b>94,045</b>    |
| <b>Total Plan Area</b>         | <b>31,567</b>      | <b>10,568</b>       | <b>175,521</b>   |

Source: NCEM RMT

### 6.3.8 Wildfire

Wildfires can cause significant damage to property and threaten the lives of people who are unable to evacuate wildfire-prone areas. Many individual homes and cabins, subdivisions, resorts, recreational areas, organizational camps, businesses, and industries are located within high-risk wildfire hazard areas. Further, the increasing demand for outdoor recreation spaces has led to greater numbers of people near the wildland-urban interface (WUI) during holidays, weekends, and vacation periods. Unfortunately, wildland residents and visitors are rarely educated or prepared for wildfire events that can sweep through the brush and timber and destroy property within minutes.

Wildfires can result in severe economic losses. Businesses that depend on timber, such as paper mills and lumber companies, experience losses that are often passed along to consumers through higher prices, and sometimes jobs are lost. The high cost of responding to and recovering from wildfires can deplete state and local resources and increase insurance rates. The economic impact of wildfires can also be felt in the tourism industry if roads and tourist attractions are closed due to health and safety concerns, such as reduced air quality by means of wildfire smoke and ash.

The areas of North Carolina with the largest wildfire hazard occurrence are also within the most exposed regions. Many areas in the eastern and western part of the state have a high risk of wildfire since there are large, forested areas in these regions. However, some counties in the central part of the state also have higher risk. Still, a county's exposure score plays a major role and counties with high exposure and high wildfire risk score highest.

Although historical evidence suggests that the Bladen-Columbus-Robeson Region is vulnerable to wildfire events, there are limited detailed records of damage. Therefore, it is difficult to calculate a reliable annualized loss figure or conduct an in-depth analysis of previous events. However, it should be noted that a single large wildfire event could easily result in severe impacts throughout the region. As of 2025, the FEMA NRI rates the wildfire hazard risk index as relatively low for Bladen County (85.68/100), relatively low for Columbus County (78.71/100), and relatively low for Robeson County (70.6/100).

It is assumed that all current and future populations remain at risk of wildfire hazards. Determining the exact number of people in certain wildfire zones is difficult with existing data and could be misleading. Timely sheltering and evacuations of elderly individuals, young individuals, disabled individuals, and individuals requiring specialized care or equipment are of critical importance to reducing risk in advance of and during a wildfire event.

Wildfire vulnerability is not uniform for all areas of the region, as urbanized areas may not carry the same risks as forest lands, but significant parts of the region are at high risk due to their proximity to WUI zones. Data from the Southern Wildfire Risk Assessment (SWRA) indicates that nearly two-thirds (66%) of the total regional acreage has a burn probability of 6 or higher based on a scale from 1 (lowest probability) to 12 (highest probability). Additionally, **Figure 6-1** below provides a map of WUI zones observed throughout the region. Per the SWRA methodology, this "functional WUI" data represents a classification of land near buildings into separate zones describing wildfire mitigation activities appropriate for each zone.

Figure 6-1: Regional Functional Wildland-Urban Interface (WUI)

**Table 6-31** and **Table 6-32** below detail estimated building and population vulnerability to wildfire events at a regional scale. This data was sourced from the RMT planning application.

**Table 6-31: Regional Estimated Building Vulnerability to Wildfires**

| Jurisdiction          | Pre-Firm Buildings at Risk | Residential Buildings at Risk |                 | Commercial Buildings at Risk |               | Public Buildings at Risk |               | Total Buildings at Risk |                 |
|-----------------------|----------------------------|-------------------------------|-----------------|------------------------------|---------------|--------------------------|---------------|-------------------------|-----------------|
|                       |                            | Number                        | Damages         | Number                       | Damages       | Number                   | Damages       | Number                  | Damages         |
| Bladen County         |                            |                               |                 |                              |               |                          |               |                         |                 |
| Town of Bladenboro    | 11                         | 1,077                         | \$123,236,388   | 118                          | \$43,521,914  | 29                       | \$58,734,837  | 1,224                   | \$225,493,140   |
| Town of Clarkton      | 3                          | 127                           | \$22,580,734    | 28                           | \$46,278,445  | 8                        | \$17,619,733  | 163                     | \$86,478,912    |
| Town of Dublin        | 0                          | 21                            | \$3,652,456     | 1                            | \$142,516     | 0                        | \$0           | 22                      | \$3,794,973     |
| Town of East Arcadia  | 0                          | 219                           | \$20,529,152    | 11                           | \$847,313     | 13                       | \$5,007,424   | 243                     | \$26,383,889    |
| Town of Elizabethtown | 0                          | 662                           | \$116,589,157   | 80                           | \$71,698,182  | 24                       | \$23,414,798  | 766                     | \$211,702,136   |
| Town of Tar Heel      | 0                          | 28                            | \$4,268,067     | 1                            | \$78,822      | 0                        | \$0           | 29                      | \$4,346,889     |
| Town of White Lake    | 0                          | 1,052                         | \$86,731,465    | 62                           | \$17,892,771  | 28                       | \$13,677,360  | 1,142                   | \$118,301,596   |
| Unincorporated Area   | 77                         | 9,979                         | \$1,080,295,768 | 1,680                        | \$343,762,205 | 228                      | \$189,695,085 | 11,887                  | \$1,613,753,058 |
| Subtotal Bladen       | 91                         | 13,165                        | \$1,457,883,187 | 1,981                        | \$524,222,168 | 330                      | \$308,149,237 | 15,476                  | \$2,290,254,593 |

## Vulnerability Assessment

| Jurisdiction          | Pre-Firm Buildings at Risk | Residential Buildings at Risk |                 | Commercial Buildings at Risk |                 | Public Buildings at Risk |                 | Total Buildings at Risk |                  |
|-----------------------|----------------------------|-------------------------------|-----------------|------------------------------|-----------------|--------------------------|-----------------|-------------------------|------------------|
|                       |                            | Number                        | Damages         | Number                       | Damages         | Number                   | Damages         | Number                  | Damages          |
| Columbus County       |                            |                               |                 |                              |                 |                          |                 |                         |                  |
| City of Whiteville    | 580                        | 542                           | \$102,430,349   | 124                          | \$148,418,597   | 27                       | \$60,673,233    | 693                     | \$311,522,179    |
| Town of Boardman      | 43                         | 44                            | \$3,622,955     | 2                            | \$258,226       | 1                        | \$138,384       | 47                      | \$4,019,565      |
| Town of Bolton        | 225                        | 251                           | \$30,676,475    | 23                           | \$7,050,476     | 11                       | \$7,222,292     | 285                     | \$44,949,243     |
| Town of Brunswick     | 158                        | 130                           | \$21,042,393    | 13                           | \$10,635,093    | 15                       | \$14,469,629    | 158                     | \$46,147,115     |
| Town of Cerro Gordo   | 44                         | 43                            | \$4,249,030     | 5                            | \$674,577       | 5                        | \$2,436,873     | 53                      | \$7,360,480      |
| Town of Chadbourn     | 359                        | 378                           | \$51,017,560    | 53                           | \$47,381,568    | 11                       | \$27,358,324    | 442                     | \$125,757,451    |
| Town of Fair Bluff    | 340                        | 339                           | \$36,957,284    | 49                           | \$20,746,688    | 12                       | \$13,234,559    | 400                     | \$70,938,530     |
| Town of Lake Waccamaw | 202                        | 250                           | \$44,151,509    | 14                           | \$9,664,333     | 16                       | \$8,485,279     | 280                     | \$62,301,121     |
| Town of Sandyfield    | 164                        | 208                           | \$24,382,055    | 8                            | \$3,726,602     | 8                        | \$3,203,681     | 224                     | \$31,312,338     |
| Town of Tabor City    | 199                        | 210                           | \$29,429,943    | 31                           | \$31,727,157    | 7                        | \$10,683,526    | 248                     | \$71,840,626     |
| Unincorporated Area   | 16,064                     | 17,944                        | \$2,133,920,790 | 1,229                        | \$539,913,598   | 304                      | \$388,186,549   | 19,477                  | \$3,062,020,938  |
| Subtotal Columbus     | 18,378                     | 20,339                        | \$2,481,880,343 | 1,551                        | \$820,196,915   | 417                      | \$536,092,329   | 22,307                  | \$3,838,169,586  |
| Robeson County        |                            |                               |                 |                              |                 |                          |                 |                         |                  |
| City of Lumberton     | 1,027                      | 2,782                         | \$561,216,793   | 267                          | \$390,765,745   | 80                       | \$139,414,270   | 3,129                   | \$1,091,396,808  |
| Town of Fairmont      | 538                        | 512                           | \$89,534,181    | 42                           | \$64,461,048    | 11                       | \$27,963,227    | 565                     | \$181,958,456    |
| Town of Lumber Bridge | 35                         | 30                            | \$3,888,057     | 2                            | \$379,712       | 3                        | \$1,357,418     | 35                      | \$5,625,188      |
| Town of Marietta      | 76                         | 63                            | \$6,857,748     | 11                           | \$1,592,510     | 2                        | \$2,455,002     | 76                      | \$10,905,260     |
| Town of Maxton        | 761                        | 692                           | \$126,514,312   | 49                           | \$21,533,492    | 20                       | \$22,010,421    | 761                     | \$170,058,225    |
| Town of McDonald      | 41                         | 36                            | \$7,449,315     | 2                            | \$1,103,103     | 3                        | \$1,402,217     | 41                      | \$9,954,636      |
| Town of Orrum         | 35                         | 29                            | \$3,230,908     | 3                            | \$941,254       | 3                        | \$5,256,123     | 35                      | \$9,428,286      |
| Town of Parkton       | 38                         | 30                            | \$4,120,730     | 3                            | \$2,745,372     | 5                        | \$3,961,584     | 38                      | \$10,827,687     |
| Town of Pembroke      | 1,229                      | 1,079                         | \$229,161,198   | 97                           | \$121,415,945   | 58                       | \$139,290,869   | 1,234                   | \$489,868,012    |
| Town of Proctorville  | 24                         | 20                            | \$2,611,776     | 1                            | \$141,395       | 3                        | \$1,593,817     | 24                      | \$4,346,988      |
| Town of Raynham       | 31                         | 26                            | \$3,617,595     | 1                            | \$370,532       | 4                        | \$5,651,314     | 31                      | \$9,639,441      |
| Town of Red Springs   | 1,349                      | 1,234                         | \$270,432,364   | 89                           | \$144,388,446   | 32                       | \$43,314,540    | 1,355                   | \$458,135,350    |
| Town of Rennert       | 181                        | 166                           | \$14,384,360    | 9                            | \$3,535,203     | 6                        | \$8,335,171     | 181                     | \$26,254,734     |
| Town of Rowland       | 63                         | 55                            | \$12,338,915    | 5                            | \$4,051,829     | 3                        | \$1,325,812     | 63                      | \$17,716,557     |
| Town of Saint Pauls   | 523                        | 486                           | \$82,263,854    | 26                           | \$38,440,431    | 11                       | \$9,715,926     | 523                     | \$130,420,211    |
| Unincorporated Area   | 29,013                     | 25,649                        | \$2,807,508,816 | 3,138                        | \$995,798,652   | 384                      | \$516,370,986   | 29,171                  | \$4,319,678,454  |
| Subtotal Robeson      | 34,964                     | 32,889                        | \$4,225,130,922 | 3,745                        | \$1,791,664,669 | 628                      | \$929,418,697   | 37,262                  | \$6,946,214,293  |
| Total Plan Area       | 53,433                     | 66,393                        | \$8,164,894,452 | 7,277                        | \$3,136,083,752 | 1,375                    | \$1,773,660,263 | 75,045                  | \$13,074,638,472 |

Source: NCEM RMT

**Table 6-32: Regional Estimated Population Vulnerability to Wildfires**

| Jurisdiction             | Elderly at Risk | Children at Risk | Total at Risk |
|--------------------------|-----------------|------------------|---------------|
| <b>Bladen County</b>     |                 |                  |               |
| Town of Bladenboro       | 130             | 23               | 475           |
| Town of Clarkton         | 4               | 0                | 16            |
| Town of Dublin           | 1               | 0                | 7             |
| Town of East Arcadia     | 8               | 3                | 41            |
| Town of Elizabethtown    | 230             | 87               | 1,078         |
| Town of Tar Heel         | 1               | 0                | 3             |
| Town of White Lake       | 31              | 3                | 95            |
| Unincorporated Area      | 3,546           | 764              | 15,853        |
| <b>Subtotal Bladen</b>   | <b>3,951</b>    | <b>880</b>       | <b>17,568</b> |
| <b>Columbus County</b>   |                 |                  |               |
| City of Whiteville       | 65              | 25               | 349           |
| Town of Boardman         | 13              | 1                | 43            |
| Town of Bolton           | 7               | 2                | 45            |
| Town of Brunswick        | 10              | 3                | 51            |
| Town of Cerro Gordo      | 1               | 1                | 7             |
| Town of Chadbourn        | 21              | 6                | 103           |
| Town of Fair Bluff       | 10              | 4                | 52            |
| Town of Lake Waccamaw    | 14              | 2                | 41            |
| Town of Sandyfield       | 31              | 5                | 195           |
| Town of Tabor City       | 17              | 5                | 99            |
| Unincorporated Area      | 6,407           | 1,655            | 30,933        |
| <b>Subtotal Columbus</b> | <b>6,596</b>    | <b>1,709</b>     | <b>31,918</b> |
| <b>Robeson County</b>    |                 |                  |               |
| City of Lumberton        | 799             | 409              | 5,111         |
| Town of Fairmont         | 81              | 18               | 412           |
| Town of Lumber Bridge    | 11              | 1                | 56            |
| Town of Marietta         | 8               | 2                | 37            |
| Town of Maxton           | 137             | 55               | 792           |
| Town of McDonald         | 2               | 0                | 9             |
| Town of Orrum            | 1               | 0                | 8             |
| Town of Parkton          | 2               | 1                | 11            |
| Town of Pembroke         | 239             | 145              | 3,015         |
| Town of Proctorville     | 1               | 0                | 4             |
| Town of Raynham          | 1               | 1                | 6             |
| Town of Red Springs      | 319             | 142              | 1,967         |
| Town of Rennert          | 16              | 8                | 120           |
| Town of Rowland          | 1               | 0                | 6             |
| Town of Saint Pauls      | 42              | 22               | 253           |
| Unincorporated Area      | 7,384           | 3,097            | 48,416        |



## Vulnerability Assessment

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| Jurisdiction            | Elderly<br>at Risk | Children<br>at Risk | Total at<br>Risk |
|-------------------------|--------------------|---------------------|------------------|
| <i>Subtotal Robeson</i> | 9,044              | 3,901               | 60,223           |
| <b>Total Plan Area</b>  | 19,591             | 6,490               | 109,709          |

Source: NCEM RMT

### 6.3.9 Winter Storm

All of the assets in the Bladen-Columbus-Robeson Region are exposed to potential winter weather. Any specific vulnerabilities of individual assets would depend greatly on individual design, building characteristics (such as a flat roof), and any existing mitigation measures currently in place. Such site-specific vulnerability determinations are outside the scope of this risk and vulnerability assessment but may be considered during future updates.

A qualitative factor in terms of vulnerability is a general lack of awareness on the part of county residents in preparing for and responding to winter storm conditions, such as snow, in a manner that will minimize the danger to themselves and others. This lack of awareness is especially apparent when driving/roadway conditions catch motorists off-guard. Potential losses associated with winter storms, such as snow include the cost of the removal of snow from roadways, debris clean-up, and some indirect losses from power outages, etc. All future structures and infrastructure in the region will be vulnerable to winter storms.

Regional risk and forecast information can be assessed directly through statewide data provided by the National Weather Service (NWS)<sup>31</sup>. A total of 38 winter storm and winter weather events (22 and 16 respectively) have been reported in the region by the National Centers for Environmental Information (NCEI) between January 1995 and January 2025. Collectively, these events resulted in over \$80,000 in property damage (not adjusted for inflation)<sup>32</sup>.

It is assumed that all existing populations and future populations are at risk from winter weather hazards. Timely sheltering and evacuations of elderly individuals, young individuals, disabled individuals, and individuals requiring specialized care or equipment are of critical importance to reducing risk before and during winter storms.

All critical facilities of the region are assumed to be at risk from winter weather hazards as well. Although some buildings may perform better than others due to construction, age, and other factors, determining individual building response is beyond the scope of this plan. As of 2025, the FEMA NRI rates the ice storm hazard risk index as relatively high for Bladen County (89.04/100), relatively high for Columbus County (88.67/100), and relatively high for Robeson County (93.04/100). The winter weather hazard is rated as relatively moderate for Bladen County (66.69/100), relatively moderate for Columbus County (71.59/100), and relatively high for Robeson County (92.46/100).

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<sup>31</sup> NOAA National Weather Service. (2025). <https://www.weather.gov/rah/NC>

<sup>32</sup> NOAA NCEI Storm Events Database. (2025). <https://www.ncdc.noaa.gov/stormevents>

## 6.4 Hazard Vulnerability Conclusions

### 6.4.1 Regional Expected Annual Losses

**Table 6-33** shows expected annual losses (EAL) by category and hazard from the FEMA National Risk Index (NRI) to quantify potential losses in the region stemming from natural hazards as of 2025 data.

Documentation provided for the NRI notes that these values are calculated by multiplying (1) exposure, (2) annualized frequency, and (3) historic loss ratios for distinct hazard types and estimate losses for relevant community sectors such as buildings, populations, and agricultural yields. The composite EAL represents the combined total of the building EAL, population equivalence EAL, and agriculture EAL. For more information on how the values were developed, please review the NRI Technical Documentation as described in the **6.1 Methodology** subsection above.

**Table 6-33: Regional Expected Annual Losses (EAL)**

| FEMA NRI Category/Hazard          | Bladen County       | Columbus County     | Robeson County      | Regional Total       |
|-----------------------------------|---------------------|---------------------|---------------------|----------------------|
| <b>Composite EAL</b>              | <b>\$34,179,117</b> | <b>\$33,997,589</b> | <b>\$51,821,642</b> | <b>\$119,998,348</b> |
| <b>Building EAL</b>               | \$24,652,207        | \$26,692,610        | \$34,222,233        | <b>\$85,567,050</b>  |
| <b>Population Equivalence EAL</b> | \$2,512,412         | \$4,241,824         | \$9,968,277         | <b>\$16,722,513</b>  |
| <b>Agriculture EAL</b>            | \$7,014,498         | \$3,063,155         | \$7,631,132         | <b>\$17,708,785</b>  |
| <b>Dam/Levee Failure</b>          | Negligible          | Negligible          | Negligible          | Negligible           |
| <b>Drought</b>                    | \$349,041           | \$275,994           | \$752,819           | \$1,377,854          |
| <b>Earthquake</b>                 | \$254,351           | \$481,624           | \$1,165,565         | \$1,901,540          |
| <b>Hurricane/Tropical Storm</b>   | \$26,079,656        | \$25,325,900        | \$35,344,755        | \$86,750,311         |
| <b>Inland Flooding</b>            | \$2,147,725         | \$1,843,362         | \$1,108,539         | \$5,099,626          |
| <b>Severe Weather</b>             | \$533,269           | \$611,079           | \$929,374           | \$2,073,722          |
| <b>Tornado</b>                    | \$2,344,968         | \$2,586,395         | \$9,169,385         | \$14,100,748         |
| <b>Wildfire</b>                   | \$648,131           | \$318,033           | \$123,068           | \$1,089,232          |
| <b>Winter Weather</b>             | \$159,274           | \$153,945           | \$290,688           | \$603,907            |

Source: FEMA NRI

### 6.4.2 Priority Risk Index Methodology

The purpose of the Priority Risk Index (PRI) is to categorize and prioritize all potential hazards for the Region as high, moderate, or low risk. The summary hazard classifications generated using the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes. The PRI calculation formula is detailed below:

$$\text{PRI VALUE} = [(\text{PROBABILITY} \times .30) + (\text{IMPACT} \times .30) + (\text{SPATIAL EXTENT} \times .20) + (\text{WARNING TIME} \times .10) + (\text{DURATION} \times .10)]$$

The application of the PRI results in numerical values that allow identified hazards to be ranked against one another (the higher the PRI value, the greater the hazard risk). PRI values are obtained by assigning varying degrees of risk to five categories for each hazard (probability, impact, spatial extent, warning time, and duration). Each degree of risk has been assigned a value (1 to 4) and weighting factor according to a framework summarized below in **Table 6-34**. The sum of all five categories equals the final PRI value, as demonstrated in the equation seen above (the highest possible PRI value is 4.0).

**Table 6-34: Priority Risk Index (PRI) Methodology**

| Risk Assessment Category                                                                                                                                                      | Level            | Degree of Risk Criteria                                                                                                                                  | Index | Weight |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------|
| <b>PROBABILITY</b><br>What is the likelihood of a hazard event occurring in a given year?                                                                                     | Unlikely         | Less than 1% annual probability                                                                                                                          | 1     | 30%    |
|                                                                                                                                                                               | Possible         | Between 1 and 10% annual probability                                                                                                                     | 2     |        |
|                                                                                                                                                                               | Likely           | Between 10 and 100% annual probability                                                                                                                   | 3     |        |
|                                                                                                                                                                               | Highly Likely    | 100% annual probability                                                                                                                                  | 4     |        |
| <b>IMPACT</b><br>In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs? | Minor            | Very few injuries, if any. Only minor property damage & minimal disruption on quality of life. Temporary shutdown of critical facilities.                | 1     | 30%    |
|                                                                                                                                                                               | Limited          | Minor injuries only. Over 10% of property in affected area damaged or destroyed. Shutdown of critical facilities for > 1 day.                            | 2     |        |
|                                                                                                                                                                               | Critical         | Multiple deaths/injuries possible. Over 25% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for > 1 week.    | 3     |        |
|                                                                                                                                                                               | Catastrophic     | High number of deaths/injuries possible. Over 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities > 30 days. | 4     |        |
| <b>SPATIAL EXTENT</b><br>How large of an area could be impacted by a hazard event? Are impacts localized or regional?                                                         | Negligible       | Less than 1% of area affected                                                                                                                            | 1     | 20%    |
|                                                                                                                                                                               | Small            | Between 1 & 10% of area affected                                                                                                                         | 2     |        |
|                                                                                                                                                                               | Moderate         | Between 10 & 50% of area affected                                                                                                                        | 3     |        |
|                                                                                                                                                                               | Large            | Between 50 & 100% of area affected                                                                                                                       | 4     |        |
| <b>WARNING TIME</b><br>Is there usually some lead time associated with the hazard event? Have warning measures been implemented?                                              | More than 24 Hrs | Self-Defined                                                                                                                                             | 1     | 10%    |
|                                                                                                                                                                               | 12 to 24 Hrs     | Self-Defined                                                                                                                                             | 2     |        |
|                                                                                                                                                                               | 6 to 12 Hrs      | Self-Defined                                                                                                                                             | 3     |        |
|                                                                                                                                                                               | Less than 6 Hrs  | Self-Defined                                                                                                                                             | 4     |        |
| <b>DURATION</b><br>How long does the hazard event usually last?                                                                                                               | Less than 6 Hrs  | Self-Defined                                                                                                                                             | 1     | 10%    |
|                                                                                                                                                                               | Less than 24 Hrs | Self-Defined                                                                                                                                             | 2     |        |
|                                                                                                                                                                               | Less than 1 week | Self-Defined                                                                                                                                             | 3     |        |
|                                                                                                                                                                               | More than 1 week | Self-Defined                                                                                                                                             | 4     |        |

### 6.4.3 Priority Risk Index Results

**Table 6-35** summarizes the degree of risk for each identified hazard using the PRI method described above.

**Table 6-35: Summary of Hazard PRI Results**

| Hazard            | Probability   | Impact   | Spatial Extent | Warning Time     | Duration         | PRI Score  |
|-------------------|---------------|----------|----------------|------------------|------------------|------------|
| Cybersecurity     | Likely        | Critical | Moderate       | Less than 6 Hrs  | More than 1 week | <b>3.2</b> |
| Dam/Levee Failure | Unlikely      | Limited  | Small          | Less than 6 Hrs  | Less than 6 Hrs  | <b>1.8</b> |
| Drought           | Highly Likely | Minor    | Large          | More than 24 Hrs | More than 1 week | <b>2.8</b> |
| Earthquake        | Possible      | Limited  | Moderate       | Less than 6 Hrs  | Less than 6 Hrs  | <b>2.3</b> |

|                                                     |               |          |          |                  |                  |     |
|-----------------------------------------------------|---------------|----------|----------|------------------|------------------|-----|
| Excessive Heat                                      | Likely        | Critical | Large    | More than 24 Hrs | Less than 1 week | 3.0 |
| Hurricane/Tropical Storm                            | Likely        | Critical | Large    | More than 24 Hrs | Less than 24 Hrs | 2.9 |
| Infectious Disease                                  | Possible      | Critical | Large    | More than 24 Hrs | More than 1 week | 2.8 |
| Inland Flooding                                     | Likely        | Critical | Moderate | 6 to 12 Hrs      | Less than 1 week | 3.0 |
| Severe Weather (Hail, Lightning, Thunderstorm Wind) | Highly Likely | Critical | Moderate | 6 to 12 Hrs      | Less than 6 Hrs  | 3.1 |
| Tornado                                             | Likely        | Critical | Small    | Less than 6 Hrs  | Less than 6 Hrs  | 2.7 |
| Wildfire                                            | Likely        | Limited  | Moderate | Less than 6 Hrs  | Less than 1 week | 2.8 |
| Winter Storm                                        | Likely        | Minor    | Moderate | More than 24 Hrs | Less than 1 week | 2.2 |

#### 6.4.4 Final Risk Classifications

As summarized in **Table 6-36**, the results from the PRI have been classified into three categories based on the assigned risk value:

- **Low Risk** – Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.
- **Medium Risk** – Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **High Risk** – Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread.

**Table 6-36: Summary of Hazard Risk Classifications**

|                           |                                                                                                                                                                                                 |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High Risk (> 2.5)         | Cybersecurity<br>Severe Weather (Hail, Lightning, Wind)<br>Excessive Heat<br>Inland Flooding (100/500-year)<br>Hurricane/Tropical Storm<br>Drought<br>Infectious Disease<br>Wildfire<br>Tornado |
| Moderate Risk (2.0 – 2.5) | Earthquake<br>Winter Storm                                                                                                                                                                      |
| Low Risk (< 2.0)          | Dam/Levee Failure                                                                                                                                                                               |



## SECTION 7: CAPABILITY ASSESSMENT

This section discusses the capability of the Region to implement hazard mitigation activities. It consists of the following four subsections:

- ◆ 7.1 Overview
- ◆ 7.2 Conducting the Capability Assessment
- ◆ 7.3 Capability Assessment Findings
- ◆ 7.4 Conclusions on Local Capability

### 7.1 Overview

The purpose of conducting a *Capability Assessment* is to determine the ability of a local jurisdiction to implement a comprehensive *Mitigation Strategy*, and to identify potential opportunities for establishing or enhancing specific mitigation policies, programs, or projects. As in any planning process, it is important to try to establish which goals, objectives, and actions are feasible, based on an understanding of the organizational capacity of those agencies or departments tasked with their implementation. A *Capability Assessment* helps to determine which mitigation actions are practical and likely to be implemented over time given a local government's planning and regulatory framework, level of administrative and technical support, amount of fiscal resources, and current political climate.

A *Capability Assessment* has two primary components: 1) an inventory of a local jurisdiction's relevant plans, ordinances, and programs already in place; and 2) an analysis of its capacity to carry them out. Careful examination of local capabilities will detect any existing gaps, shortfalls, or weaknesses with ongoing government activities that could hinder proposed mitigation activities and possibly exacerbate community hazard vulnerability. *Capability Assessment* also highlights the positive mitigation measures already in place or being implemented at the local government level, which should continue to be supported and enhanced through future mitigation efforts.

The *Capability Assessment* completed for the Plan Area serves as a critical planning step and an integral part of the foundation for designing an effective *Mitigation Strategy*. Coupled with the *Risk Assessment*, the *Capability Assessment* helps identify and target meaningful mitigation actions for incorporation into the *Mitigation Strategy* portion of the Plan. It not only helps establish the goals and objectives for the Region to pursue under this Plan, but also ensures that those goals and objectives are realistically achievable under given local conditions.

### 7.2 Conducting the Capability Assessment

To facilitate the inventory and analysis of local government capabilities within Bladen Columbus and Robeson counties, a detailed capability assessment was completed for each of the participating jurisdictions based on information found in existing hazard mitigation plans and local government websites. The assessment compiled information on various "capability indicators" including relevant planning regulatory practices (plans, programs, and ordinances), fiscal resources, administrative and technical capacity, and current political climate. These capability indicators provide insight into existing conditions that support and/or hinder the region's ability to implement hazard mitigation actions.

The standardized indicators used to assess capability promote an extensive inventory of existing local plans, ordinances, programs, and resources that are in place or underway in addition to their overall effect on hazard loss reduction. Additionally, this information can help identify gaps, weaknesses, or conflicts that counties and local jurisdictions can be addressed through newly proposed mitigation actions as part of the hazard mitigation strategy.

The information collected for the capability assessment was incorporated into a database for further analysis. A general scoring methodology was then applied to quantify each jurisdiction's overall capability. According to the scoring system, each capability indicator was assigned a point value based on its relevance to hazard mitigation. The scoring methodology is included in Appendix B: Planning Tools. Using this scoring methodology, a total score<sup>2</sup> and an overall capability rating of "high," "moderate," or "limited" could be determined according to the total number of points received. These classifications are designed to provide a general assessment of local government capability. The results of this capability assessment help inform and the development of an effective and practical mitigation str

### 7.3 Capability Assessment Findings

The findings of the *Capability Assessment* are summarized in this Plan to provide insight into the relevant capacity of the Plan Area to implement hazard mitigation activities. All information is based upon the input provided by local government officials through the MAC.

#### 7.3.1 Planning and Regulatory Capability

Planning and regulatory capability is based on the implementation of plans, ordinances, and programs that demonstrate a local jurisdiction's commitment to guiding and managing growth, development, and redevelopment in a responsible manner, while maintaining the general welfare of the community. It includes emergency response and mitigation planning, comprehensive land use planning, and transportation planning, in addition to the enforcement of zoning or subdivision ordinances and building codes that regulate how land is developed and structures are built, as well as protecting environmental, historic, and cultural resources in the community. Although some conflicts can arise, these planning initiatives generally present significant opportunities to integrate hazard mitigation principles and practices into the local decision-making process.

This assessment is designed to provide a general overview of the key planning and regulatory tools or programs in place or under development for the Region, along with their potential effect on loss reduction. This information will help identify opportunities to address existing gaps, weaknesses, or conflicts with other initiatives in addition to integrating the implementation of this Plan with existing planning mechanisms where appropriate.

Table 7-1 provides a summary of the relevant local plans, ordinances, and programs already in place or under development for the Region. Listed below are existing plans, studies, reports and technical information reviewed for plan development and update. Relevant information such as, hazard analysis, NFIP data, building codes, ordinances and communication procedures, existing data, and shared objectives were incorporated into the mitigation plan via coordination with relevant agencies, prioritizing hazards, prioritizing mitigation actions.

A checkmark (✓) indicates that the given item is currently in place and being implemented. An asterisk (\*) indicates that the given item is currently being developed for future implementation. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the Hazard Mitigation Plan.

Table 7-1: Relevant Plans, Ordinances, and Programs

| Jurisdiction          | Hazard Mitigation Plan | Comprehensive Land Use Plan | Floodplain Management Plan | Open Space Management Plan | Stormwater Management Plan | Emergency Operations Plan | SARA Title III Plan | Radiological Emergency Plan | Continuity of Operations Plan | Evacuation Plan | Disaster Recovery Plan | Capital Improvements Plan | Economic Development Plan | Historic Preservation Plan | Transportation Plan | Flood Damage Prevention Ordinance | Zoning Ordinance | Subdivision Ordinance | Site Plan Review Requirements | Unified Development Ordinance | Post-Disaster Redevelopment Ordinance | Building Code | Fire Code | Community Wildfire Protection Plan | National Flood Insurance Program | Community Rating System |
|-----------------------|------------------------|-----------------------------|----------------------------|----------------------------|----------------------------|---------------------------|---------------------|-----------------------------|-------------------------------|-----------------|------------------------|---------------------------|---------------------------|----------------------------|---------------------|-----------------------------------|------------------|-----------------------|-------------------------------|-------------------------------|---------------------------------------|---------------|-----------|------------------------------------|----------------------------------|-------------------------|
| Town of Bladenboro    | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           | ✓                             | ✓               | ✓                      | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             |                               | ✓                                     | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Clarkton      | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           | ✓                             | ✓               | ✓                      | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             |                               | ✓                                     | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Dublin        | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           | ✓                             | ✓               | ✓                      | ✓                         | ✓                         |                            | ✓                   |                                   | ✓                | ✓                     | ✓                             |                               | ✓                                     | ✓             | ✓         | ✓                                  |                                  |                         |
| Town of Elizabethtown | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           | ✓                             | ✓               | ✓                      | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             |                               | ✓                                     | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Chadbourne    | ✓                      | ✓                           | ✓                          | ✓                          | ✓                          | ✓                         | ✓                   |                             | ✓                             | ✓               |                        | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Fair Bluff    | ✓                      | ✓                           | ✓                          | ✓                          | ✓                          | ✓                         | ✓                   | ✓                           | ✓                             | ✓               | ✓                      | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Lake Waccamaw | ✓                      | ✓                           | ✓                          | ✓                          | ✓                          | ✓                         | ✓                   |                             | ✓                             | ✓               |                        | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Tabor City    | ✓                      | ✓                           | ✓                          | ✓                          | ✓                          | ✓                         | ✓                   |                             | ✓                             | ✓               |                        | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         | ✓                                  | ✓                                |                         |
| City of Whiteville    | ✓                      | ✓                           | ✓                          | ✓                          | ✓                          | ✓                         | ✓                   | ✓                           | ✓                             | ✓               | ✓                      | ✓                         | ✓                         | *                          | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         | ✓                                  | ✓                                | ✓                       |
| Robeson County        | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   |                             |                               |                 |                        |                           | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             |                               |                                       | ✓             | ✓         |                                    | ✓                                |                         |
| City of Lumberton     | ✓                      | ✓                           | ✓                          | ✓                          | ✓                          | ✓                         |                     |                             |                               |                 |                        | ✓                         |                           |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             |                               |                                       | ✓             | ✓         |                                    | ✓                                |                         |
| Town of Red Springs   | ✓                      | ✓                           | ✓                          | ✓                          | ✓                          | ✓                         | ✓                   | ✓                           | ✓                             | ✓               | ✓                      | ✓                         | ✓                         | ✓                          | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             | ✓                                     | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Fairmont      | ✓                      | ✓                           | ✓                          |                            | ✓                          | ✓                         |                     |                             |                               |                 |                        | ✓                         | ✓                         | ✓                          | ✓                   | ✓                                 | ✓                | ✓                     |                               |                               |                                       | ✓             |           | ✓                                  | ✓                                |                         |
| Town of Bolton        | ✓                      | ✓                           | ✓                          | ✓                          | ✓                          | ✓                         | ✓                   |                             | ✓                             | ✓               |                        | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         | ✓                                  | ✓                                |                         |

| Jurisdiction          | Hazard Mitigation Plan | Comprehensive Land Use Plan | Floodplain Management Plan | Open Space Management Plan | Stormwater Management Plan | Emergency Operations Plan | SARA Title III Plan | Radiological Emergency Plan | Continuity of Operations Plan | Evacuation Plan | Disaster Recovery Plan | Capital Improvements Plan | Economic Development Plan | Historic Preservation Plan | Transportation Plan | Flood Damage Prevention Ordinance | Zoning Ordinance | Subdivision Ordinance | Site Plan Review Requirements | Unified Development Ordinance | Post-Disaster Redevelopment Ordinance | Building Code | Fire Code | Community Wildfire Protection Plan | National Flood Insurance Program | Community Rating System |
|-----------------------|------------------------|-----------------------------|----------------------------|----------------------------|----------------------------|---------------------------|---------------------|-----------------------------|-------------------------------|-----------------|------------------------|---------------------------|---------------------------|----------------------------|---------------------|-----------------------------------|------------------|-----------------------|-------------------------------|-------------------------------|---------------------------------------|---------------|-----------|------------------------------------|----------------------------------|-------------------------|
| Bladen County         | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           | ✓                             | ✓               | ✓                      | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             |                               | ✓                                     | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Tar Heel      | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           | ✓                             | ✓               | ✓                      | ✓                         | ✓                         |                            | ✓                   |                                   | ✓                | ✓                     | ✓                             |                               | ✓                                     | ✓             | ✓         | ✓                                  |                                  |                         |
| Columbus County       | ✓                      | ✓                           | ✓                          | ✓                          | ✓                          | ✓                         | ✓                   |                             | ✓                             | ✓               |                        | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Brunswick     | ✓                      | ✓                           | ✓                          | ✓                          | ✓                          | ✓                         | ✓                   |                             | ✓                             | ✓               |                        | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Cerro Gordo   | ✓                      | ✓                           | ✓                          | ✓                          | ✓                          | ✓                         | ✓                   |                             | ✓                             | ✓               |                        | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Orrum         | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   |                             |                               |                 |                        |                           | ✓                         |                            | ✓                   |                                   | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         |                                    |                                  |                         |
| Town of Parkton       | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   |                             |                               |                 |                        |                           | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         |                                    | ✓                                |                         |
| Town of Lumber Bridge | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   |                             |                               |                 |                        |                           | ✓                         |                            | ✓                   |                                   | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         |                                    |                                  |                         |
| Town of White Lake    | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           | ✓                             | ✓               | ✓                      | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             |                               | ✓                                     | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of East Arcadia  | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           | ✓                             | ✓               | ✓                      | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             |                               | ✓                                     | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Marietta      | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   |                             |                               |                 |                        |                           | ✓                         |                            | ✓                   |                                   | ✓                | ✓                     | ✓                             |                               |                                       | ✓             | ✓         |                                    |                                  |                         |
| Town of Maxton        | ✓                      |                             |                            |                            |                            | ✓                         |                     |                             |                               |                 |                        | ✓                         | ✓                         |                            |                     | ✓                                 | ✓                | ✓                     | ✓                             |                               |                                       | ✓             | ✓         |                                    | ✓                                |                         |
| Town of Pembroke      | ✓                      | ✓                           | ✓                          | ✓                          | ✓                          |                           |                     |                             |                               |                 |                        |                           |                           |                            |                     | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         |                                    | ✓                                |                         |
| Town of Saint Pauls   | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   |                             |                               |                 |                        |                           | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             |                               |                                       | ✓             | ✓         |                                    | ✓                                |                         |
| Town of Proctorville  | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   |                             |                               |                 |                        |                           | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             |                               |                                       | ✓             | ✓         |                                    | ✓                                |                         |



| Jurisdiction                          | Town of Rowland | Town of Raynham | Town of Rennett | Town of Sandyfield | Town of Boardman | Town of McDonald |
|---------------------------------------|-----------------|-----------------|-----------------|--------------------|------------------|------------------|
| Hazard Mitigation Plan                | ✓               | ✓               | ✓               | ✓                  | ✓                | ✓                |
| Comprehensive Land Use Plan           | ✓               | ✓               | ✓               | ✓                  | ✓                | ✓                |
| Floodplain Management Plan            | ✓               | ✓               | ✓               | ✓                  | ✓                | ✓                |
| Open Space Management Plan            | ✓               | ✓               | ✓               | ✓                  | ✓                | ✓                |
| Stormwater Management Plan            |                 |                 |                 | ✓                  | ✓                |                  |
| Emergency Operations Plan             | ✓               | ✓               | ✓               | ✓                  | ✓                | ✓                |
| SARA Title III Plan                   | ✓               | ✓               | ✓               | ✓                  | ✓                | ✓                |
| Radiological Emergency Plan           |                 |                 |                 |                    |                  |                  |
| Continuity of Operations Plan         |                 |                 |                 | ✓                  | ✓                |                  |
| Evacuation Plan                       |                 |                 |                 | ✓                  | ✓                |                  |
| Disaster Recovery Plan                |                 |                 |                 |                    |                  |                  |
| Capital Improvements Plan             |                 |                 |                 | ✓                  | ✓                |                  |
| Economic Development Plan             | ✓               | ✓               | ✓               | ✓                  | ✓                | ✓                |
| Historic Preservation Plan            |                 |                 |                 |                    |                  |                  |
| Transportation Plan                   | ✓               | ✓               | ✓               | ✓                  | ✓                | ✓                |
| Flood Damage Prevention Ordinance     |                 |                 | ✓               | ✓                  | ✓                |                  |
| Zoning Ordinance                      | ✓               | ✓               | ✓               | ✓                  | ✓                | ✓                |
| Subdivision Ordinance                 | ✓               | ✓               | ✓               | ✓                  | ✓                | ✓                |
| Site Plan Review Requirements         | ✓               | ✓               | ✓               | ✓                  | ✓                | ✓                |
| Unified Development Ordinance         |                 |                 |                 | ✓                  | ✓                |                  |
| Post-Disaster Redevelopment Ordinance |                 |                 |                 |                    |                  |                  |
| Building Code                         | ✓               | ✓               | ✓               | ✓                  | ✓                | ✓                |
| Fire Code                             | ✓               | ✓               | ✓               | ✓                  | ✓                | ✓                |
| Community Wildfire Protection Plan    |                 |                 |                 | ✓                  | ✓                |                  |
| National Flood Insurance Program      |                 |                 |                 | ✓                  | ✓                |                  |
| Community Rating System               |                 |                 |                 |                    |                  |                  |

A more detailed discussion on the Region's planning and regulatory capability follows, along with the incorporation of additional information based on the narrative comments provided by local officials in response to the survey questionnaire.

### 7.3.1.1 Emergency Management

Hazard mitigation is widely recognized as one of the four primary phases of emergency management. The three other phases are preparedness, response, and recovery. In reality each phase is interconnected with hazard mitigation, as Figure 7-1 suggests. Opportunities to reduce potential losses through mitigation practices are most often implemented before a disaster event, such as elevation of flood-prone structures or through the continuous enforcement of policies that prevent and regulate development that is vulnerable to hazards because of its location, design, or other characteristics. Mitigation opportunities can also be identified during immediate preparedness or response activities (such as installing storm shutters in advance of a hurricane), and in many instances during the long-term recovery and redevelopment process following a disaster event.



Figure 7-1: The Four Phases of Emergency Management

Planning for each phase is a critical part of a comprehensive emergency management program and a key to the successful implementation of hazard mitigation actions. As a result, the **Local Capability Assessment Survey** asked several questions across a range of emergency management plans to assess the Area's willingness to plan and their level of technical planning proficiency.

#### Hazard Mitigation Plan

A hazard mitigation plan represents a community's blueprint for how it intends to reduce the impact of natural, and in some cases human-caused, hazards on people and the built environment. The essential elements of a hazard mitigation plan include a risk assessment, capability assessment, and mitigation strategy.

- 35 of the 35 participating jurisdictions in this regional planning effort have previously been covered by their county's multi-jurisdictional hazard mitigation plan.

#### Disaster Recovery Plan

A disaster recovery plan serves to guide the physical, social, environmental, and economic recovery and reconstruction process following a disaster event. In many instances, hazard mitigation principles and

practices are incorporated into local disaster recovery plans with the intent of capitalizing on opportunities to break the cycle of repetitive disaster losses. Disaster recovery plans can also lead to the preparation of disaster redevelopment policies and ordinances to be enacted following a hazard event.

- 11 of the 35 participating jurisdictions have a disaster recovery plan either in place or under development. (6 jurisdictions have one in place; 5 covered under a county plan)

### **Emergency Operations Plan**

An emergency operations plan outlines responsibility and the means by which resources are deployed during and following an emergency or disaster.

- 34 of the 35 participating jurisdictions have an emergency operations plan either in place or are covered under a county plan. (19 jurisdictions have one in place; 16 covered under a county plan)

### **Continuity of Operations Plan**

A continuity of operations plan establishes a chain of command, line of succession, and plans for backup or alternate emergency facilities in case of an extreme emergency or disaster event.

- 20 of the 35 participating jurisdictions have a continuity of operations plan in place.

### **7.3.1.2 General Planning**

The implementation of hazard mitigation activities often involves agencies and individuals beyond the emergency management profession. Stakeholders may include local planners, public works officials, economic development specialists, and others. In many instances, concurrent local planning efforts will help to achieve or complement hazard mitigation goals, even though they are not designed as such.

**Local Capability Assessment Survey** also asked questions regarding general planning capabilities and the degree to which hazard mitigation is integrated into other ongoing planning efforts in the Plan Area.

### **Comprehensive/General Plan**

A comprehensive land use plan, or general plan, establishes the overall vision for what a community wants to be and serves as a guide for future governmental decision making. Typically, a comprehensive plan contains sections on demographic conditions, land use, transportation elements, and community facilities. Given the broad nature of the plan and its regulatory standing in many communities, the integration of hazard mitigation measures into the comprehensive plan can enhance the likelihood of achieving risk reduction goals, objectives, and actions.

- 34 of the 35 participating jurisdictions have a comprehensive land use plan either in place or under development (18 jurisdictions have one in place; 16 covered under a county plan)

### **Capital Improvements Plan**

A capital improvements plan guides the scheduling of spending on public improvements. A capital improvements plan can serve as an important mechanism for guiding future development away from identified hazard areas. Limiting public spending in hazardous areas is one of the most effective long-term mitigation actions available to local governments.

- 23 of the 35 participating jurisdictions have a capital improvements plan in place or under development.

### Historic Preservation Plan

A historic preservation plan is intended to preserve historic structures or districts within a community. An often-overlooked aspect of the historic preservation plan is the assessment of buildings and sites located in areas subject to natural hazards, and the identification of ways to reduce future damages. This may involve retrofitting or relocation techniques that account for the need to protect buildings that do not meet current building standards or are within a historic district that cannot easily be relocated out of harm's way.

- 3 of the 35 participating jurisdictions have an historic preservation plan in place or under development.

### Zoning Ordinance

Zoning represents the primary means by which land use is controlled by local governments. As part of a community's police power, zoning is used to protect the public health, safety, and welfare of those in a given jurisdiction that maintains zoning authority. A zoning ordinance is the mechanism through which zoning is typically implemented. Since zoning regulations enable municipal governments to limit the type and density of development, a zoning ordinance can serve as a powerful tool when applied in identified hazard areas.

- 35 of the 35 participating jurisdictions have a zoning ordinance in place or under development.

### Subdivision Ordinance

A subdivision ordinance is intended to regulate the development of residential, commercial, industrial, or other uses, including associated public infrastructure, as land is subdivided into buildable lots for sale or future development. Subdivision design that accounts for natural hazards can dramatically reduce the exposure of future development.

- 35 of the 35 participating jurisdictions have a subdivision ordinance in place or under development.

### Building Codes, Permitting, and Inspections

Building codes regulate construction standards. In many communities, permits and inspections are required for new construction. Decisions regarding the adoption of building codes (that account for hazard risk), the type of permitting process required both before and after a disaster, and the enforcement of inspection protocols all affect the level of hazard risk faced by a community.

- 35 of the 35 participating jurisdictions have building codes in place.

The adoption and enforcement of building codes by local jurisdictions is routinely assessed through the Building Code Effectiveness Grading Schedule (BCEGS) program, developed by the Insurance Services Office, Inc. (ISO). In North Carolina, the North Carolina Department of Insurance assesses the building codes in effect in a particular community and how the community enforces its building codes, with special emphasis on mitigation of losses from natural hazards. The results of BCEGS assessments are routinely provided to ISO's member private insurance companies, which in turn may offer ratings credits for new buildings constructed in communities with strong BCEGS classifications. The concept is that communities with well-enforced, up-to-date codes should experience fewer disaster-related losses, and as a result should have lower insurance rates.

In conducting the assessment, ISO collects information related to personnel qualification and continuing education, as well as number of inspections performed per day. This type of information combined with local building codes is used to determine a grade for that jurisdiction. The grades range from 1 to 10,

with a BCEGS grade of 1 representing exemplary commitment to building code enforcement, and a grade of 10 indicating less than minimum recognized protection.

### 7.3.1.3 Floodplain Management

Flooding represents the greatest natural hazard facing the nation. At the same time, the tools available to reduce the impacts associated with flooding are among the most developed when compared to other hazard-specific mitigation techniques. In addition to approaches that cut across hazards such as education, outreach, and the training of local officials, the National Flood Insurance Program (NFIP) contains specific regulatory measures that enable government officials to determine where and how growth occurs relative to flood hazards. Participation in the NFIP is voluntary for local governments; however, program participation is strongly encouraged by FEMA as a first step for implementing and sustaining an effective hazard mitigation program. It is therefore used as part of this *Capability Assessment* as a key indicator for measuring local capability.

In order for a county or municipality to participate in the NFIP, they must adopt a local flood damage prevention ordinance that requires jurisdictions to follow established minimum building standards in the floodplain. These standards require that all new buildings and substantial improvements to existing buildings will be protected from damage by a 100-year flood event, and that new development in the floodplain will not exacerbate existing flood problems or increase damage to other properties.

A key service provided by the NFIP is the mapping of identified flood hazard areas. Once completed, the Flood Insurance Rate Maps (FIRMs) are used to assess flood hazard risk, regulate construction practices, and set flood insurance rates. FIRMs are an important source of information to educate residents, government officials, and the private sector about the likelihood of flooding in their community.

Table 7-2 provides NFIP policy and claim information for each participating jurisdiction in the Region.



**Table 7-2: NFIP Policy and Claim Information**

| Jurisdiction                          | Date Joined NFIP | Current Effective Map Date | NFIP Policies in Force | Insurance in Force   | Written Premium in Force | Closed Losses | Total Payments      |
|---------------------------------------|------------------|----------------------------|------------------------|----------------------|--------------------------|---------------|---------------------|
| <b>Bladen</b>                         |                  |                            |                        |                      |                          |               |                     |
| Bladen County (Unincorporated Area)   | 01/20/78         | 12/06/19                   | 151                    | \$37,376,000         | \$114,010                | 94            | \$5,501,977         |
| Town of Bladenboro                    | 11/30/73         | 12/06/19                   | 26                     | \$6,521,000          | \$52,017                 | 29            | \$1,644,561         |
| Town of Clarkton                      | 12/07/73         | 02/16/07                   | 6                      | \$1,547,000          | \$3,930                  | 3             | \$215,405           |
| Town of East Arcadia                  | 09/01/89         | (NSFHA)                    | 2                      | \$372,000            | \$1,187                  | 0             | 0                   |
| Town of Elizabethtown                 | 12/21/73         | 02/16/07                   | 11                     | \$3,993,000          | \$7,736                  | 4             | \$91,944            |
| Town of White Lake                    | 09/01/89         | 02/16/07                   | 17                     | \$5,202,000          | \$8,400                  | 5             | \$168,177           |
| <i>Subtotal Bladen</i>                | -                | -                          | 213                    | <i>\$55,011,000</i>  | <i>\$187,280</i>         | 135           | <i>\$7,622,064</i>  |
| <b>Robeson</b>                        |                  |                            |                        |                      |                          |               |                     |
| City of Lumberton                     | 06/28/74         | 12/06/19                   | 795                    | \$207,062,000        | \$866,394                | 661           | \$36,729,431        |
| Robeson County (Unincorporated Area)  | 07/28/78         | 12/06/19                   | 400                    | \$83,968,000         | \$319,851                | 410           | \$12,750,530        |
| Town of Fairmont                      | 02/15/74         | 01/05/07                   | 10                     | \$3,239,000          | \$9,636                  | 7             | \$124,078           |
| Town of Maxton                        | 01/19/05         | 12/06/19                   | 2                      | \$663,000            | \$1,205                  | 0             | 0                   |
| Town of Parkton                       | 02/17/89         | 01/05/07                   | 0                      | 0                    | 0                        | 1             | \$3878              |
| Town of Pembroke                      | 01/19/05         | 12/06/19                   | 16                     | \$2,560,000          | \$10,313                 | 5             | \$283,512           |
| Town of Proctorville                  | 01/19/05         | 01/05/07                   | 0                      | 0                    | 0                        | 0             | 0                   |
| Town of Red Springs                   | 04/01/77         | 01/05/07                   | 24                     | \$7,374,000          | \$14,953                 | 9             | \$117,063           |
| Town of Rennert                       | 01/19/05         | 01/05/07                   | 0                      | 0                    | 0                        | 0             | 0                   |
| Town of Saint Pauls                   | 01/19/05         | (NSFHA)                    | 7                      | \$1,699,000          | \$4,529                  | 3             | \$29,595            |
| <i>Subtotal Robeson</i>               | -                | -                          | 1,254                  | <i>\$306,565,000</i> | <i>\$1,226,881</i>       | 1,096         | <i>\$50,038,087</i> |
| <b>Columbus</b>                       |                  |                            |                        |                      |                          |               |                     |
| City of Whiteville                    | 02/15/74         | 12/06/19                   | 90                     | \$21,319,000         | \$92,522                 | 85            | \$4,344,004         |
| Columbus County (Unincorporated Area) | 06/19/78         | 12/06/19                   | 239                    | \$60,136,000         | \$170,892                | 176           | \$8,501,670         |

## Capability Assessment

|                          |          |          |              |                      |                    |              |                     |
|--------------------------|----------|----------|--------------|----------------------|--------------------|--------------|---------------------|
| Town of Boardman         | 06/16/78 | 12/06/19 | 5            | \$869,000            | \$5,780            | 1            | \$23,360            |
| Town of Bolton           | 03/08/74 | 02/16/07 | 1            | \$300,000            | \$586              | 1            | \$28,257            |
| Town of Brunswick        | 06/02/06 | (NSFHA)  | 2            | \$541,000            | \$1,491            | 1            | \$41,377            |
| Town of Cerro Gordo      | 10/17/75 | 12/06/19 | 0            | 0                    | 0                  | 0            | 0                   |
| Town of Chadbourn        | 05/24/74 | 02/16/07 | 5            | \$1,240,000          | \$2,484            | 3            | \$47,288            |
| Town of Fair Bluff       | 12/14/73 | 06/02/06 | 38           | \$9,258,000          | \$38,878           | 56           | \$3,444,993         |
| Town of Lake Waccamaw    | 12/21/73 | 12/06/19 | 182          | \$48,813,000         | \$132,324          | 90           | \$3,202,985         |
| Town of Sandyfield       | 06/16/78 | 12/06/19 | 1            | \$350,000            | \$448              | 0            | 0                   |
| Town of Tabor City       | 06/07/74 | 12/06/19 | 6            | \$675,000            | \$3,829            | 14           | \$249,941           |
| <i>Subtotal Columbus</i> | -        | -        | 569          | <i>\$143,501,000</i> | <i>\$449,234</i>   | 427          | <i>\$19,883,875</i> |
| <b>TOTAL PLAN</b>        | -        | -        | <b>2,036</b> | <b>\$505,077,000</b> | <b>\$1,863,395</b> | <b>1,658</b> | <b>\$77,544,026</b> |

Source: FEMA NFIP Policy Statistics as of June 3, 2025.

All jurisdictions listed above participate in the National Flood Insurance Program and will continue to comply with all required provisions of the program and work to adequately comply in the future utilizing a number of strategies. Floodplain management is managed through zoning ordinances, building code restrictions, and the county building inspection program. The jurisdictions will coordinate with NCEM and FEMA to develop maps and regulations related to Special Flood Hazard Areas within their jurisdictional boundaries and, through a consistent monitoring process, will design and improve their floodplain management program in a way that reduces the risk of flooding to people and property. Each county and its municipalities while participating in the National Flood Insurance Program comply with regulations as demonstrated in regular Community Assessment Visits.

### Community Rating System

An additional indicator of floodplain management capability is the active participation of local jurisdictions in the Community Rating System (CRS). The CRS is an incentive-based program that encourages counties and municipalities to undertake defined flood mitigation activities that go beyond the minimum requirements of the NFIP, adding extra local measures to provide protection from flooding. All of the 18 creditable CRS mitigation activities are assigned a range of point values. As points are accumulated and reach identified thresholds, communities can apply for an improved CRS class. Class ratings, which range from 10 to 1, are tied to flood insurance premium reductions as shown in Table 7-3. As class ratings improve (the lower the number, the better), the percent reduction in flood insurance premiums for NFIP policyholders in that community increases.

**Table 7-3: CRS Premium Discounts, By Class**

| CRS Class | Premium Reduction |
|-----------|-------------------|
| 1         | 45%               |
| 2         | 40%               |
| 3         | 35%               |
| 4         | 30%               |
| 5         | 25%               |
| 6         | 20%               |
| 7         | 15%               |
| 8         | 10%               |
| 9         | 5%                |
| 10        | 0%                |

Source: NFIP Community Rating System.

Community participation in the CRS is voluntary. Any community that is in full compliance with the rules and regulations of the NFIP may apply to FEMA for a CRS classification better than class 10. The CRS application process has been greatly simplified over the past several years, based on community comments intended to make the CRS more user friendly, and extensive technical assistance available for communities who request it. The City of Whiteville in Columbus County participates in the CRS Class 9.

### Floodplain Management Plan

A floodplain management plan (or a flood mitigation plan) provides a framework for action regarding corrective and preventative measures to reduce flood-related impacts.

- 34 of the 35 participating jurisdictions have a floodplain management plan in place.

### **Flood Damage Prevention Ordinance**

All communities participating in the NFIP are required to adopt a local flood damage prevention ordinance. All counties and municipalities participating in this hazard mitigation plan also participate in the NFIP and they all have adopted flood damage prevention regulations and have appointed floodplain managers to oversee enforcement and implementation of the ordinance. Each county and municipality have designated a floodplain manager that is responsible for enforcing the flood damage prevention ordinance.

- 27 of the 35 participating jurisdictions participate in the NFIP.

### **Open Space Management Plan**

An open space management plan is designed to preserve, protect, and restore largely undeveloped lands in their natural state, and to expand or connect areas in the public domain such as parks, greenways, and other outdoor recreation areas. In many instances open space management practices are consistent with the goals of reducing hazard losses, such as the preservation of wetlands or other flood-prone areas in their natural state in perpetuity.

- 33 of the 35 participating jurisdictions have an open space management plan in place or under development.

### **Stormwater Management Plan**

A stormwater management plan is designed to address flooding associated with stormwater runoff. The stormwater management plan is typically focused on design and construction measures that are intended to reduce the impact of more frequently occurring minor urban flooding.

- 15 of the 35 participating jurisdictions have a stormwater management plan in place.

### **Substantial Damage Estimate Procedures**

Properties in communities that participate in the NFIP that are determined to be “substantially damaged” following a flood event must be brought into compliance with the local flood damage prevention ordinance. Determination of substantial damage is a coordinated effort between emergency management, police and fire departments and permitting departments such as planning and building inspections departments. Substantial damage estimating procedures for participating jurisdictions are detailed below in Table 7-4.

**Table 7-4: SDE Procedures of NFIP Communities**

| Jurisdiction         | Local Floodplain Management Regulations                               | Designated Officials for SD/SI Determinations                               | Process Used to Make SD/SI Determinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Communication Procedures for SD/SI Requirements                                                                                                                                                  |
|----------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BLADEN COUNTY</b> | The County maintains a county-wide Flood Damage Prevention Ordinance. | The County Planning Director is designated as the Floodplain Administrator. | <p>Determination of substantial damage is a coordinated effort between Bladen County Emergency Management, Police and Fire Departments, Permitting Departments and all jurisdictions within the County that participate in the NFIP.</p> <p>Following a flood event, County Emergency Management staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial improvement/repair of damage</li> </ol> <p>This process involves comparing the damage assessment information with permit applications.</p> | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by County staff and compliance with building codes and flood prevention ordinance required. |
| Bladenboro           | The Town maintains a town-wide Flood Damage Prevention Ordinance.     | The Town Administrator is designated as the Floodplain Administrator.       | <p>Determination of substantial damage is a coordinated effort between relevant Town staff and Bladen County Emergency Management, Police and Fire Departments, Permitting Departments.</p> <p>Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial improvement/repair of damage</li> </ol> <p>This process involves comparing the damage assessment information with permit</p>                                                                                   | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required.   |



## Capability Assessment

| Jurisdiction   | Local Floodplain Management Regulations                           | Designated Officials for SD/SI Determinations                                                                                                                                        | Process Used to Make SD/SI Determinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Communication Procedures for SD/SI Requirements                                                                                                                                                |
|----------------|-------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                   |                                                                                                                                                                                      | applications.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                |
| Clarkton       | The Town participates in the NFIP.                                | Determination of substantial damage is a coordinated effort between relevant Town staff and Bladen County Emergency Management, Police and Fire Departments, Permitting Departments. | <p>Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ul style="list-style-type: none"> <li>d. Estimation of market value or obtaining appraisal</li> <li>e. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>f. Determination of whether work constitutes substantial improvement/repair of damage</li> </ul> <p>This process involves comparing the damage assessment information with permit applications.</p>                                                                                                                                                                                             | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required. |
| Dublin**       | --                                                                | --                                                                                                                                                                                   | --                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | --                                                                                                                                                                                             |
| East Arcadia** | --                                                                | --                                                                                                                                                                                   | --                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | --                                                                                                                                                                                             |
| Elizabethtown  | The Town maintains a town-wide Flood Damage Prevention Ordinance. | The Town Planner is designated as the Floodplain Administrator.                                                                                                                      | <p>Determination of substantial damage is a coordinated effort between relevant Town staff and Bladen County Emergency Management, Police and Fire Departments, Permitting Departments.</p> <p>Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ul style="list-style-type: none"> <li>a. Estimation of market value or obtaining appraisal</li> <li>b. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>c. Determination of whether work constitutes substantial improvement/repair of damage</li> </ul> <p>This process involves comparing the damage assessment information with permit applications.</p> | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required. |
| Tar Heel**     | --                                                                | --                                                                                                                                                                                   | --                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | --                                                                                                                                                                                             |

## Capability Assessment

| Jurisdiction    | Local Floodplain Management Regulations                               | Designated Officials for SD/SI Determinations                            | Process Used to Make SD/SI Determinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Communication Procedures for SD/SI Requirements                                                                                                                                                  |
|-----------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| White Lake      | The Town maintains a town-wide Flood Damage Prevention Ordinance.     | The Town Zoning Inspector is designated as the Floodplain Administrator. | <p>Determination of substantial damage is a coordinated effort between relevant Town staff and Bladen County Emergency Management, Police and Fire Departments, Permitting Departments.</p> <p>Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial improvement/repair of damage</li> </ol> <p>This process involves comparing the damage assessment information with permit applications.</p>                                                                       | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required.   |
| COLUMBUS COUNTY | The County maintains a county-wide Flood Damage Prevention Ordinance. | The County Manager is designated as the Floodplain Administrator.        | <p>Determination of substantial damage is a coordinated effort between Columbus County Emergency Management, Police and Fire Departments, Permitting Departments and all jurisdictions within the County that participate in the NFIP.</p> <p>Following a flood event, County Emergency Management staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial improvement/repair of damage</li> </ol> <p>This process involves comparing the damage assessment information with permit applications.</p> | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by County staff and compliance with building codes and flood prevention ordinance required. |
| Boardman        | The Town participates in the NFIP.                                    | Determination of substantial damage is a coordinated                     | Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | If work constitutes substantial improvement or                                                                                                                                                   |

## Capability Assessment

| Jurisdiction | Local Floodplain Management Regulations | Designated Officials for SD/SI Determinations                                                                                                                                          | Process Used to Make SD/SI Determinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Communication Procedures for SD/SI Requirements                                                                                                                                                |
|--------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                                         | effort between relevant Town staff and Columbus County Emergency Management, Police and Fire Departments, Permitting Departments.                                                      | <p>assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial improvement/repair of damage</li> </ol> <p>This process involves comparing the damage assessment information with permit applications.</p>                                                                                                                        | repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required.                                                |
| Bolton       | The Town participates in the NFIP.      | Determination of substantial damage is a coordinated effort between relevant Town staff and Columbus County Emergency Management, Police and Fire Departments, Permitting Departments. | <p>Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial improvement/repair of damage</li> </ol> <p>This process involves comparing the damage assessment information with permit applications.</p> | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required. |
| Cerro Gordo  | The Town participates in the NFIP.      | Determination of substantial damage is a coordinated effort between relevant Town staff and Columbus County Emergency Management, Police and Fire Departments, Permitting Departments. | <p>Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial</li> </ol>                                                                                                                                 | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required. |

## Capability Assessment

| Jurisdiction  | Local Floodplain Management Regulations                           | Designated Officials for SD/SI Determinations                                                                                                                                          | Process Used to Make SD/SI Determinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Communication Procedures for SD/SI Requirements                                                                                                                                                |
|---------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               |                                                                   |                                                                                                                                                                                        | improvement/repair of damage<br><br>This process involves comparing the damage assessment information with permit applications.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                |
| Chadbourn     | The Town maintains a town-wide Flood Damage Prevention Ordinance. | The Town Manager is designated as the Floodplain Administrator.                                                                                                                        | <p>Determination of substantial damage is a coordinated effort between relevant Town staff and Columbus County Emergency Management, Police and Fire Departments, Permitting Departments.</p> <p>Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial improvement/repair of damage</li> </ol> <p>This process involves comparing the damage assessment information with permit applications.</p> | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required. |
| Fair Bluff    | The Town participates in the NFIP.                                | Determination of substantial damage is a coordinated effort between relevant Town staff and Columbus County Emergency Management, Police and Fire Departments, Permitting Departments. | <p>As a member of the NFIP, Fair Bluff is required to have a Flood Damage Prevention Ordinance. It is likely the town adopted that of Columbus County (see above).</p> <p>Source: <a href="#">Fair-Bluff-Downtown-Flood-Retrofit-Summary-Report-1.pdf</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | It is likely the town adopted that of Columbus County (see above).                                                                                                                             |
| Lake Waccamaw | The Town maintains a town-wide Flood Damage Prevention Ordinance. | The Town Manager is designated as the Floodplain Administrator.                                                                                                                        | <p>Determination of substantial damage is a coordinated effort between relevant Town staff and Columbus County Emergency Management, Police and Fire Departments, Permitting Departments.</p> <p>Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or</li> </ol>                                                                                                                                                                                                                                                                                                                                                                    | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required. |

## Capability Assessment

| Jurisdiction | Local Floodplain Management Regulations                           | Designated Officials for SD/SI Determinations                                                                                                                                          | Process Used to Make SD/SI Determinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Communication Procedures for SD/SI Requirements                                                                                                                                                |
|--------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                                                                   |                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>b. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>c. Determination of whether work constitutes substantial improvement/repair of damage</li> </ul> <p>This process involves comparing the damage assessment information with permit applications.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                |
| Sandyfield   | The Town participates in the NFIP.                                | Determination of substantial damage is a coordinated effort between relevant Town staff and Columbus County Emergency Management, Police and Fire Departments, Permitting Departments. | <p>Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ul style="list-style-type: none"> <li>a. Estimation of market value or obtaining appraisal</li> <li>b. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>c. Determination of whether work constitutes substantial improvement/repair of damage</li> </ul> <p>This process involves comparing the damage assessment information with permit applications.</p>                                                                                            | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required. |
| Tabor City   | The Town maintains a town-wide Flood Damage Prevention Ordinance. | The Town Manager is designated as the Floodplain Administrator.                                                                                                                        | <p>Determination of substantial damage is a coordinated effort between relevant Town staff and Columbus County Emergency Management, Police and Fire Departments, Permitting Departments.</p> <p>Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ul style="list-style-type: none"> <li>a. Estimation of market value or obtaining appraisal</li> <li>b. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>c. Determination of whether work constitutes substantial improvement/repair of damage</li> </ul> | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required. |



## Capability Assessment

| Jurisdiction   | Local Floodplain Management Regulations                                                                 | Designated Officials for SD/SI Determinations                                          | Process Used to Make SD/SI Determinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Communication Procedures for SD/SI Requirements                                                                                                                                                  |
|----------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                                                         |                                                                                        | This process involves comparing the damage assessment information with permit applications.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                  |
| Whiteville     | The City maintains a city-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 9). | The City Manager is designated as the Floodplain Administrator.                        | <p>Determination of substantial damage is a coordinated effort between relevant City staff and Columbus County Emergency Management, Police and Fire Departments, Permitting Departments.</p> <p>Following a flood event, City staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial improvement/repair of damage</li> </ol> <p>This process involves comparing the damage assessment information with permit applications.</p>                                                                    | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by City staff and compliance with building codes and flood prevention ordinance required.   |
| ROBESON COUNTY | The County maintains a county-wide Flood Damage Prevention Ordinance.                                   | The County Building Codes Administrator is designated as the Floodplain Administrator. | <p>Determination of substantial damage is a coordinated effort between Robeson County Emergency Management, Police and Fire Departments, Permitting Departments and all jurisdictions within the County that participate in the NFIP.</p> <p>Following a flood event, County Emergency Management staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial improvement/repair of damage</li> </ol> <p>This process involves comparing the damage assessment information with permit applications.</p> | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by County staff and compliance with building codes and flood prevention ordinance required. |

## Capability Assessment

| Jurisdiction    | Local Floodplain Management Regulations                           | Designated Officials for SD/SI Determinations                             | Process Used to Make SD/SI Determinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Communication Procedures for SD/SI Requirements                                                                                                                                                |
|-----------------|-------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fairmont        | The Town maintains a town-wide Flood Damage Prevention Ordinance. | The Town Manager is designated as the Floodplain Administrator.           | <p>Determination of substantial damage is a coordinated effort between relevant Town staff and Robeson County Emergency Management, Police and Fire Departments, Permitting Departments.</p> <p>Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial improvement/repair of damage</li> </ol> <p>This process involves comparing the damage assessment information with permit applications.</p> | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required. |
| Lumberton       | The City maintains a city-wide Flood Damage Prevention Ordinance. | The City Planning Director is designated as the Floodplain Administrator. | <p>Determination of substantial damage is a coordinated effort between relevant City staff and Robeson County Emergency Management, Police and Fire Departments, Permitting Departments.</p> <p>Following a flood event, City staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial improvement/repair of damage</li> </ol> <p>This process involves comparing the damage assessment information with permit applications.</p> | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by City staff and compliance with building codes and flood prevention ordinance required. |
| Lumber Bridge** | --                                                                | --                                                                        | --                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | --                                                                                                                                                                                             |
| Marietta**      | --                                                                | --                                                                        | --                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | --                                                                                                                                                                                             |
| Maxton          | The Town                                                          | Determination of                                                          | Following a flood event, Town staff (along                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | If work constitutes                                                                                                                                                                            |

## Capability Assessment

| Jurisdiction | Local Floodplain Management Regulations                               | Designated Officials for SD/SI Determinations                                                                                                                                | Process Used to Make SD/SI Determinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Communication Procedures for SD/SI Requirements                                                                                                                                                |
|--------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | Participates in the NFIP.                                             | substantial damage is a coordinated effort between Town staff and Robeson County Emergency Management, Police and Fire Departments, Permitting Departments.                  | <p>with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial improvement/repair of damage</li> </ol> <p>This process involves comparing the damage assessment information with permit applications.</p>                                            | substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required.                     |
| McDonald**   | --                                                                    | --                                                                                                                                                                           | --                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | --                                                                                                                                                                                             |
| Orrum**      | --                                                                    | --                                                                                                                                                                           | --                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | --                                                                                                                                                                                             |
| Parkton      | The Town does maintain a town-wide Flood Damage Prevention Ordinance. | Determination of substantial damage is a coordinated effort between Town staff and Robeson County Emergency Management, Police and Fire Departments, Permitting Departments. | <p>Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial improvement/repair of damage</li> </ol> <p>This process involves comparing the damage assessment information with permit applications.</p> | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required. |
| Pembroke     | The Town participates in the NFIP.                                    | Determination of substantial damage is a coordinated effort between Town staff and Robeson County Emergency Management, Police and Fire Departments, Permitting Departments. | <p>Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-</li> </ol>                                                                                                                                                                                                                                                                      | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required. |

## Capability Assessment

| Jurisdiction | Local Floodplain Management Regulations                           | Designated Officials for SD/SI Determinations                                                                                                                                | Process Used to Make SD/SI Determinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Communication Procedures for SD/SI Requirements                                                                                                                                                |
|--------------|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                                                                   |                                                                                                                                                                              | <p>damaged condition, or combined, vs. market value of building/structure</p> <p>c. Determination of whether work constitutes substantial improvement/repair of damage</p> <p>This process involves comparing the damage assessment information with permit applications.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                |
| Proctorville | The Town participates in the NFIP.                                | Determination of substantial damage is a coordinated effort between Town staff and Robeson County Emergency Management, Police and Fire Departments, Permitting Departments. | <p>Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial improvement/repair of damage</li> </ol> <p>This process involves comparing the damage assessment information with permit applications.</p> | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required. |
| Raynham**    | --                                                                | --                                                                                                                                                                           | --                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | --                                                                                                                                                                                             |
| Red Springs  | The Town maintains a town-wide Flood Damage Prevention Ordinance. | Determination of substantial damage is a coordinated effort between Town staff and Robeson County Emergency Management, Police and Fire Departments, Permitting Departments. | <p>Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.</p> <p>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:</p> <ol style="list-style-type: none"> <li>Estimation of market value or obtaining appraisal</li> <li>Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>Determination of whether work constitutes substantial improvement/repair of damage</li> </ol> <p>This process involves comparing the damage assessment information with permit applications.</p> | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required. |
| Rennert      | The Town participates in the NFIP.                                | Determination of substantial damage is a coordinated effort between Town                                                                                                     | Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | If work constitutes substantial improvement or repair of substantial                                                                                                                           |

## Capability Assessment

| Jurisdiction | Local Floodplain Management Regulations                           | Designated Officials for SD/SI Determinations                                                                                                                                | Process Used to Make SD/SI Determinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Communication Procedures for SD/SI Requirements                                                                                                                                                |
|--------------|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                                                                   | staff and Robeson County Emergency Management, Police and Fire Departments, Permitting Departments.                                                                          | structures.<br><br>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:<br><ul style="list-style-type: none"> <li>a. Estimation of market value or obtaining appraisal</li> <li>b. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>c. Determination of whether work constitutes substantial improvement/repair of damage</li> </ul><br>This process involves comparing the damage assessment information with permit applications.                                                                                                                                                                | damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required.                                                                      |
| Rowland**    | --                                                                | --                                                                                                                                                                           | --                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | --                                                                                                                                                                                             |
| St. Pauls    | The Town maintains a town-wide Flood Damage Prevention Ordinance. | Determination of substantial damage is a coordinated effort between Town staff and Robeson County Emergency Management, Police and Fire Departments, Permitting Departments. | Following a flood event, Town staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures.<br><br>Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:<br><ul style="list-style-type: none"> <li>a. Estimation of market value or obtaining appraisal</li> <li>b. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure</li> <li>c. Determination of whether work constitutes substantial improvement/repair of damage</li> </ul><br>This process involves comparing the damage assessment information with permit applications. | If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes and flood prevention ordinance required. |

\*\*Community does not participate in the NFIP.

### 7.3.2 Administrative and Technical Capability

The ability of a local government to develop and implement mitigation projects, policies, and programs is directly tied to its ability to direct staff time and resources for that purpose. Administrative capability can be evaluated by determining how mitigation-related activities are assigned to local departments and if there are adequate personnel resources to complete these activities. The degree of intergovernmental coordination among departments will also affect administrative capability for the implementation and success of proposed mitigation activities.

Technical capability can generally be evaluated by assessing the level of knowledge and technical expertise of local government employees, such as personnel skilled in using geographic information systems (GIS) to analyze and assess community hazard vulnerability. The Local Capability Assessment Survey was used to capture information on administrative and technical capability through the



## Capability Assessment

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identification of available staff and personnel resources. *Local Capability Assessment Survey* was used to capture information on administrative and technical capability through the identification of available staff and personnel resources.

Table 7-4 provides a summary of the *Local Capability Assessment Survey* results for the Plan Area with regard to relevant staff and personnel resources. A checkmark indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill.

Table 7-4: Relevant Staff/Personnel Resources

| Jurisdiction          | Planners with knowledge of land development and land management practices | Engineers or professionals trained in construction practices related to buildings and/or infrastructure | Planners or engineers with an understanding of natural and/or human-caused hazards | Building Official | Emergency manager | Floodplain manager | Land surveyors | Scientist familiar with the hazards of the community | Staff with education or expertise to assess the community' s vulnerability to hazards | Personnel skilled in Geographic Information Systems (GIS) and/or HAZUS | Resource development staff or grant writers | Maintenance programs to reduce risk | Warning systems/services | Mutual Aid Agreements |
|-----------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------|-------------------|--------------------|----------------|------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|--------------------------|-----------------------|
| Town of Bladenboro    |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                       |                                                                        |                                             |                                     |                          |                       |
| Town of Clarkton      |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                       |                                                                        |                                             |                                     |                          |                       |
| Town of Dublin        | ✓                                                                         | ✓                                                                                                       |                                                                                    | ✓                 | ✓                 | ✓                  |                |                                                      |                                                                                       |                                                                        | ✓                                           | ✓                                   |                          | ✓                     |
| Town of Elizabethtown |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                       |                                                                        |                                             |                                     |                          |                       |
| Town of Chadbourn     |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                       |                                                                        |                                             |                                     |                          |                       |
| Town of Fair Bluff    | ✓                                                                         |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                       |                                                                        | ✓                                           |                                     |                          | ✓                     |
| Town of Lake Waccamaw |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                       |                                                                        |                                             |                                     |                          |                       |
| Town of Tabor City    |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                       |                                                                        |                                             |                                     |                          |                       |
| City of Whiteville    | ✓                                                                         | ✓                                                                                                       | ✓                                                                                  | ✓                 | ✓                 | ✓                  | ✓              |                                                      | ✓                                                                                     | ✓                                                                      | ✓                                           | ✓                                   | ✓                        | ✓                     |
| Robeson County        | ✓                                                                         |                                                                                                         |                                                                                    | ✓                 | ✓                 | ✓                  |                |                                                      | ✓                                                                                     | ✓                                                                      | ✓                                           |                                     | ✓                        | ✓                     |
| City of Lumberton     | ✓                                                                         | ✓                                                                                                       | ✓                                                                                  | ✓                 | ✓                 | ✓                  |                |                                                      | ✓                                                                                     |                                                                        |                                             | ✓                                   |                          | ✓                     |
| Town of Red Springs   | ✓                                                                         | ✓                                                                                                       | ✓                                                                                  | ✓                 | ✓                 | ✓                  | ✓              |                                                      | ✓                                                                                     | ✓                                                                      | ✓                                           | ✓                                   | ✓                        | ✓                     |
| Town of Fairmont      |                                                                           |                                                                                                         |                                                                                    |                   | ✓                 |                    |                |                                                      | ✓                                                                                     |                                                                        | ✓                                           | ✓                                   | ✓                        | ✓                     |

## Capability Assessment

| Jurisdiction          | Planners with knowledge of land development and land management practices | Engineers or professionals trained in construction practices related to buildings and/or infrastructure | Planners or engineers with an understanding of natural and/or human-caused hazards | Building Official | Emergency manager | Floodplain manager | Land surveyors | Scientist familiar with the hazards of the community | Staff with education or expertise to assess the community's vulnerability to hazards | Personnel skilled in Geographic Information Systems (GIS) and/or HAZUS | Resource development staff or grant writers | Maintenance programs to reduce risk | Warning systems/services | Mutual Aid Agreements |
|-----------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------|-------------------|--------------------|----------------|------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|--------------------------|-----------------------|
| Town of Bolton        |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Bladen County         | ✓                                                                         | ✓                                                                                                       | ✓                                                                                  | ✓                 | ✓                 | ✓                  | ✓              |                                                      | ✓                                                                                    | ✓                                                                      | ✓                                           | ✓                                   | ✓                        | ✓                     |
| Town of Tar Heel      |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Columbus County       | ✓                                                                         | ✓                                                                                                       |                                                                                    | ✓                 | ✓                 | ✓                  | ✓              |                                                      | ✓                                                                                    | ✓                                                                      | ✓                                           | ✓                                   |                          | ✓                     |
| Town of Brunswick     |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Town of Cerro Gordo   |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Town of Orrum         |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Town of Parkton       |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Town of Lumber Bridge |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Town of White Lake    |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Town of East Arcadia  |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Town of Marietta      |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Town of Maxton        |                                                                           |                                                                                                         |                                                                                    |                   | ✓                 |                    |                |                                                      | ✓                                                                                    |                                                                        |                                             | ✓                                   |                          | ✓                     |
| Town of Pembroke      |                                                                           |                                                                                                         |                                                                                    |                   |                   | ✓                  |                |                                                      |                                                                                      |                                                                        | ✓                                           | ✓                                   | ✓                        | ✓                     |
| Town of Saint Pauls   |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |

## Capability Assessment

| Jurisdiction         | Planners with knowledge of land development and land management practices | Engineers or professionals trained in construction practices related to buildings and/or infrastructure | Planners or engineers with an understanding of natural and/or human-caused hazards | Building Official | Emergency manager | Floodplain manager | Land surveyors | Scientist familiar with the hazards of the community | Staff with education or expertise to assess the community's vulnerability to hazards | Personnel skilled in Geographic Information Systems (GIS) and/or HAZUS | Resource development staff or grant writers | Maintenance programs to reduce risk | Warning systems/services | Mutual Aid Agreements |
|----------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------|-------------------|--------------------|----------------|------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|--------------------------|-----------------------|
| Town of Proctorville |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Town of Rowland      |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Town of Raynham      |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Town of Rennett      |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Town of Sandyfield   |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Town of Boardman     |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |
| Town of McDonald     |                                                                           |                                                                                                         |                                                                                    |                   |                   |                    |                |                                                      |                                                                                      |                                                                        |                                             |                                     |                          |                       |

### 7.3.3 Fiscal Capability

The ability of a local government to act is often closely associated with the amount of money available to implement policies and projects. This may take the form of outside grant funding awards or locally based revenue and financing. The costs associated with mitigation policy and project implementation vary widely. In some cases, policies are tied primarily to staff time or administrative costs associated with the creation and monitoring of a given program. In other cases, direct expenses are linked to an actual project such as the acquisition of flood-prone houses, which can require a substantial commitment from local, state, and federal funding sources.

The *Local Capability Assessment Survey* was used to capture information on the Region's fiscal capability through the identification of locally available financial resources.

Table 7-5 provides a summary of the results for the Plan Area with regard to relevant fiscal resources. A checkmark indicates that the given fiscal resource is locally available for hazard mitigation purposes (including match funds for state and federal mitigation grant funds).

**Table 7-5: Relevant Fiscal Resources**

| Jurisdiction          | Capital Improvement Programming | Community Development Block Grants (CDBG) | Special Purpose Taxes | Gas/Electric Utility Fees | Water/Sewer Fees | Stormwater Utility Fees | Development Impact Fees | General Obligation Bonds | Revenue Bonds | Special Tax Bonds | Other |
|-----------------------|---------------------------------|-------------------------------------------|-----------------------|---------------------------|------------------|-------------------------|-------------------------|--------------------------|---------------|-------------------|-------|
| Town of Bladenboro    |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Clarkton      |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Dublin        |                                 | ✓                                         |                       |                           | ✓                |                         |                         |                          |               |                   |       |
| Town of Elizabethtown |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Chadbourn     |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Fair Bluff    |                                 | ✓                                         |                       |                           | ✓                |                         |                         |                          |               |                   |       |
| Town of Lake Waccamaw |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Tabor City    |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| City of Whiteville    | ✓                               | ✓                                         |                       |                           | ✓                | ✓                       |                         |                          |               |                   |       |
| Robeson County        |                                 | ✓                                         |                       |                           | ✓                |                         |                         | ✓                        |               |                   |       |
| City of Lumberton     | ✓                               | ✓                                         | ✓                     | ✓                         | ✓                | ✓                       |                         |                          |               |                   |       |
| Town of Red Springs   | ✓                               | ✓                                         | ✓                     | ✓                         | ✓                |                         | ✓                       | ✓                        |               |                   |       |
| Town of Fairmont      |                                 | ✓                                         |                       | ✓                         | ✓                | ✓                       |                         |                          |               |                   |       |



## Capability Assessment

| Jurisdiction          | Capital Improvement Programming | Community Development Block Grants (CDBG) | Special Purpose Taxes | Gas/Electric Utility Fees | Water/Sewer Fees | Stormwater Utility Fees | Development Impact Fees | General Obligation Bonds | Revenue Bonds | Special Tax Bonds | Other |
|-----------------------|---------------------------------|-------------------------------------------|-----------------------|---------------------------|------------------|-------------------------|-------------------------|--------------------------|---------------|-------------------|-------|
| Town of Bolton        |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Bladen County         | ✓                               | ✓                                         |                       |                           | ✓                |                         |                         |                          |               | ✓                 |       |
| Town of Tar Heel      |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Columbus County       | ✓                               |                                           |                       |                           | ✓                |                         | ✓                       |                          |               |                   |       |
| Town of Brunswick     |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Cerro Gordo   |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Orrum         |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Parkton       |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Lumber Bridge |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of White Lake    |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of East Arcadia  |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Marietta      |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Maxton        | ✓                               | ✓                                         | ✓                     |                           | ✓                |                         |                         |                          |               |                   |       |
| Town of Pembroke      | ✓                               | ✓                                         | ✓                     |                           | ✓                | ✓                       | ✓                       | ✓                        | ✓             | ✓                 |       |
| Town of Saint Pauls   |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Proctorville  |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Rowland       |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Raynham       |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Rennert       |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Sandyfield    |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of Boardman      |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |
| Town of McDonald      |                                 |                                           |                       |                           |                  |                         |                         |                          |               |                   |       |

Source: Local Capability Assessment Survey.

### 7.3.4 Education and Outreach Capability

This type of local capability refers to education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Examples include natural disaster or safety related school programs; participation in community programs such as Firewise or StormReady; and activities conducted as part of hazard awareness campaigns such as a Tornado Awareness Month.

Table 7-6 provides a summary of the results for the Plan Area with regard to relevant education and outreach resources. A checkmark indicates that the given resource is locally available for hazard mitigation purposes.

**Table 7-6: Education and Outreach Resources**

| Jurisdiction          | Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. | Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education) | Natural disaster or safety related school programs | Storm Ready certification | Firewise Communities certification | Public-private partnership initiatives addressing disaster-related issues | Other |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|---------------------------|------------------------------------|---------------------------------------------------------------------------|-------|
| Town of Bladenboro    |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Clarkton      |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Dublin        |                                                                                                                                                             | ✓                                                                                                                                           |                                                    |                           |                                    |                                                                           |       |
| Town of Elizabethtown |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Chadbourn     |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Fair Bluff    |                                                                                                                                                             | ✓                                                                                                                                           |                                                    |                           |                                    | ✓                                                                         |       |
| Town of Lake Waccamaw |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Tabor City    |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| City of Whiteville    | ✓                                                                                                                                                           | ✓                                                                                                                                           | ✓                                                  |                           |                                    | ✓                                                                         |       |
| Robeson County        | ✓                                                                                                                                                           | ✓                                                                                                                                           | ✓                                                  | ✓                         |                                    |                                                                           |       |
| City of Lumberton     | ✓                                                                                                                                                           | ✓                                                                                                                                           |                                                    |                           |                                    | ✓                                                                         |       |
| Town of Red Springs   | ✓                                                                                                                                                           | ✓                                                                                                                                           | ✓                                                  | ✓                         | ✓                                  | ✓                                                                         | ✓     |
| Town of Fairmont      | ✓                                                                                                                                                           |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Bolton        |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Bladen County         | ✓                                                                                                                                                           | ✓                                                                                                                                           |                                                    |                           |                                    | ✓                                                                         |       |
| Town of Tar Heel      |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Columbus County       | ✓                                                                                                                                                           | ✓                                                                                                                                           |                                                    |                           |                                    |                                                                           |       |

| Jurisdiction          | Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. | Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education) | Natural disaster or safety related school programs | Storm Ready certification | Firewise Communities certification | Public-private partnership initiatives addressing disaster-related issues | Other |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|---------------------------|------------------------------------|---------------------------------------------------------------------------|-------|
| Town of Brunswick     |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Cerro Gordo   |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Orrum         |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Parkton       |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Lumber Bridge |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of White Lake    |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of East Arcadia  |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Marietta      |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Maxton        |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Pembroke      |                                                                                                                                                             | ✓                                                                                                                                           |                                                    |                           |                                    |                                                                           |       |
| Town of Saint Pauls   |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Proctorville  |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Rowland       |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Raynham       |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Rennert       |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Sandyfield    |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of Boardman      |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |
| Town of McDonald      |                                                                                                                                                             |                                                                                                                                             |                                                    |                           |                                    |                                                                           |       |

### 7.3.5 Political Capability

One of the most difficult capabilities to evaluate involves the political will of a jurisdiction to enact meaningful policies and projects designed to reduce the impact of future hazard events. Hazard mitigation may not be a local priority or may conflict with or be seen as an impediment to other goals of the community, such as growth and economic development. Therefore, the local political climate must be considered in designing mitigation strategies, as it could be the most difficult hurdle to overcome in accomplishing their adoption and implementation.

The *Local Capability Assessment Survey* was used to capture information on political capability of the Plan Area. Survey respondents were asked to identify some general examples of local political capability, such as guiding development away from identified hazard areas, restricting public investments or capital improvements within hazard areas, or enforcing local development standards that go beyond minimum state or federal requirements (e.g., building codes, floodplain management, etc.).

In addition to the inventory and analysis of specific local capabilities, the *Local Capability Assessment Survey* asked counties and local jurisdictions within the Plan Area to conduct a self-assessment of their perceived capability to implement hazard mitigation activities. As part of this process, local officials were encouraged to consider the barriers to implementing proposed mitigation strategies in addition to the mechanisms that could enhance or further such strategies. In response to the survey questionnaire, county officials classified each of the aforementioned capabilities as either “limited,” “moderate,” or “high.”

**Table 7-8** shows the results of the capability assessment using the designed scoring methodology. The capability score is based solely on the information found in existing hazard mitigation plans and readily available on the jurisdictions’ government websites. The scoring methods ranking is presented as follows:

- Limited: 0-29
- Moderate: 30-59
- High: 60-100

According to the assessment, the average local capability score for all jurisdictions is 35, which falls into the moderate capability ranking.

Table 7-7 summarizes the results of the self-assessment for the Plan Area.

**Table 7-7: Self-Assessment of Capability**

| Jurisdiction          | Plans, Ordinances, Codes and Programs | Administrative and Technical Capability | Fiscal Capability | Education and Outreach Capability | Political Capability | Overall Capability |
|-----------------------|---------------------------------------|-----------------------------------------|-------------------|-----------------------------------|----------------------|--------------------|
| Town of Bladenboro    | High                                  | High                                    | Limited           | Moderate                          | High                 | High               |
| Town of Clarkton      | High                                  | High                                    | Limited           | Moderate                          | High                 | High               |
| Town of Dublin        | Limited                               | Limited                                 | Limited           | Limited                           | Limited              | Limited            |
| Town of Elizabethtown | High                                  | High                                    | Limited           | Moderate                          | High                 | High               |
| Town of Chadbourn     | Moderate                              | Moderate                                | Moderate          | Moderate                          | Moderate             | Moderate           |
| Town of Fair Bluff    | Moderate                              | Limited                                 | Limited           | Limited                           | Moderate             | Moderate           |
| Town of Lake Waccamaw | Moderate                              | Moderate                                | Moderate          | Moderate                          | Moderate             | Moderate           |

| Jurisdiction          | Plans, Ordinances, Codes and Programs | Administrative and Technical Capability | Fiscal Capability | Education and Outreach Capability | Political Capability | Overall Capability |
|-----------------------|---------------------------------------|-----------------------------------------|-------------------|-----------------------------------|----------------------|--------------------|
| Town of Tabor City    | Moderate                              | Moderate                                | Moderate          | Moderate                          | Moderate             | Moderate           |
| City of Whiteville    | High                                  | High                                    | Moderate          | Moderate                          | High                 | High               |
| Robeson County        | High                                  | High                                    | High              | High                              | High                 | High               |
| City of Lumberton     | High                                  | High                                    | Moderate          | Moderate                          | Moderate             | Moderate           |
| Town of Red Springs   | High                                  | High                                    | Moderate          | High                              | High                 | High               |
| Town of Fairmont      | Moderate                              | Moderate                                | Limited           | Limited                           | Moderate             | Moderate           |
| Town of Bolton        | Moderate                              | Moderate                                | Moderate          | Moderate                          | Moderate             | Moderate           |
| Bladen County         | High                                  | High                                    | Limited           | Moderate                          | High                 | High               |
| Town of Tar Heel      | High                                  | High                                    | Limited           | Moderate                          | High                 | High               |
| Columbus County       | Moderate                              | Moderate                                | Moderate          | Moderate                          | Moderate             | Moderate           |
| Town of Brunswick     | Moderate                              | Moderate                                | Moderate          | Moderate                          | Moderate             | Moderate           |
| Town of Cerro Gordo   | Moderate                              | Moderate                                | Moderate          | Moderate                          | Moderate             | Moderate           |
| Town of Orrum         | High                                  | High                                    | High              | High                              | High                 | High               |
| Town of Parkton       | High                                  | High                                    | High              | High                              | High                 | High               |
| Town of Lumber Bridge | High                                  | High                                    | High              | High                              | High                 | High               |
| Town of White Lake    | High                                  | High                                    | Limited           | Moderate                          | High                 | High               |
| Town of East Arcadia  | High                                  | High                                    | Limited           | Moderate                          | High                 | High               |
| Town of Marietta      | High                                  | High                                    | High              | High                              | High                 | High               |
| Town of Maxton        | Limited                               | Moderate                                | Moderate          | Limited                           | Moderate             | Moderate           |
| Town of Pembroke      | Moderate                              | Moderate                                | Moderate          | Limited                           | Moderate             | Moderate           |
| Town of Saint Pauls   | High                                  | High                                    | High              | High                              | High                 | High               |
| Town of Proctorville  | High                                  | High                                    | High              | High                              | High                 | High               |
| Town of Rowland       | High                                  | High                                    | High              | High                              | High                 | High               |



| Jurisdiction       | Plans, Ordinances, Codes and Programs | Administrative and Technical Capability | Fiscal Capability | Education and Outreach Capability | Political Capability | Overall Capability |
|--------------------|---------------------------------------|-----------------------------------------|-------------------|-----------------------------------|----------------------|--------------------|
| Town of Raynham    | High                                  | High                                    | High              | High                              | High                 | High               |
| Town of Rennert    | High                                  | High                                    | High              | High                              | High                 | High               |
| Town of Sandyfield | Moderate                              | Moderate                                | Moderate          | Moderate                          | Moderate             | Moderate           |
| Town of Boardman   | High                                  | High                                    | High              | High                              | High                 | High               |
| Town of McDonald   | High                                  | High                                    | High              | High                              | High                 | High               |

#### 7.4 Conclusions on Local Capability

In order to form meaningful conclusions on the assessment of local capability, a quantitative scoring methodology was designed and applied to results of the Local Capability Assessment Survey. This methodology attempts to assess the overall level of capability of the Plan Area to implement hazard mitigation actions. *Local Capability Assessment Survey* This methodology attempts to assess the overall level of capability of the Plan Area to implement hazard mitigation actions.

Table 7-8 shows the results of the *Capability Assessment* using the designed scoring methodology. The capability score is based solely on the information provided by local officials in response to the *Local Capability Assessment Survey*. According to the assessment, the average local capability score for all responding jurisdictions is 62.69, which falls into the High capability ranking.

**Table 7-8: Capability Assessment Results**

| Jurisdiction           | Overall Capability Score | Overall Capability Rating |
|------------------------|--------------------------|---------------------------|
| <b>Bladen County</b>   | <b>78</b>                | <b>High</b>               |
| City of Lumberton      | 58                       | Moderate                  |
| City of Whiteville     | 82                       | High                      |
| <b>Columbus County</b> | <b>65</b>                | <b>High</b>               |
| <b>Robeson County</b>  | <b>59</b>                | <b>Moderate</b>           |
| Town of Bladenboro     | 78                       | High                      |
| Town of Boardman       | 65                       | High                      |
| Town of Bolton         | 65                       | High                      |
| Town of Brunswick      | 65                       | High                      |
| Town of Cerro Gordo    | 65                       | High                      |
| Town of Chadbourn      | 65                       | High                      |
| Town of Clarkton       | 78                       | High                      |
| Town of Dublin         | 57                       | Moderate                  |

| Jurisdiction          | Overall Capability Score | Overall Capability Rating |
|-----------------------|--------------------------|---------------------------|
| Town of East Arcadia  | 78                       | High                      |
| Town of Elizabethtown | 78                       | High                      |
| Town of Fair Bluff    | 49                       | Moderate                  |
| Town of Fairmont      | 44                       | Moderate                  |
| Town of Lake Waccamaw | 65                       | High                      |
| Town of Lumber Bridge | 59                       | Moderate                  |
| Town of Marietta      | 59                       | Moderate                  |
| Town of Maxton        | 40                       | Moderate                  |
| Town of McDonald      | 59                       | Moderate                  |
| Town of Orrum         | 59                       | Moderate                  |
| Town of Parkton       | 59                       | Moderate                  |
| Town of Pembroke      | 58                       | Moderate                  |
| Town of Proctorville  | 59                       | Moderate                  |
| Town of Raynham       | 59                       | Moderate                  |
| Town of Red Springs   | 89                       | High                      |
| Town of Rennert       | 59                       | Moderate                  |
| Town of Rowland       | 59                       | Moderate                  |
| Town of Saint Pauls   | 59                       | Moderate                  |
| Town of Sandyfield    | 65                       | High                      |
| Town of Tabor City    | 65                       | High                      |
| Town of Tar Heel      | 78                       | High                      |
| Town of White Lake    | 78                       | High                      |

Source: Local Capability Assessment Survey.

As previously discussed, one of the reasons for conducting a Capability Assessment is to examine local capabilities to detect any existing gaps or weaknesses within ongoing government activities that could hinder proposed mitigation activities and possibly exacerbate community hazard vulnerability. These gaps or weaknesses have been identified, for each jurisdiction, in the tables found throughout this section. The participating jurisdictions used the Capability Assessment as part of the basis for the mitigation actions that are identified in Section 9; therefore, each jurisdiction addresses their ability to expand on and improve their existing capabilities through the identification of their mitigation actions.

## SECTION 8: MITIGATION STRATEGY

Section 8 discusses the mitigation strategy process and mitigation action plan for the Regional Hazard Mitigation Plan and outlines all of the goals and strategies that will be implemented at the county and municipal level. This chapter also describes how the MAC met the mitigation strategy requirements from the 10-step planning process. This chapter consists of the following subsections:

- ◆ 8.1 Mitigation Strategy Overview
- ◆ 8.2 Goals
- ◆ 8.3 Identification and Analysis of Mitigation Actions

### Requirement §201.6(c)(3)(ii)

[The mitigation strategy section shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

### 8.1 Mitigation Strategy Overview

The results of the planning process, the risk assessment, the goal setting, and the identification of mitigation actions led to the mitigation strategy and mitigation action plan for this HMP. All strategies relating to regional initiatives were developed through this planning process. The modifications of these plan elements was based on the direction and input of the MAC and a range of stakeholders. All actions have been updated and are intended to reflect the current needs and desires of the MAC. The mitigation strategies developed through the planning process will be implemented at the county, and in some cases, municipal level. Bladen, Columbus and Robeson Counties will take the lead in undertaking all strategies outlined in this plan, with support and assistance from all participating jurisdictions.

The following umbrella mitigation strategy was used during development of this HMP:

- **Communicate** the hazard information collected and analyzed through this planning process as well as MAC success stories so that the community better understands what can happen where and what they themselves can do to be better prepared.
- **Implement** the action plan recommendations of this plan.
- **Use** existing rules, regulations, policies, and procedures already in existence.
- **Monitor** multi-objective management opportunities so that funding opportunities may be shared and packaged, and broader constituent support may be garnered.

As the MAC worked through the development of this action plan, the group focused on six primary mitigation focus areas for the Region, as well as each participating jurisdiction. These focus areas define the various aspects of mitigation and provide guidance toward the development of a truly comprehensive solution to mitigation planning.

1. **Prevention Mechanisms** include regulatory methods such as planning and zoning, building regulations, open space planning, land development regulations, and stormwater management.
2. **Property Protection** actions diminish the risk of structural damage through acquisition of land, relocation of buildings, modifying high-risk structures, and floodproofing high-risk structures.

3. **Natural Resource Protection** can soften hazard impacts through mechanisms such as erosion and sediment control or wetlands protection.
4. **Emergency Services** measures include warning, response capabilities, Town critical infrastructures protection (with emphasis on new and existing buildings and infrastructure), and health and safety maintenance.
5. **Structural Mitigation** controls natural hazards through projects such as reservoirs, levees, diversions, channel modifications and storm sewers.
6. **Public Education** includes providing hazard maps and information, outreach programs, real estate disclosure, technical assistance and education.

### 8.1.1 Mitigation Plan Progress

#### Public Participation

All participating jurisdictions work very closely with citizens to provide programs and support that will improve the Region's resiliency to natural disasters. Over the last five years, the Region has taken significant steps to improve upon existing emergency service functions and programs. The public was an integral part in carrying out all of these efforts. All issues relating to emergency management policy and programs have been thoroughly discussed with the Counties' Board of Commissioners and Town/City governing bodies. Specifically, the public has been involved in discussions relating to regulatory tools, mitigation, and emergency services through County Planning Board and Board of Commissioners meetings. All meetings are locally advertised and open to the public. Through this Hazard Mitigation Plan update, the MAC intends to expand public outreach efforts, as outlined in the updated strategies.

#### Monitoring and Evaluation

The Region has and will continue to utilize the information within this document for day-to-day planning efforts. Through monitoring the status of the existing Mitigation Plan, the Region has improved upon the data utilized throughout this document. The Counties' administration maintains a dialogue with its Board of Commissioners and municipal representatives regarding mitigation/ emergency management issues and provides the public with information when deemed necessary.

#### Incorporation of Mitigation Plan into Other Planning Mechanisms

Over the last five years, the Region has made several land development policy amendments. The information and strategies outlined within the existing HMPs were factored into discussions during the development of these documents. This coordination ensures that information outlined in the hazard mitigation plan is carrying over into land use policy. Additionally, the Region reviewed their Flood Damage Prevention Ordinances to ensure compliance with current standards, including review and adoption of updated Flood Insurance Rate Maps. All entities also considered the HMP during decisions relating to capital expenditures, such as infrastructure improvements (with emphasis on new and existing buildings and infrastructure). No changes in development that has occurred in hazard prone areas has impacted the any of the jurisdictions' overall vulnerability.

#### Mitigation Strategy Progress

Over the last five years, each jurisdiction participating in this update process has implemented mitigation strategies at both the County and municipal levels. Through these implementation efforts, each jurisdiction has strengthened its respective mitigation program, as well as improved the resiliency of its respective community. A status report of the existing mitigation actions is provided in Section 9 - Mitigation Action Plan.

## 8.2 Goals

### Requirement §201.6(c)(3)(i)

[The mitigation strategy section shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Sections 4 through 6 document the hazards and associated risks that threaten the Region including the vulnerability to structures, infrastructure, and critical facilities. Section 7 evaluates the capacity of the participating jurisdictions to reduce the impact of those hazards. The intent of Goal Setting is to identify areas where improvements to existing capabilities (policies and programs) can be made so that community vulnerability is reduced. Goals are also necessary to guide the review of possible mitigation measures. This plan ensures that recommended actions are consistent with what is appropriate for the communities and the hazards identified in the plan. Mitigation goals reflect community priorities and should be consistent with other plans in the community. Priorities have not changed since the plan was previously approved.

The overall hazard mitigation planning effort is focused on providing the Region with an action plan that will strive toward the achievement of the goals outlined below. In order to establish this plan, the MAC decided that the best approach would be to define goals to guide the identification of specific strategies. In taking this approach, the goals as defined in the previous plans have been redefined. The overall intent is consistent; however, the language and content of the statements has been slightly modified as outlined in Section 8.2.3.

The following provides definitions of how goals and implementing strategies relate to one another:

- **Goals:** A broad-based statement of intent that establishes the direction for the Hazard Mitigation Plan. Goals state desired outcomes for the overall implementation process.
- **Implementing Strategies:** A project-specific strategy aimed at mitigation and involving a specific entity, interest, and funding mechanism.

### 8.2.1 Coordination with Other Planning Efforts

The goals of this plan need to be consistent with and complement the goals of other planning efforts. The primary planning document where the goals of this Plan must complement and be consistent with is the Comprehensive Plan. The Comprehensive Plan is important as it is developed and designed to guide future growth within the community. Therefore, there should be some consistency in the overall goals and how they relate to each other.

### 8.2.2 Compliance with NFIP/CRS

Given the flood hazards in the planning area, an emphasis will be placed on compliance with the NFIP and participation in the CRS. As a function of implementing this plan, all participating NFIP communities will consider joining the CRS Program through actions such as: adoption and enforcement of floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs); Floodplain identification and mapping, including any local requests for map updates; or; Description of community assistance and monitoring activities.

### 8.2.3 Resulting Goals

As noted, goals are statements of desirable future conditions that are to be achieved. They are broad in scope and assist in setting community priorities. The following goals will provide the basis for the implementation strategies that will be included in this section, some of which are already being



administered and implemented locally. These goals consider the strategic goals outlined in the existing plan.

### Goal #1

Promote the public health, safety, and general welfare of residents and minimize public and private losses due to natural hazards.

### Goal #2

Reduce the risk and impact of future natural disasters by regulating development in known high hazard areas.

### Goal #3

Pursue funds to reduce the risk of natural hazards to existing developments where such hazards are clearly identified, and the mitigation efforts are cost-effective.

### Goal #4

Effectively expedite post-disaster reconstruction.

### Goal #5

Provide education to citizens that will empower them to protect themselves and their families from natural hazards.

### Goal #6

Protect the fragile natural and scenic areas of the Region, particularly those areas that protect drinking water supplies.

## 8.3 Identification and Analysis of Mitigation Actions

### Requirement §201.6(c)(3)(ii)

[The mitigation strategy section shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

### 8.3.1 Prioritization Process

The actions in the following table have been ranked based on a cost-benefit review conducted by the MAC through the planning process. Each implementing action has been assigned a priority of low, medium, or high based on this review. The following provides a breakdown of the factors utilized to conduct this cost benefit review:

- **High Priority:** Highly cost-effective, administratively feasible and politically feasible strategies that should be implemented in 2 fiscal years and be continued.
- **Medium Priority:** Strategies that have at least two of the following characteristics (but not all three) and should be implemented in 3 fiscal years:
  - Highly cost-effective; or
  - Administratively feasible, given current levels of staffing and resources; or
  - Are politically popular and supportable given the current environment.

- **Low Priority:** Strategies that have one of the following characteristics and should be implemented in the next five years):
  - Highly cost-effective; or
  - Administratively feasible, given current levels of staffing and resources; or
  - Are politically popular and supportable given the current environment.

Strategies will be implemented earlier if resources are available. It should also be noted that projects or initiatives given low priority may be ultimately contingent upon grant funding. In devising the strategies outlined in this section, the MAC took the following factors into consideration:

- The strategy will solve the problem it is intended to solve or begin to develop a solution.
- The strategy meets at least one community mitigation goal.
- The strategy complies with all laws and regulations.
- The strategy is cost-beneficial.
- The community implementing the strategy has (or will have) the capability to do so.
- The strategy is environmentally sound.
- The strategy is technically feasible.
- The strategy will further the County's standing in the NFIP.

In accordance with the DMA requirements, an emphasis was placed on the importance of a benefit-cost analysis in determining action priority. The MAC reviewed each potential statement based on the overall benefit in relation to the financial and staff resources required for implementation.

Table 9.1 provides a detailed breakdown of specific mitigation actions that will aid the Region and all participating jurisdictions in furthering the goals discussed throughout this section of the plan. These actions are intended to address activities to be achieved over the next five years. Subsequent to this period, the MAC will revisit these actions as outlined within Section 10, Plan Maintenance.

## SECTION 9: MITIGATION ACTION PLAN

### Requirement §201.6(c)(3)(ii)

[The mitigation strategy section shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

Section 9 presents the mitigation action plan developed for each participating jurisdiction. The action plan was developed to present the recommendations developed by the MAC for how the communities can reduce the risk and vulnerability of people, property, infrastructure, and natural and cultural resources to future disaster losses. Emphasis was placed on both future and existing development. The action plan summarizes who is responsible for implementing each of the prioritized actions as well as when and how the actions will be implemented. **Table 9.1 identifies new and/or revised mitigation actions for each participating jurisdiction for this plan update.**

It should be clarified that the actions included in this mitigation strategy are subject to further review and refinement; alternatives analyses; and reprioritization due to funding availability and/or other criteria. The participating jurisdictions are not obligated by this document to implement any or all these projects. Rather this mitigation strategy represents the desires of each community to mitigate the risks and vulnerabilities from identified hazards.

Acronyms provided in the funding source column of Table 9.1 are defined as follows:

- ◆ GF - General Fund
- ◆ SR - Staff Resources
- ◆ UHMA - Unified Hazard Mitigation Assistance (HMGP and FMA)
- ◆ PA - Public Assistance
- ◆ USACE - US Army Corps of Engineers
- ◆ NCDEQ - NC Department of Environmental Quality
- ◆ NCDOT - NC Department of Transportation
- ◆ NCDPS - NC Department of Public Safety
- ◆ NCDPH - NC Division of Public Health
- ◆ NCCE - NC Cooperative Extension
- ◆ NCFS - NC Forest Service
- ◆ ARC - American Red Cross

**Mitigation Action Cost Estimate are defined as follows:**

- Low: less than \$5k
- Medium: \$6k to \$20k
- High: greater than \$20k

**Mitigation Action Timeframe Key are defined as follows:**

Low: Less than 2 years

Medium: 2-5 years High:

High: Greater than 5 years

Table 9-1: New/Updated Mitigation Action Plan

| Action Number                                                                                                                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Project Status (2025)                                                                                                                                     | Goal Addressed (see p. 8-4) | Hazards Addressed                                                                      | Priority | Responsible Party/Dept.                                                                                                                             | Funding Sources | Cost Estimate | Timeframe |
|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|----------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------|-----------|
| Bladen County and all Participating Jurisdictions (Bladenboro, Clarkton, Dublin, East Arcadia, Elizabethtown, Tarheel, White Lake) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                           |                             |                                                                                        |          |                                                                                                                                                     |                 |               |           |
| B-1                                                                                                                                | Bladen County and all jurisdictions will review the County’s Comprehensive Land Use Plan annually to ensure that the Future Land Use Map adequately delineates portions <sup>N P</sup> of the County deemed unsuitable for development due to existing environmental conditions.                                                                                                                                                                                                                                                   | Ongoing and to be continued, the Land Use Plan is reviewed by Bladen County on a yearly basis to ensure that future land use is suitable for development. | 1, 2, 6                     | Inland Flooding, Wildfire, Hurricane/Tropical Storm                                    | Medium   | <ul style="list-style-type: none"><li>• Bladen County Planning</li><li>• Municipal Administrations</li><li>• Bladen County MAC</li></ul>            | GF              | Low           | Low       |
| B-2                                                                                                                                | Bladen County, as well as all municipal jurisdictions participating in the NFIP program (Bladen County (unincorporated), Bladenboro, Clarkton, East Arcadia, Elizabethtown, and White Lake) will review their respective Flood Damage Prevention Ordinances to assess whether any revision and/or updates have been mandated by FEMA or NCEM. Additionally, jurisdictions will consider whether regulatory options are available to provide for more effective floodplain management.                                              | To be continued, Bladen County is currently elevating properties that are in the floodplain and acquiring repetitive loss properties due to flooding.     | 1, 2, 6                     | Inland Flooding                                                                        | Medium   | <ul style="list-style-type: none"><li>• Bladen County Planning</li><li>• Municipal Administrations</li><li>• Governing Boards</li></ul>             | GF, NCDPS       | Low           | Low       |
| P-3                                                                                                                                | Bladen County, as well as all participating municipal jurisdictions, will continue to enforce the NC State Building Code. Local Government Inspections Staff will recertify the NC State Building Code as the adopted local regulation applying to all construction activities on an annual basis. Through enforcement of the NC State Building Code, all jurisdictions will work to ensure that all structures, including manufactured homes, are properly anchored to minimize potential impacts stemming from a disaster event. | Ongoing and to be continued, Bladen County adheres to all NC building code regulations and attends con-ed to stay current with all changes.               | 2                           | Dam/Levee Failure, Inland Flooding, Hurricane/Tropical Storm, Severe Weather, Wildfire | High     | <ul style="list-style-type: none"><li>• Bladen County Building Inspections</li><li>• Municipal Administrations</li></ul>                            | GF              | Low           | Low       |
| B-4                                                                                                                                | Bladen County, including all municipal jurisdictions participating in the NFIP program, (Bladenboro, Clarkton, Elizabethtown) will maintain and update local Flood Insurance Rate Maps (FIRM) on the County Geographic Information System (GIS). These maps will be reviewed and formally updated as revisions become available through the North Carolina Floodplain Mapping Program.                                                                                                                                             | Ongoing and to be continued, Bladen County continues to maintain all FIRM maps to remain eligible with NFIP.                                              | 1, 2                        | Inland Flooding                                                                        | Medium   | <ul style="list-style-type: none"><li>• Bladen County Planning</li><li>• Municipal Administrations</li><li>• Governing Boards</li></ul>             | GF, NCDPS       | Medium        | Low       |
| B-5                                                                                                                                | Bladen County will consider establishing a freeboard requirement for all development located within a defined flood hazard area. (Refer to municipal strategy statements for their respective freeboard requirement, if applicable)                                                                                                                                                                                                                                                                                                | To be continued, Bladen County continues to enforce a 2-foot free board following the Bladen County floodplain ordinance.                                 | 1, 2                        | Inland Flooding                                                                        | High     | <ul style="list-style-type: none"><li>• Bladen County Building Inspections</li><li>• Municipal Administrations</li><li>• Governing Boards</li></ul> | GF              | Medium        | High      |
| B-6                                                                                                                                | All participating jurisdictions shall maintain all FEMA Elevation Certificates in an effort to track structures that are built in full compliance with NFIP standards (this is not required by the NFIP program).                                                                                                                                                                                                                                                                                                                  | To be continued, the Bladen County Planning Department and Building Inspections Dept. maintain copies of all elevation Certificates.                      | 1, 2                        | Inland Flooding                                                                        | High     | <ul style="list-style-type: none"><li>• Individual Inspections</li><li>• Individual Planning</li></ul>                                              | GF              | Medium        | Low       |
| B-7                                                                                                                                | Bladen County and all its municipalities will consider the data and recommendations outlined within this plan when preparing or updating a Capital Improvements Plan. All recommendations regarding capital expenditures will focus on siting infrastructure and public facilities outside of the Flood Hazard Area.                                                                                                                                                                                                               | To be continued, Bladen County continues to address recommendations of this plan in developing CIP during the budget process when funding is available.   | 1, 2                        | Inland Flooding                                                                        | Medium   | <ul style="list-style-type: none"><li>• Bladen County Administration</li><li>• Bladen County Board of Commissioners</li></ul>                       | GF              | Medium        | Medium    |
| B-8                                                                                                                                | Bladen County will continue to maintain all property acquired within the SFHA as undisturbed open space in perpetuity. The County will continue to                                                                                                                                                                                                                                                                                                                                                                                 | In progress. To date Bladen County has acquired 2 properties with more in the works. Bladen County                                                        | 1, 2, 6                     | Inland Flooding                                                                        | High     | <ul style="list-style-type: none"><li>• Bladen County Board of Commissioners</li><li>• Bladen County Planning</li></ul>                             | GF, PDM, HMGP   | Medium        | High      |



| Action Number | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Project Status (2025)                                                                                                                                                                                                                           | Goal Addressed (see p. 8-4) | Hazards Addressed                            | Priority | Responsible Party/Dept.                                                                                                                                     | Funding Sources  | Cost Estimate | Timeframe |
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|               | proactively establish open space within the floodplain and floodway as grant funds become available to carry out this initiative.                                                                                                                                                                                                                                                                                                                                                    | maintains all acquired properties through grant funded acquisitions.                                                                                                                                                                            |                             |                                              |          |                                                                                                                                                             |                  |               |           |
| B-9           | Bladen County, in conjunction with all municipal jurisdictions participating in the Bladen Columbus Robeson Hazard Mitigation Plan, will update it at least every 5 years.                                                                                                                                                                                                                                                                                                           | Ongoing and to be Continued, Bladen County continues to work on 5-year updates.                                                                                                                                                                 | 1, 2, 3, 4, 5, 6            | All Hazards                                  | High     | <ul style="list-style-type: none"><li>• Bladen County Emergency Services</li><li>• Bladen County Planning</li></ul>                                         | GF, UHMA, NCDPS  | Low           | Medium    |
| B-10          | Bladen County will continue to proactively seek out grant funding, when deemed necessary, through NCEM and FEMA to mitigate repetitive loss properties (RLP) from future flooding events. The County will maintain a list of RLPs, and on an annual basis will apply for funding for all structures that meet cost- benefit thresholds as defined by FEMA. Bladen County will assist all municipal jurisdictions in working through the structural mitigation grant funding process. | To be continued, Bladen County maintains a repetitive loss property list and is actively working with grant funding to address said properties.                                                                                                 | 1, 2                        | Inland Flooding                              | Medium   | <ul style="list-style-type: none"><li>• Bladen County Planning</li><li>• Bladen County Board of Commissioners</li><li>• Municipal Administrations</li></ul> | GF, UHMA, NCDPS  | Low           | Low       |
| B-11          | Bladen County, as well as all participating municipal jurisdictions, will coordinate with NCDEQ to enforce all NC State Erosion and Sedimentation Control Regulations.                                                                                                                                                                                                                                                                                                               | To be continued, Bladen County works with NCDEQ to enforce laws.                                                                                                                                                                                | 2, 3                        | Dam/Levee Failure, Inland Flooding, Wildfire | Medium   | <ul style="list-style-type: none"><li>• Bladen County Planning</li><li>• Municipal Administrations</li><li>• NCDEQ</li></ul>                                | GF, NCDEQ, USACE | Low           | Medium    |
| B-12          | Bladen County and all participating jurisdictions will continue to expand upon the Alert Emergency Notification System available to all residents. Bladen County Emergency Services will coordinate with all municipal jurisdictions regarding registration through the Bladen County Emergency Notification Registration Portal.                                                                                                                                                    | To be continued. All jurisdictions will continue to expand emergency alert functions to residents in all jurisdictions. Bladen County currently has Code Red reverse 911 system. About 2000-3000 are currently registered.                      | 1, 4, 5                     | All Hazards                                  | Medium   | <ul style="list-style-type: none"><li>• Bladen County Emergency Services</li><li>• Municipal Administrations</li></ul>                                      | GF, NCDPS        | High          | Low       |
| B-13          | Bladen County and all participating jurisdictions will consider all of the data, information, maps and recommendations outlined throughout this hazard mitigation plan when developing all new critical facilities sites. This consideration will consider the data and maps developed through this planning effort. All hazards will be considered during the course of this analysis.                                                                                              | To be continued. All jurisdictions will continue to incorporate hazard mitigation data into relevant planning mechanisms for all hazards. To be continued, Bladen County does take into consideration this plan when developing new properties. | 1, 2, 3, 4, 6               | All Hazards                                  | High     | <ul style="list-style-type: none"><li>• Bladen County Administration</li><li>• Bladen County Planning</li><li>• Municipal Administrations</li></ul>         | GF, NCDPS        | Low           | Low       |
| B-14          | Bladen County Emergency Services, in conjunction with annual EOP updates, will determine if access to all critical facilities is readily available in the event of a flooding event. Careful consideration should be given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified, Bladen County will establish a plan for alternative transportation.                                                         | To be continued, Bladen County will allow access to critical facilities in the event of flooding and other disasters. Alternate access ways can be established.                                                                                 | 1, 4, 5                     | All Hazards                                  | High     | <ul style="list-style-type: none"><li>• Bladen County Emergency Services</li><li>• NCEM</li></ul>                                                           | GF, NCDPS        | Medium        | Medium    |
| B-15          | Bladen County will continue to maintain the County’s Continuity of Operations (COP). This effort will include an annual update addressing risk management, service retention, alternative staffing procedures and recovery checklists for each County department.                                                                                                                                                                                                                    | To be continued, the COP plan is reviewed annually.                                                                                                                                                                                             | 4, 5                        | All Hazards                                  | High     | <ul style="list-style-type: none"><li>• Bladen County Administration</li><li>• Bladen County Board of Commissioners</li></ul>                               | GF, NCDPS        | Low           | Low       |
| B-16          | Bladen County Emergency Services will review and update the County Emergency Operations Plan on an annual basis. This update will involve                                                                                                                                                                                                                                                                                                                                            | To be continued and ongoing, Bladen County EOP is reviewed and updated annually.                                                                                                                                                                | 1, 4, 5                     | All Hazards                                  | Medium   | <ul style="list-style-type: none"><li>• Bladen County Emergency Services</li><li>• Municipal Administrations</li></ul>                                      | GF, NCDPS        | Low           | Low       |

| Action Number                                                                                                                                                       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Project Status (2025)                                                                                                                   | Goal Addressed (see p. 8-4) | Hazards Addressed         | Priority | Responsible Party/Dept.                                                                                                                                                        | Funding Sources | Cost Estimate | Timeframe |
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|                                                                                                                                                                     | coordination with all municipalities to ensure that all emergency contacts are accurate.                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                         |                             |                           |          |                                                                                                                                                                                |                 |               |           |
| B-17                                                                                                                                                                | Bladen County, in coordination with all participating municipalities, will work to expand upon the County’s Special Medical Needs Registry (SMNR). The SMNR is available to all County Residents; effective participation will require close cooperation between County ESD and local government staff members. All jurisdictions will work to advertise the availability of this service through channels deemed to be effective within their respective community. | To be continued and ongoing, Bladen EM works with Social Services and Health Dept. to identify the special needs population.            | 1, 4, 5                     | All Hazards               | High     | <ul style="list-style-type: none"><li>• Bladen County Emergency Services</li><li>• Municipal Administrations</li><li>• Governing Boards</li></ul>                              | GF, NCDPS, ARC  | Low           | Low       |
| B-18                                                                                                                                                                | Bladen County and participating municipalities will operate in a support role to the American Red Cross in the operation of emergency shelters.                                                                                                                                                                                                                                                                                                                      | To be Continued, Bladen County works with schools and the Red Cross to establish shelters.                                              | 1,4                         | All Hazards               | High     | <ul style="list-style-type: none"><li>• American Red Cross</li><li>• Bladen County Emergency Services</li><li>• Municipal Administrations</li><li>• Governing Boards</li></ul> | GF, NCDPS, ARC  | Medium        | Low       |
| B-19                                                                                                                                                                | Bladen County will continue to maintain the County’s Local Emergency Planning Committee (LEPC) focused on monitoring the presence and proliferation of hazardous materials throughout the County. The LEPC and County staff will continue to utilize E-Plan to monitor these materials. Bladen County supports efforts of the State of NC to develop an alternative to the Federal E-Plan system.                                                                    | Action to be deleted. Hazmat is not included as a hazard in this plan.                                                                  | 1,4                         | HazMat                    | Medium   | <ul style="list-style-type: none"><li>• Bladen County Emergency Services</li></ul>                                                                                             | GF, NCDEQ       | Medium        | Low       |
| B-20                                                                                                                                                                | Bladen County and all jurisdictions will consider methods of providing back up power to critical facilities through systems, such as generators.                                                                                                                                                                                                                                                                                                                     | To be continued and ongoing. Opportunities for new backup power are always under consideration and funding will be sought as available. | 1,4                         | All Hazards               | Medium   | <ul style="list-style-type: none"><li>• Bladen County Emergency Services</li></ul>                                                                                             | GF, UHMA        | High          | Low       |
| B-21                                                                                                                                                                | Bladen County will continue to provide detailed information regarding properties located within flood hazard areas, including maintaining all FIRMs on the County Geographic Information System (GIS).                                                                                                                                                                                                                                                               | To be continued and ongoing, GIS continues to maintain the flood areas on the GIS mapping system.                                       | 1, 2, 5                     | Inland Flooding           | High     | <ul style="list-style-type: none"><li>• Bladen County Building Inspections</li><li>• Bladen County Planning</li><li>• Municipal Administrations</li></ul>                      | GF              | High          | Low       |
| B-22                                                                                                                                                                | Bladen County will continue to maintain a library of materials focused on educating citizens, builders, realtors and developers about the dangers associated with floodplain development. This information will include material outlining sound techniques for floodplain development and floodproofing of existing structures. The County will also maintain staff educated in these issues to work with prospective builders.                                     | To be continued, Bladen County Building Inspections Dept. will work with builders and homeowners on dangers of flood plain building.    | 1, 2, 5                     | Inland Flooding           | High     | <ul style="list-style-type: none"><li>• Bladen County Building Inspections</li><li>• Bladen County Planning</li><li>• Municipal Administrations</li></ul>                      | GF, NCDPS       | Medium        | Low       |
| B-23                                                                                                                                                                | Bladen County will continue to work with real estate agents to encourage education for prospective buyers about development within a flood hazard area.                                                                                                                                                                                                                                                                                                              | To be continued and ongoing, Bladen County Building Inspections works to educate area agents.                                           | 1, 2, 5                     | Inland Flooding           | Medium   | <ul style="list-style-type: none"><li>• Bladen County Planning</li><li>• Municipal Administrations</li></ul>                                                                   | GF, NCDPS       | Medium        | Low       |
| Columbus County and all Participating Jurisdictions (Boardman, Bolton, Brunswick, Cerro Gordo, Chadbourn, Fair Bluff, Lake Waccamaw, Sandyfield, Tabor, Whiteville) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                         |                             |                           |          |                                                                                                                                                                                |                 |               |           |
| C-1                                                                                                                                                                 | Columbus County will review the County’s Comprehensive Land Use Plan annually to ensure that the Future Land Use Map adequately delineates portions of the County deemed unsuitable for development due to existing environmental conditions.                                                                                                                                                                                                                        | To be continued and ongoing, Land Use Plan is reviewed every year and will continue to be reviewed.                                     | 1, 2, 6                     | Inland Flooding, Wildfire | Medium   | <ul style="list-style-type: none"><li>• Columbus County Planning</li><li>• Municipal Administrations</li><li>• Columbus County MAC</li></ul>                                   | GF              | Low           | Low       |

| Action Number | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Project Status (2025)                                                                                   | Goal Addressed (see p. 8-4) | Hazards Addressed                                                                              | Priority | Responsible Party/Dept.                                                                                                                               | Funding Sources | Cost Estimate | Timeframe |
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| C-2           | Columbus County, as well as all municipal jurisdictions participating in the NFIP program, will review their respective Flood Damage Prevention Ordinances to assess whether any revision and/or updates have been mandated by FEMA or NCEM. Additionally, jurisdictions will consider whether regulatory options are available to provide for more effective floodplain management, including ensuring that all structures in flood prone areas are built at or above base flood elevation and consideration of low impact design. | To be continued and ongoing, Flood Ordinances are reviewed every year and will continue to be reviewed. | 1, 2                        | Inland Flooding                                                                                | Low      | <ul style="list-style-type: none"><li>• Columbus County Planning</li><li>• Municipal Administrations</li><li>• Governing Boards</li></ul>             | GF, NCDPS       | Low           | Medium    |
| C-3           | Columbus County and all municipalities with flood hazard areas will evaluate the cost-effectiveness of participation in the CRS program.                                                                                                                                                                                                                                                                                                                                                                                            | To be continued and ongoing, evaluation occurs annually.                                                | 1, 2                        | Inland Flooding                                                                                | Low      | <ul style="list-style-type: none"><li>• Columbus County Emergency Services</li><li>• Municipal Administrations</li></ul>                              | GF, NCDPS       | Low           | Low       |
| C-4           | Columbus County, as well as all participating municipal jurisdictions, will continue to enforce the NC State Building Code. Local Government Inspections Staff will recertify the NC State Building Code as the adopted local regulation applying to all construction activities on an annual basis. Through enforcement of the NC State Building Code, jurisdictions will work to ensure that all structures, including manufactured homes, are properly anchored to minimize potential impacts stemming from a disaster event.    | To be continued and ongoing, Code enforcements occur daily.                                             | 2                           | Dam/Levee Failure, Inland Flooding, Hurricane/Tropical Storm, Tornado, Severe Weather Wildfire | High     | <ul style="list-style-type: none"><li>• Columbus County Building Inspections</li><li>• Municipal Administrations</li></ul>                            | GF              | Medium        | High      |
| C-5           | Columbus County, including all municipal jurisdictions participating in the NFIP program, will maintain and update local GIS Flood Insurance Rate Maps (FIRM). These maps will be reviewed and formally updated as revisions become available through the North Carolina Floodplain Mapping Program.                                                                                                                                                                                                                                | To be continued and ongoing. FIRMS are updated as needed.                                               | 1, 2                        | Inland Flooding                                                                                | High     | <ul style="list-style-type: none"><li>• Columbus County Planning</li><li>• Municipal Administrations</li><li>• Governing Boards</li></ul>             | GF, NCDPS       | Medium        | Medium    |
| C-6           | Columbus County will maintain a GIS layer which identifies county-wide evacuation routes.                                                                                                                                                                                                                                                                                                                                                                                                                                           | To be continued and ongoing. GIS information is updated annually.                                       | 1, 4, 5                     | All Hazards                                                                                    | Medium   | <ul style="list-style-type: none"><li>• Columbus County Management Information Systems</li></ul>                                                      | GF, NCDPS       | High          | Medium    |
| C-7           | Columbus County will consider establishing a freeboard requirement for all development located within a defined flood hazard area. (Refer to municipal strategy statements for their respective freeboard requirement, if applicable).                                                                                                                                                                                                                                                                                              | Deferred: This action continues to be evaluated as staff time and funding allows.                       | 1, 2                        | Inland Flooding                                                                                | Medium   | <ul style="list-style-type: none"><li>• Columbus County Building Inspections</li><li>• Municipal Administrations</li><li>• Governing Boards</li></ul> | GF              | Low           | High      |
| C-8           | Columbus County and all municipal jurisdictions will consider the data and recommendations outlined within this plan when preparing or updating Capital Improvements Plans. All recommendations regarding capital expenditures will focus on siting infrastructure and public facilities outside of the Flood Hazard Area.                                                                                                                                                                                                          | Deferred: This action continues to be evaluated as staff time and funding allows.                       | 1, 2                        | Inland Flooding                                                                                | Medium   | <ul style="list-style-type: none"><li>• Columbus County Administration</li><li>• Municipal Administration</li><li>• Governing Boards</li></ul>        | GF              | Medium        | Low       |
| C-9           | Columbus County will increase public education as it relates to hazards with development and implementation of “lightning safety” training for coaches, referees, schools, pools, and parks.                                                                                                                                                                                                                                                                                                                                        | Deferred: This action continues to be evaluated as staff time and funding allows.                       | 1, 5                        | Severe Weather, Tornado                                                                        | Medium   | <ul style="list-style-type: none"><li>• Columbus County Parks and Recreation</li><li>• Columbus County Emergency Services</li></ul>                   | GF, NCDPS       | Medium        | Low       |
| C-10          | Columbus County will educate on fire prevention by using Fire Administration and Forestry Resources.                                                                                                                                                                                                                                                                                                                                                                                                                                | Deferred: This action continues to be evaluated as staff time and funding allows.                       | 1, 5                        | Wildfire                                                                                       | Low      | <ul style="list-style-type: none"><li>• Columbus County Fire Marshal’s Office</li><li>• NC Forest Service - Columbus Co. Office</li></ul>             | GF, NCFS        | Medium        | Medium    |

| Action Number | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Project Status (2025)                                                                                                                                                                                                                                            | Goal Addressed (see p. 8-4) | Hazards Addressed                  | Priority | Responsible Party/Dept.                                                                                                                                 | Funding Sources | Cost Estimate | Timeframe |
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| C-11          | Columbus County and all municipal jurisdictions will continue to proactively seek out grant funding, when deemed necessary, through NCEM and FEMA to mitigate repetitive loss properties (RLP) from future flooding events. The County and affected municipalities will maintain lists of RLPs, and on an annual basis will apply for funding for all structures that meet cost-benefit thresholds as defined by FEMA. Columbus County will assist all municipal jurisdictions in working through the structural mitigation grant funding process. | Deferred: This action continues to be evaluated as staff time and funding allows.                                                                                                                                                                                | 2, 3                        | Inland Flooding                    | Low      | <ul style="list-style-type: none"><li>• Columbus County Planning</li><li>• Columbus County Board of Commissioners</li></ul> Municipal Administrations   | GF, UHMA, NCDPS | Medium        | Low       |
| C-12          | Columbus County, as well as all participating municipal jurisdictions, will coordinate with NCDEQ to enforce all NC State Erosion and Sedimentation Control Regulations.                                                                                                                                                                                                                                                                                                                                                                           | Deferred: This action continues to be evaluated as staff time and funding allows.                                                                                                                                                                                | 1, 2, 6                     | Dam/Levee Failure, Inland Flooding | Medium   | <ul style="list-style-type: none"><li>• Columbus County Planning</li><li>• Municipal Administration</li><li>• NCDENR</li></ul>                          | GF, NCDEQ       | Low           | Low       |
| C-13          | Columbus County and all participating jurisdictions will continue to expand upon the CODE RED alert system available to all residents. Columbus County Emergency Services will coordinate with all municipal jurisdictions regarding registration for this system to warn for all hazards.                                                                                                                                                                                                                                                         | To be continued and ongoing. All jurisdictions will continue to expand emergency alert functions to residents in all jurisdictions. Columbus County currently has Code Red reverse911 system. About 2000-3000 are currently registered.                          | 4, 5                        | All Hazards                        | Medium   | <ul style="list-style-type: none"><li>• Columbus County Emergency Services</li><li>• Municipal Administrations</li></ul>                                | GF, NCDPS       | High          | High      |
| C-14          | Columbus County and all participating jurisdictions will consider all data, information, maps and recommendations outlined throughout this plan when siting for the development of all new critical facilities. This consideration will consider the data and maps developed through this planning effort. All hazards will be considered during the course of this analysis.                                                                                                                                                                      | To be continued and ongoing. All jurisdictions will continue to incorporate hazard mitigation data into relevant planning mechanisms for all hazards. Columbus County does take into consideration this plan when developing new properties.                     | 2, 4, 6                     | All Hazards                        | High     | <ul style="list-style-type: none"><li>• Columbus County Administration</li><li>• Columbus County Planning</li><li>• Municipal Administrations</li></ul> | GF, NCDPS       | Low           | Low       |
| C-15          | Columbus County will continue to maintain and update annually its EOP, POD, and CRDP plans.                                                                                                                                                                                                                                                                                                                                                                                                                                                        | To be continued, plans are updated every year.                                                                                                                                                                                                                   | 4, 5                        | All Hazards                        | High     | <ul style="list-style-type: none"><li>• Columbus County Emergency Services</li></ul>                                                                    | GF, NCDPS       | Low           | Low       |
| C-16          | Columbus County Emergency Services, in conjunction with annual EOP updates, will determine if access to all critical facilities is readily available in the event of a flooding event.                                                                                                                                                                                                                                                                                                                                                             | To be continued and ongoing. Careful consideration was given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified, Columbus County will establish a plan for alternative transportation. | 1, 4, 5                     | Inland Flooding                    | Low      | <ul style="list-style-type: none"><li>• Columbus County Emergency Services</li><li>• NCEM</li></ul>                                                     | GF, NCDPS       | Low           | Low       |
| C-17          | Columbus County will annually evaluate shelters and identify back up shelters in accordance with American Red Cross standards.                                                                                                                                                                                                                                                                                                                                                                                                                     | Deferred: This action continues to be evaluated as staff time and funding allows.                                                                                                                                                                                | 4                           | All Hazards                        | Medium   | <ul style="list-style-type: none"><li>• Columbus County Planning</li><li>• Municipal Administrations</li></ul>                                          | GF, ARC, NCDPS  | Low           | Low       |
| C--18         | Columbus County will consider preparing a Continuity of Operations Plan (COP). This effort will include an annual update addressing risk management, service retention, alternative staffing procedures and recovery checklists for each County department.                                                                                                                                                                                                                                                                                        | Deferred: This action continues to be evaluated as staff time and funding allows.                                                                                                                                                                                | 4                           | All Hazards                        | High     | <ul style="list-style-type: none"><li>• Columbus County Administration</li><li>• Columbus County Board of Commissioners</li></ul>                       | GF, NCDPS       | Low           | Low       |



| Action Number                                                                                                                                                                                                | Description                                                                                                                                                                                                                                                                                                                                                                                                                                          | Project Status (2025)                                                                                                                                                                                                         | Goal Addressed (see p. 8-4) | Hazards Addressed                                            | Priority | Responsible Party/Dept.                                                                             | Funding Sources | Cost Estimate | Timeframe |
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| C-19                                                                                                                                                                                                         | Columbus County will continue to utilize the County’s Special Need Registry (SNR). The SNR is available to all County Registrants. All jurisdictions will work to advertise the availability of this service through channels deem to be effective within their respective community.                                                                                                                                                                | To be continued and ongoing. Registry updated annually.                                                                                                                                                                       | 1, 4, 5                     | All Hazards                                                  | Medium   | • Columbus County Emergency Services                                                                | GF, NCDPS       | Low           | Low       |
| C-20                                                                                                                                                                                                         | Columbus County Emergency Services will review, update, and exercise the County Emergency Operations Plan on an annual basis. This update will involve coordination with all municipalities to ensure that all emergency contacts are accurate.                                                                                                                                                                                                      | To be continued and ongoing. EOP reviewed and exercised every year.                                                                                                                                                           | 1, 4, 5                     | All Hazards                                                  | High     | • Columbus County Emergency Services<br>• Municipal Administrations                                 | GF, NCDPS       | Low           | Low       |
| C-21                                                                                                                                                                                                         | Columbus County and all municipal jurisdictions will continue to provide detailed information regarding properties located within flood hazard areas on GIS floodplain/wetlands maps maintained by the County.                                                                                                                                                                                                                                       | To be continued and ongoing. Property database continues to be maintained.                                                                                                                                                    | 1, 2, 5                     | Inland Flooding                                              | Medium   | • Columbus County Building Inspections<br>• Columbus County Planning<br>• Municipal Administrations | GF              | High          | High      |
| C-22                                                                                                                                                                                                         | Columbus County will continue to maintain a library of materials focused on educating citizens, builders, realtors and developers about all the hazard dangers associated with all disaster events.<br><br>Copies of the material will be available to the municipalities. The County will also maintain staff educated in these issues to work with prospective builders.                                                                           | To be continued: This information included material outlining sound techniques for floodplain development, floodproofing of existing structures, and the CERT and “Turn Around, Don’t Drown” programs are currently progress. | 1,4, 5                      | All Hazards                                                  | Medium   | • Columbus County Building Inspections<br>• Columbus County Planning<br>• Municipal Administrations | GF, NCDPS       | Medium        | High      |
| C-23                                                                                                                                                                                                         | Columbus County will continue to work with real estate agents to ensure that prospective buyers are educated about development within a flood hazard area.                                                                                                                                                                                                                                                                                           | To be continued. Building Inspections works with area real estate agents annually.                                                                                                                                            | 1, 2, 5                     | Inland Flooding                                              | Medium   | • Columbus County Planning<br>• Municipal Administrations                                           | GF, NCDPS       | Low           | Low       |
| C-24                                                                                                                                                                                                         | Columbus County will use CDC and FEMA materials to educate the public on heat/safety issues.                                                                                                                                                                                                                                                                                                                                                         | Deferred: No measurable progress has been made due to lack of funding and staffing.                                                                                                                                           | 1,5                         | Excessive Heat                                               | Medium   | • Columbus County Emergency Services<br>• Municipal Administrations                                 | GF, NCDPS       | Low           | Low       |
| Tabor City Actions                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                               |                             |                                                              |          |                                                                                                     |                 |               |           |
| C-25                                                                                                                                                                                                         | Implement drainage improvement projects to reduce stormwater related flooding.                                                                                                                                                                                                                                                                                                                                                                       | New action for the 2025 plan.                                                                                                                                                                                                 | 1, 3                        | Inland Flooding                                              | High     | • Tabor City Staff                                                                                  | FEMA, NCDPS, GF | High          | High      |
| C-26                                                                                                                                                                                                         | Identify areas most at risk for flooding and investigate strategies to reduce those risks.                                                                                                                                                                                                                                                                                                                                                           | New action for the 2025 plan.                                                                                                                                                                                                 | 1, 3                        | Inland Flooding                                              | High     | • Tabor City staff                                                                                  | FEMA, NCDPS, GF | Medium        | High      |
| Robeson County and all Participating Jurisdictions (Fairmont, Lumberton, Lumber Bridge, Marietta, Maxton, McDonald, Orrum, Parkton, Pembroke, Proctorville, Raynham, Red Springs, Rennert, Roland, St. Pauls |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                               |                             |                                                              |          |                                                                                                     |                 |               |           |
| R-1                                                                                                                                                                                                          | Require a finished floor elevation certificate for all development within the special flood hazard area (SFHA) within both incorporated and unincorporated portions of the County. All elevation certificates should be submitted on an official FEMA elevation certificate. No certificate of occupancy shall be issued for any development within a defined special flood hazard area without the submittal of the required elevation certificate. | In progress. The planning department and Building Inspections Dept. maintain copies of all elevation certificates.                                                                                                            | 1, 2, 4, 5                  | Dam/Levee Failure, Inland Flooding, Hurricane/Tropical Storm | High     | • Robeson County<br>• Inspections Dept., City of Lumberton<br>• Inspections Dept.                   | GF NCDPS        | High          | Low       |



| Action Number | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Project Status (2025)                                                                                                                                                                                                                                                                            | Goal Addressed (see p. 8-4) | Hazards Addressed                                                  | Priority | Responsible Party/Dept.                                                                                         | Funding Sources | Cost Estimate | Timeframe |
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| R-2           | Maintain a map information service involving the following: <ul style="list-style-type: none"><li>• Provide information relating to Flood Insurance Rate Maps (FIRM) to all inquirers, including provision of information on whether a given property is located within a flood hazard area.</li><li>• Provide information regarding the flood insurance purchase requirements.</li><li>• Maintain historical <b>and</b> current FIRMs.</li><li>• Advertise once annually in the local newspaper.</li><li>• Provide information to inquirers about local floodplain management requirements.</li></ul> | To be continued. As of 2025, the county has utilized technology to develop an automated system that coordinates information on plans, development, roadways, and other information. As information continues to change, the county will need to update the system; Task will remain in the plan. | 1, 2, 4, 5                  | Dam/Levee Failure, Inland Flooding, Hurricane/Tropical Storm       | High     | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• City of Lumberton Inspections Dept.</li></ul> | GF NCDPS        | High          | Low       |
| R-3           | Robeson County will work with local real estate agencies to ensure that agents are informing clients when property for sale is located within an SFHA. The County will provide these agencies with brochures documenting the concerns relating to development located within flood prone areas and ways that homeowners may make their homes more disaster resistant to strong winds, lightning, and heavy rains.                                                                                                                                                                                      | In progress. Building Inspections works with this information to educate area agents.                                                                                                                                                                                                            | 1, 2, 5                     | Inland Flooding, Hurricane/Tropical Storm, Severe Weather, Tornado | Medium   | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• City of Lumberton Inspections Dept.</li></ul> | GF NCDPS        | Medium        | Low       |
| R-4           | Robeson County and all participating jurisdictions will make information regarding all hazards available through some of the following: <ul style="list-style-type: none"><li>• Ensuring that local library maintains information related to all profiled hazards.</li><li>• Providing a link(s) to FEMA or other resources covering all profiled hazards, disaster preparedness, and post-disaster recovery.</li><li>• Posting the HMP on the County/City websites.</li></ul>                                                                                                                         | In progress and ongoing. The County and all jurisdictions have developed a project website for HMP purposes.                                                                                                                                                                                     | 1, 2, 4, 5                  | All Hazards                                                        | High     | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• City of Lumberton</li></ul>                   | GF NCDPS        | Medium        | High      |

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                             |                                                                                                        |          |                                                                                                                  |                        |               |           |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------|----------|------------------------------------------------------------------------------------------------------------------|------------------------|---------------|-----------|
| R-5           | Robeson County will provide comprehensive services regarding planning and development activities within the defined SFHA and issues relating to the construction of disaster resistant structures.                                                                                                                                                                                                                             | To be continued. These services will include (as needed): <ul style="list-style-type: none"><li>• Providing site-specific flood and flood-related information on an as-needed basis.</li><li>• Maintaining a list of contractors with experience in floodproofing and retrofitting techniques.</li><li>• Providing information on wind proofing construction methods for new and renovated structures.</li><li>• Maintaining materials that provide an overview of how to select a qualified contractor.</li><li>• Making site visits upon request to review occurrences of flooding, drainage problems, and sewer problems. When applicable, the inspector should provide one-on-one advice to the property owner.</li><li>• Advertising the availability of this service once annually within the local newspaper.</li><li>• Maintaining a log of all individuals assisted through this County service, including all site visits.</li></ul> | 1, 2, 5, 6                  | Earthquake, Inland Flooding, Hurricane/Tropical Storm, Severe Weather, Tornado, Wildfire, Winter Storm | High     | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• City of Lumberton</li></ul>                    | GF NCDPS               | Medium        | Medium    |
| R-6           | Robeson County will continue to maintain all property acquired within the SFHA as undisturbed open space in perpetuity. The County will continue to proactively establish open space within the floodplain and floodway as grant funds become available to carry out this initiative.                                                                                                                                          | To be continued and ongoing. To date, Robeson County has acquired 2 properties with more in the works. The County maintains all acquired properties through grant funded acquisitions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1, 2, 4, 6                  | Dam/Levee Failure, Inland Flooding, Hurricane/Tropical Storm                                           | High     | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• Municipalities' Administration, FEMA</li></ul> | GF NCDPS UHMA PA       | Medium        | Medium    |
| Action Number | Description                                                                                                                                                                                                                                                                                                                                                                                                                    | Project Status (2025)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Goal Addressed (see p. 8-4) | Hazards Addressed                                                                                      | Priority | Responsible Party/Dept.                                                                                          | Funding Sources        | Cost Estimate | Timeframe |
| R-7           | Robeson County will develop and maintain a comprehensive Geographic Information System (GIS) with current FIRM panels, land use, wildfire risk and other mitigation related information in an effort to make this information readily available to County citizens. In addition to this digital data, bound copies of all historical and current FIRM panels will be maintained within the Robeson County Planning Department. | In progress and to be continued. The County continues to maintain all FIRM maps to remain eligible with NFIP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1, 2, 5, 6                  | Dam/Levee Failure, Inland Flooding, Hurricane/Tropical Storm, wildfire                                 | High     | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• Municipalities' Administration</li></ul>       | GF NCDPS               | High          | Medium    |
| R-8           | Robeson County, in conjunction with all municipal jurisdictions participating in this hazard plan update, will work on the five-year implementation of the plan. At the end of the five-year period, the Region will again update the plan.                                                                                                                                                                                    | To be continued. Robeson County continues to work on 5-year updates.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1, 2, 3, 4, 5, 6            | All Hazards                                                                                            | High     | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• Municipalities' Administration</li></ul>       | GF NCDPS FEMA PDM HMGP | Medium        | Medium    |
| R-9           | Robeson County will continue to support the NC Office of Dam Safety efforts to monitor and inspect all dams throughout the County, as well as the State of North Carolina. The County relies on this agency to ensure that all dam facilities, both public and private, are properly maintained and stable.                                                                                                                    | To be continued. Support occurs as needed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1, 2, 3, 5                  | Dam/Levee Failure, Inland Flooding, Hurricane/Tropical Storm                                           | High     | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• Municipalities' Administration</li></ul>       | GF NCDPS               | Medium        | Medium    |

|               |                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                      |                             |                                                                                                               |          |                                                                                                                                                                                                              |                             |               |           |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------------|-----------|
| R-10          | Robeson County and all participating jurisdictions will consider participation in the Community Rating System (CRS) Program. The County will lead this effort with the assistance of each participating jurisdiction.                                                                                                                                                                                        | Deferred: No measurable progress due to lack of funding and staff.                   | 1, 2, 4, 5, 6               | Dam/Levee Failure, Inland Flooding, Hurricane/Tropical Storm                                                  | Medium   | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• Municipalities’</li><li>• Administration, NCDPS,</li><li>• CRS</li></ul>                                                                   | GF<br>NCDPS<br>FEMA         | Medium        | High      |
| R-11          | Robeson County Emergency Management will continue to work closely with the American Red Cross on the management and, when necessary, operation of emergency shelter facilities within the County. The County will operate only in a support role in dealing with individual shelter issues.                                                                                                                  | To be continued. Support occurs as needed.                                           | 1, 2, 4, 5, 6               | All Hazards                                                                                                   | High     | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• Municipalities’</li><li>• Administration,</li><li>• NCDPS,</li><li>• Department of Social Services,</li><li>• American Red Cross</li></ul> | GF<br>NCDPS ARC             | Low           | Low       |
| R-12          | Robeson County and all participating jurisdictions will work with the American Red Cross and will attempt to obtain funding for locating switches to support existing generators at all emergency shelter locations.                                                                                                                                                                                         | Deferred: No measurable progress due to lack of funding and staff.                   | 1,2,4,5,6                   | All Hazards                                                                                                   | High     | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• Municipalities’</li><li>• Administration, NCDPS,</li><li>• Department of Social Services,</li><li>• American Red Cross</li></ul>           | GF<br>NCDPS<br>ARC          | Low           | Medium    |
| R-13          | Robeson County and all participating jurisdictions will continue to maintain and exercise the County Reverse 911 system that will assist the County in notifying residents of impending inclement weather or other potentially hazardous situations. This effort includes efforts to expand upon the number of residents registered. This system benefits all residents as a warning system for all hazards. | To be continued. Approximately 2,000 residents registered.                           | 1, 2, 3, 5                  | All Hazards                                                                                                   | High     | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• Municipalities’</li><li>• Administration</li></ul>                                                                                         | GF<br>NCDPS                 | High          | High      |
| R-14          | Robeson County Emergency Management will continue to coordinate with the County Public Works Department, as well as all municipalities, regarding the monitoring of water resources statewide. When necessary, the County will institute measures to conserve water resources according to the County’s Drought Management Plan.                                                                             | To be continued and ongoing. Monitoring occurs daily. Conservation occurs as needed. | 2, 5, 6                     | Drought, Excessive Heat                                                                                       | High     | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• Municipalities’</li><li>• Administration</li></ul>                                                                                         | GF<br>NCDPS                 | Low           | Medium    |
| Action Number | Description                                                                                                                                                                                                                                                                                                                                                                                                  | Project Status (2025)                                                                | Goal Addressed (see p. 8-4) | Hazards Addressed                                                                                             | Priority | Responsible Party/Dept.                                                                                                                                                                                      | Funding Sources             | Cost Estimate | Timeframe |
| R-15          | Robeson County, as well as participating jurisdictions, will continue to host/attend the Hurricane Preparedness Expo conducted annually. This expo assists the community in preparing for the effects of severe weather and provides the preliminary planning steps required for effective post-disaster recovery.                                                                                           | Ongoing and to be continued. The County attends annually.                            | 1, 2, 4, 5, 6               | Dam/Levee Failure, Inland Flooding, Hurricane/Tropical Storm, Severe Weather, Tornado, Wildfire, Winter Storm | High     | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• Municipalities’</li><li>• Administration</li></ul>                                                                                         | GF                          | High          | Low       |
| R-16          | Robeson County, as well as all participating jurisdictions, will maintain a contract with a qualified post-disaster recovery service provider. This contract will include the provision of essential services and equipment, including generators, and will include documentation required for reimbursement from FEMA/NCEM.                                                                                 | In Progress. 25% complete.                                                           | 1, 2, 3, 4, 5, 6            | All Hazards                                                                                                   | High     | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• Municipalities’</li><li>• Administration</li></ul>                                                                                         | GF<br>NCDPS<br>HMGP<br>FEMA | High          | High      |

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                          |                  |                                                                                                     |      |                                                                                                                                                          |                              |        |        |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------|--------|
| R-17              | <p>Robeson County and all participating jurisdictions will assist all communities within the County, including property owners in unincorporated areas, in applying for FEMA-sponsored mitigation grant assistance programs such as HMGP, PDM and FMA. Eligible activities may include:</p> <ul style="list-style-type: none"><li>• Property acquisition, structure demolition or relocation, structure elevation</li><li>• Reconstruction</li><li>• Dry floodproofing</li><li>• Flood reduction projects</li><li>• Building retrofits (structural and non-structural)</li><li>• Safe room construction and/or Wind retrofits</li><li>• Soil stabilization</li><li>• Wildfire mitigation</li><li>• Post-disaster code enforcement</li><li>• Generators</li><li>• Hazard mitigation planning</li></ul> | <p>To be continued. County and jurisdictions provide support as needed when grants become available.</p> | 1, 2, 3, 5, 6    | All Hazards                                                                                         | High | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• Municipalities’</li><li>• Administration, NCDPS</li></ul>                              | GF<br>NCDPS<br>HMGP,<br>FEMA | Medium | High   |
| R-18              | <p>Robeson County and all participating jurisdictions will seek grant funding for mitigation opportunities eligible under the most current version of the UHMA Guidance and Public Assistance 406 Mitigation Guidance at the time of application. Projects could include acquisition, elevation, mitigation reconstruction, and wet/dry flood proofing to commercial and/or residential structures as applicable; redundant power to critical facilities, wind retrofits to critical facilities, storm shelters and other activities that reduce to the loss of life and property.</p>                                                                                                                                                                                                                | <p>This action remain ongoing and to be continued as new funding opportunities arise.</p>                | 1, 3             | All Hazards                                                                                         | High | <ul style="list-style-type: none"><li>• Emergency Management,</li><li>• Engineering and/or</li><li>• Planning Departments of each jurisdiction</li></ul> | HMGP,<br>FEMA                | Medium | High   |
| R-19              | <p>Conduct federally required levee assessment. Address stormwater management requirements if City is included in Phase II stormwater requirements. Conduct stream bank stabilization projects on critical sections of Meadow Branch, Pole Cat Branch, Ivey’s Branch, and Five Mile Branch. Begin snagging operations on Saddletree Swamp. Conduct snagging and sediment removal on Little Juniper Branch and Gum Swamp Branch. Continue current and increase future street sweeping program. Complete final phase of sanitary sewer/storm sewer separation project.</p>                                                                                                                                                                                                                              | <p>In Progress. 25% complete.</p>                                                                        | 1, 2, 4, 5       | Dam/Levee Failure, Inland Flooding, Hurricane/Tropical Storm, Severe Weather, Tornado, Winter Storm | High | <ul style="list-style-type: none"><li>• Robeson County,</li><li>• City of Lumberton Administration</li></ul>                                             | GF<br>NCDPS<br>HMGP<br>FEMA  | Medium | Medium |
| City of Lumberton |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                          |                  |                                                                                                     |      |                                                                                                                                                          |                              |        |        |
| R-20              | <p>Staff and equipment will be on standby and ready for use on an “as needed” basis by all other departments.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>Ongoing and to be continued. Available as needed.</p>                                                 | 1, 2, 3, 4, 5, 6 | All Hazards                                                                                         | High | <ul style="list-style-type: none"><li>• City of Lumberton</li><li>• Administration</li></ul>                                                             | GF<br>NCDPS                  | Low    | Low    |

## SECTION 10: PLAN MAINTENANCE

### Requirement §201.6(c)(4)

[The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

This Chapter provides an overview of the overall strategy for plan implementation, integration and maintenance and outlines the method and schedule for monitoring, evaluating, and updating the plan. The section also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement. It consists of the following subsections:

- ◆ 10.1 Implementation
- ◆ 10.2 Plan Integration
- ◆ 10.3 Role of the MAC in Implementation and Maintenance
- ◆ 10.4 Monitoring, Evaluating, and Updating
- ◆ 10.5 Continued Public Involvement

### 10.1 Implementation and Incorporation

Implementation and maintenance of the plan is critical to the overall success of hazard mitigation planning. This is Planning Step 10 of the 10-step planning process. Implementation of the Hazard Mitigation Plan will commence with adoption of the document by all participating jurisdictions. Resolutions of Adoption are provided in Appendix A of the plan.

Upon adoption, this Hazard Mitigation Plan faces the truest test of its worth – implementation. Implementation implies two closely related concepts: action and priority. While this plan puts forth many worthwhile and high priority recommendations, the first task facing the Mitigation Advisory Committee (MAC) is the decision about which action to undertake first. There are two factors to consider in making that decision: the priority of the item and available funding. Thus, pursuing low or no-cost high-priority recommendations will have the greatest likelihood of success. Central to the success of this plan is the need for regional coordination regarding implementation of some of the mitigation strategies.

Another highly effective and low-cost implementation mechanism is incorporation of the hazard mitigation plan recommendations and their underlying principles into other county and municipal plans and regulatory mechanisms, such as Capital Improvements Plans and Land Use Plans. The Counties and participating municipalities will utilize this plan as a starting point toward implementing policies and programs to reduce losses to life and property from natural hazards. Bladen, Columbus and Robeson Counties will be charged with ensuring implementation of strategies specific to its jurisdiction. If these efforts require intergovernmental coordination, the MAC should also be involved. If a strategy has been documented as regional, all participating jurisdictions should assist in carrying out the function and/or strategy.

### 10.2 Plan Integration

**Mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development.** This integration is accomplished by constant efforts to network, identify, and highlight the multi-objective benefits to each program and its stakeholders. This effort is achieved through the routine actions of monitoring implementation efforts, attending meetings, and promoting a safe, sustainable community. Additional mitigation strategies could include consistent and



ongoing enforcement of existing policies and review of county and municipal programs for coordination and multi-objective opportunities.

Along with these efforts, it is important to maintain a constant monitoring of funding opportunities that can be leveraged to implement some of the more costly recommended actions. This process will include creating and maintaining ideas on how any required local match or participation requirement can be met. When funding does become available, MAC members will be in a position to capitalize on the opportunity for their respective jurisdictions. Funding opportunities to be monitored include special pre- and post-disaster funds, special district budgeted funds, state or federal earmarked funds, and grant programs, including those that can serve or support multi-objective implementing actions.

The MAC, which will meet at a minimum annually, will provide a mechanism for ensuring that the actions identified in this plan are incorporated into ongoing County and municipal planning activities for each participating jurisdiction. The participating jurisdictions currently utilize comprehensive land use planning and building codes to guide and control development in the communities. After all participating jurisdictions adopt the Hazard Mitigation Plan, these existing mechanisms will have hazard mitigation strategies integrated into them. The communities will utilize the planning tools outlined in Section 7 – Capability Assessments

After the adoption of the HMP, the participating jurisdictions will work with the State Building Code office to make sure the jurisdictions adopt and enforce the minimum standards established in the new State Building Code. This effort will ensure that life/safety criteria are met for new construction. These efforts will be carried out by the Regional MAC, as well as each respective County MAC.

The capital improvements planning that may occur in the future will also contribute to the goals in the HMP. The jurisdictions will work with capital improvements planners to secure high-hazard areas for low risk uses. During the HMP planning/implementation period, each participating jurisdiction will strive for the objective of formal adoption of the HMP policies.

### **10.3 Role of the MAC in Implementation and Maintenance**

With adoption of this plan, the MAC will be tasked with plan implementation and maintenance. The MAC, led by the Director of Emergency Services of Bladen County, the Director of Emergency Services of Columbus County, and the Emergency Management Assistant Director of Robeson County, agree to:

- Act as a forum for hazard mitigation issues;
- Disseminate hazard mitigation ideas and activities to all participants;
- Pursue the implementation of high-priority, low/no-cost recommended actions;
- Keep the concept of mitigation in the forefront of community decision-making by identifying plan recommendations when other community goals, plans, and activities overlap, influence, or directly affect increased community vulnerability to disasters;
- Continuously monitor multi-objective cost-share opportunities to help the community implement the plan's recommended actions for which no current funding exists;
- Monitor and assist in implementation and update of this plan;
- Report on plan progress and recommended changes to the County Board of Commissioners; and
- Inform and solicit input from the public.

The MAC will not have any powers over County or municipal staff personnel; it will be a purely advisory body. Its primary duty is to see the plan successfully carried out and to report to the community governing boards and the public on the status of plan implementation and mitigation opportunities for the county and participating municipal jurisdictions. Other duties include reviewing and promoting

mitigation proposals, considering stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information on the County websites.

### 10.4 Monitoring, Evaluating, and Updating

Since the previous plan was adopted, each jurisdiction has worked to ensure that Plan was integrated into local activities and that the Plan was appropriately implemented. Each of the jurisdictions outlined a process in the previous mitigation plan for monitoring, evaluating and updating the plan throughout the interim period between plan updates. Each jurisdiction was ultimately successful in implementing the monitoring, evaluation and updating processes that were outlined in previous plan as jurisdictions held annual meetings to discuss the mitigation plan and the priorities that were outlined and tracked in it. The specific process is outlined below with an explanation of how the monitoring, evaluating and updating process was and will be carried out as well as any changes that were identified by the jurisdictions that would be useful to implement during the next update.

Plan maintenance implies an ongoing effort to monitor and evaluate plan implementation and to update the plan as progress, roadblocks, or changing circumstances are recognized. In order to track progress and update the mitigation strategies identified in the policy section of the plan, the MAC will revisit this plan on an annual basis and after a hazard event. The Bladen County Director of Emergency Services, Columbus County Director Emergency Services, and Robeson County Emergency Management Assistant, acting as chairs of the MAC, are responsible for initiating this review and will consult with members of the MAC. This monitoring and updating will take place through a formal review by the MAC annually, and a five- year interval written update to be submitted to the NCEM and FEMA Region 4, unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule.

The Plan will be thoroughly reviewed by the MAC every five years to determine whether there have been any significant changes in the region that may, in turn, necessitate changes in the types of mitigation actions proposed. New development in identified hazard areas, an increased exposure to hazards, an increase or decrease in capability to address hazards, and changes to federal or state legislation are examples of factors that may affect the necessary content of the Plan. The plan review provides county and municipal officials with an opportunity to evaluate those actions that have been successful and to explore the possibility of documenting potential losses avoided due to the implementation of specific mitigation measures. The plan review also provides the opportunity to address mitigation actions that may not have been successfully implemented as assigned. They will be responsible for reconvening the MAC and conducting the five-year review. During the five-year plan review process, the following questions will be considered as criteria for assessing the effectiveness and appropriateness of the Plan:

- Do the goals address current and expected conditions?
- Has the nature or magnitude of risks changed?
- Are the current resources appropriate for implementing the Plan?
- Are there implementation problems, such as technical, political, legal or coordination issues with other agencies?
- Have the outcomes occurred as expected?
- Did County departments participate in the plan implementation process as assigned?

Evaluation of progress can be achieved by monitoring changes in vulnerabilities identified in the plan. Changes in vulnerability can be identified by noting:

- Decreased vulnerability as a result of implementing recommended actions;
- Increased vulnerability as a result of failed or ineffective mitigation actions; and/or

- Increased vulnerability as a result of new development (and/or annexation).

Updates to this plan will:

- Consider changes in vulnerability due to project implementation;
- Document success stories where mitigation efforts have proven effective;
- Document areas where mitigation actions were not effective;
- Document any new hazards that may arise or were previously overlooked;
- Incorporate new data or studies on hazards and risks;
- Incorporate new capabilities or changes in capabilities;
- Incorporate growth and development-related changes to County inventories; and
- Incorporate new project recommendations or changes in project prioritization.

### Evaluation Process

In order to best evaluate any changes in vulnerability as a result of plan implementation, the MAC will use the following process:

- A representative from the responsible office identified in each mitigation strategy will be requested to report on an annual basis to the MAC on project status and provide input on whether the project as implemented meets the defined objectives and is likely to be successful in reducing vulnerabilities.
- If the project does not meet identified objectives, the MAC may recommend additional measures to be implemented, and an assigned individual will be responsible for defining project scope, implementing the project, monitoring success of the project, and making any required modifications to the plan.

Changes will be made to the plan to accommodate for projects that have failed or are not considered feasible after a review for their consistency with established criteria, the time frame, county priorities, and/or funding resources. Priorities that were identified as potential mitigation strategies will be reviewed as well during the monitoring and update of this plan to determine feasibility of future implementation.

Updating of the plan will be accomplished by written changes and submissions as the MAC deems appropriate and necessary, and as approved by the Board of Commissioners or the participating municipalities' governing boards, if applicable. In keeping with the process of adopting the plan, a public involvement process to receive public comment on plan maintenance and updating will be held annually, and the final product will be adopted by the Counties and all participating municipalities. The plan will be updated every 5 years, as required.

## 10.5 Continued Public Involvement

Public participation is an integral component to the new mitigation planning process and will continue to be essential as the Hazard Mitigation Plan evolves over time. Significant changes or amendments to the Plan shall require the involvement of the general community as deemed appropriate.

Efforts to involve the general community in the plan maintenance, implementation, monitoring, evaluation, and review process will be made as necessary. These efforts may include:

- Advertising meetings of the MAC with invitation for public participation;
- Designating knowledgeable and willing members of the community to serve as official representatives on the MAC;

- Utilizing local media to update the community of any maintenance and/or periodic review activities taking place;
- Utilizing the Bladen, Columbus and Robeson Counties' government website to advertise any maintenance and/or periodic review activities taking place; and
- Keeping copies of the Plan in local libraries.
- Soliciting public feedback via social media surveys.

## **Appendix A: Plan Adoption**



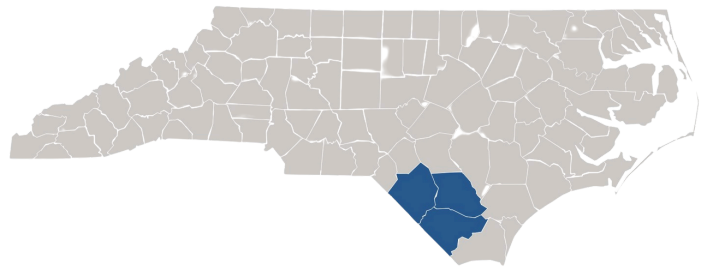
## **Appendix B: Regulation Checklist**

This appendix to the Bladen Columbus Robeson Regional Hazard Mitigation Plan contains a copy of a completed Regulation Checklist from FEMA's *Local Mitigation Plan Review Tool*. This checklist provides page numbers indicating where in the Plan each element required by FEMA is met. This serves as a final internal review to confirm that the Plan meets Federal requirements.

## **Appendix C: State and Federal Approval Letters**

## **Appendix D: Public Outreach Documentation**

This appendix to the Bladen Columbus Robeson Regional Hazard Mitigation Plan contains a copies of the documentation for Public Outreach that was conducted for the 2025 update.



# HAZARD MITIGATION UPDATE 2024

**BLADEN, COLUMBUS, AND ROBESON  
COUNTIES NEED YOUR INPUT!**



.....

## WHAT IS HAZARD MITIGATION?

Hazard mitigation are actions taken to help reduce or eliminate long-term risks caused by hazards or disasters, such as flooding, earthquakes, and wildfires.

## WHY IS HAZARD MITIGATION IMPORTANT?

This plan update will identify long-term strategies for protecting our people and property from future hazard events. Mitigation plans are key to breaking the cycle of disaster damage and reconstruction.

## PARTICIPATE TODAY!

Scan the QR code or visit the link below to take our public survey!



**Visit the project website to learn more:**



[www.bcrregionalhmp.com](http://www.bcrregionalhmp.com)

# Bladen, Columbus, & Robeson Hazard Mitigation Plan Update - Public Meeting

ONLINE EVENT

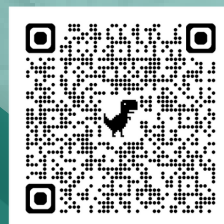
## Impact:

Your feedback is crucial for a plan that reflects our community's needs and enhances the Bladen, Columbus, & Robeson Region's resiliency.

## Purpose:

Engage with the community, provide project background, and gather input on hazards & risks.

Don't miss this chance to contribute your insights and feedback!



WEDNESDAY  
12.11.2024



START AT  
06:00PM

REGISTER HERE



# Bladen, Columbus, Robeson Regional Hazard Mitigation Plan Public Meeting

**ONLINE EVENT**

**Purpose:**

This plan helps protect lives, property, and community resources — and is required to remain eligible for certain state and federal disaster funding.

The plan affects  
your home, your  
neighborhood,  
your future —  
make sure your  
voice is heard.

**Impact:**

Your input ensures the plan reflects local priorities, protects vulnerable areas, and strengthens our communities' resilience for years to come.



**THURSDAY,  
JUNE 26, 2025**



**START AT  
5:30PM**



**REGISTER HERE**

## **Appendix E: Project Information Fact Sheet**

This appendix to the Bladen Columbus Robeson Regional Hazard Mitigation Plan contains a copy of the project information fact sheet that was developed to communicate information about the project to the general public and stakeholders, and to provide talking points for Hazard Mitigation Planning Committee members.



# Bladen-Columbus-Robeson Regional Hazard Mitigation Plan

*Natural hazards have the potential to cause property damage, loss of life, economic hardship, and threats to public health and safety. Hazard mitigation measures are the things we do today to be more protected in the future. They are actions taken before a disaster happens to reduce the impact of future hazard events on people and property in the community. Mitigation reduces the risk of loss and creates a more resilient and sustainable community.*

## Project Overview

The counties of Bladen, Columbus and Robeson, in coordination with their participating municipal jurisdictions, are preparing a **regional hazard mitigation plan** that will cover the county-county area. The Bladen-Columbus-Robeson Regional Hazard Mitigation Plan will identify local policies and actions for reducing risk and future losses from natural hazards such as floods, severe storms, wildfires, and winter weather.

The plan will also serve to meet key federal planning regulations which require local governments to develop a hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance, including funding for hazard mitigation projects.

These requirements stem from the Disaster Mitigation Act of 2000 which was passed by the President in October of 2000. This Act mandates that all states and local governments must have hazard mitigation plans in place in order to be eligible to apply for funding under such programs as the Hazard Mitigation Grant Program (HMGP) and the Pre-Disaster Mitigation (PDM) program.

## The Planning Process

The planning process for the Bladen-Columbus-Robeson Regional Hazard Mitigation Plan will consist of six main phases described in detail in the following sections: **public outreach, risk assessment, capability assessment, mitigation strategy development, plan maintenance, and plan adoption.**



## Public Outreach

The goals of the public outreach strategy for this planning effort are to: generate public interest, solicit citizen input, and engage additional partners in the planning process.

Public outreach will include two open public meetings, a project information website (the Bladen-Columbus-Robeson Hazard Mitigation Planning website located at (<https://gis.aecomonline.net/IRISK2/NCHMP.aspx?region=2>), a web-based public participation survey (<https://www.surveymonkey.com/r/JL9R3FW>), and updates and information shared through social media, such as on Facebook.

## Risk Assessment

The desired outcomes of a risk assessment are an evaluation of each identified hazard's potential impacts on the people, economy, and built and natural environments in the planning area plus an understanding of each participating jurisdiction's overall vulnerability and most significant risks. These potential impacts and a thorough understanding of the overall vulnerability can be used to create problem statements and identify mitigation actions to reduce risk.

## Capability Assessment

Each participating jurisdiction has a unique set of capabilities, including authorities, policies, programs, staff, funding, and other resources available to accomplish mitigation and reduce long-term vulnerability. By reviewing the existing capabilities in each jurisdiction, the planning team can identify capabilities that currently reduce disaster losses or could be used to reduce losses in the future.

## Mitigation Strategy Development

The primary purpose of mitigation planning is to systematically identify policies, actions, and activities to reduce the impact that future natural hazard occurrences will have on people and property in the planning area. Mitigation strategy development includes long-range mitigation goals common to the planning area and short-term mitigation actions specific to each participating jurisdiction.

## Plan Maintenance

Plan maintenance is the process established to track the plan's implementation and to aid in updating the plan every five years. These procedures help to ensure that the mitigation strategy is implemented according to the plan. They also provide the foundation for an ongoing mitigation program, standardize long-term monitoring of hazard-related activities, integrate mitigation principles into local officials' daily job responsibilities, and maintain momentum through continued engagement and accountability in the plan's progress.

## Plan Adoption

Each participating jurisdiction seeking plan approval must adopt the plan. Adoption by the local governing body demonstrates the community's commitment to implementing the mitigation strategy and authorizes responsible agencies to execute their actions. The final plan is not approved until the community adopts the plan and FEMA receives documentation of formal adoption by the governing body of the jurisdictions requesting approval.

## Project Leadership

This regional planning effort is being led by the Robeson County Emergency Management, with technical assistance from AECOM. A local Hazard Mitigation Planning Committee made up of local officials, representatives, and stakeholders has been established to guide this process. In addition, local points of contact have been established for each of the four counties as well as all of the participating municipal jurisdictions. Planning committee meetings and open public meetings will be scheduled to occur at key points throughout the project timeline.

## Schedule

The planning process began in January 2020 and a fully updated plan is expected to be ready for review by the North Carolina Division of Emergency Management and the Federal Emergency Management Agency by May 2020. Draft documents will be available on the project information website at various stages in the planning process.

## For More Information

To learn more about this project, or to find out how you can be involved, please contact Stephanie Chavis, Robeson County Emergency Management Coordinator, [stephanie.chavis@co.robeson.nc.us](mailto:stephanie.chavis@co.robeson.nc.us). Additional information and regular updates throughout the duration of this project can be found on the Bladen-Columbus-Robeson Hazard Mitigation Planning website located at

<https://gis.aecomonline.net/IRISK2/NCHMP.aspx?region=2>.

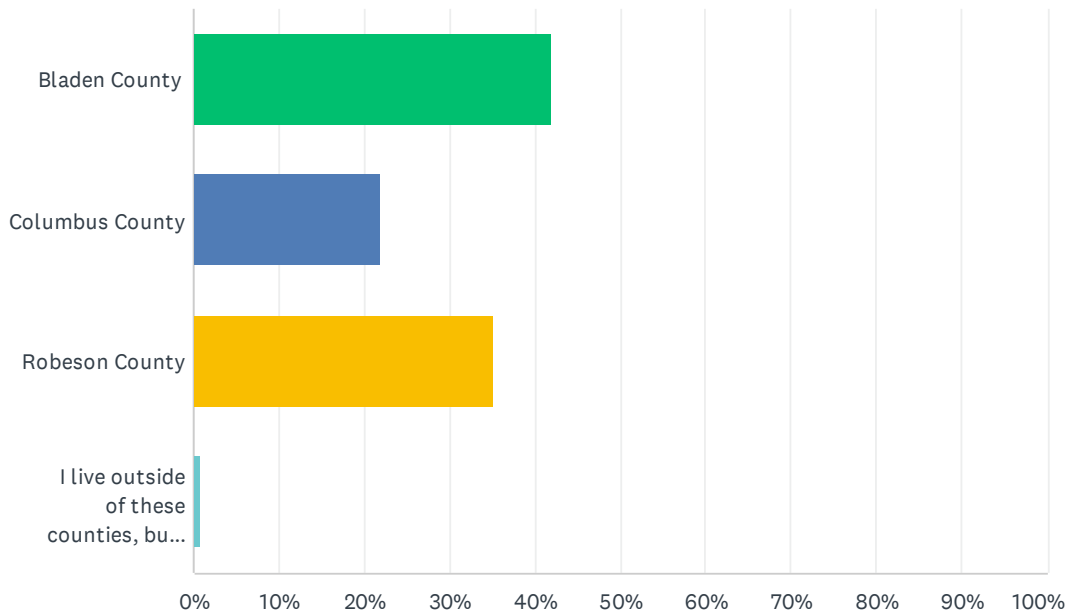


## **Appendix F: Public Participation Survey**



## Q1 Where do you live?

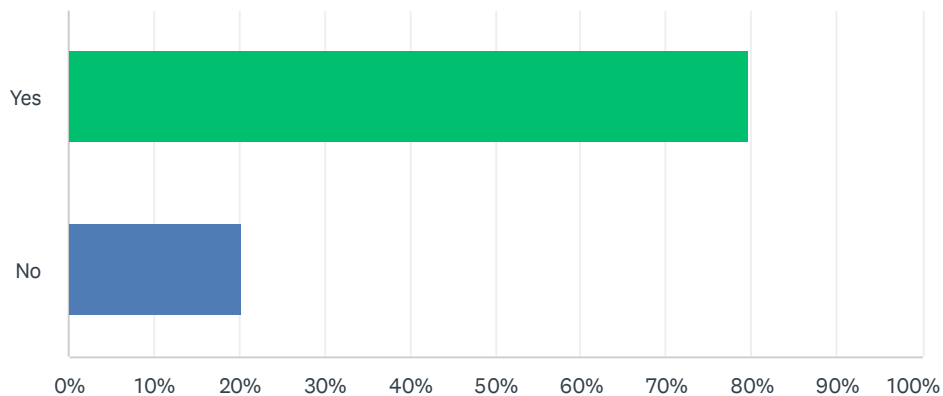
Answered: 114 Skipped: 0



| ANSWER CHOICES                                                               | RESPONSES |     |
|------------------------------------------------------------------------------|-----------|-----|
| Bladen County                                                                | 42.11%    | 48  |
| Columbus County                                                              | 21.93%    | 25  |
| Robeson County                                                               | 35.09%    | 40  |
| I live outside of these counties, but work or recreate in one or all of them | 0.88%     | 1   |
| TOTAL                                                                        |           | 114 |

## Q2 Have you ever experienced or been impacted by a hazard or disaster in the Bladen, Columbus, Robeson region?

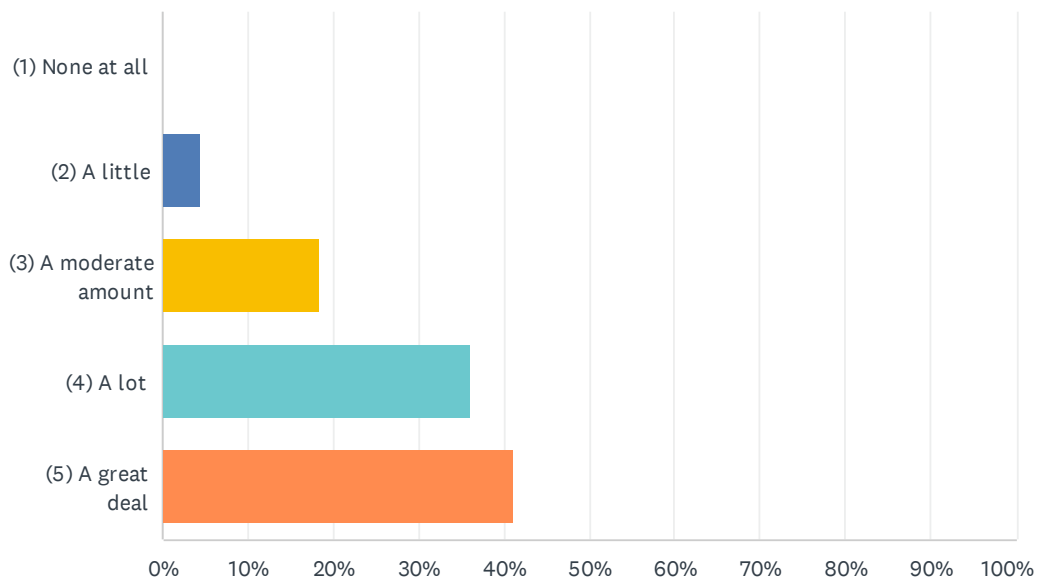
Answered: 114 Skipped: 0



| ANSWER CHOICES | RESPONSES |     |
|----------------|-----------|-----|
| Yes            | 79.82%    | 91  |
| No             | 20.18%    | 23  |
| TOTAL          |           | 114 |

**Q3 On a scale of 1-5, where 1 = not at all concerned and 5 = very concerned, how concerned are you about the possibility of your community being impacted by a hazard event?**

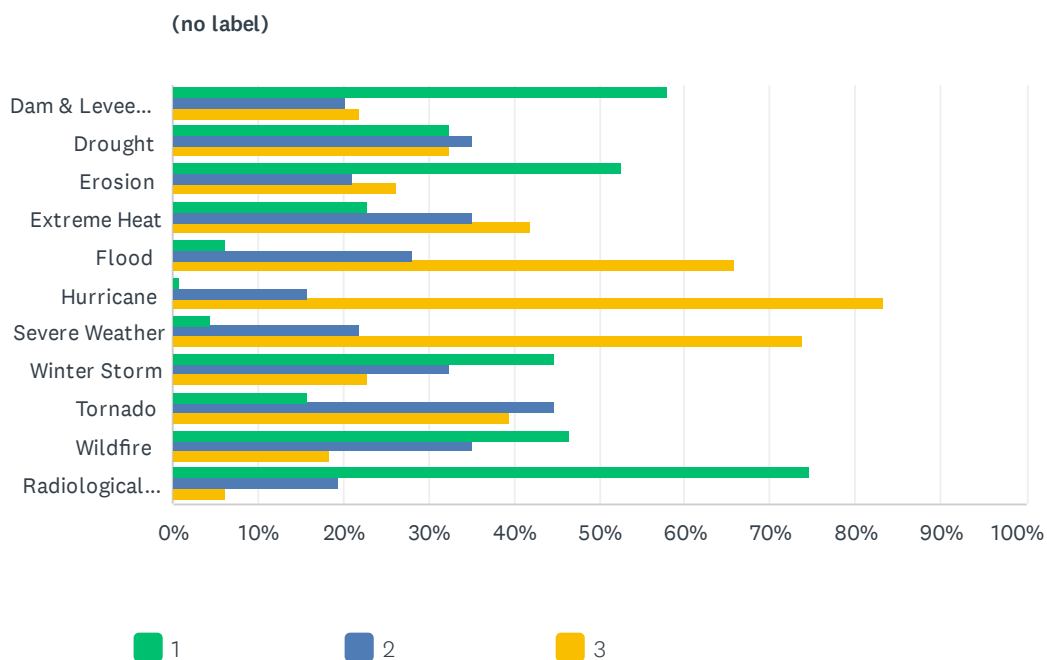
Answered: 114 Skipped: 0



| ANSWER CHOICES         | RESPONSES |    |
|------------------------|-----------|----|
| (1) None at all        | 0.00%     | 0  |
| (2) A little           | 4.39%     | 5  |
| (3) A moderate amount  | 18.42%    | 21 |
| (4) A lot              | 35.96%    | 41 |
| (5) A great deal       | 41.23%    | 47 |
| Total Respondents: 114 |           |    |

Q4 Please review the list of hazards below and rate each hazard from 1-3 based on how much risk you think it poses to your community. 1 = little to no risk, 2 = moderate risk, 3 = high risk

Answered: 114 Skipped: 0



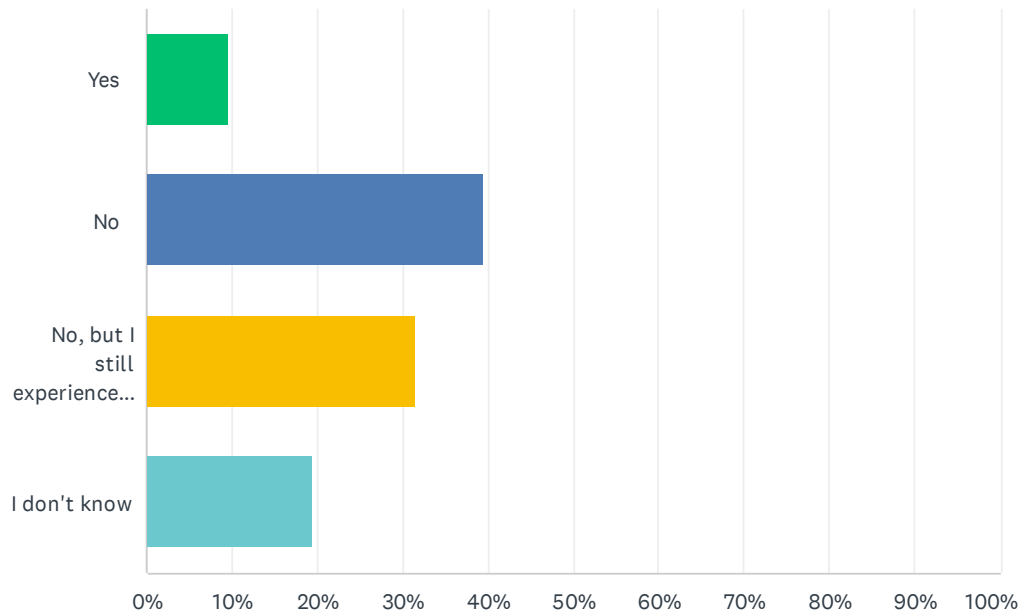
# Bladen, Columbus, & Robeson Hazard Mitigation Plan Public Survey

| (no label)            |              |              |              |       |
|-----------------------|--------------|--------------|--------------|-------|
|                       | 1            | 2            | 3            | TOTAL |
| Dam & Levee Failure   | 57.89%<br>66 | 20.18%<br>23 | 21.93%<br>25 | 114   |
| Drought               | 32.46%<br>37 | 35.09%<br>40 | 32.46%<br>37 | 114   |
| Erosion               | 52.63%<br>60 | 21.05%<br>24 | 26.32%<br>30 | 114   |
| Extreme Heat          | 22.81%<br>26 | 35.09%<br>40 | 42.11%<br>48 | 114   |
| Flood                 | 6.14%<br>7   | 28.07%<br>32 | 65.79%<br>75 | 114   |
| Hurricane             | 0.88%<br>1   | 15.79%<br>18 | 83.33%<br>95 | 114   |
| Severe Weather        | 4.39%<br>5   | 21.93%<br>25 | 73.68%<br>84 | 114   |
| Winter Storm          | 44.74%<br>51 | 32.46%<br>37 | 22.81%<br>26 | 114   |
| Tornado               | 15.79%<br>18 | 44.74%<br>51 | 39.47%<br>45 | 114   |
| Wildfire              | 46.49%<br>53 | 35.09%<br>40 | 18.42%<br>21 | 114   |
| Radiological Incident | 74.56%<br>85 | 19.30%<br>22 | 6.14%<br>7   | 114   |



## Q5 Is your home located in a floodplain?

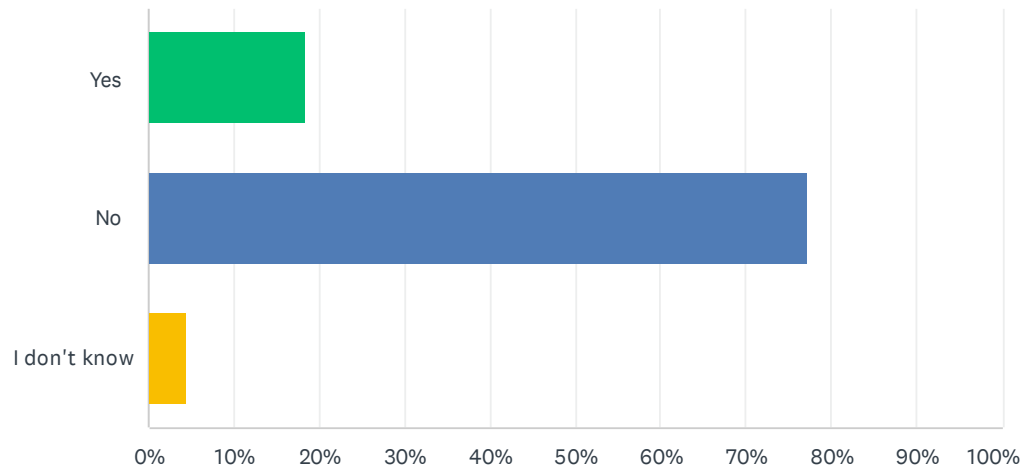
Answered: 114 Skipped: 0



| ANSWER CHOICES                      | RESPONSES |     |
|-------------------------------------|-----------|-----|
| Yes                                 | 9.65%     | 11  |
| No                                  | 39.47%    | 45  |
| No, but I still experience flooding | 31.58%    | 36  |
| I don't know                        | 19.30%    | 22  |
| TOTAL                               |           | 114 |

## Q6 Do you have flood insurance for your home and/or personal property?

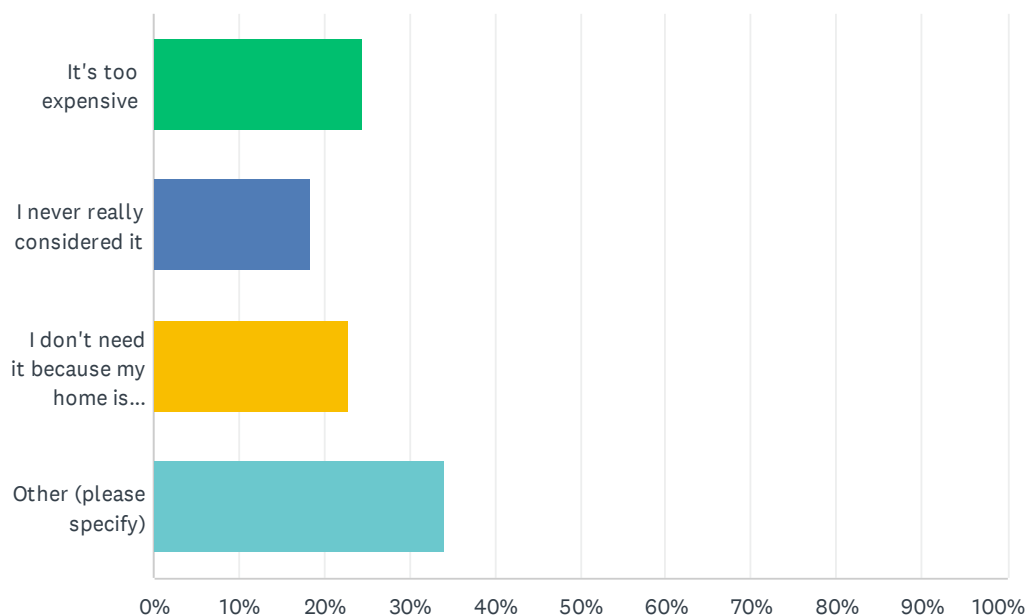
Answered: 114 Skipped: 0



| ANSWER CHOICES | RESPONSES |     |
|----------------|-----------|-----|
| Yes            | 18.42%    | 21  |
| No             | 77.19%    | 88  |
| I don't know   | 4.39%     | 5   |
| TOTAL          |           | 114 |

## Q7 If you do NOT have flood insurance, what is the reason?

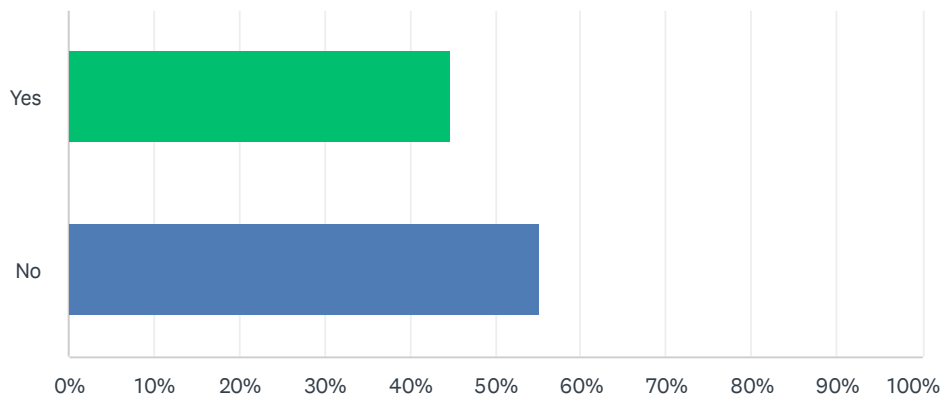
Answered: 114 Skipped: 0



| ANSWER CHOICES                                                     | RESPONSES |     |
|--------------------------------------------------------------------|-----------|-----|
| It's too expensive                                                 | 24.56%    | 28  |
| I never really considered it                                       | 18.42%    | 21  |
| I don't need it because my home is elevated or otherwise protected | 22.81%    | 26  |
| Other (please specify)                                             | 34.21%    | 39  |
| TOTAL                                                              |           | 114 |

## Q8 Have you taken any actions to protect your home or neighborhood from hazards?

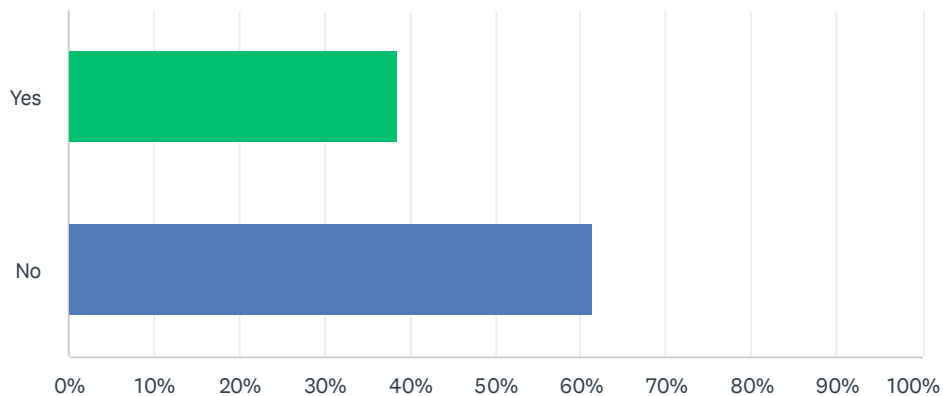
Answered: 114 Skipped: 0



| ANSWER CHOICES | RESPONSES |     |
|----------------|-----------|-----|
| Yes            | 44.74%    | 51  |
| No             | 55.26%    | 63  |
| TOTAL          |           | 114 |

## Q9 Do you know what government office to contact to learn more about your hazard risks and how to reduce vulnerability in your area?

Answered: 114 Skipped: 0



| ANSWER CHOICES | RESPONSES |     |
|----------------|-----------|-----|
| Yes            | 38.60%    | 44  |
| No             | 61.40%    | 70  |
| TOTAL          |           | 114 |

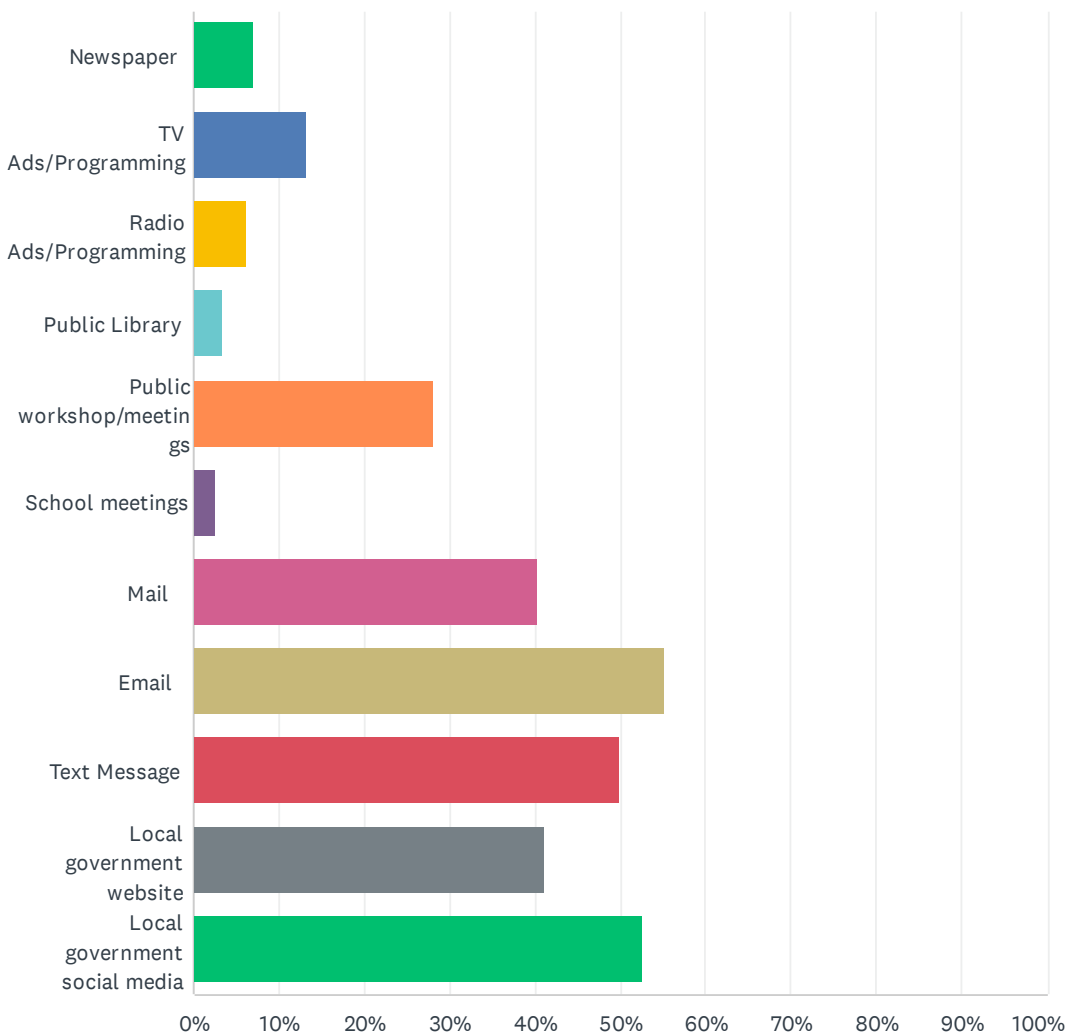


**Q10 What are some steps your local government could take to reduce the risk of future hazard damages in your neighborhood?**

Answered: 114   Skipped: 0

**Q11 What is the best way for you to receive information about how to make your home or neighborhood more resistant to flood damage? Please select your top three choices.**

Answered: 114 Skipped: 0

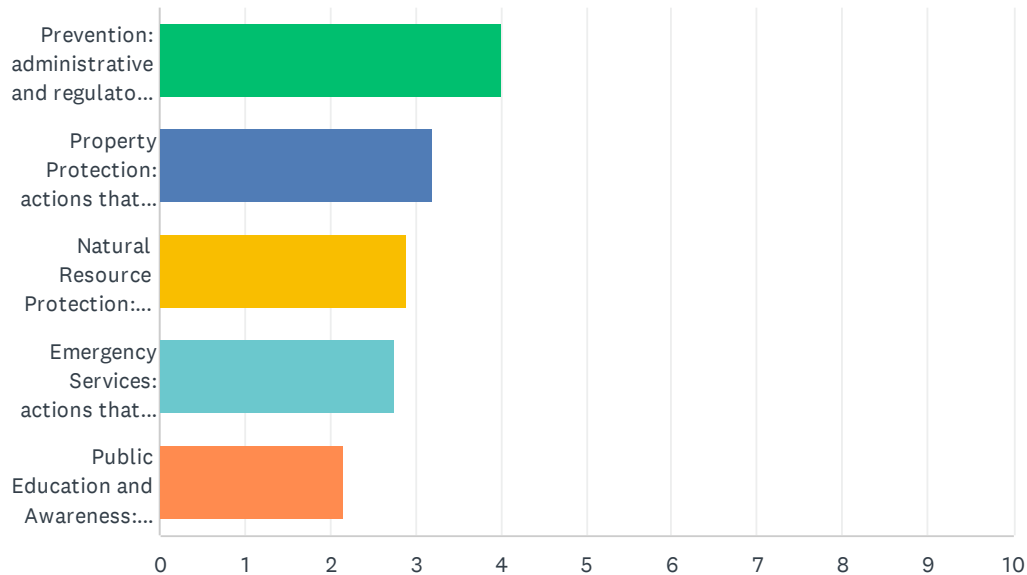


# Bladen, Columbus, & Robeson Hazard Mitigation Plan Public Survey

| ANSWER CHOICES                | RESPONSES |    |
|-------------------------------|-----------|----|
| Newspaper                     | 7.02%     | 8  |
| TV Ads/Programming            | 13.16%    | 15 |
| Radio Ads/Programming         | 6.14%     | 7  |
| Public Library                | 3.51%     | 4  |
| Public workshop/meetings      | 28.07%    | 32 |
| School meetings               | 2.63%     | 3  |
| Mail                          | 40.35%    | 46 |
| Email                         | 55.26%    | 63 |
| Text Message                  | 50.00%    | 57 |
| Local government website      | 41.23%    | 47 |
| Local government social media | 52.63%    | 60 |
| Total Respondents: 114        |           |    |

Q12 Many community-wide activities can reduce our risk from hazards. These activities generally fall into one of six broad categories. Please rank these categories from 1 (most important) to 6 (least important) by how important you think each one is for your community to consider pursuing.

Answered: 114 Skipped: 0



# Bladen, Columbus, & Robeson Hazard Mitigation Plan Public Survey

|                                                                                                                                                                                                                                                                                    | 1            | 2            | 3            | 4            | 5            | TOTAL | SCORE |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|--------------|--------------|-------|-------|
| Prevention: administrative and regulatory actions, plans, policies, and ordinances that influence how land is developed and buildings are built. Examples include planning and zoning, building codes, open space preservation, land use, and floodplain regulations.              | 46.49%<br>53 | 20.18%<br>23 | 21.93%<br>25 | 9.65%<br>11  | 1.75%<br>2   | 114   | 4.00  |
| Property Protection: actions that involve the modification of existing buildings to protect them from a hazard or remove them from a hazardous area. Examples include acquisition, relocation, elevation, structural retrofits, and storm shutters.                                | 18.42%<br>21 | 28.07%<br>32 | 21.05%<br>24 | 20.18%<br>23 | 12.28%<br>14 | 114   | 3.20  |
| Natural Resource Protection: actions that minimize hazard losses and preserve or restore the functions of natural systems. Examples include floodplain protection, habitat preservation, slope stabilization, stream buffers, wetland and marsh protection, and forest management. | 14.91%<br>17 | 19.30%<br>22 | 28.07%<br>32 | 15.79%<br>18 | 21.93%<br>25 | 114   | 2.89  |
| Emergency Services: actions that protect people and property during and immediately after a hazard event. Examples include warning systems, evacuation planning, emergency response training, and protection of critical emergency facilities or systems.                          | 11.40%<br>13 | 20.18%<br>23 | 14.91%<br>17 | 39.47%<br>45 | 14.04%<br>16 | 114   | 2.75  |
| Public Education and Awareness: actions to inform the public about hazards and techniques they can use to protect themselves and their property. Examples include outreach projects, school education programs, library materials, and demonstration events.                       | 8.77%<br>10  | 12.28%<br>14 | 14.04%<br>16 | 14.91%<br>17 | 50.00%<br>57 | 114   | 2.15  |



## **Appendix G: Meeting Files**

# Bladen-Columbus-Robeson Regional Hazard Mitigation Plan



2025 Hazard Mitigation Plan Update

Larger Stakeholder Meeting

October 14, 2024

38 Legend Rd., Lumberton, NC



# Agenda

- Welcome & Introductions
- Meeting Objectives
- Mitigation Overview
- Purpose of Update
- Plan Update Process
- Project Information & Next Steps
- Q&A Session



# Introductions

Welcome!

Reminder to Sign-In





Engage the  
Community



Gather Input



Educate and  
Inform



Enhance Plan  
Relevance

# Meeting Objectives





# What is Mitigation?



## "mit-i-gate"

- 1: to cause to become less harsh or hostile.
- 2: to make less severe or painful.



## Hazard Mitigation

Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.

# Basic Types of Mitigation



Mitigating against hazard impacts on **existing development**

- Houses
- Businesses
- Infrastructure
- Critical Facilities



Ensuring **future development** is conducted in a way that does not increase vulnerability

- Plans
- Policies
- Procedures



# Mitigation Techniques

1. Prevention
2. Property Protection
3. Natural Resource Management
4. Structural Projects
5. Emergency Services
6. Education and Awareness



# Purpose of Update

Reflect on Changing Risks

Increase Community Resilience

Compliance and Funding

Ensure Preparedness



# Purpose of Update – Changing Risks

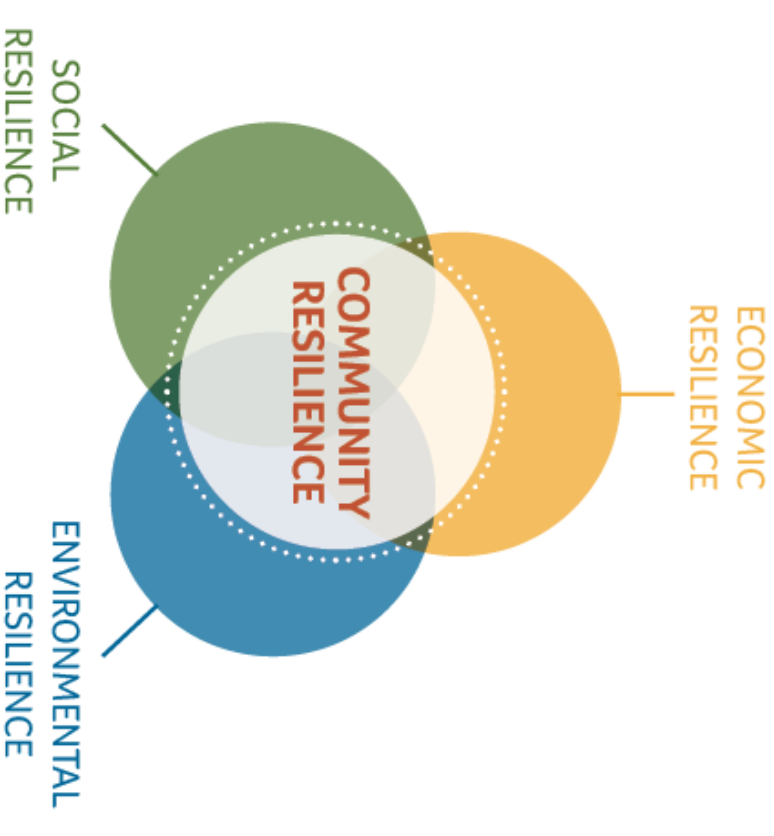
1. Population Increase and Community Growth
  - Greater Exposure to Hazard Risk
  - Increased Exposure = More Damage
2. More Hazards (Man-Made)
  - Included in State Plan
  - Ex. Technological, Civil Disturbance, Terrorism
3. Climate Change
  - Anticipated Increase in Frequency and Magnitude
  - \*\*New FEMA Requirement
4. Development Patterns
  - Increased Impermeable Surfaces
  - More Infrastructure and Assets at Risk





# Purpose of Update – Increase Community Resilience

1. Identification of New Vulnerabilities
  - \*\*Vulnerable Populations
2. Adopting Effective Mitigation Strategies



# Purpose of Update – Compliance and Funding



Ensure compliance with  
federal and state  
requirements

Disaster Mitigation Act of  
2000  
NC GS 166 A



Maintain eligibility for  
disaster mitigation funding  
and assistance programs

HMGP  
FMA  
BRIC  
CRS





## Planning

Planning for Public Involvement



## Coordinating

Coordinating with Departments and Agencies

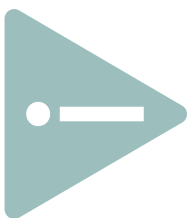


## Finalizing

Finalizing a List of Stakeholders for Involvement (HMPC)

# Plan Update Process

## Step 1: Organize Resources



## Hazard Identification

What Can Happen Here?

- Previously Identified Hazards
- Identify New Hazards



## Vulnerability Assessment

What Will be Affected/Impacted?

- Will Use County Parcel Data, FEMA HAZUS Analysis, and NCEM Data



## Capability Assessment

How Prepared Are We?

- Communities to Self-Assess Capability
- What Mitigation Actions are Feasible
- Where Gaps Exist

# Plan Update Process

## Step 2: Risk Assessment

# Previously Identified Hazards (2020)

|                                                                                                                                                                                         |                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Dam/Levee Failure</li><li>• Drought</li><li>• Earthquake</li><li>• Hurricane/Tropical Storm</li><li>• Inland Flooding (100-/500-year)</li></ul> | <ul style="list-style-type: none"><li>• Severe Weather (Thunderstorm, Wind, Lightning, &amp; Hail)</li><li>• Tornado</li><li>• Wildfire</li><li>• Winter Storm</li></ul> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Hazard                                               | Likelihood of Future Occurrence | Vulnerability Assessment |
|------------------------------------------------------|---------------------------------|--------------------------|
| Dam/Levee Failure                                    | Unlikely                        | Yes                      |
| Drought                                              | Highly Likely                   | Yes                      |
| Earthquake                                           | Possible                        | Yes                      |
| Hurricane/Tropical Storm                             | Likely                          | Yes                      |
| Inland Flooding: 100-/500-year                       | Possible                        | Yes                      |
| Severe Weather (thunderstorm wind, lightning & hail) | Highly Likely                   | Yes                      |
| Tornado                                              | Likely                          | Yes                      |
| Wildfire                                             | Highly Likely                   | Yes                      |
| Winter Storm                                         | Highly Likely                   | Yes                      |





# Plan Update Process

## Step 3: Develop a Mitigation Plan

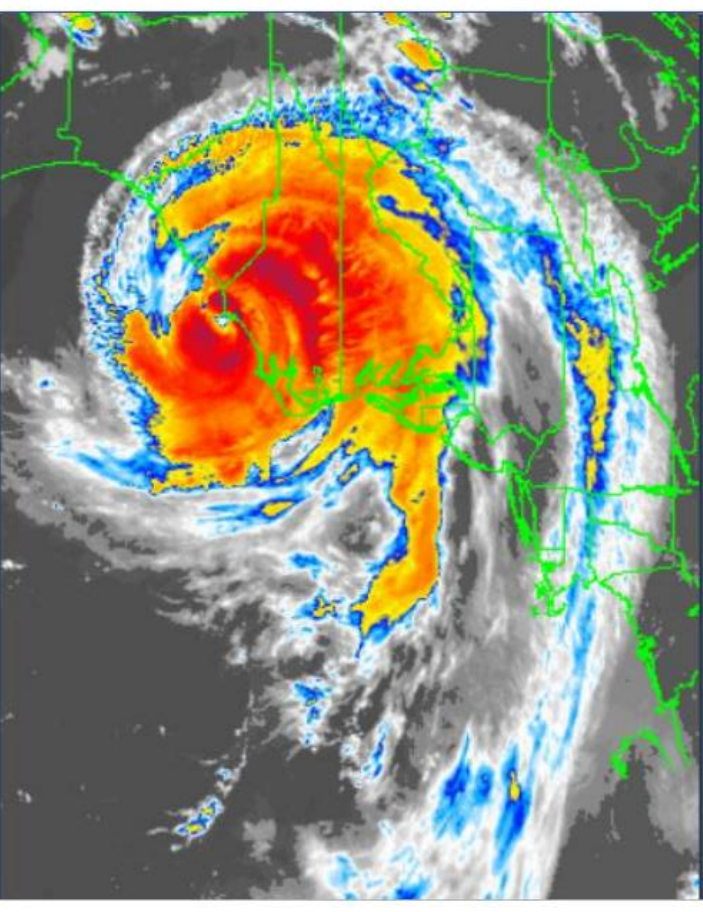
Setting Planning Goals

Reviewing Mitigation Alternatives

HMPC May Need to Develop New Actions

Drafting an Action Plan

Bladen Columbus Robeson



Regional Hazard

Mitigation Plan

**AECOM**



Seeking Review and Approval from  
Relevant Authorities

Securing Funding and Managing  
Resources of Mitigation Projects  
and Activities

Executing the Identified Mitigation  
Actions

Continuously Monitoring the  
Progress of Mitigation Activities

# Plan Update Process

## Step 4: Adoption and Implementation

# Project Schedule

Project Kickoff Date – 7/8/2024

Larger Stakeholder Meeting – 10/14/2024

Public Meeting #1 – Date TBD

Proposed Delivery of Draft – 4/6/2025

Public Meeting #2 – Date TBD

Existing Plan Expiration Date – 10/6/2025



# Plan Website

- Project Team requests counties/municipalities post relevant project information and updates
- Can be used as a Tool for HMPC Coordination and Public Outreach
- Ideas for Website Content
  - Upcoming Meeting Announcements
  - Meeting Agendas and Minutes
  - Public Survey
  - Draft Documents of Plan Update
  - Information on Identified Hazards
  - Opportunities to Provide Feedback



# Next Steps

1. Record and analyze input received during Stakeholder Meeting
2. Share Public Survey on municipal and county websites
3. Select Date/Location of Public Meeting #1
4. Continue working on the Risk Assessment (underway)
5. Continue working on Capability Assessment (underway)
6. Mitigation Strategy Development Meeting (date TBD)
7. Actionable Items for Stakeholders
  - a. Begin reviewing Mitigation Action Plan and updating status of each action (FEMA requirement)
  - b. Brainstorm locations and dates for Public Meeting #1
  - c. Reach out to smaller communities to engage/include in the process





# Complete and Share the Public Survey!

## Bladen-Columbus-Robeson RHMP Public Survey



Scan the QR Code for Access to the Public Survey!

Or go to <https://www.surveymonkey.com/r/BCRRHMP2025>



# Questions

Questions/Comments/Concerns



# Brainstorming Questions

1. What are key concerns or challenges you believe should be addressed in the hazard mitigation plan update?
2. How can the community be better prepared for potential hazards or disasters in the future?
3. Are there any specific areas or infrastructure that you feel require additional consideration?
4. What role do you think community members should play in implementing hazard mitigation strategies (if any)?
5. Do you have any additional suggestions or feedback regarding the plan update that you would like to share at this time?

Adjourn –  
Thank you!

## Contact Information:

- Ryan Cox - [rcox@insight-pd.com](mailto:rcox@insight-pd.com)
- Austin Brinkley - [abrinkley@insight-pd.com](mailto:abrinkley@insight-pd.com)
- Kelly Keefe - [kelly.keefe@aecom.com](mailto:kelly.keefe@aecom.com)
- Nathan Slaughtner -  
[nslaughtner@espassociates.com](mailto:nslaughtner@espassociates.com)

**Meeting Minutes – Monday, October 14, 2024**  
**Bladen-Columbus-Robeson RHMP Kick-Off Meeting**  
**10:30am EDT**

| Online (Virtual) Attendees                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | In Person Attendees                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Austin Brinkley, Senior Planner, Insight Planning &amp; Development</li> <li>• Danielle Taliaferro, Administrative Manager (scribe), Insight Planning &amp; Development</li> <li>• Mayor Robert McDougald, Town of Rowland NC (Robeson County)</li> <li>• Benton Rogers, Town of St Paul's, Asst. Public Works Director</li> <li>• Carl Baker, NCEM, Hazard Mitigation Planner</li> <li>• Renee Babson, Admin Assistant, Bladen County EM</li> <li>• Victoria Carter, Town of Pembroke Stormwater and Special Projects Program Manager</li> <li>• John Mello, Hazard Mitigation Planner, NC Emergency Management</li> <li>• R. Crosby, Town of Chadbourn, Finance Director</li> <li>• 919-649-7426</li> <li>• Joey Coleman, Bladen County EM</li> <li>• Bobbie Faircloth, Project Manager, Town of Fair Bluff</li> <li>• Angela Pitchford, Town Manager, Town of Maxton</li> </ul> | <ul style="list-style-type: none"> <li>• Justin Hunt, Robeson County EM</li> <li>• Josh Ward, Tabor City, town of Brunswick</li> <li>• Nola Viles, Columbus County</li> <li>• Duella Hall, Columbus County</li> <li>• Walter Powell, Town of Marietta</li> <li>• Stephanie Dollinger, St. Pauls</li> <li>• Michael Owens, St Pauls Police Department</li> <li>• Tammy McKell, Lumberton EM</li> <li>• James Edwards, Town of Marietta</li> </ul> |

**Begin Meeting (Austin Brinkley)**

- I. Opening/Introductions/Objectives/Agenda Review
  - a. Engage Community
  - b. Gather Input
  - c. Educate
  - d. Enhance Relevance
- II. What is Mitigation
  - a. Definition Reviewed
  - b. Hazard Mitigation
- III. Types of Mitigation
  - a. Prevention
  - b. Property Protection
  - c. Natural Resource Management
  - d. Structural Projects
  - e. Emergency Services
- IV. Purpose of Update
  - a. Reflect on changing risks
  - b. Increase community resilience
  - c. Compliance and funding



- d. Ensure Preparedness
- V. Changing Risks
  - a. Pop. Increase & community growth
  - b. More manmade hazards
    - i. Technological, Civil Disturbances or Terrorism
  - c. Climate change
  - d. Development Patterns
    - i. More infrastructure and assets at risk
- VI. Increase Community Resilience
  - a. Identification of new vulnerabilities
  - b. Adopting effective mitigation strategies
- VII. Compliance and Funding – 5 year update – required to be updated per Hazard Mitigation Act of 2000
  - a. Plan needs to be in place and compliant in order to be eligible for funding
  - b. Ensure compliance w/ federal and state requirements
  - c. Maintain eligibility for disaster mitigation funding and assistance programs
- VIII. Step One – Organize Results (today’s approximate status)
  - a. Organizing resources
  - b. Reached out to communities in the region
  - c. Identifying stakeholders
  - d. Coordinating with departments to finalize stakeholder lists
- IX. Step Two – Risk Assessment
  - a. Hazard identification
    - i. Previously identified
    - ii. Identify new hazards
  - b. Vulnerability Assessment
  - c. Capability Assessment
    - i. How prepared are we?
    - ii. Identify gaps
- X. Previously identified hazards from 2020
  - a. Hurricanes
  - b. Droughts
  - c. Dam/Levee Failure
  - d. Will be able to reevaluate to determine the likely hood of a recurrence
  - e. Develop best strategy based on the region
- XI. Step Three – Develop Mitigation Plan & Set goals
  - a. Drafting an action plan
- XII. Step Four – Adoption and Implementation
  - a. Seek approval from relevant authorities
  - b. Manage resources
  - c. Identify actions
  - d. Monitor along the way
  - e. Self-assessment and prepare for next update
- XIII. Project Schedule
  - a. Project Kickoff Date – 7/8/2024
  - b. Larger Stakeholder Meeting – 10/14/2024
  - c. Public Mtg. #1 – TBD

- d. Proposed Delivery of draft - 4/6/2025
- e. Public Mtg. # 2 – TBD
- f. Existing Plan Expiration Date – 10/6/2025
- g. Little under a year from adoption and implementation

XIV. Project Website

- a. Can be used to access survey
- b. Plan updates
- c. Meeting announcements
- d. Can be used for public outreach

XV. Next Steps

- a. Share public survey
- b. Select date/location for first public meeting
- c. Need as much input as possible
- d. Update status of existing action plan
- e. Engage smaller communities
- f. Missing contact information – will seek recommendations following meeting

XVI. QR Code/Link for survey

XVII. Questions/Open Floor

- a. Carl – Couldn't hear introductions from folks in the room
- b. No tribal representation at the meeting today
  - i. Asked that folks reach out and try to get a hold of tribal representatives – get them engaged in process
  - ii. Reminder about underserved populations as well – get them engaged and part of update process
- c. Review of Four Steps again – Step 1 will conclude around public meeting wrapping up.
  - i. Should have public meeting scheduled in the next month or so. Keep momentum.
- d. Will share PPT with minutes

-END-

# Bladen-Columbus-Robeson Regional Hazard Mitigation Plan

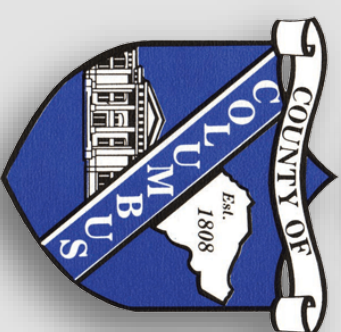


2025 Hazard Mitigation Plan Update

Public Meeting

December 11, 2024

Virtual Engagement



# Agenda

- Welcome & Introductions
- Meeting Objectives
- Mitigation Overview
- Purpose of Update
- Plan Update Process
- Project Information & Next Steps
- Q&A Session



# Introductions

Welcome!

Reminder to Sign-In







Engage the  
Community



Gather Input



Educate and  
Inform



Enhance Plan  
Relevance

# Meeting Objectives



# What is Mitigation?



## "mit-i-gate"

- 1: to cause to become less harsh or hostile.
- 2: to make less severe or painful.



## Hazard Mitigation

Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.

# Basic Types of Mitigation



Mitigating against hazard impacts on **existing development**

- Houses
- Businesses
- Infrastructure
- Critical Facilities



Ensuring **future development** is conducted in a way that does not increase vulnerability

- Plans
- Policies
- Procedures



# Mitigation Techniques

1. Prevention
2. Property Protection
3. Natural Resource Management
4. Structural Projects
5. Emergency Services
6. Education and Awareness



# Purpose of Update

Reflect on Changing Risks

Increase Community Resilience

Compliance and Funding

Ensure Preparedness





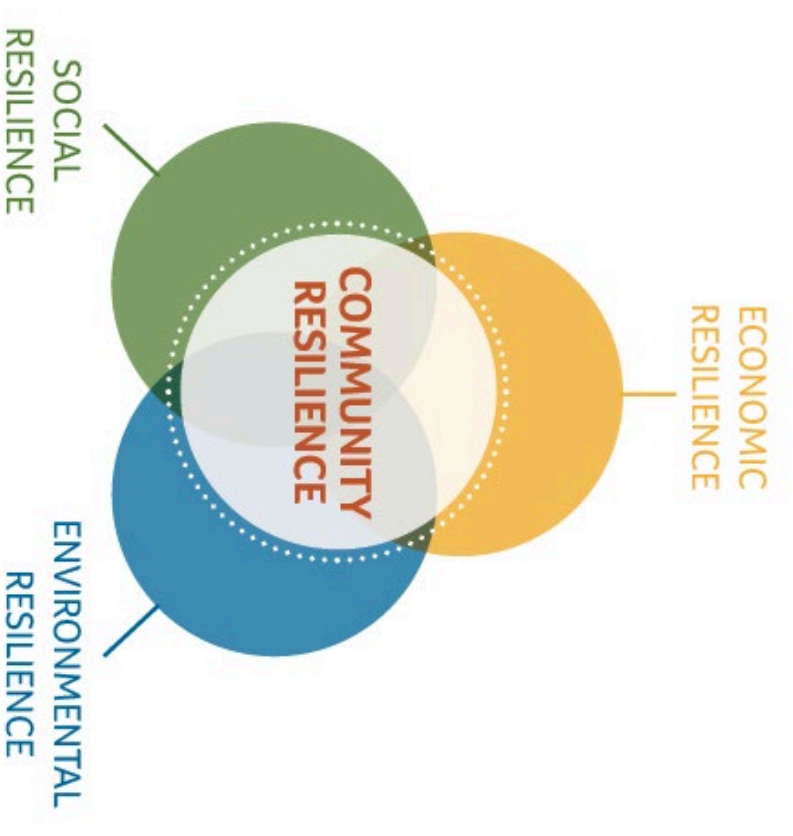
# Purpose of Update – Changing Risks

1. Population Increase and Community Growth
  - Greater Exposure to Hazard Risk
  - Increased Exposure = More Damage
2. More Hazards (Man-Made)
  - Included in State Plan
  - Ex. Technological, Civil Disturbance, Terrorism
3. Climate Change
  - Anticipated Increase in Frequency and Magnitude
  - \*\*New FEMA Requirement
4. Development Patterns
  - Increased Impermeable Surfaces
  - More Infrastructure and Assets at Risk



# Purpose of Update – Increase Community Resilience

1. Identification of New Vulnerabilities
  - \*\*Vulnerable Populations
2. Adopting Effective Mitigation Strategies



# Purpose of Update – Compliance and Funding



Ensure compliance with  
federal and state  
requirements

Disaster Mitigation Act of  
2000  
NC GS 166 A



Maintain eligibility for  
disaster mitigation funding  
and assistance programs

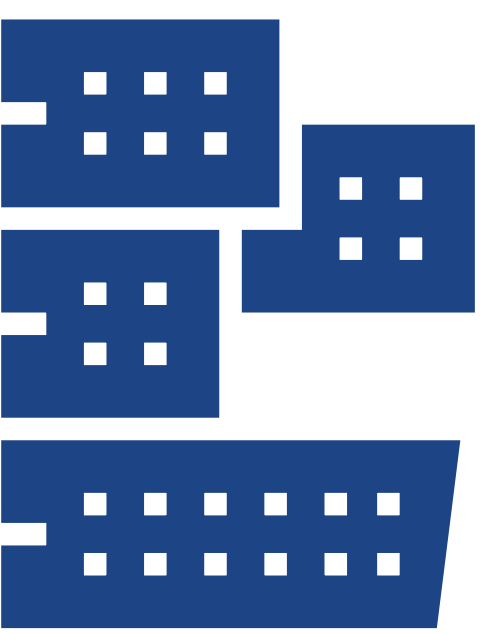
HMGP  
FMA  
BRIC  
CRS



# Purpose of Update – Ensure Preparedness

The 2025 Plan Update ensures that the Bladen Columbus Robeson Region is better prepared to:

1. Address existing and emerging hazards
2. Protect lives and property
3. Sustain continuity of essential services during and following an event





## Planning

Planning for Public Involvement



## Coordinating

Coordinating with Departments and Agencies



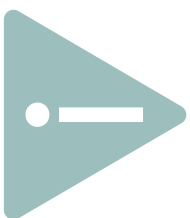
## Finalizing

Finalizing a List of Stakeholders for Involvement (HMPC)

# Plan Update Process

## Step 1: Organize Resources

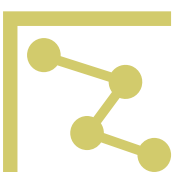




## Hazard Identification

What Can Happen Here?

- Previously Identified Hazards
- Identify New Hazards



## Vulnerability Assessment

What Will be Affected/Impacted?

- Will Use County Parcel Data, FEMA HAZUS Analysis, and NCEM Data



## Capability Assessment

How Prepared Are We?

- Communities to Self-Assess Capability
- What Mitigation Actions are Feasible
- Where Gaps Exist

# Plan Update Process

## Step 2: Risk Assessment

# Previously Identified Hazards (2020)

|                                                                                                                                                                                         |                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Dam/Levee Failure</li><li>• Drought</li><li>• Earthquake</li><li>• Hurricane/Tropical Storm</li><li>• Inland Flooding (100-/500-year)</li></ul> | <ul style="list-style-type: none"><li>• Severe Weather (Thunderstorm, Wind, Lightning, &amp; Hail)</li><li>• Tornado</li><li>• Wildfire</li><li>• Winter Storm</li></ul> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Hazard                                               | Likelihood of Future Occurrence | Vulnerability Assessment |
|------------------------------------------------------|---------------------------------|--------------------------|
| Dam/Levee Failure                                    | Unlikely                        | Yes                      |
| Drought                                              | Highly Likely                   | Yes                      |
| Earthquake                                           | Possible                        | Yes                      |
| Hurricane/Tropical Storm                             | Likely                          | Yes                      |
| Inland Flooding: 100-/500-year                       | Possible                        | Yes                      |
| Severe Weather (thunderstorm wind, lightning & hail) | Highly Likely                   | Yes                      |
| Tornado                                              | Likely                          | Yes                      |
| Wildfire                                             | Highly Likely                   | Yes                      |
| Winter Storm                                         | Highly Likely                   | Yes                      |



# Plan Update Process

## Step 3: Develop a Mitigation Plan

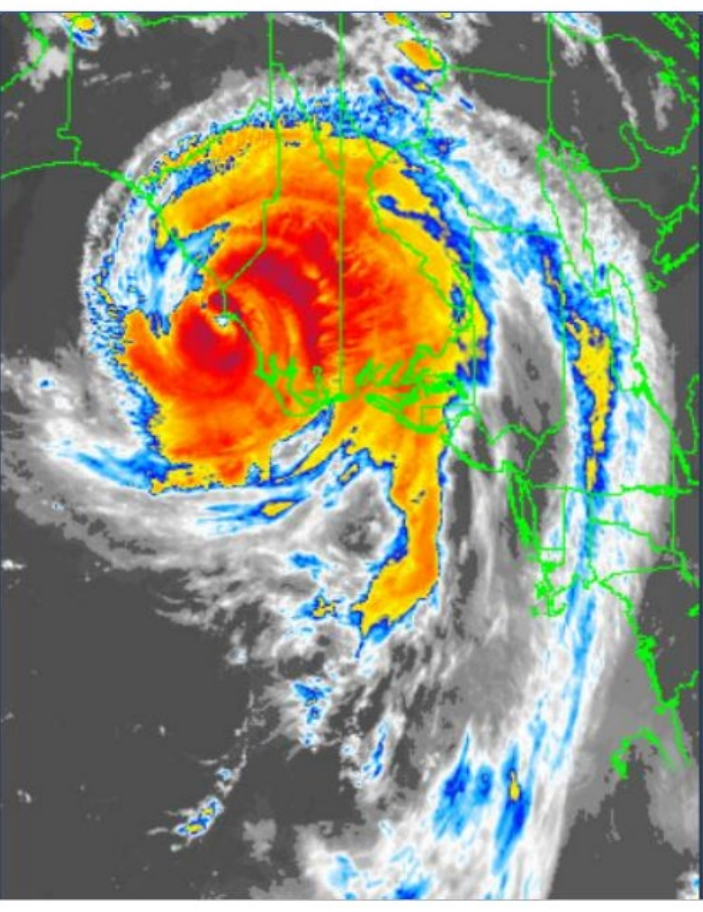
Setting Planning Goals

Reviewing Mitigation Alternatives

HMPC May Need to Develop New Actions

Drafting an Action Plan

Bladen Columbus Robeson



Regional Hazard

Mitigation Plan

**AECOM**



Seeking Review and Approval from  
Relevant Authorities

Securing Funding and Managing  
Resources of Mitigation Projects  
and Activities

Executing the Identified Mitigation  
Actions

Continuously Monitoring the  
Progress of Mitigation Activities

# Plan Update Process

## Step 4: Adoption and Implementation

# Project Schedule

Project Kickoff Date – 7/8/2024

Larger Stakeholder Meeting – 10/14/2024

Public Meeting #1 – 12/11/2024

HIRA Meeting – February 2025

Mitigation Strategy Meeting – March 2025

Proposed Delivery of Draft – 4/6/2025

Existing Plan Expiration Date – 10/6/2025





# Plan Website

- Project Team requests counties/municipalities post relevant project information and updates
- Can be used as a Tool for HMPC Coordination and Public Outreach
- Ideas for Website Content
  - Upcoming Meeting Announcements
  - Meeting Agendas and Minutes
  - Public Survey
  - Draft Documents of Plan Update
  - Information on Identified Hazards
  - Opportunities to Provide Feedback



# Next Steps

1. Record and analyze input received during Public Meeting
2. Share Public Survey on municipal and county websites
3. Continue working on the Risk Assessment (underway)
4. Continue working on Capability Assessment (underway)
5. HIRA Review Meeting (date TBD)
6. Mitigation Strategy Development Meeting (date TBD)
7. Actionable Items for Stakeholders
  - a. Begin reviewing Mitigation Action Plan and updating status of each action (FEMA requirement)
  - b. Reach out to smaller communities to engage/include in the process



# Complete and Share the Public Survey!

## Bladen-Columbus-Robeson RHMP Public Survey



Scan the QR Code for Access to the Public Survey!

Or go to <https://www.surveymonkey.com/r/BCRRHMP2025>



# Questions

Questions/Comments/Concerns



# Brainstorming Questions

1. What are key concerns or challenges you believe should be addressed in the hazard mitigation plan update?
2. How can the community be better prepared for potential hazards or disasters in the future?
3. Are there any specific areas or infrastructure that you feel require additional consideration?
4. What role do you think community members should play in implementing hazard mitigation strategies (if any)?
5. Do you have any additional suggestions or feedback regarding the plan update that you would like to share at this time?



Adjourn –  
Thank you!

## Contact Information:

- Austin Brinkley - [abrinkley@insight-pd.com](mailto:abrinkley@insight-pd.com)
- Kelly Keefe - [kelly.keefe@aecocom.com](mailto:kelly.keefe@aecocom.com)
- Nathan Slaughter -  
[nslaughter@espassociates.com](mailto:nslaughter@espassociates.com)

**Meeting Minutes – Wednesday, December 11, 2024**  
**Bladen-Columbus-Robeson RHMP**  
**Public Meeting #1**

| Online (Virtual) Attendees                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Austin Brinkley, Insight Consulting</li><li>• Nakoma Simmons</li><li>• Leslie Jones</li></ul> |

Begin Meeting (Austin Brinkley)

- I. Welcome & Introductions
  - a. Austin Brinkley opens meeting, confirms recording
  - b. Introduces purpose:
    - i. Educate and inform the public on draft plan development and next steps
    - ii. Provide opportunity for questions and feedback to improve plan relevance
- II. Background & Context
  - a. Regional Hazard Mitigation Plan has existed for nearly 15 years
  - b. Meeting aimed to define hazard mitigation and explore various types
  - c. Focus on existing development vulnerability and minimizing future risks
  - d. Mitigation explained as steps/actions to reduce impact of hazards
- III. Mitigation Overview
  - a. There are 2 categories of mitigation:
    - i. Existing development
    - ii. Future development
  - b. There are 6 mitigation techniques:
    - i. Prevention
    - ii. Property protection
    - iii. Natural resource management
    - iv. Structural projects
    - v. Emergency services
    - vi. Public education & awareness
- IV. Purpose of Update
  - a. Reflects changing risks due to increased development
  - b. Shift toward an “all hazards” approach
  - c. Incorporates climate change considerations
- V. Regulatory Context
  - a. Emphasized requirements of the Disaster Mitigation Act of 2000 (DMA 2000)
  - b. Importance of hazard mitigation planning for federal funding eligibility (FMA, HMGP)

- c. FEMA mandates updates every 5 years for continued funding eligibility

VI. Planning Process (4-Step Process)

- a. Organizing resources:
  - i. Collaboration with counties and municipalities
  - ii. Public outreach and stakeholder engagement for diverse input
- b. Conducting risk assessment:
  - i. Hazard identification (what can happen?) considering historical and emerging hazards
  - ii. Vulnerability assessment (what do hazards do when they occur?)
  - iii. Capability assessment (what is our ability to do anything?)
- c. Developing mitigation plan:
  - i. Review of existing actions and project status updates (per FEMA)
  - ii. Integration of new mitigation actions from the Mitigation Strategy Meeting with the Planning Committee
- d. Final adoption & implementation:
  - i. Draft plan sent to the Planning Committee for review
  - ii. First review round with NCEM; FEMA provides final approval
  - iii. Communities can adopt plan early to expedite process

VII. Project Schedule

- a. Planning process initiated July 2024
- b. Draft plan scheduled for delivery by Summer 2025
- c. Current plan coverage expires October 2025
  - i. Obtain approval and adoption before expiration

VIII. Next Steps

- a. Incorporate additional feedback from public meeting
- b. Submit plan to FEMA for review and approval
- c. Local adoption process (often by resolution) can occur simultaneously with FEMA review
- d. Once approved, plan will be officially adopted
- e. Public survey is available online

-END-



Hazard  
Mitigation  
Planning  
Committee  
Meeting  
April 17,  
2025

# Bladen, Columbus, Robeson Regional HMP Update: Hazard ID & Risk Assessment (HIRA)

# Agenda

---

- Where we are in the planning process
  - Step 4 & Step 5
  - Organization in the plan
- Hazard Identification
  - State plan & existing Bladen Columbus Robeson Regional Hazard Mitigation Plan
  - Major Disaster Declarations
- Asset Inventory
  - Building Exposure
  - Critical Facilities
- Hazard Profiles: Risk & Vulnerability Assessment
- Discuss Objectives & Actions
- Next Steps and Questions



# Planning Process

---

- Step 1: Organize to Prepare the Plan
- Step 2: Involve the Public – *ongoing*
- Step 3: Coordinate – *ongoing*
- **Step 4: Assess the Hazard**
- **Step 5: Assess the Problem**
- Step 6: Set Goals
- Step 7: Review Possible Activities
- Step 8: Draft an Action Plan
- Step 9: Adopt the Plan
- Step 10: Implement, Evaluate, & Revise the Plan





# Hazard Identification & Risk Assessment (HIRA)

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- **Step 4: Assess the Hazard**
- **Step 5: Assess the Problem**



Risk is a combination of hazard, vulnerability, and exposure; each is assessed to determine a hazard's potential impact and overall priority

# HIRA Organization

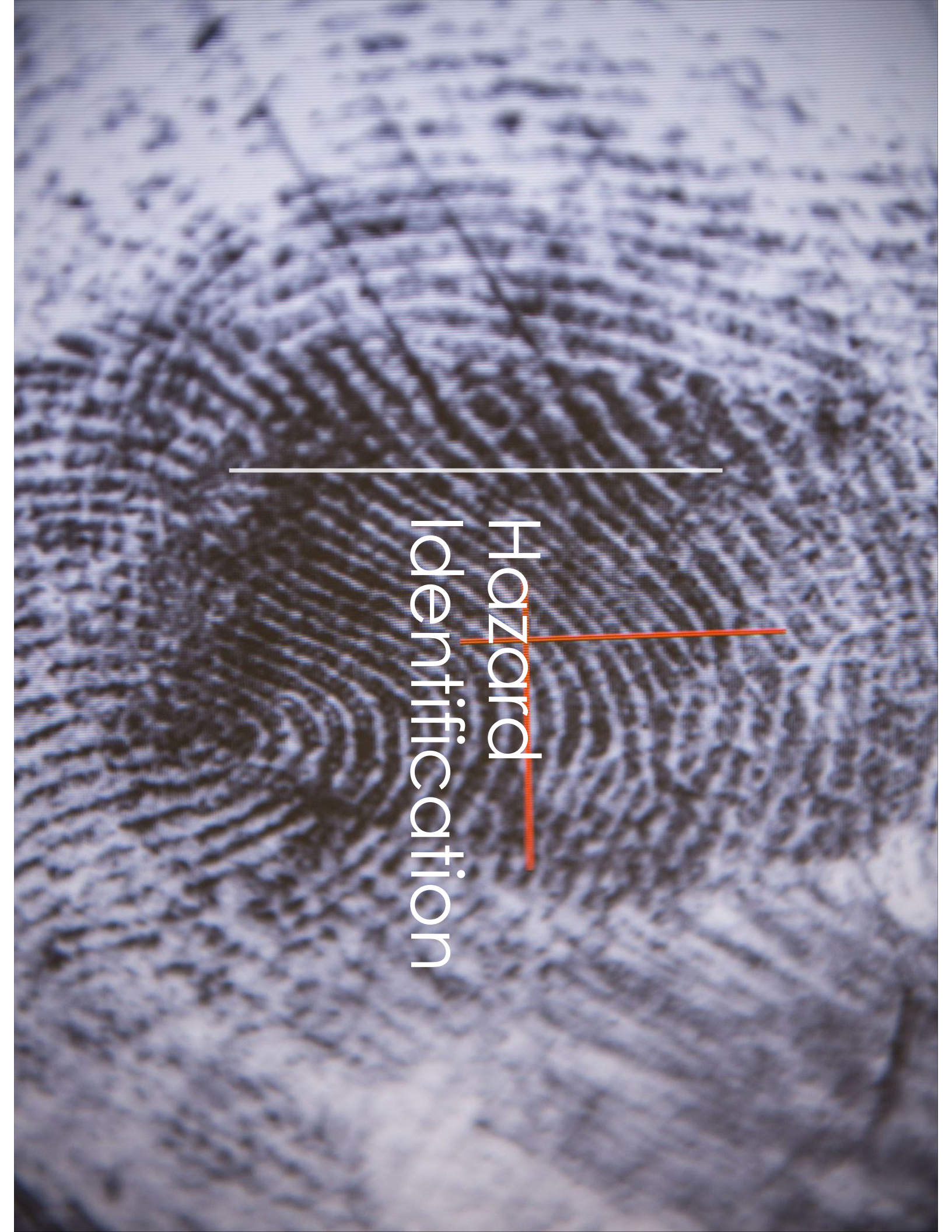
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Data collected through this process has been incorporated into the following sections of this plan:

- **Section 4: Hazard Identification** identifies the natural and human-caused hazards that threaten the planning area.
- **Section 5: Hazard Profiles** discusses the threat to the planning area, describes previous occurrences of hazard events and the likelihood of future occurrences, and assesses the planning area's exposure to each hazard profiled; considering assets at risk, critical facilities, and future development trends.
- **Section 5.10: Hazard Profile Summary** summarizes the results from the Hazard Profiles and defines each hazard as Low, Medium, or High-Risk hazard.
- **Section 6: Vulnerability Assessment** details the population, buildings, and critical facilities at risk within the planning area.







# Hazard Identification



# Major Disaster Declarations (BCR Region)

| Disaster # | Dec. Date  | Incident Type   | Event Title                            |
|------------|------------|-----------------|----------------------------------------|
| 699        | 3/30/1984  | Tornado         | Severe Storms and Tornadoes            |
| 724        | 9/11/1984  | Hurricane       | Hurricane Diana                        |
| 1127       | 7/8/1996   | Hurricane       | Hurricane Bertha                       |
| 1134       | 9/6/1996   | Hurricane       | Hurricane Fran                         |
| 1200       | 1/15/1998  | Flooding        | Flooding                               |
| 1240       | 8/27/1998  | Hurricane       | Hurricane Bonnie                       |
| 1292       | 9/16/1999  | Hurricane       | Hurricane Floyd                        |
| 1490       | 9/18/2003  | Hurricane       | Hurricane Isabel                       |
| 1546       | 9/10/2004  | Hurricane       | Tropical Storm Frances                 |
| 1969       | 4/19/2011  | Severe Storm(s) | Severe Storms, Tornadoes, and Flooding |
| 4019       | 8/31/2011  | Hurricane       | Hurricane Irene                        |
| 4285       | 10/10/2016 | Hurricane       | Hurricane Matthew                      |
| 4393       | 9/4/2018   | Hurricane       | Hurricane Florence                     |
| 4465       | 10/4/2019  | Hurricane       | Hurricane Dorian                       |
| 4487       | 3/25/2020  | Pandemic        | COVID-19 Pandemic                      |
| 4568       | 10/14/2020 | Hurricane       | Hurricane Isaias                       |
| 4588       | 3/3/2021   | Hurricane       | Tropical Storm Eta                     |

## 17 Total Declarations

- 13 hurricane events
- 3 severe weather events (including flooding and tornadoes)
- 1 pandemic event



# Review of Hazards in Existing Plans

| Hazard                                                                            | Included in State Plan? | Included in 2020 Bladen-Columbus-Robeson Plan? | Identified as a significant hazard to be included in the Plan? |
|-----------------------------------------------------------------------------------|-------------------------|------------------------------------------------|----------------------------------------------------------------|
| Coastal Hazards (coastal flooding, coastal erosion, storm surge & sea level rise) | Yes                     | No                                             | No                                                             |
| Dam/Levee Failure                                                                 | Yes                     | Yes                                            | Yes                                                            |
| Drought                                                                           | Yes                     | Yes                                            | Yes                                                            |
| Earthquake                                                                        | Yes                     | Yes                                            | Yes                                                            |
| Erosion                                                                           | No                      | No                                             | No                                                             |
| Extreme Heat                                                                      | Yes                     | No                                             | No                                                             |
| Hurricane/Tropical Storm                                                          | Yes                     | Yes                                            | Yes                                                            |
| Inland Flooding: 100-/500-year                                                    | Yes                     | Yes                                            | Yes                                                            |
| Severe Weather (thunderstorm wind, lightning, & hail)                             | Yes                     | Yes                                            | Yes                                                            |
| Tornado                                                                           | Yes                     | Yes                                            | Yes                                                            |
| Wildfire                                                                          | Yes                     | Yes                                            | Yes                                                            |
| Winter Weather                                                                    | Yes                     | Yes                                            | Yes                                                            |
| Geological: Landslides/Sinkholes                                                  | Yes                     | No                                             | No                                                             |
| Infectious Disease                                                                | Yes                     | No                                             | No                                                             |
| Hazardous Substances                                                              | Yes                     | No                                             | No                                                             |
| Radiological Emergency                                                            | Yes                     | No                                             | No                                                             |
| Cyber Threat                                                                      | Yes                     | No                                             | No                                                             |
| Terrorism                                                                         | Yes                     | No                                             | No                                                             |
| Civil Disturbance                                                                 | Yes                     | No                                             | No                                                             |
| Electromagnetic Pulse                                                             | Yes                     | No                                             | No                                                             |
| Food Emergency                                                                    | Yes                     | No                                             | No                                                             |



# Hazard Identification

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## Hazards Not Included

- **Coastal Hazards:** The 2020 BCR plan did not address this hazard as it is only applicable to coastal areas that are not part of the region.
- **Erosion:** The 2020 BCR plan did not address this hazard and past plan updates found the risk occurrence to be unlikely in the region.
- **Landslide:** The 2020 BCR plan did not address this hazard. Past plan updates found that risk for landslides is low, and occurrence is unlikely in the region.
- **Sinkholes:** The 2020 BCR plan did not address this hazard. USGS data shows little to no geological basis for sinkhole risk in the region.
- **Extreme Heat:** The 2020 BCR plan did not address this hazard. There were no past events in or near the planning area.
- **Infectious Disease:** The State HMP reports the entire State is equally at risk, but vulnerability is low.
- **Hazardous Substances:** The 2020 BCR plan did not address this hazard. Hazardous substances will be addressed through emergency operations planning.





# Hazard Identification (continued)

---

## Hazards Not Included

- **Radiological Emergency:** The 2023 State plan addresses this hazard. The region considers this hazard more appropriately address at the State level.
- **Cyber Threat:** The region considers this hazard more appropriately addressed through emergency operations planning and local staff training.
- **Terrorism:** The 2020 BCR plan did not address this hazard while the 2023 State plan did address this hazard. This hazard is better handled through state level mitigation and local emergency operations planning.
- **Civil Disturbance:** The 2023 State plan addresses this hazard. The region considers this hazard more appropriately address at the State level.
- **Electromagnetic Pulse:** The 2023 State plan addresses this hazard. The region considers this hazard more appropriately addressed at the State level.
- **Food Emergency:** The 2020 BCR plan did not address this hazard. This hazard is better handled through state level mitigation and local emergency operations planning.

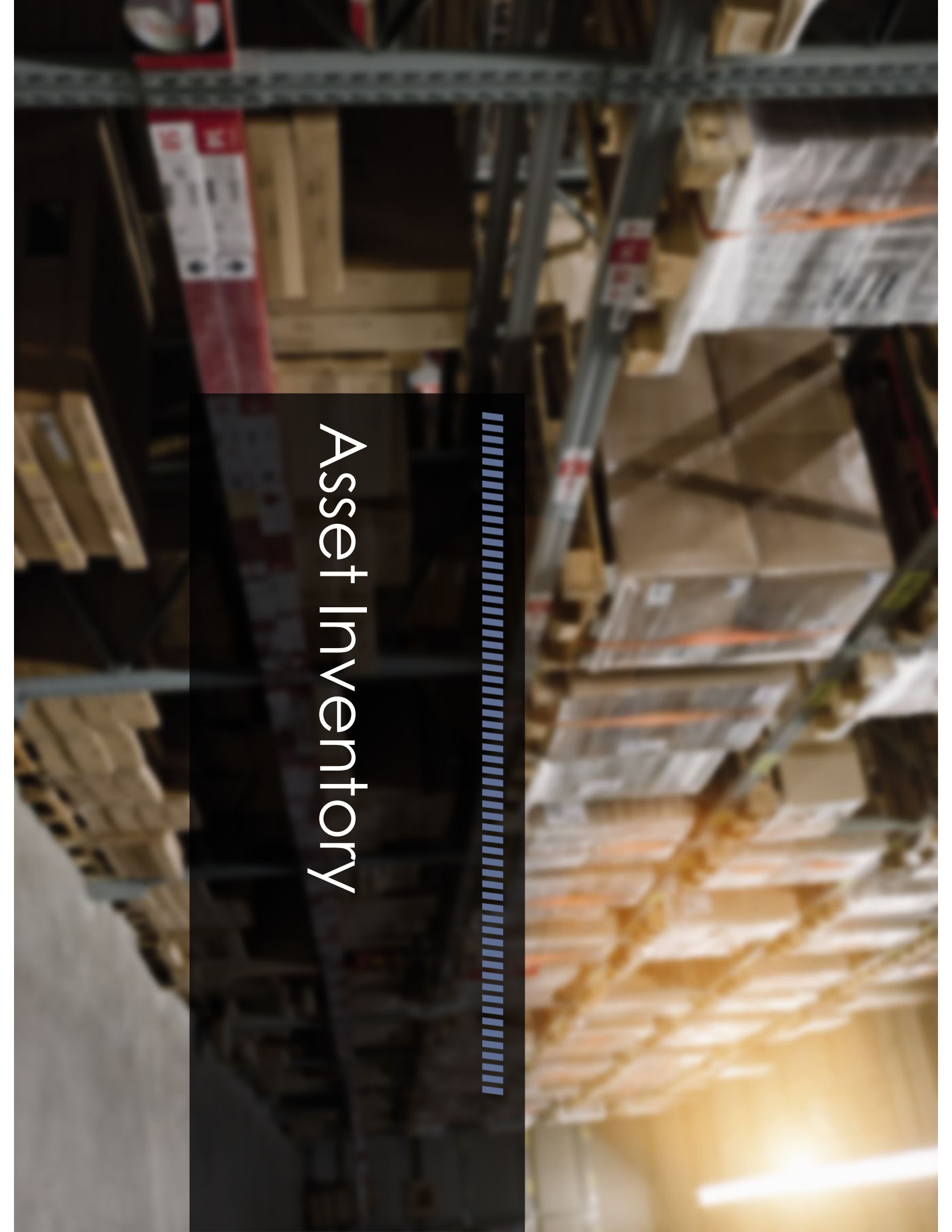


# Hazards Profiled

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- Dam & Levee Failure
- Drought
- Earthquake
- Hurricane/Tropical Storm
- Inland Flooding: 100-/500-Year
- Severe Weather (thunderstorm wind, lightning, & hail)
- Tornado
- Wildfire
- Winter Weather





# Asset Inventory





# Asset Inventory

## Population

| Jurisdiction (including municipalities in County #) | 2020 Census Population | Elderly (Age 65 and Over) | Children (Age 5 and Under) |
|-----------------------------------------------------|------------------------|---------------------------|----------------------------|
| Bladen County                                       | 29,606                 | 6,523                     | 1,522                      |
| Columbus County                                     | 50,623                 | 10,606                    | 2,466                      |
| Robeson County                                      | 116,530                | 19,090                    | 7,087                      |
| Total                                               | 196,759                | 36,219                    | 11,075                     |



# Asset Inventory

## Building Exposure

| Jurisdiction (including municipalities in County #) | Building Count | Building Value   |
|-----------------------------------------------------|----------------|------------------|
| Bladen County                                       | 23,111         | \$3,756,205,017  |
| Columbus County                                     | 37,013         | \$6,680,483,824  |
| Robeson County                                      | 60,664         | \$12,289,136,864 |
| Total                                               | 120,788        | \$22,725,827,705 |





# Critical Infrastructure & Key Resources (including municipalities with County)

| Infrastructure Type            | Bladen Co. | Columbus Co. | Robeson Co. |
|--------------------------------|------------|--------------|-------------|
| Chemical & Hazardous           | 1          | 1            | 0           |
| Communications                 | 0          | 1            | 1           |
| Defense Industrial Base        | 1          | 0            | 1           |
| Nuclear Reactors and Materials | 0          | 0            | 1           |
| Transportation Systems         | 6          | 9            | 10          |
| Energy                         | 3          | 2            | 5           |
| Emergency Services             | 7          | 9            | 12          |
| Water                          | 1          | 1            | 7           |
| <b>TOTAL</b>                   | <b>19</b>  | <b>23</b>    | <b>37</b>   |



# What are Critical Facilities?

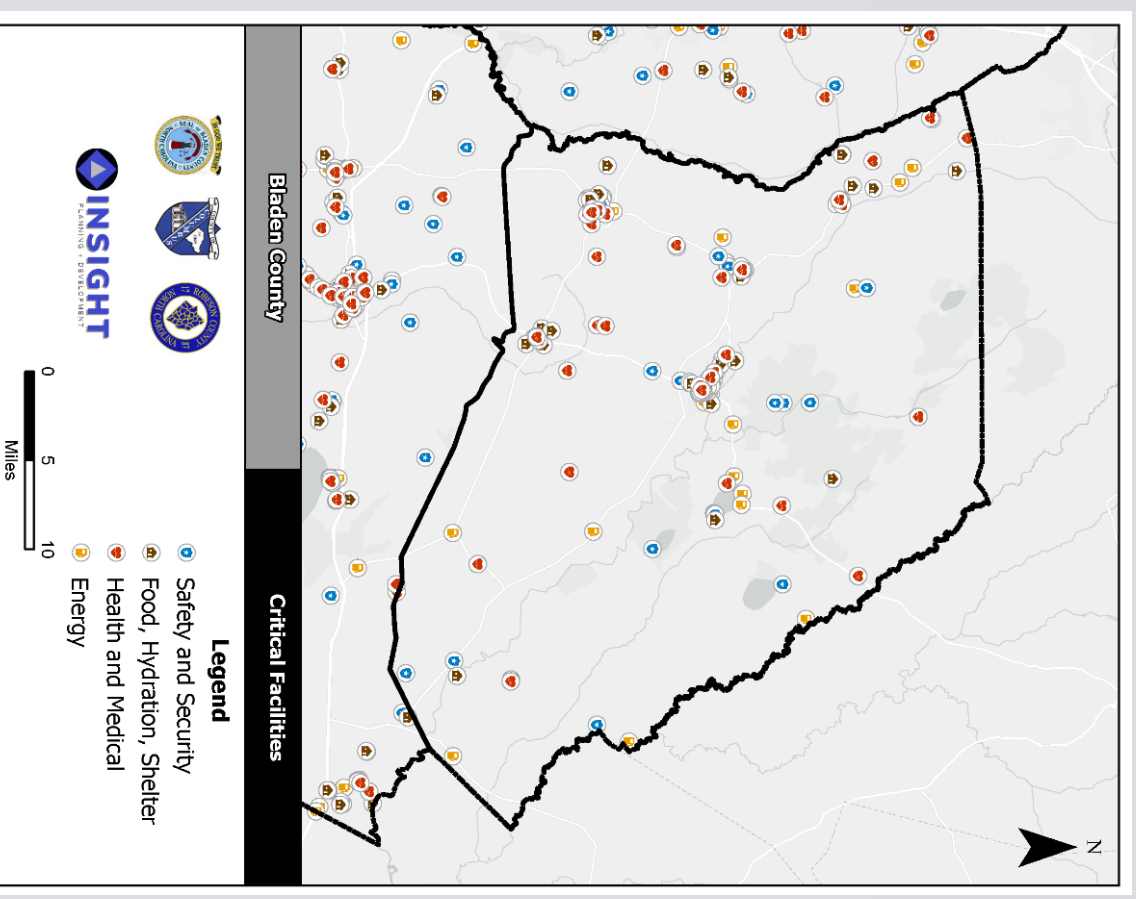
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- FEMA defines Critical Facilities as being assets that are community lifelines. The buildings and infrastructure that enable the continuous operation of critical business and government functions that are essential to human health and safety or economic security.



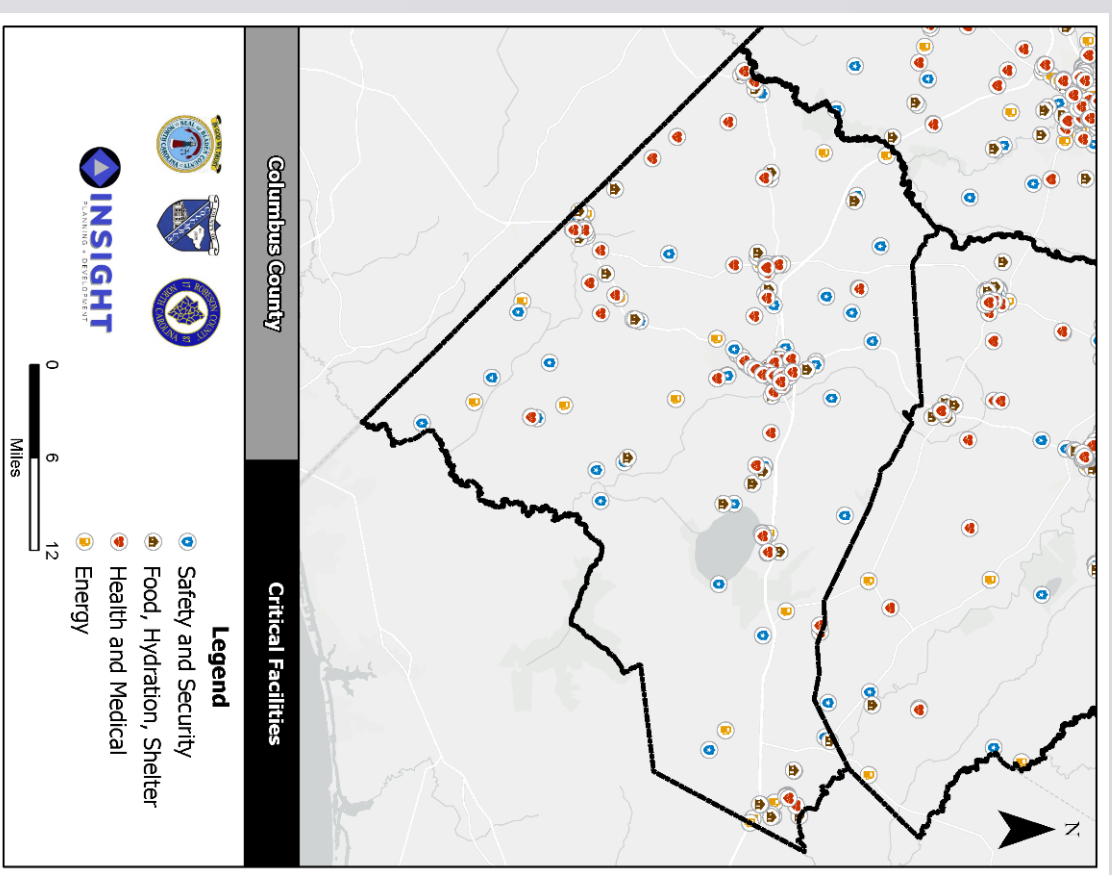
# Critical Facilities (Bladen County)

- 42 Safety & Security critical facilities
- 27 Food, Hydration, & Shelter critical facilities
- 54 Health & Medical critical facilities
- 31 Energy critical facilities



# Critical Facilities (Columbus County)

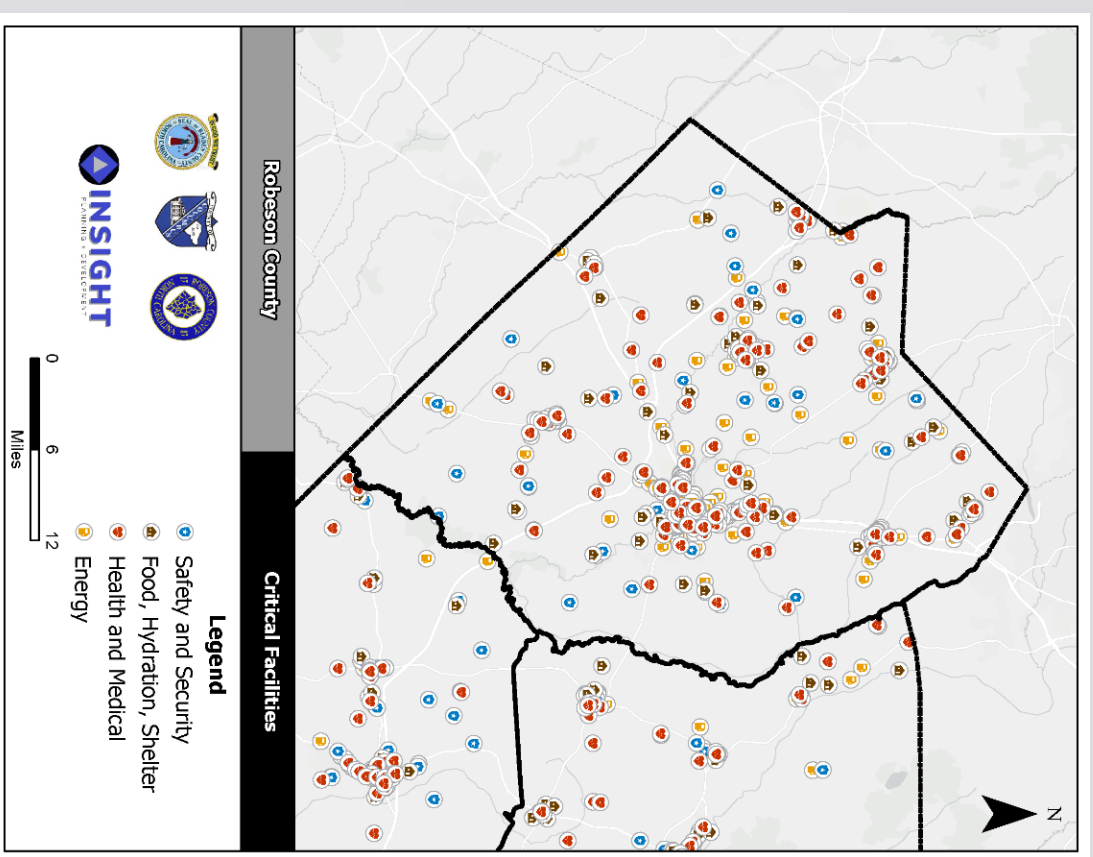
- 68 Safety & Security critical facilities
- 39 Food, Hydration, & Shelter critical facilities
- 83 Health & Medical critical facilities
- 45 Energy critical facilities





# Critical Facilities (Robeson County)

- 112 Safety & Security critical facilities
- 67 Food, Hydration, & Shelter critical facilities
- 171 Health & Medical critical facilities
- 134 Energy critical facilities





# Agriculture Risk & Exposure

| Jurisdiction | Number of Farms | Acreage in Farms | Proportion of Total Land Area in Farms | Market Value of Agricultural Products | Average Value of Farm & Buildings |
|--------------|-----------------|------------------|----------------------------------------|---------------------------------------|-----------------------------------|
| Bladen       | 423             | 146,195          | 26.1%                                  | \$615,976,000                         | \$598,422,000                     |
| Columbus     | 447             | 125,177          | 20.8%                                  | \$221,838,000                         | \$489,003,000                     |
| Robeson      | 732             | 263,080          | 43.4%                                  | \$638,375,000                         | \$1,025,228,000                   |





# Hazard Profiles



# What is PRI?

---

The Priority Risk Index is used to compare all hazards. It is a numerical value assigned to a hazard based upon **Probability, Impact, Warning, Spatial Extent, Time, Duration**. The sum of all scores is the PRI for the hazard. The purpose of the PRI is to determine what are high, moderate, and low hazards within the Bladen-Columbus-Robeson Region. The PRI will serve as an asset in determining mitigation strategies.

The existing plan served as the baseline PRI for the update, the existing PRI will be updated to reflect any change in risk.



# PRI SCALE

|                           |                                                                                                                |
|---------------------------|----------------------------------------------------------------------------------------------------------------|
| High Risk (> 2.5)         | Severe Weather<br>Hurricane/Tropical Storm<br>Wildfire<br>Drought<br>Inland Flooding: 100-/500-year<br>Tornado |
|                           | Winter Storm<br>Earthquake                                                                                     |
|                           | Dam/Levee Failure                                                                                              |
| Moderate Risk (2.0 – 2.5) |                                                                                                                |
| Low Risk (< 2.0)          |                                                                                                                |





# Hazard Profile Summary

| Hazard                                                | Probability   | Impact   | Spatial Extent | Warning Time     | Duration         | PRI Score |
|-------------------------------------------------------|---------------|----------|----------------|------------------|------------------|-----------|
| Dam/Levee Failure                                     | Unlikely      | Limited  | Small          | Less than 6 hrs  | Less than 6 hrs  | 1.8       |
| Drought                                               | Highly Likely | Minor    | Large          | More than 24 hrs | More than 1 week | 2.8       |
| Earthquake                                            | Possible      | Limited  | Moderate       | Less than 6 hrs  | Less than 6 hrs  | 2.3       |
| Hurricane/Tropical Storm                              | Likely        | Critical | Large          | More than 24 hrs | Less than 24 hrs | 2.9       |
| Inland Flooding: 100-/500-year                        | Possible      | Critical | Moderate       | 6 to 12 hours    | Less than 1 week | 2.7       |
| Severe Weather (thunderstorm wind, lightning, & hail) | Highly Likely | Critical | Moderate       | 6 to 12 hours    | Less than 6 hrs  | 3.1       |
| Tornado                                               | Likely        | Critical | Small          | Less than 6 hrs  | Less than 6 hrs  | 2.7       |
| Wildfire                                              | Highly Likely | Limited  | Small          | Less than 6 hrs  | Less than 1 week | 2.9       |
| Winter Storm                                          | Highly Likely | Minor    | Moderate       | More than 24 hrs | Less than 1 week | 2.5       |





# Excluded Hazards

---

The following hazards have been excluded from this plan but are addressed in the State of North Carolina plan. The primary reason for exclusion is due to the fact that these hazards are mitigate more efficiently through local emergency management and state level mitigation:

- Infectious Disease
- Hazardous Substances
- Radiological Emergency
- Cyber Threat
- Terrorism
- Civil Disturbance
- Electromagnetic Pulse
- Food Emergency



# Climate Change Effect

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Data has shown that climate change is influencing multiple hazards. Increasing temperatures are influencing the severity and frequency of hazardous events. The effects of climate change must be considered when reviewing the hazards that have been identified in this risk assessment and when developing mitigation strategies.

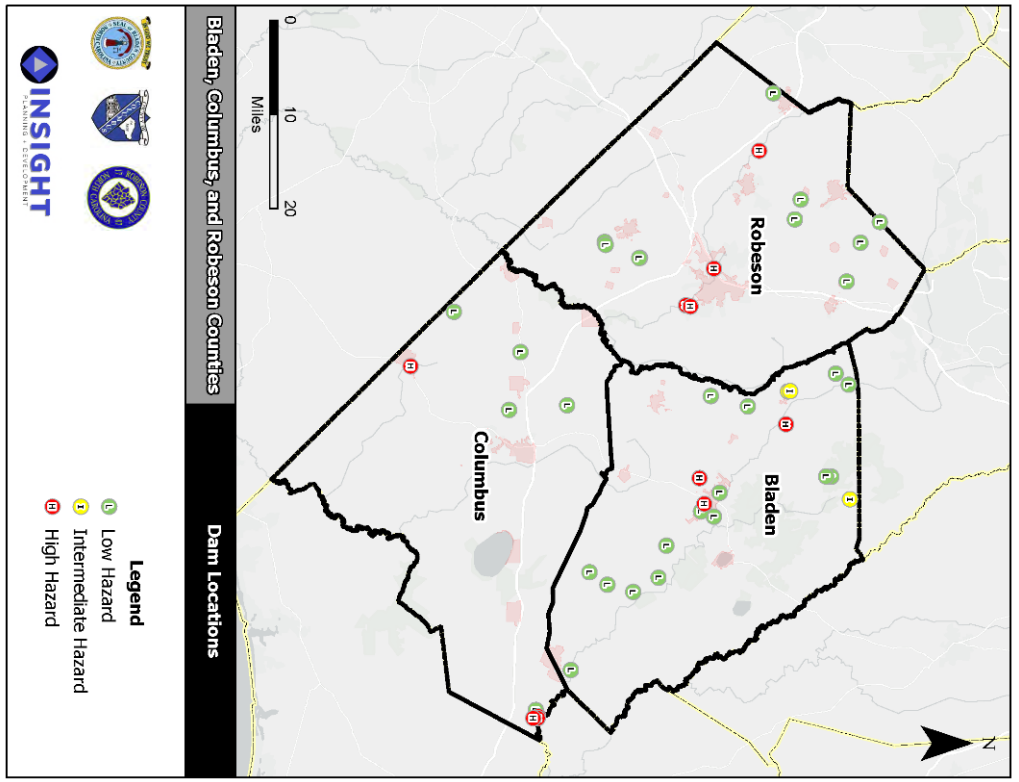


# Dam/Levee Failure

| Probability | Impact  | Spatial Extent | Warning Time    | Duration        |
|-------------|---------|----------------|-----------------|-----------------|
| Unlikely    | Limited | Small          | Less than 6 hrs | Less than 6 hrs |

## NC Dam Inventory (2025):

- 41 dams in BCR Region
  - 27 low hazard
  - 3 intermediate hazard
  - 11 high hazard
- 1 levee in BCR Region



| Hazard Classification | Description                                                                        | Quantitative Guidelines                |
|-----------------------|------------------------------------------------------------------------------------|----------------------------------------|
| Low                   | Interruption of road service, low volume roads                                     | Less than 25 vehicles per day          |
|                       | Economic damage                                                                    | Less than \$30,000                     |
|                       | Damage to highways, interruption of service                                        | 25 to less than 250 vehicles per day   |
| Intermediate          | Economic damage                                                                    | \$30,000 to less than \$200,000        |
|                       | Loss of human life*                                                                | Probable loss of 1 or more human lives |
| High                  | Economic damage                                                                    | More than \$200,000                    |
|                       | *Probable loss of human life due to breached roadway or bridge on or below the dam | 250 or more vehicles per day           |



# Dam Failure

| Probability | Impact  | Spatial Extent | Warning Time    | Duration        |
|-------------|---------|----------------|-----------------|-----------------|
| Unlikely    | Limited | Small          | Less than 6 hrs | Less than 6 hrs |

## Historical Occurrences

- Floodwaters circumvented the Lumberton Levee during the October 2016 Hurricane Matthew event.
- The White Oak Dike also experienced failure days after catastrophic rainfall from Hurricane Florence (2018).



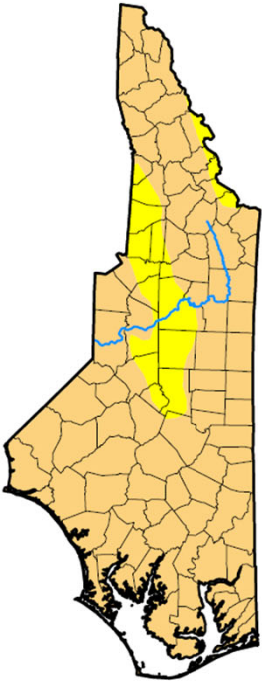


# Drought

| Probability   | Impact | Spatial Extent | Warning Time     | Duration         |
|---------------|--------|----------------|------------------|------------------|
| Highly Likely | Minor  | Large          | More than 24 hrs | More than 1 week |

## U.S. Drought Monitor North Carolina

**December 3, 2024**  
(Released Thursday, Dec. 5, 2024)  
Valid 7 a.m. EST



|                                         | Drought Conditions (Percent Area) |        |       |       |       |      |
|-----------------------------------------|-----------------------------------|--------|-------|-------|-------|------|
|                                         | None                              | D0-D4  | D1-D4 | D2-D4 | D3-D4 | D4   |
| Current                                 | 0.00                              | 100.00 | 87.99 | 0.00  | 0.00  | 0.00 |
| Last Week<br>11-26-2024                 | 0.00                              | 100.00 | 33.27 | 0.00  | 0.00  | 0.00 |
| 3 Months Ago<br>09-03-2024              | 84.97                             | 15.03  | 5.24  | 0.00  | 0.00  | 0.00 |
| Start of<br>Calendar Year<br>01-02-2024 | 53.95                             | 46.05  | 13.26 | 3.54  | 0.00  | 0.00 |
| Start of<br>Water Year<br>10-01-2024    | 100.00                            | 0.00   | 0.00  | 0.00  | 0.00  | 0.00 |
| One Year Ago<br>12-05-2023              | 20.04                             | 79.96  | 57.96 | 31.11 | 8.84  | 0.00 |

**Intensity:**  
None  
D0 Abnormally Dry  
D1 Moderate Drought  
D2 Severe Drought  
D3 Extreme Drought  
D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

**Author:**

David Simmeral  
Western Regional Climate Center



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

- All of the BCR Region is susceptible
- Most significant impacts are related to agriculture, wildland fire protection, municipal usage, commerce, tourism, recreation, and wildlife preservation
- Can increase susceptibility to flooding due to soil compaction
- Can cause a reduction in electric power regeneration and deteriorate water quality





# Drought

| Probability   | Impact | Spatial Extent | Warning Time     | Duration         |
|---------------|--------|----------------|------------------|------------------|
| Highly Likely | Minor  | Large          | More than 24 hrs | More than 1 week |

- According to the US Drought Monitor, the BCR Region experienced some level of drought condition, ranging from abnormally dry to exceptional drought over the last 24 years (2000-2024).

| Category | Description         | Possible Impacts                                                                                                                                                                                                                                                      |
|----------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D0       | Abnormally Dry      | <ul style="list-style-type: none"><li>Going into drought:</li><li>• short-term dryness slowing planting, growth of crops or pastures</li><li>Coming out of drought:</li><li>• some lingering water deficits</li><li>• pastures or crops not fully recovered</li></ul> |
| D1       | Moderate Drought    | <ul style="list-style-type: none"><li>• Some damage to crops, pastures</li><li>• Streams, reservoirs, or wells low, some water shortages developing or imminent</li><li>• Voluntary water-use restrictions requested</li></ul>                                        |
| D2       | Severe Drought      | <ul style="list-style-type: none"><li>• Crop or pasture losses likely</li><li>• Water shortages common</li><li>• Water restrictions imposed</li></ul>                                                                                                                 |
| D3       | Extreme Drought     | <ul style="list-style-type: none"><li>• Major crop/pasture losses</li><li>• Widespread water shortages or restrictions</li></ul>                                                                                                                                      |
| D4       | Exceptional Drought | <ul style="list-style-type: none"><li>• Exceptional and widespread crop/pasture losses</li><li>• Shortages of water in reservoirs, streams, and wells creating water emergencies</li></ul>                                                                            |

Source: US Drought Monitor

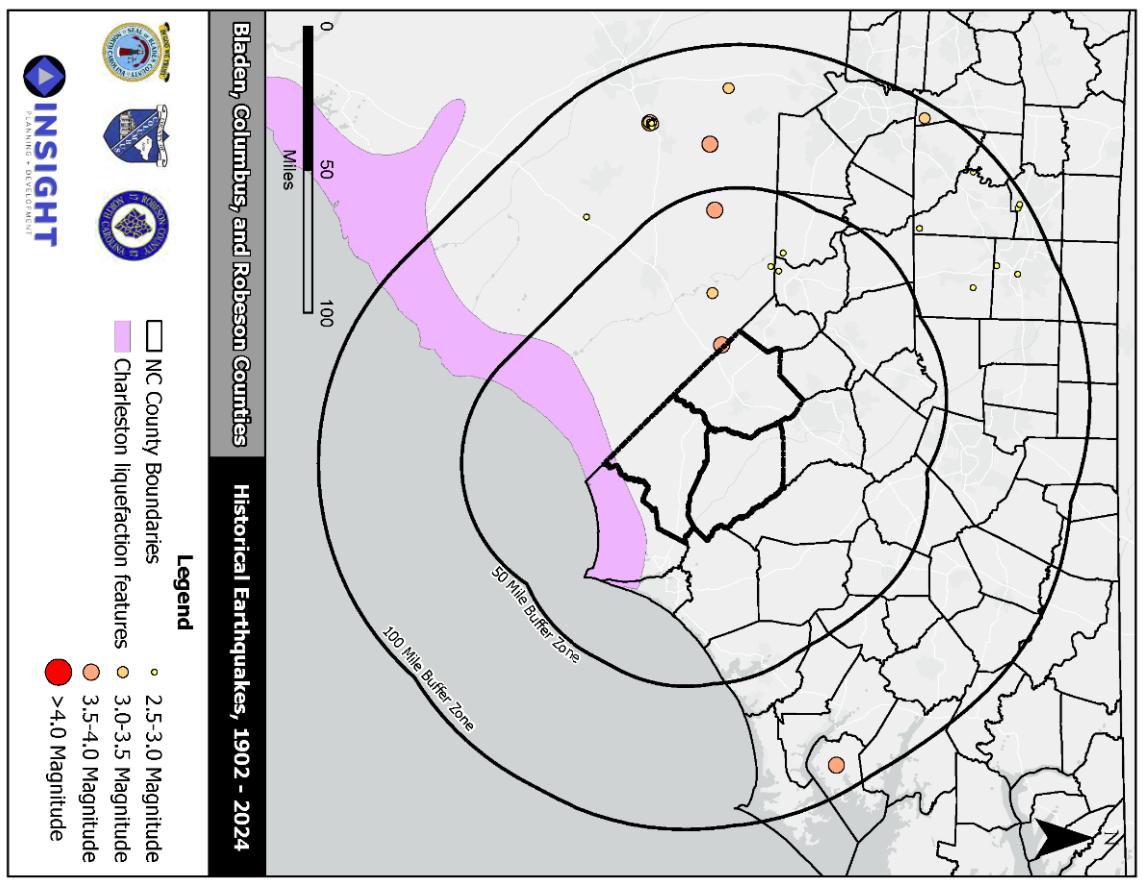
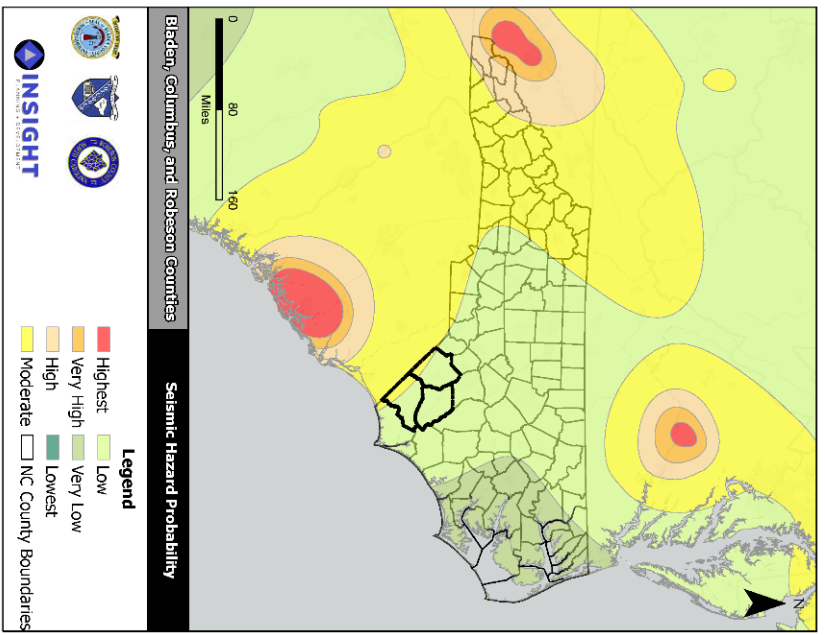
The BCR Region averages **\$49,453,510.79** in crop losses due to drought annually according to USDA Crop Insurance data.



# Earthquake

- North Carolina has experienced 5 earthquakes with discernible impacts since 1989, none of these have resulted in impacts in the BCR region

| Probability | Impact  | Spatial Extent | Warning Time    | Duration        |
|-------------|---------|----------------|-----------------|-----------------|
| Possible    | Limited | Moderate       | Less than 6 hrs | Less than 6 hrs |



| Probability | Impact  | Spatial Extent | Warning Time    | Duration        |
|-------------|---------|----------------|-----------------|-----------------|
| Possible    | Limited | Moderate       | Less than 6 hrs | Less than 6 hrs |

# Earthquake

## Estimated Building Damages from 250-Year Earthquake Event:

| Jurisdiction      | All Buildings | Number of Pre-FIRM Buildings at Risk |            | Residential Buildings at Risk |            |                   | Commercial Buildings at Risk |            |                   | Public Buildings at Risk |            |                   | Total Buildings at Risk |            |                   |
|-------------------|---------------|--------------------------------------|------------|-------------------------------|------------|-------------------|------------------------------|------------|-------------------|--------------------------|------------|-------------------|-------------------------|------------|-------------------|
|                   | Num           | Num                                  | % of Total | Num                           | % of Total | Estimated Damages | Num                          | % of Total | Estimated Damages | Num                      | % of Total | Estimated Damages | Num                     | % of Total | Estimated Damages |
| Subtotal Bladen   | 23,111        | 10,803                               | 46.7%      | 6,665                         | 28.8%      | \$22,723          | 3,651                        | 15.8%      | \$174,302         | 487                      | 2.1%       | \$56,190          | 10,803                  | 46.7%      | \$253,217         |
| Subtotal Columbus | 37,013        | 21,436                               | 57.9%      | 22,110                        | 59.7%      | \$108,338         | 3,097                        | 8.4%       | \$273,664         | 702                      | 1.9%       | \$141,169         | 25,909                  | 70%        | \$523,170         |
| Subtotal Robeson  | 60,664        | 55,272                               | 91.1%      | 51,639                        | 85.1%      | \$413,283         | 6,626                        | 10.9%      | \$780,126         | 1,206                    | 2%         | \$350,318         | 59,471                  | 98%        | \$1,543,732       |
| TOTAL PLAN        | 120,788       | 87,511                               | 72.5%      | 80,414                        | 66.6%      | \$544,344         | 13,374                       | 11.1%      | \$1,228,092       | 2,395                    | 2%         | \$547,677         | 96,183                  | 79.6%      | \$2,320,119       |

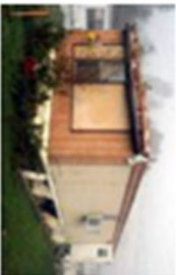
\*County numbers include municipalities.





# Hurricane

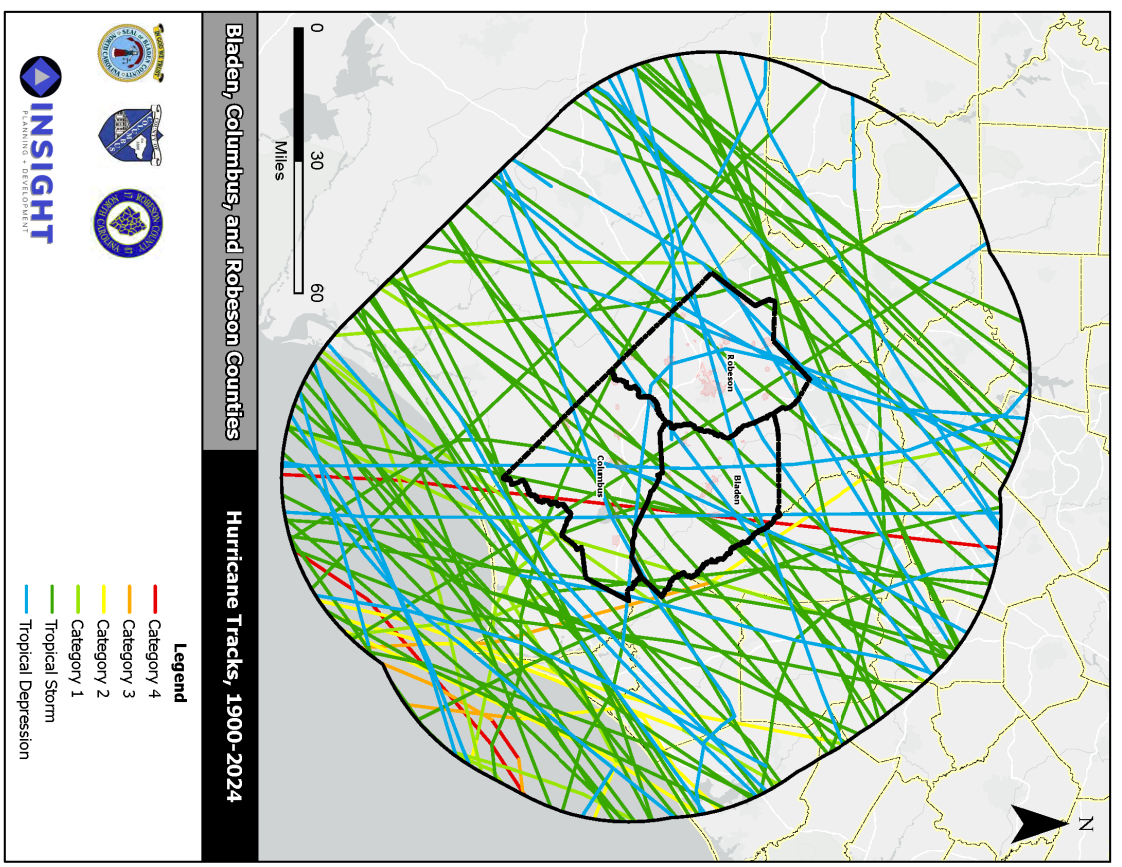
| Probability | Impact   | Spatial Extent | Warning Time     | Duration         |
|-------------|----------|----------------|------------------|------------------|
| Likely      | Critical | Large          | More than 24 hrs | Less than 24 hrs |

| Storm Category | Damage Level | Description of Damages                                                                                                                                                                                                                                                                          | Photo Example                                                                        |
|----------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 1              | MINIMAL      | No real damage to building structures. <u>Damage</u> primarily to unanchored mobile homes, shrubbery, and trees. Also, <u>some</u> coastal flooding and minor pier damage.                                                                                                                      |                                                                                      |
| 2              | MODERATE     | Some roofing material, door, and window damage. Considerable damage to vegetation, mobile homes, etc. Flooding damages piers and small <u>craft</u> in unprotected moorings may break their moorings.                                                                                           |  |
| 3              | EXTENSIVE    | Some structural damage to small residences and utility buildings, with a minor amount of curtainwall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures, with larger structures damaged by floating debris. Terrain may be flooded well inland.          |   |
| 4              | EXTREME      | More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Terrain may be flooded well inland.                                                                                                                            |   |
| 5              | CATASTROPHIC | Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Flooding causes major damage to lower floors of all structures near the shoreline. Massive evacuation of residential areas may be required. |   |

# Hurricane

- 93 hurricanes and tropical storms have passed within 50 miles of the BCR region since 1900.

| Probability | Impact   | Spatial Extent | Warning Time     | Duration         |
|-------------|----------|----------------|------------------|------------------|
| Likely      | Critical | Large          | More than 24 hrs | Less than 24 hrs |





# Hurricane

| Probability | Impact   | Spatial Extent | Warning Time     | Duration         |
|-------------|----------|----------------|------------------|------------------|
| Likely      | Critical | Large          | More than 24 hrs | Less than 24 hrs |

## Building loss estimate from 25-Yr Hurricane Winds

| Jurisdiction* | Total Buildings at Risk | Estimated Damages |
|---------------|-------------------------|-------------------|
| Bladen Co.    | 23,110                  | \$14,907,191      |
| Columbus Co.  | 36,973                  | \$35,865,005      |
| Robeson Co.   | 60,618                  | \$21,329,585      |

\*Includes municipalities.



# Inland Flooding

| Probability | Impact   | Spatial Extent | Warning Time  | Duration         |
|-------------|----------|----------------|---------------|------------------|
| Possible    | Critical | Moderate       | 6 to 12 hours | Less than 1 week |

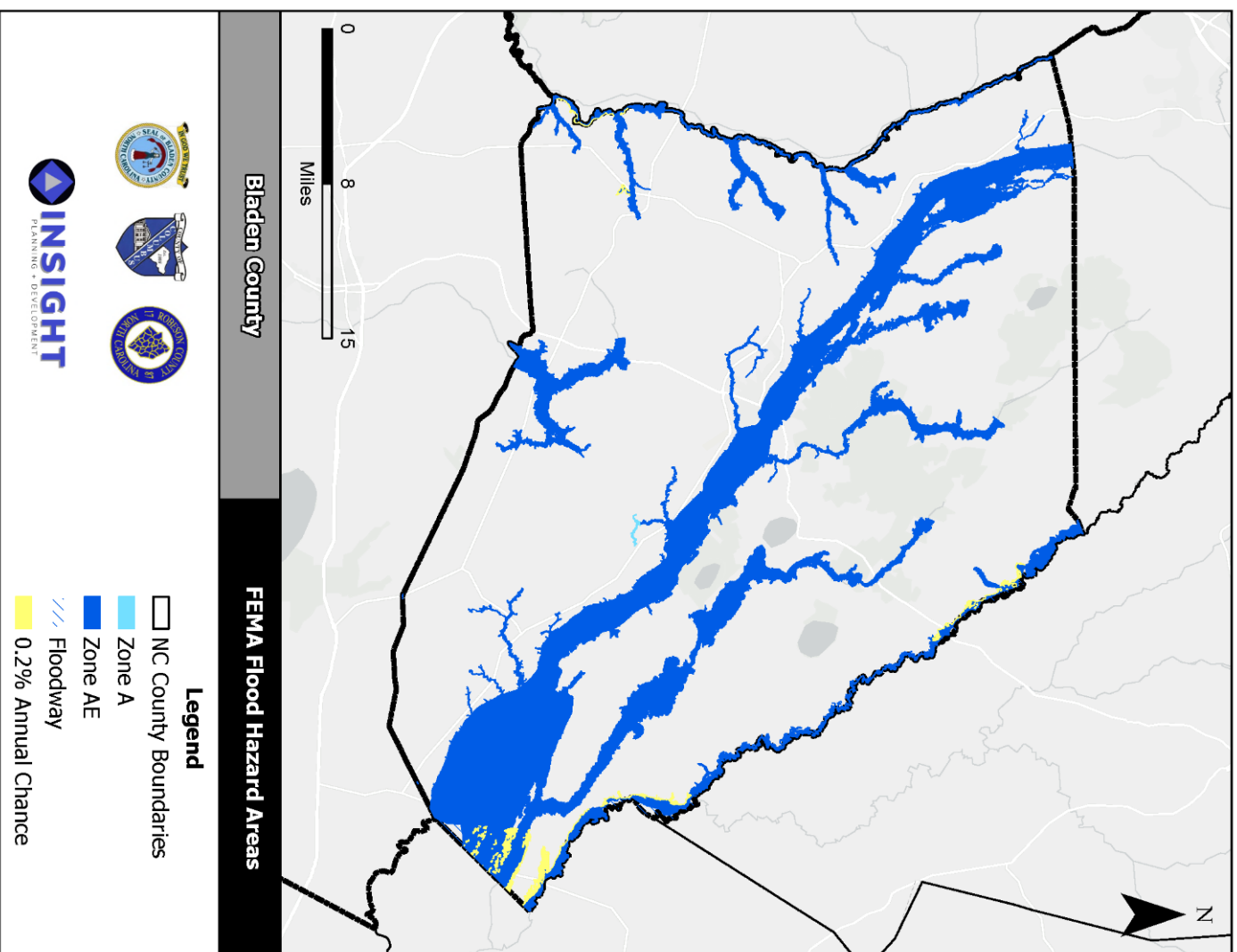
- Flooding types: Riverine Flooding, Flash Flooding

| Flood Zone   | Bladen     | Columbus   | Robeson    | BCR Region Total |
|--------------|------------|------------|------------|------------------|
| A            | 72.37      | 16,572.70  | 496.13     | 17,141.20        |
| AE           | 93,772.43  | 155,379.68 | 131,551.19 | 380,703.30       |
| X (500-year) | 1,026.84   | 4,407.35   | 9,225.43   | 14,659.62        |
| X Unshaded   | 477,268.15 | 430,379.99 | 466,799.15 | 1,374,447.20     |

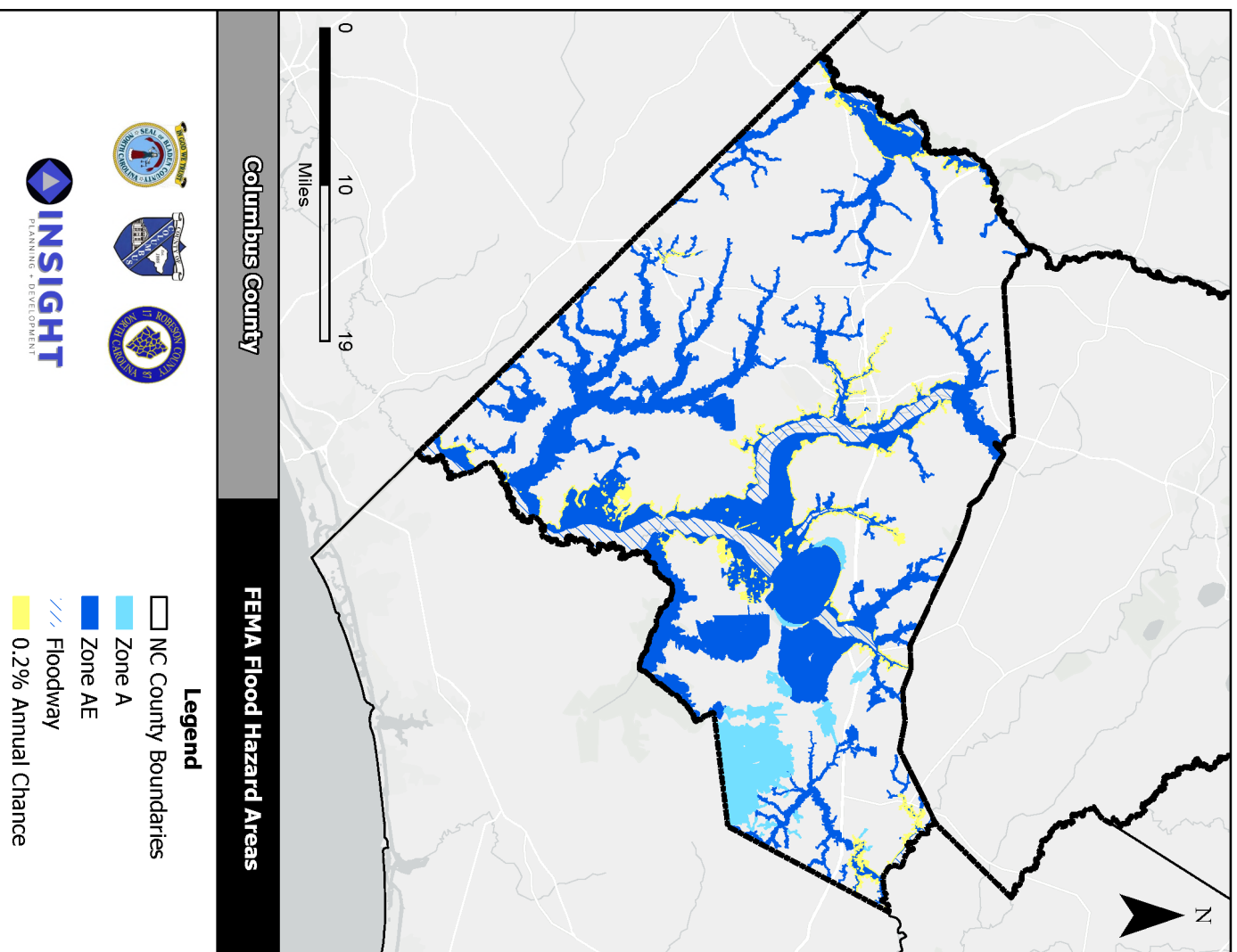
Structures located in a Special Flood Hazard Area Have a 26% Chance of Flooding During the Life of a 30-Year Mortgage



# Flood

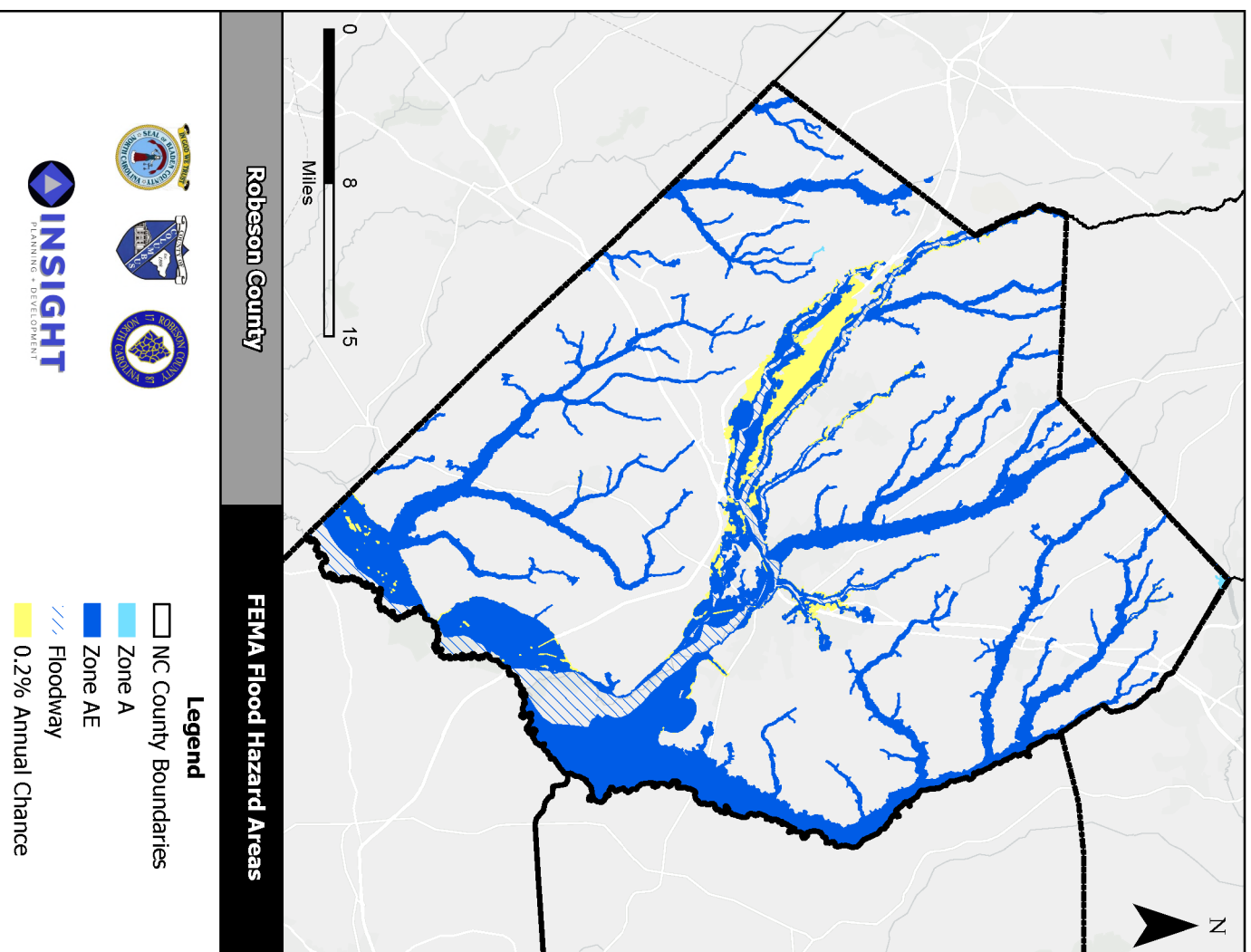


# Flood





# Flood





# Flood

| Probability | Impact   | Spatial Extent | Warning Time  | Duration         |
|-------------|----------|----------------|---------------|------------------|
| Possible    | Critical | Moderate       | 6 to 12 hours | Less than 1 week |

## Population Impacted by the 100 Year Flood Event

| Jurisdiction             | Total Population | Population at Risk |             | All Elderly Population | Elderly Population at Risk |             | All Children Population | Children at Risk |             |
|--------------------------|------------------|--------------------|-------------|------------------------|----------------------------|-------------|-------------------------|------------------|-------------|
|                          |                  | Number             | Percent     |                        | Number                     | Percent     |                         | Number           | Percent     |
| <i>Subtotal Bladen</i>   | 35,157           | 1,514              | 4.3%        | 5483                   | 236                        | 4.3%        | 2132                    | 91               | 4.3%        |
| <i>Subtotal Columbus</i> | 58,099           | 1,493              | 2.6%        | 8830                   | 227                        | 2.6%        | 3514                    | 90               | 2.6%        |
| <i>Subtotal Robeson</i>  | 134,318          | 9,357              | 7%          | 15077                  | 1050                       | 7%          | 10223                   | 712              | 7%          |
| <b>TOTAL PLAN</b>        | <b>227,574</b>   | <b>12,364</b>      | <b>5.4%</b> | <b>29390</b>           | <b>1513</b>                | <b>5.1%</b> | <b>15869</b>            | <b>893</b>       | <b>5.6%</b> |

\*County numbers include municipalities.



# Flood

| Probability | Impact   | Spatial Extent | Warning Time  | Duration         |
|-------------|----------|----------------|---------------|------------------|
| Possible    | Critical | Moderate       | 6 to 12 hours | Less than 1 week |

## Critical Infrastructure and Buildings at Risk to 100-year flood

| Sector                                | Number of Buildings at Risk |  | Estimated Damages |
|---------------------------------------|-----------------------------|--|-------------------|
| Banking and Finance                   | 72                          |  | \$5,410,459       |
| Chemical                              | 2                           |  | \$150,028,735     |
| Commercial Facilities                 | 6,917                       |  | \$498,000,627     |
| Communications                        | 8                           |  | \$332,798         |
| Critical Manufacturing                | 881                         |  | \$87,753,021      |
| Defense Industrial Base               | 4                           |  | \$623,176         |
| Emergency Services                    | 46                          |  | \$1,841,760       |
| Energy                                | 65                          |  | \$331,413,258     |
| Food and Agriculture                  | 1,353                       |  | \$10,208,563      |
| Government Facilities                 | 513                         |  | \$37,721,921      |
| Healthcare and Public Health          | 163                         |  | \$14,620,171      |
| Nuclear Reactors, Materials and Waste | 1                           |  | \$60,907          |
| Transportation Systems                | 500                         |  | \$52,052,118      |
| Water                                 | 92                          |  | \$841,873,887     |
|                                       |                             |  |                   |



# Severe Weather

(Thunderstorm Wind)

| Probability   | Impact   | Spatial Extent | Warning Time  | Duration        |
|---------------|----------|----------------|---------------|-----------------|
| Highly Likely | Critical | Moderate       | 6 to 12 hours | Less than 6 hrs |

- The average single cell thunderstorm is approximately 15 miles in diameter and lasts for less than 30 minutes at a single location. However, thunderstorms especially when organized in clusters or lines, can travel for distances exceeding 600 miles
- Between 1996 and 2024, the NCEI recorded 773 separate incidents of thunderstorm winds, strong winds and high winds across the three counties. These events caused \$69,855,000 in recorded property damage, 27 injuries, and 2 fatalities.



# Severe Weather

## (Thunderstorm Wind)

| Probability   | Impact   | Spatial Extent | Warning Time  | Duration        |
|---------------|----------|----------------|---------------|-----------------|
| Highly Likely | Critical | Moderate       | 6 to 12 hours | Less than 6 hrs |

Building loss estimate from 50-Yr Thunderstorm Winds:

| Jurisdiction (includes municipalities) | Total Buildings at Risk | Estimated Damages |
|----------------------------------------|-------------------------|-------------------|
| Bladen Co.                             | 23,110                  | \$11,155,728      |
| Columbus Co.                           | 36,973                  | \$22,259,060      |
| Robeson Co.                            | 60,618                  | \$35,088,427      |
| Total                                  | 120,701                 | \$68,503,215      |



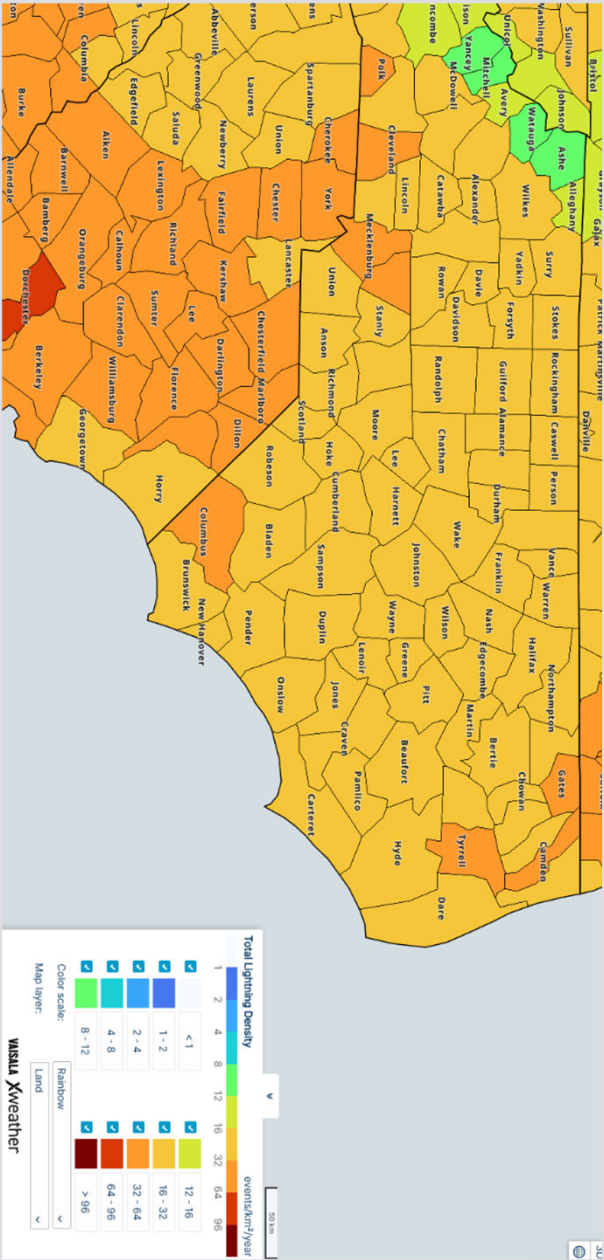


# Severe Weather (Lightning)

| Probability   | Impact   | Spatial Extent | Warning Time  | Duration        |
|---------------|----------|----------------|---------------|-----------------|
| Highly Likely | Critical | Moderate       | 6 to 12 hours | Less than 6 hrs |

- NCEI records 37 lightning incidents causing 7 injuries, 2 fatalities, and \$1,040,000 in property damages.
- The BCR region experiences an average of 27.5 lightning events per square km per year.

Average Lightning Frequency per sq. km



Source: Vaisala Interactive Global Lightning Density Map.





# Severe Weather

(Hail)

| Probability   | Impact   | Spatial Extent | Warning Time  | Duration        |
|---------------|----------|----------------|---------------|-----------------|
| Highly Likely | Critical | Moderate       | 6 to 12 hours | Less than 6 hrs |

| Jurisdiction | Number of Occurrences | Average Hail Diameter |
|--------------|-----------------------|-----------------------|
| Bladen Co.   | 144                   | 1.09"                 |
| Columbus Co. | 136                   | 1.09"                 |
| Robeson Co.  | 137                   | 1.08"                 |

- NCEI records 417 separate hail incidents across 178 days between 1996 and 2024 in the BCR Region.
- These events were reported to have caused an estimated \$357,100 in property damage and \$50,000 in crop damage.



| Probability | Impact   | Spatial Extent | Warning Time    | Duration        |
|-------------|----------|----------------|-----------------|-----------------|
| Likely      | Critical | Small          | Less than 6 hrs | Less than 6 hrs |

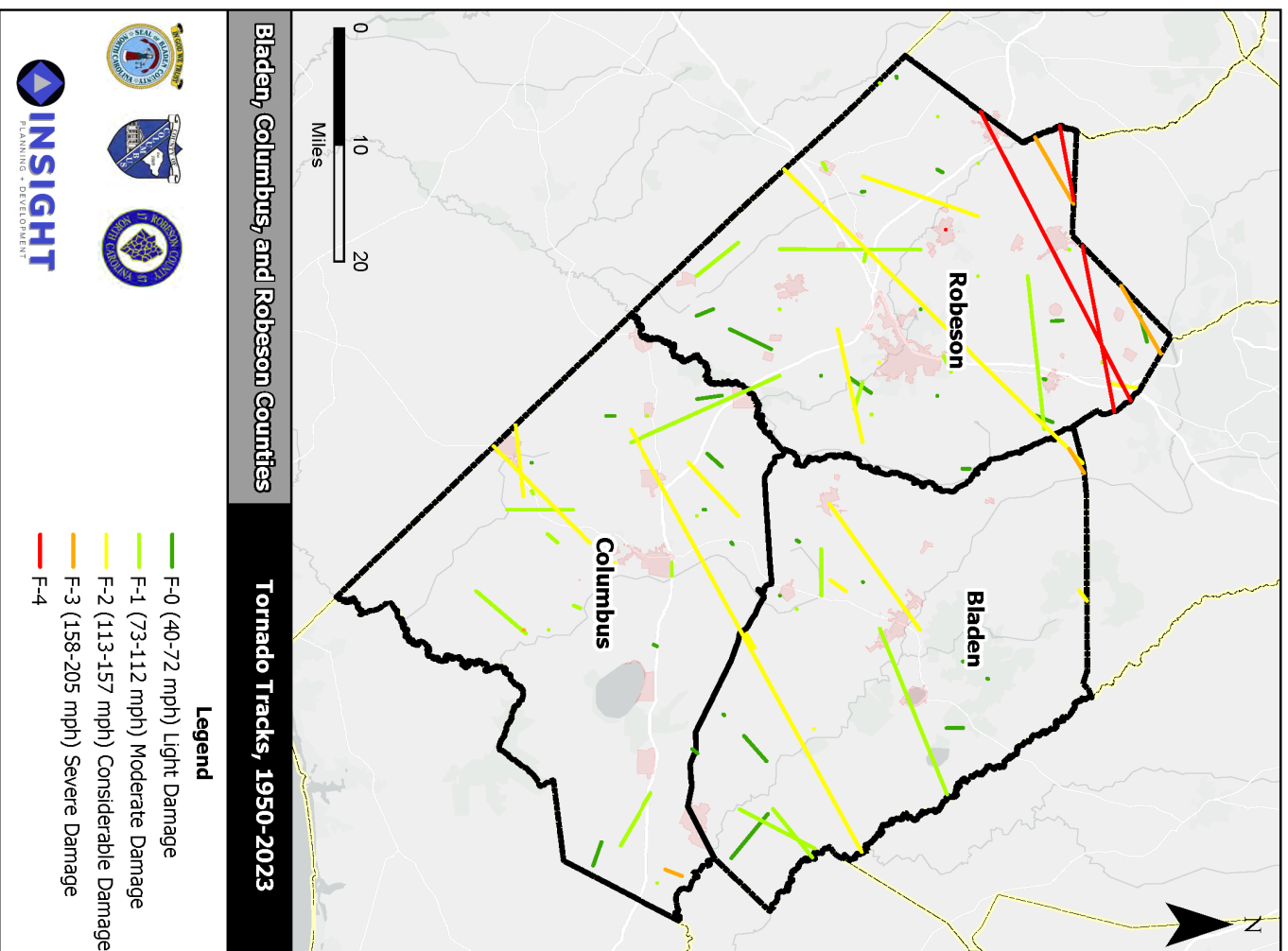
# Tornado

- The BCR region has experienced 120 tornado incidents between 1950-2024:
- 19 deaths
- 382 injuries
- \$46.7M in property damage
- \$13.5K in crop damage

| County   | Total Recorded Occurrences | Recorded Deaths | Recorded Injuries | Total Reported Property Damage | Total Reported Crop Damage |
|----------|----------------------------|-----------------|-------------------|--------------------------------|----------------------------|
| Bladen   | 31                         | 5               | 8                 | \$30.5M                        | \$13K                      |
| Columbus | 35                         | 8               | 40                | \$6.6M                         | \$500                      |
| Robeson  | 54                         | 6               | 334               | \$9.6M                         | \$0                        |
| Total    | 120                        | 19              | 382               | \$46.7M                        | \$13.5K                    |



# Tornado





# Wildfire

| Probability   | Impact  | Spatial Extent | Warning Time    | Duration         |
|---------------|---------|----------------|-----------------|------------------|
| Highly Likely | Limited | Small          | Less than 6 hrs | Less than 1 week |

- From 1984-2021, the BCR region experienced 7 wildfire events.
  - Above count does not include fires managed by local departments; actual fire count is likely higher
- Wildfire Damage Potential

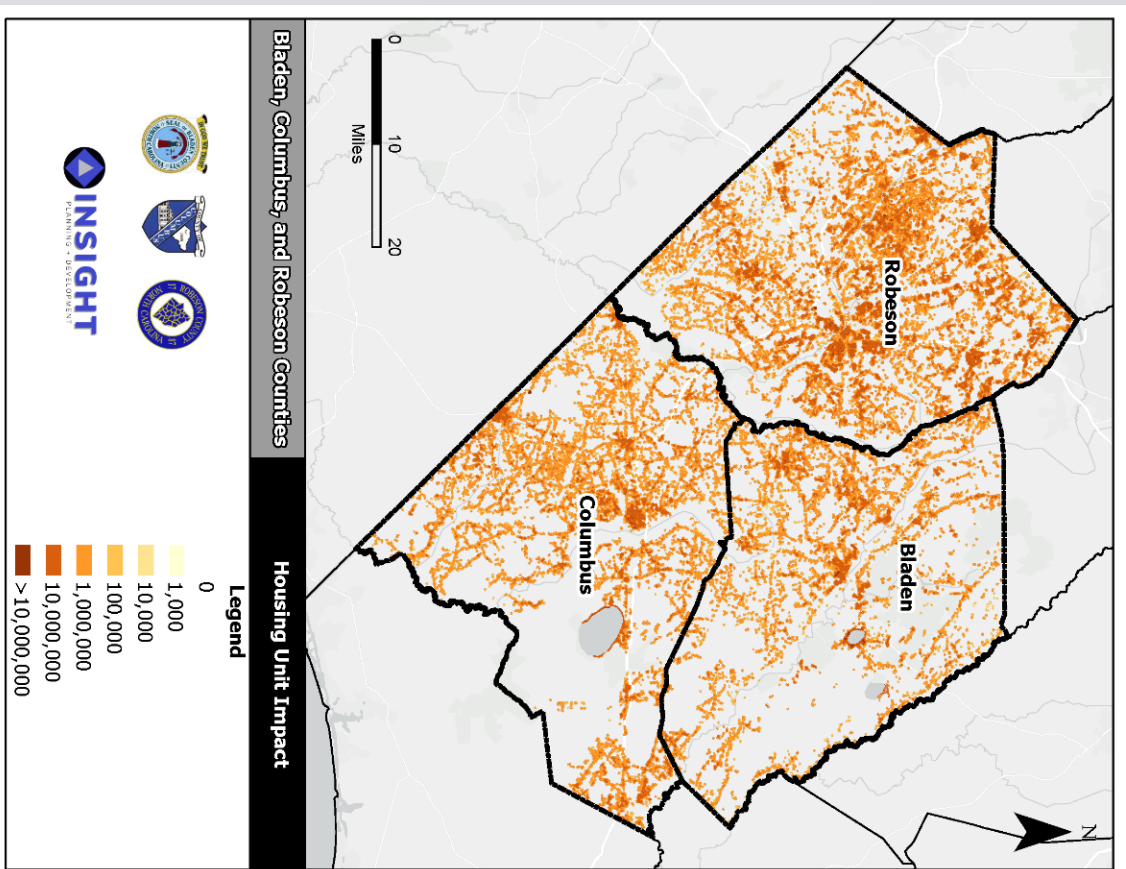
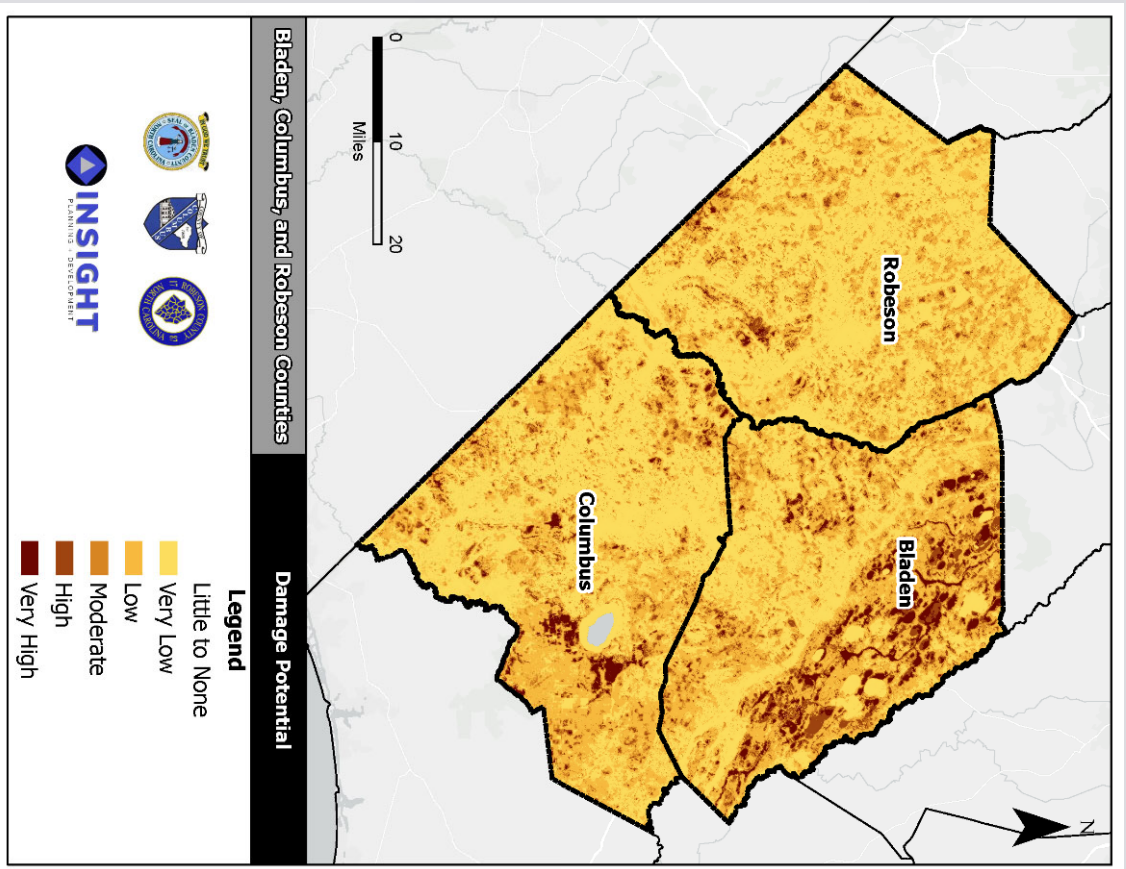
| Class        | Description                                                                                                                                                                                                                                                                               |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1, Very Low  | Very small, discontinuous flames, usually less than 1 foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and non-specialized equipment.                                                                       |
| 2, Low       | Small flames, usually less than two feet long; small amount of very short range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.                                                                                    |
| 3, Moderate  | Flames up to 9 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.    |
| 4, High      | Large Flames, up to 40 feet in length; short-range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property. |
| 5, Very High | Flames exceeding 200 feet in length; expect extreme fire behavior.                                                                                                                                                                                                                        |

Source: Southern Wildfire Risk Assessment



# Wildfire

| Probability   | Impact  | Spatial Extent | Warning Time    | Duration         |
|---------------|---------|----------------|-----------------|------------------|
| Highly Likely | Limited | Small          | Less than 6 hrs | Less than 1 week |





# Winter Storm

| Probability   | Impact | Spatial Extent | Warning Time     | Duration         |
|---------------|--------|----------------|------------------|------------------|
| Highly Likely | Minor  | Moderate       | More than 24 hrs | Less than 1 week |

## Past Occurrences, 1996-2024

| Hazard         | Bladen | Columbus | Robeson |
|----------------|--------|----------|---------|
| Frost/Freeze   | 3      | 3        | 3       |
| Heavy Snow     | 5      | 4        | 5       |
| Ice Storm      | 6      | 1        | 5       |
| Winter Storm   | 7      | 5        | 10      |
| Winter Weather | 6      | 5        | 5       |

Major risks include:

- icy roadways
- cost of snow and debris removal
- power outages
- indirect losses such as lost productivity



# Priority Risk Index (PRI)

| Risk Assessment Category                                                                                                                                                      | Level         | Degree of Risk Criteria                                                                                                                                              | Index | Weight |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------|
| <b>PROBABILITY</b><br>What is the likelihood of a hazard event occurring in a given year?                                                                                     | Unlikely      | Less than 1% Annual probability                                                                                                                                      | 1     | 30%    |
|                                                                                                                                                                               | Possible      | Between 1 & 10% Annual probability                                                                                                                                   | 2     |        |
|                                                                                                                                                                               | Likely        | Between 10 & 100% Annual probability                                                                                                                                 | 3     |        |
|                                                                                                                                                                               | Highly likely | 100% Annual probability                                                                                                                                              | 4     |        |
| <b>IMPACT</b><br>In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs? | Minor         | Very few injuries, if any. Only minor property damage & minimal disruption on quality of life. Temporary shutdown of critical facilities.                            | 1     | 30%    |
|                                                                                                                                                                               | Limited       | Minor injuries only. More than 10% of property in <u>affected area damaged</u> or destroyed. Complete shutdown of critical facilities for > 1 day.                   | 2     |        |
|                                                                                                                                                                               | Critical      | Multiple deaths/injuries possible. More than 25% of property in <u>affected area damaged</u> or destroyed. Complete shutdown of critical facilities for > 1 week.    | 3     |        |
|                                                                                                                                                                               | Catastrophic  | High number of deaths/injuries possible. More than 50% of property in <u>affected area damaged</u> or destroyed. Complete shutdown of critical facilities > 30 days. | 4     |        |

| Risk Assessment Category                                                                                                         | Level            | Degree of Risk Criteria            | Index | Weight |
|----------------------------------------------------------------------------------------------------------------------------------|------------------|------------------------------------|-------|--------|
| <b>SPATIAL EXTENT</b><br>How large of an area could be impacted by a hazard event? Are impacts localized or regional?            | Negligible       | Less than 1% of area affected      | 1     | 20%    |
|                                                                                                                                  | Small            | Between 1 & 10% of area affected   | 2     |        |
|                                                                                                                                  | Moderate         | Between 10 & 50% of area affected  | 3     |        |
| <b>WARNING TIME</b><br>Is there usually some lead time associated with the hazard event? Have warning measures been implemented? | Large            | Between 50 & 100% of area affected | 4     | 10%    |
|                                                                                                                                  | More than 24 Hrs | Self-Defined                       | 1     |        |
|                                                                                                                                  | 12 to 24 Hrs     | Self-Defined                       | 2     |        |
| <b>DURATION</b><br>How long does the hazard event usually last?                                                                  | 6 to 12 Hrs      | Self-Defined                       | 3     | 10%    |
|                                                                                                                                  | Less than 6 Hrs  | Self-Defined                       | 4     |        |
|                                                                                                                                  | Less than 6 Hrs  | Self-Defined                       | 1     |        |
|                                                                                                                                  | Less than 24 Hrs | Self-Defined                       | 2     | 10%    |
|                                                                                                                                  | Less than 1 week | Self-Defined                       | 3     |        |
|                                                                                                                                  | More than 1 week | Self-Defined                       | 4     |        |



# PRI Results

| Hazard                                                | Probability   | Impact   | Spatial Extent | Warning Time     | Duration         | PRI Score |
|-------------------------------------------------------|---------------|----------|----------------|------------------|------------------|-----------|
| Dam/Levee Failure                                     | Unlikely      | Limited  | Small          | Less than 6 hrs  | Less than 6 hrs  | 1.8       |
| Drought                                               | Highly Likely | Minor    | Large          | More than 24 hrs | More than 1 week | 2.8       |
| Earthquake                                            | Possible      | Limited  | Moderate       | Less than 6 hrs  | Less than 6 hrs  | 2.3       |
| Hurricane/Tropical Storm                              | Likely        | Critical | Large          | More than 24 hrs | Less than 24 hrs | 2.9       |
| Inland Flooding: 100-/500-year                        | Possible      | Critical | Moderate       | 6 to 12 hours    | Less than 1 week | 2.7       |
| Severe Weather (thunderstorm wind, lightning, & hail) | Highly Likely | Critical | Moderate       | 6 to 12 hours    | Less than 6 hrs  | 3.1       |
| Tornado                                               | Likely        | Critical | Small          | Less than 6 hrs  | Less than 6 hrs  | 2.7       |
| Wildfire                                              | Highly Likely | Limited  | Small          | Less than 6 hrs  | Less than 1 week | 2.9       |
| Winter Storm                                          | Highly Likely | Minor    | Moderate       | More than 24 hrs | Less than 1 week | 2.5       |





## Continue to . . .

---

- Reach out to stakeholders within your community including members of underserved populations so that they can provide input and involve themselves in the hazard mitigation planning process.
- Review the existing HMP and provide a status update on implementation.
- Begin brainstorming for new mitigation strategies for the hazards that have been identified today.
- Think of actions to implement projects, reduce damage, increase resilience!



## Next Steps

---

- Develop Goals & Objectives
- Develop New Mitigation Actions
- Review Draft Plan

**FINAL MEETING DATE TBD (May)**







Questions or  
Comments?

## **Bladen, Columbus, Robeson Regional Hazard Mitigation Plan Update**

HIRA Meeting – Thursday, April 17<sup>th</sup>, 2025 @ 3pm EDT

| Meeting Attendees                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ryan Cox, Insight<br>Danielle Taliaferro, Insight (scribe)<br>Melissa Graham, Insight<br>Carl Baker, NCEM Mitigation Plans Manager<br>Darren Norris, Columbus Regional Healthcare System, Emergency Manager<br>Greg Elkins, Bladen County<br>Joey Coleman, Bladen County, Emergency Management<br>Renee Babson, Bladen County EM<br>Teresa Smith, Columbus County EM Services Deputy Director<br>Josh Ward, Brunswick (Columbus) | PH: 910-874-2102<br>PH: 910-653-3458<br><br>Doris Underwood, Parkton Mayor<br>Nathan Slaughter, NCEM<br>John Mello, NCEM Hazard Mitigation Planner<br>Angela Pitchford, Town Manager, Maxton (Robeson)<br>Peyton Campbell, AECOM<br>Sean Martin, Town Administrator, White Lake (Bladen)<br>Kelly Keefe, AECOM<br>Justin Hunt, Interim EM Director, Robeson<br>Claudia Bray, Sandyfield/Bolton (Columbus) |

- I. Ryan Cox opens meeting
- II. Intros/Review Agenda
- III. Planning process
  - a. Review of steps
- IV. Hazard Identification & Risk Assessment (HIRA)
  - a. Steps 4 & 5 of the update process
- V. Review of major Disasters in the Bladen, Columbus, Robeson (BCR) Region
  - a. Existing plans review
  - b. Hazards not included in current plan – review
  - c. Any desire from group to add?
    - i. Joey Coleman, Bladen re: adding action items – Ryan suggests sending in email so it can be captured in the next meeting (Mitigation Strategy)
    - ii. Nathan Slaughter re: excluded hazards – extreme heat – it has been popular topic of discussion
    - iii. Joey – if we have extreme heat, do we add extreme cold? Severe winter weather?
    - iv. Requests to add extreme heat
    - v. Justin Hunt, Robeson – requests to add cyber threats
    - vi. Angela Pritchford – agrees re: cyber threat
    - vii. Ryan Cox – have to have hazard mitigation actions in place for every hazard identified, correct?
    - viii. Nathan – FEMA will only look at natural hazards
    - ix. John – can add anything you want to the plan – FEMA will only review natural hazards
    - x. Good to have ideas and add them to plan – doesn't mean you have to do anything about it, just addressing it and identifying it as an area of concern
    - xi. Ryan – do we still want to add cyber?
    - xii. Teresa Smith – wants to include it
    - xiii. Group confirms – will add Cyber & infectious disease and extreme heat to plan update
  - d. Hazards Profiled – Review
    - i. Will add 3 additional hazards discussed today

## VI. Asset Inventory

- a. Review of Population
- b. 2020 Census for all counties
  - i. No comments from group
- c. Building exposure – does this look accurate?
  - i. Group believes so
- d. Critical Infrastructures and Key Resources – any discrepancies?
  - i. Joey – can you elaborate?
  - ii. Bladen needs 911 center
  - iii. Nathan or Kelly?
  - iv. Ryan will get back to Joey on 911 center re: stand alone?
  - v. Need updated numbers re: infrastructure
  - vi. Tier 2 for most counties is off... need folks to send in updated numbers if they have them
  - vii. Robeson does not have Nuclear reactor
  - viii. Justin Hunt – we have 39 total facilities re: emergency services
- e. Danielle to send out table (slide 15) to group for updating
- f. What are critical facilities – review definition
- g. Critical Facilities for Bladen – Review map
  - i. Joey – are they itemized? Ryan – we can get them to you, but the list is in current hazard mitigation plan
- h. Critical Facilities for Columbus \_ Review Map
- i. Critical Facilities for Robeson – Review Map

## VII. Agriculture Risk and Exposure

- a. Geospatial information
- b. Insurance information may differ
- c. Farmers only insure a portion of crops

## VIII. Hazard Profiles

- a. What is PRI?
- b. How we calculate what risk is for each hazard
- c. What goes into it?; probability of occurrence, warning system?
- d. Spatial extent -what is vulnerable to hazard?
- e. Duration – how long will it last?

## IX. PRI Scale

- a. Review of what's identified (See slide 23)
- b. Does it look accurate? – Group confirms it does

## X. Profile Summary – Review Slide 24

- a. Any changes needed?
- b. Joey – after Florence, the duration was weeks with the fluctuation of flooding waters
- c. In Bladen County, Hurricane Florence was a 1000 year storm
- d. Haven't seen levy failure to that extent
- e. We can change if the group prefers – time frames listed are average
- f. Would take it to a moderate level
- g. Joey – suggests increasing probability of hurricane to “Highly Likely”
- h. Group agrees with this
- i. Will make the change in PRI to highly likely
- j. Will stick with 6 hr duration

- XI. Climate Change Effect
  - a. Influencing multiple hazards
- XII. Carl – FEMA does not have climate change effect requirement for natural hazards
- XIII. Dam/Levee Failure Review
  - a. Reference slide 27
- XIV. Review of Dam Failures
  - a. Matthew and Florence
  - b. Anymore we are not aware of?
  - c. To Justin – how to address for Robeson?
  - d. Justin – dam didn't fail, water just ended up going around it.
  - e. Let it ride
- XV. Drought
  - a. Categories based on crop loss
  - b. Keep in mind that Farmers do not insure all of crops
- XVI. Earthquake
  - a. 5 earthquakes experienced somewhat close to the region, but nothing of significance
- XVII. Hurricanes
  - a. Review of map
  - b. Some documentation is misleading relative to storm categories
- XVIII. Flood zone review for each county ( slides 37-39)
- XIX. Severe weather
  - a. Average single cell thunderstorm is approx. 15 miles in diameter
  - b. Buildings at risk
  - c. Estimated damages
- XX. Lightening
- XXI. Hail
  - a. Highly likely
- XXII. Tornado
  - a. Several events
  - b. Review of track map
- XXIII. Wildfire Risk
  - a. Highly likely
  - b. 7 events recorded in the region
  - c. Ryan request additional info from the group if it's available
  - d. Has call into DOI
  - e. Justin – 2007 was bad year
  - f. Nathan – would depend on size of the 7 noted – why is limited to such small number
  - g. Review wildfire map
    - i. Nathan – turn out a ton of data – million different ways to slice the data
    - ii. They have good data
- XXIV. Winter storms
  - a. Past occurrences
  - b. Review of major risks included
- XXV. Back to PRI Review
  - a. Scoring and how it's achieved
  - b. Likely vs Highly Likely – will add one (1) point to score

- c. Review of results (slide 52)

XXVI. Next steps

- a. What needs to happen for next meetings
- b. Reach out to stakeholders
- c. Get folks involved
- d. Need to review current plan and provide updates to action items
- e. What are our goals, strategies, and actions
- f. Objectives are still not required. Nathan confirms.
- g. Need to have goals and actions
  - i. Very localized & specific to each jurisdiction participating in the plan
- h. Begin brainstorming for new mitigation strategies for the hazards that have been identified today
- i. Send new actions to Danielle, copy Ryan – need to make sure they are included in the update

XXVII. Nathan – can you send out existing actions to each county?

- a. Ryan – yes, we are working to update right now but can send out following review
- b. Once Insight completes review, we will send out individual action plans to corresponding counties

XXVIII. Questions/Open Floor

- a. Nathan – existing plan doesn't expire until October 6 but trying to get draft together and up to FEMA well in advance of expiration date.
- b. Following FEMA review, still need to go through adoption with resolutions.

-END-

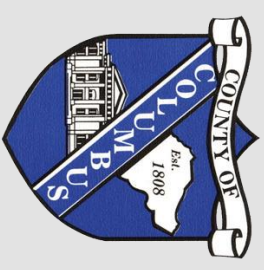


# Bladen, Columbus, Robeson Regional HMP Update: Mitigation Strategy Meeting

2025 Hazard Mitigation Plan Update

May 29, 2025

Virtual Meeting



# Agenda

- Welcome & Introductions
- Meeting Objectives
- Planning Process & Status Updates
- Capability Assessment
- Mitigation Strategy
- Next Steps & Questions



# Introductions

Welcome!

Reminder  
to Sign-In

Introductions



## Capability Assessment

Overview of Capability Assessment (Existing)

Discuss changes needed In the capability assessment

Current Capability Assessment in progress!

Info on Substantial Damage Estimation Procedures needed.

## Mitigation Strategy Development

Overview of Mitigation

Consider Mitigation Techniques Available

Review Previous Mitigation Goals

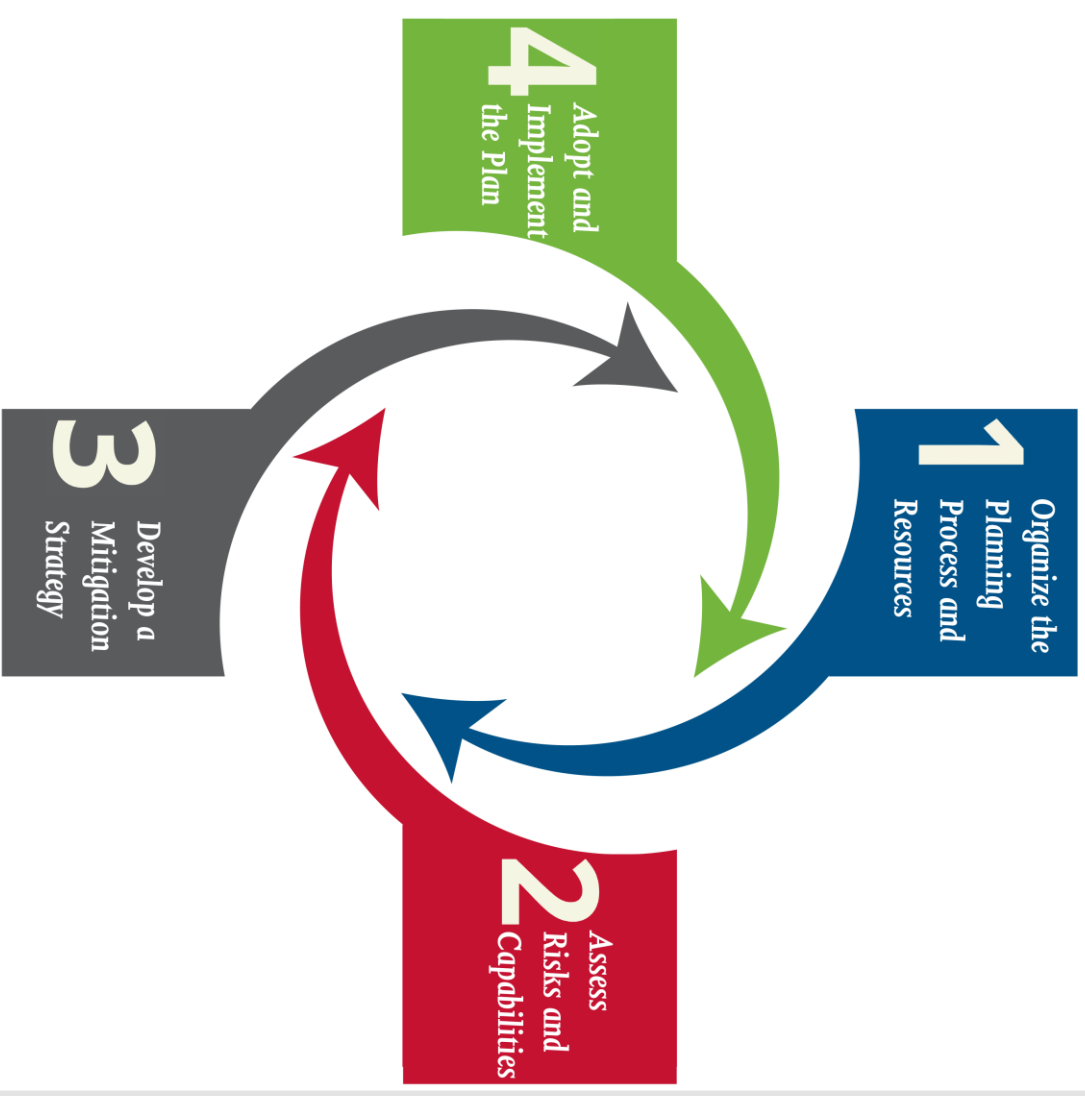
Discuss Existing Actions and Update Status

Identify New Actions and Opportunities

# Meeting Objectives



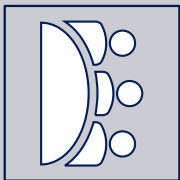
# Organize Resources





# Plan Update Process

## Step 1: Organize Resources



### Planning

Planning for Public  
Involvement  
Status: Ongoing

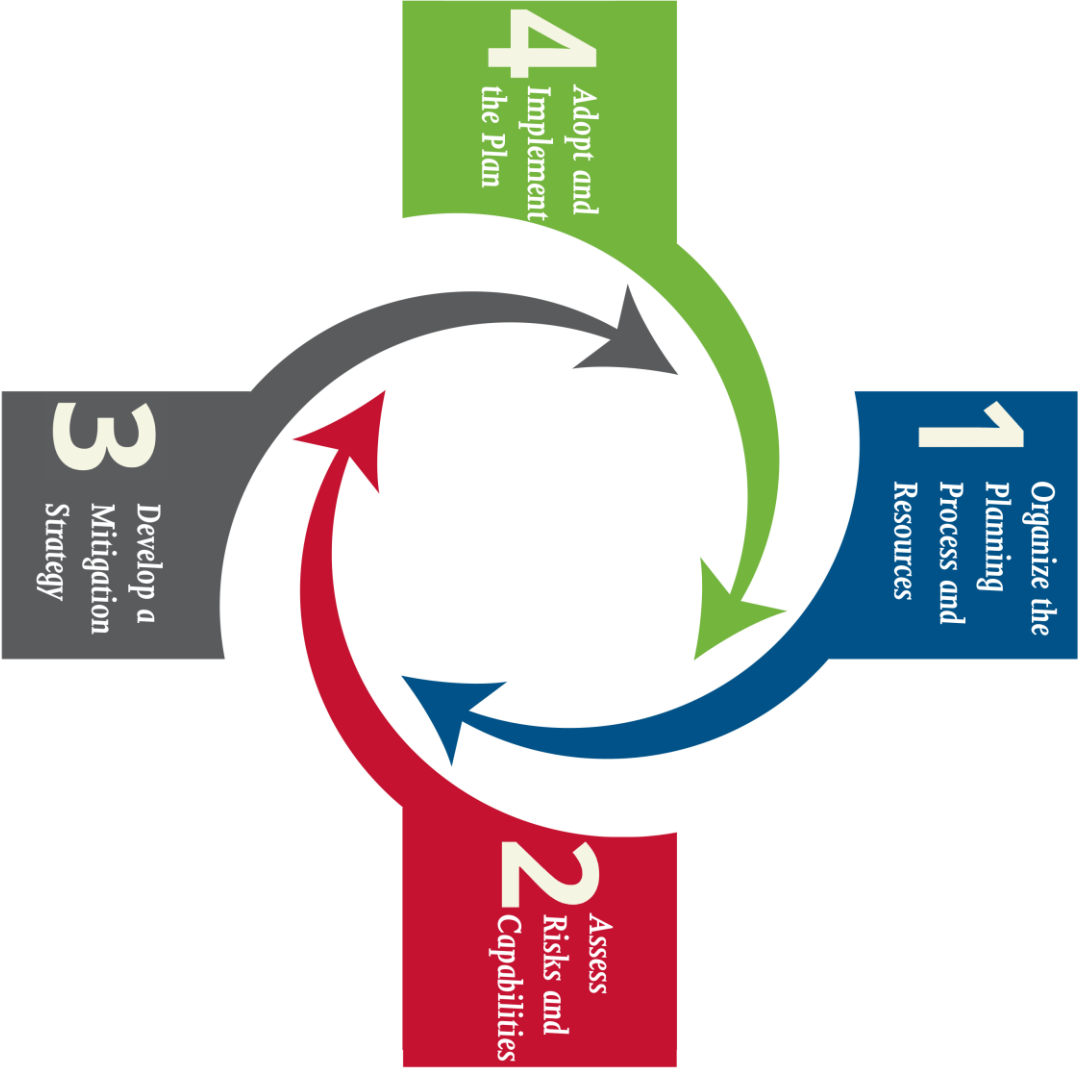


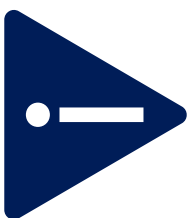
### Coordinating

Coordinating with  
Departments and  
Agencies  
Status: Ongoing



# Risk & Capability Assessment

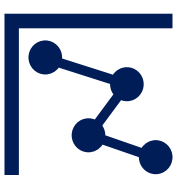




## Hazard Identification

What Can Happen Here?

- Previously Identified Hazards
- Identify New Hazards
- Status: Completed



## Vulnerability Assessment

What Will be Affected/Impacted?

- Will Use County Parcel Data, FEMA HAZUS Analysis, and NCEM Data
- Status: Ongoing



## Capability Assessment

What is our capacity to mitigate?

- Communities previously Self-Assessed Capability
- What Mitigation Actions are Feasible
- Where Gaps Exist
- Status: Current

# Plan Update Process

## Step 2: Risk & Capability Assessment

# What is Capability?



Measures community capability to implement hazard mitigation activities



Identifies and target gaps, conflicts and opportunities with existing local plans, programs, policies, etc.



Identifies mitigation measures already in place or underway



*Coupled with the Risk Assessment, the Capability Assessment helps to form the foundation for identifying Mitigation Actions*



# Capability Indicators

Indicators help evaluate resources, capability, and readiness of a community to effectively implement and sustain mitigation activities.

Plans and Regulatory – Plans, programs, & ordinances

Administrative and Technical – Relevant staff, personnel, and expertise

Fiscal Resources – Bonds, fees, and taxes

Education and Resources – Education programs, volunteer groups, and certifications

Mitigation Resources – Mitigation grants and activities

Political Will – Decision-making, investments, regulation enforcement





# Capability Indicator Examples

| Plans and Regulatory             |  | Fiscal Resources                 |  |
|----------------------------------|--|----------------------------------|--|
| Hazard Mitigation Plan           |  | Capital Improvement Program      |  |
| Comprehensive Land Use Plan      |  | CDBG Funding                     |  |
| Stormwater Management Plan       |  | Special Purpose Taxes            |  |
| Flood Prevention Ordinance       |  | Gas/Electric Utility Fees        |  |
| National Flood Insurance Program |  | Stormwater Utility Fees          |  |
| Community Rating System          |  | Special Tax Bonds                |  |
| Administrative and Technical     |  | Education and Outreach           |  |
| Building Official                |  | Local Citizen Groups             |  |
| Emergency Manager                |  | School Programs                  |  |
| Floodplain Manager               |  | Ongoing Education Programs       |  |
| Grant Writers                    |  | Storm Ready Certification        |  |
| Land Surveyors                   |  | Firewise Community Certification |  |
| GIS-Skilled Personnel            |  | Public-Private Partnerships      |  |



Capability vs. Vulnerability Matrix

|                     | Low Vulnerability    | Moderate Vulnerability | High Vulnerability    |
|---------------------|----------------------|------------------------|-----------------------|
| High Capability     | (Best Case Scenario) |                        |                       |
| Moderate Capability |                      |                        |                       |
| Low Capability      |                      |                        | (Worst Case Scenario) |

High Capability + Low Vulnerability (Best Case Scenario):

The jurisdiction has robust planning, technical, and financial tools in place and is effectively minimizing hazard exposure. These communities are well-positioned to implement mitigation actions with minimal assistance.

Low Capability + High Vulnerability (Worst Case Scenario):

The community lacks the capacity to implement or enforce mitigation strategies and faces significant risk from natural hazards. These areas should be prioritized for technical support, grant funding, and capacity-building.

Moderate Capability/Vulnerability Intersections

Communities in the mid-range of the matrix may have some foundational tools but need targeted improvements—such as updated ordinances, enhanced staff training, or expanded public outreach—to reduce risk more effectively.

# New FEMA Requirement on Substantial Flood Estimates (SDE) for Capability Assessment

## Rationale:

1. Focuses on identifying structures at risk of substantial damage from future flood events
2. Helps prioritize mitigation strategies and allocate resources effectively
3. Ensures a proactive approach to reduce vulnerability and enhance community resilience to floods
4. Emphasizes the importance of incorporating SDE findings into hazard mitigation planning for risk reduction

**Follow-up Action Required: Must collect this information from each municipality individually (example below)**

*Immediately after a flood event, employees across multiple departments that consist of Town planners, stormwater and transportation engineers, inspectors, building officials, and certified floodplain managers deploy to the affected areas. The town is broken into three areas, and each area has a dedicated number of teams to conduct windshield surveys and assess damage.*

*This is tracked digitally and on paper forms and then logged into Town databases. Once homeowners come in for permits for repair work, this data is referenced and if a substantial damage is triggered then the building must come into compliance with all Town ordinances, including the floodplain ordinance.*

*If a homeowner or applicant comes in to improve the property voluntarily without damage, then substantial improvement protocols are activated. This entails a lengthy review during plan review of the project scope, evaluating the building's depreciated value either by tax assessor value or through an appraisal, and the work is adjusted accordingly depending on the determination. All work is also field verified by inspectors to make sure construction is up to code and in compliance with Town ordinances.*



# Impact on Mitigation Actions

**\*Note:** Hazard scores may be adjusted in the draft plan per the previous HIRA meeting.

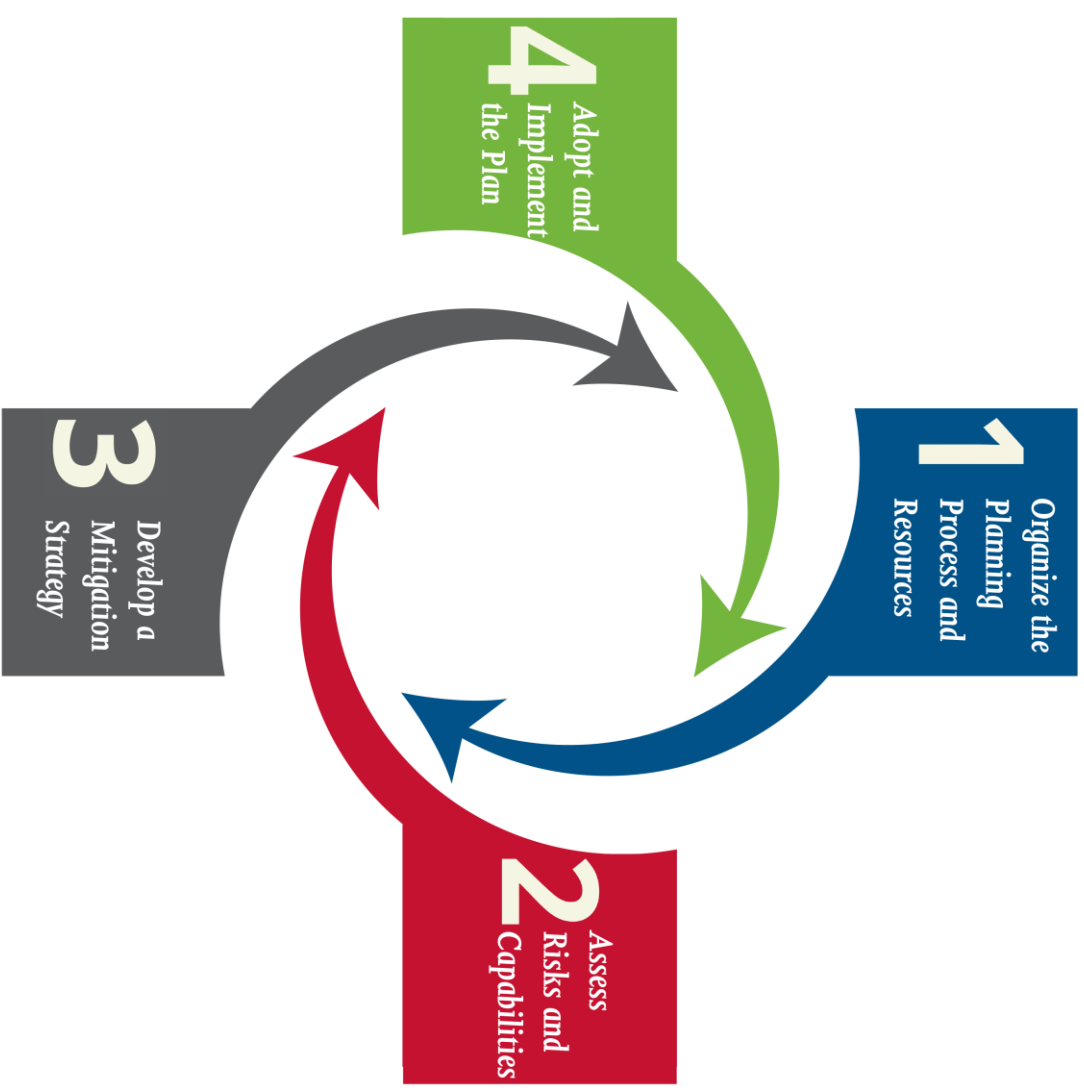
|                                     |                                                                                                                                |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>High Risk</b><br>(≥ 3.0)         | Excessive Heat<br>Flooding<br>Hurricane & Tropical Storms<br>Tornado<br>Thunderstorm Wind<br>Severe Winter Weather<br>Wildfire |
| <b>Moderate Risk</b><br>(2.0 – 2.9) | Drought<br>Dam Failure<br>Lightning & Hail                                                                                     |
| <b>Low Risk</b><br>(< 2.0)          | Earthquake                                                                                                                     |

Analysis of risks alongside capabilities is essential for informed decision-making and mitigation strategy development because the combined data:

1. Provides a complete picture of the risks faced by the community and its readiness to manage them
2. Helps identify gaps in preparedness and allocates resources strategically to address vulnerabilities
3. Ensures investments in mitigation measures are targeted at areas and/or populations at highest risk (supports prioritization of actions)



# Mitigation Strategy Development





# Plan Update Process

## Step 3: Mitigation Strategy Development



Setting Mitigation Goals



Reviewing Mitigation Alternatives



Drafting an Action Plan

**\*\*Status of 3 Tasks: Current**



# What is a Mitigation Strategy?

## What is the purpose?

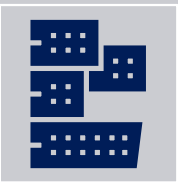
- Reduce vulnerability and mitigate the impact of natural and man-made hazards on communities
- Prioritize actions and allocate resources effectively
- Collaborate with stakeholders, heighten awareness, and build capacity for continued hazard mitigation efforts

## What does it entail?

- Development, prioritization, and implementation of feasible measures to prevent, prepare for, respond to, and recover from potential disasters



# Basic Types of Mitigation



Mitigating against hazard impacts on **existing development**

Houses  
Businesses  
Infrastructure  
Critical Facilities



Ensuring **future development** is conducted in a way that does not increase vulnerability

Plans  
Policies  
Procedures



# Mitigation Techniques

1. Prevention
2. Property Protection
3. Natural Resource Management
4. Structural Projects
5. Emergency Services
6. Education and Awareness

# Mitigation Techniques – Examples

| Prevention                   | Natural Resource Mgmt.   | Emergency Services     |
|------------------------------|--------------------------|------------------------|
| Planning/Zoning              | Floodplain Protection    | Warning Systems        |
| Building Codes               | Watershed Mgmt.          | Response Equipment     |
| Open Space Preservation      | Riparian Buffers         | Shelter Operations     |
| Floodplain Regulations       | Erosion/Sediment Control | Evacuation Planning    |
| Stormwater Mgmt.             | Wetland Restoration      | Response Training      |
| Drainage Maintenance         | Habitat Preservation     | Sandbagging            |
| Property Protection          | Structural Projects      | Education/Awareness    |
| Acquisition/Relocation       | Reservoirs               | Outreach Projects      |
| Building Elevation           | Dams, Levees, Dikes      | Speaker Series         |
| Critical Facility Protection | Stormwater Diversions    | Hazard Map Info        |
| Retrofitting                 | Retention Basins         | Real Estate Disclosure |
| Safe Room/Shutters           | Channel Modification     | Library Materials      |
| Insurance                    | Storm Sewers             | Hazard Expositions     |





# Setting Mitigation Goals



**Goal 1 - Promote the public health, safety, and general welfare of residents and minimize public and private losses due to natural hazards.**



**Goal 2 - Reduce the risk and impact of future natural disasters by regulating development in known high hazard areas.**



**Goal 3 - Pursue funds to reduce the risk of natural hazards to existing developments where such hazards are clearly identified, and the mitigation efforts are cost-effective.**



**Goal 4 - Effectively expedite post-disaster reconstruction.**



**Goal 5 - Provide education to citizens that will empower them to protect themselves and their families from natural hazards.**



**Goal 6 - Protect the fragile natural and scenic areas of the Region, particularly those areas that protect drinking water supplies.**



# Review Mitigation Alternatives

1. Review previous plan to determine the status of existing actions
  - FEMA Requirement
  - Completed, deleted, progress update
  - “Ongoing” is too broad
2. Identify new mitigation actions to address evolving needs/vulnerabilities



| Action Number                                                                                                                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Project Status                                                                                                                                            | Goal Addressed (see p. 8-4) | Hazards Addressed                                     | Priority | Responsible Party/Dept.                                                                                                            | Funding Sources | Cost Estimate | Timeframe |
|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------|-----------|
| Bladen County and all Participating Jurisdictions (Bladenboro, Clarkton, Dublin, East Arcadia, Elizabethtown, Tarheel, White Lake) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                           |                             |                                                       |          |                                                                                                                                    |                 |               |           |
| B-1                                                                                                                                | Bladen County and all jurisdictions will review the County's Comprehensive Land Use Plan annually to ensure that the Future Land Use Map adequately delineates portions <sup>N P</sup> of the County deemed unsuitable for development due to existing environmental conditions.                                                                                                                                                                                                                                                   | To be Continued. Bladen County Planning reviews the land use plan on a yearly basis to ensure that future land use is suitable for development            | 1, 2, 6                     | Flood, Wildfire                                       | Medium   | <ul style="list-style-type: none"><li>Bladen County Planning</li><li>Municipal Administrations</li><li>Bladen County MAC</li></ul> | GF              | Low           | Low       |
| B-2                                                                                                                                | Bladen County, as well as all municipal jurisdictions participating in the NFIP program (Bladen County (unincorporated), Bladenboro, Clarkton, East Arcadia, Elizabethtown, and White Lake) will review their respective Flood Damage Prevention, Ordinances to assess whether any revision and/or updates have been mandated by FEMA or NCEM. Additionally, jurisdictions will consider whether regulatory options are available to provide for more effective floodplain management.                                             | To be continued, Bladen County is currently acquiring and elevating properties that are in the floodplain and repetitive loss properties due to flooding. | 1, 2, 6                     | Flood                                                 | Medium   | <ul style="list-style-type: none"><li>Bladen County Planning</li><li>Municipal Administrations</li><li>Governing Boards</li></ul>  | GF, NCDPS       | Low           | Low       |
| P-3                                                                                                                                | Bladen County, as well as all participating municipal jurisdictions, will continue to enforce the NC State Building Code. Local Government Inspections Staff will recertify the NC State Building Code as the adopted local regulation applying to all construction activities on an annual basis. Through enforcement of the NC State Building Code, all jurisdictions will work to ensure that all structures, including manufactured homes, are properly anchored to minimize potential impacts stemming from a disaster event. | To be continued, Bladen County adheres to all NC building code regulations and attends con-ed to keep current with all changes.                           | 2                           | Dam/Levee, Flood, Hurricane, Severe Weather, Wildfire | High     | <ul style="list-style-type: none"><li>Bladen County Building Inspections</li><li>Municipal Administrations</li></ul>               | GF              | Low           | Low       |
| B-4                                                                                                                                | Bladen County, including all municipal jurisdictions participating in the NFIP program, (Bladenboro, Clarkton, Elizabethtown) will maintain and update local Flood Insurance Rate Maps (FIRM) on the County Geographic Information System (GIS). These maps will be reviewed and formally updated as revisions become available through the North Carolina Floodplain Mapping Program.                                                                                                                                             | To be Continued, Bladen County continues to maintain all FIRM maps to remain eligible with NFIP                                                           | 1, 2                        | Flood                                                 | Medium   | <ul style="list-style-type: none"><li>Bladen County Planning</li><li>Municipal Administrations</li><li>Governing Boards</li></ul>  | GF, NCDPS       | Medium        | Low       |

# Review Previous Plan

## Mitigation Action Plan (2020)

Table 9.1 (Pages 933-941)

| Action |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Description                                      | Priority                                       | Lead Agency | Potential Funding Sources | Status | Status Explanation                                                                                                                                              |            |                      |                     |                             |                                                                                                                                |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------|-------------|---------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------|---------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| G3     | Request Hazard Mitigation Grant Program (HMGSP) funding for the elevation and/or acquisition of structures substantially damaged during a natural hazard event. This funding may also be utilized to address infrastructure needs, if it is determined that facilities within the County or any of the participating jurisdictions are adversely impacted by flood events.                                                                                                                                                                                                                                                                                                        | Greene County, Hookerton, Snow Hill, Walstonburg | Flood, Hurricane & Tropical Storm, Dam Failure | High        | 1.2                       | PP     | <ul style="list-style-type: none"><li>• Greene County Administration</li><li>• Greene County Emergency Management</li><li>• Municipal Administrations</li></ul> | Staff Time | HMGSP, PDM, UHMA     | Ongoing – As Needed | As Needed – Carry Forward   | Greene County will continue to apply for this funding as the need and/or opportunity arises.                                   |
| G4     | Work to educate and inform local real estate agents, contractors, developers and citizens about issues associated with development in the floodplain by Ensuring that a range of materials related to flood insurance, flood protection, floodplain management, information on floodplains, and listings of qualified contractors familiar with floodproofing and elevation techniques, are available through various avenues including: <ul style="list-style-type: none"><li>o Placing materials in the local library</li><li>o Maintaining documents at the County Planning and Economic Development Office</li><li>o Disseminating information to local contractors</li></ul> | Greene County, Hookerton, Snow Hill, Walstonburg | Flood, Hurricane & Tropical Storm, Dam Failure | High        | 4.2                       | PIO    | <ul style="list-style-type: none"><li>• Greene County Planning and Administration</li><li>• Municipal Administrations</li></ul>                                 | Staff Time | General Fund, NCDCPS | 1 year              | Not Started – Carry Forward | Greene County will initiate these efforts in conjunction with the County's application to the Community Rating System Program. |

What hazards does this action address?

How long will it take to implement?

# Developing a Mitigation Action Plan

# Identify New Mitigation Actions

- Brainstorm and discuss a full range of possible mitigation projects/available mitigation techniques
- Consistent with mitigation goals and other community objectives
- Based on hazard risk and local capability
- ~~Consider BRIC projects for inclusion~~
- Use available resources to aid in strategy development
- FEMAs Local Mitigation Planning Handbook
- FEMAs Mitigation Ideas
- FEMAs Economic Development Strategy and Hazard Mitigation Plan Alignment







# Mitigation Strategy - Examples

Potential Actions to Mitigate Excessive Heat (tied for highest PRI as per Risk Assessment findings)

1. Increase Green Space, Parks, and Urban Forests
2. Develop and Implement Heat Emergency Response Plans/Protocols
3. Install Public Cooling Stations, Misting Stations, and Water Fountains in Public Spaces
4. Conduct Outreach Campaigns to Raise Awareness About Heat-Related Risks

# Mitigation Strategy - Examples

Potential Actions to Mitigate Hurricane & Tropical Storms (tied for highest PRI as per Risk Assessment findings)

1. Elevating structures to meet requirements of FDPO or relocate structures
2. Provide land use designations susceptible to severe damage from hurricanes and coastal storm events outside of designated SFHA
3. Utilize living shorelines and vegetation, leave natural areas in an undisturbed condition
4. Make structural modifications to increase resilience

# Mitigation Strategy - Examples

Potential Actions to Mitigate Flooding (tied for second highest PRI as per Risk Assessment findings)

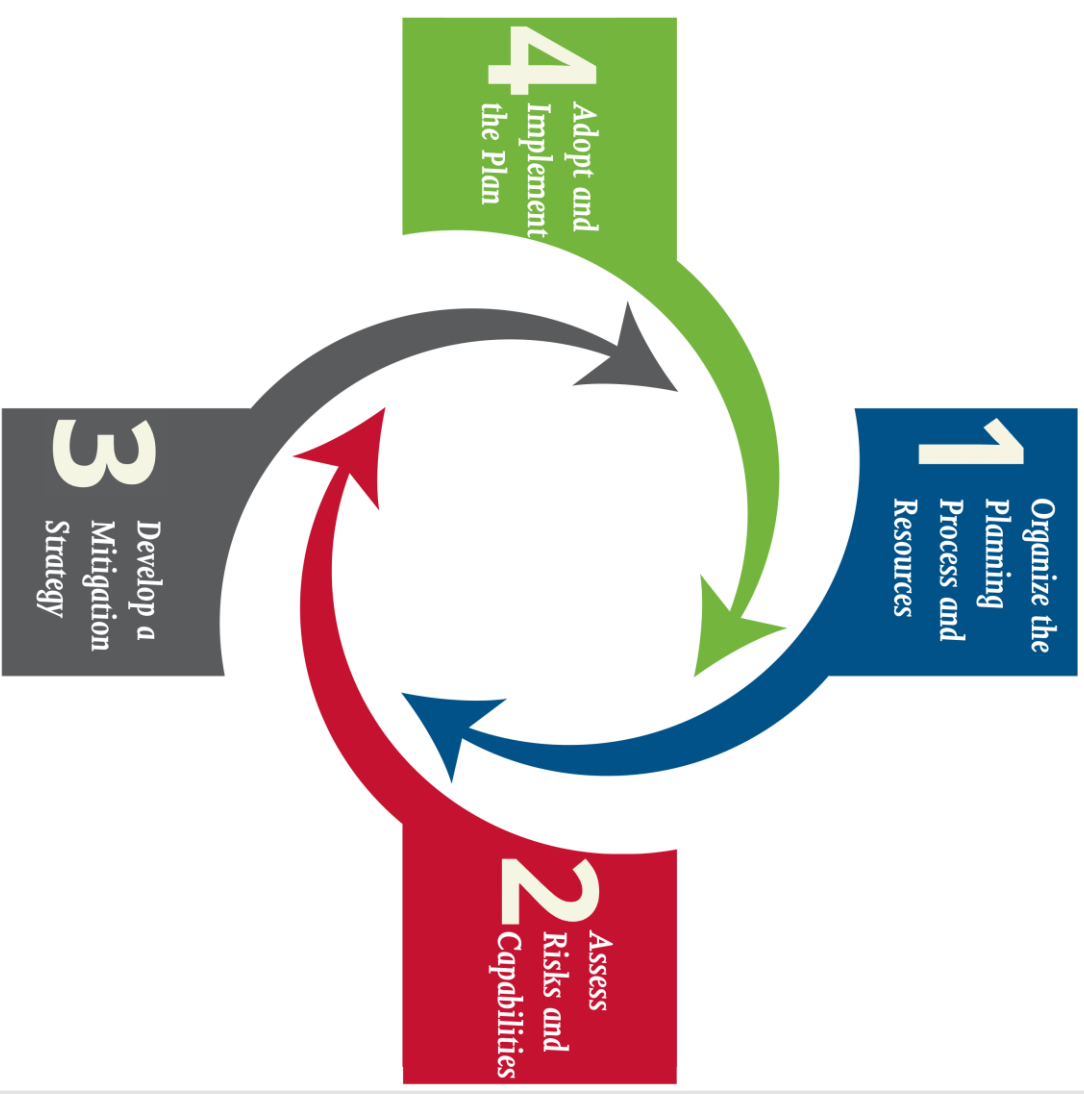
1. Remove Existing Structures from Flood Hazard Zones
2. Increase Capacity of Storm Drainage System
3. Protect and Preserve Wetlands
4. Develop an Open Space Acquisition, Reuse, and Preservation Plan

# Next Steps

1. Submit Updated Mitigation Actions – As soon as possible, we need these back in a timely manner to provide NCCEM with a DRAFT of the plan six months prior to expiration.
2. Submit New Mitigation Actions (if any).
3. Review Draft Capability Assessment – We will provide this assessment within the coming weeks.
4. Submit Substantial Damage Estimate (SDE) Procedures.
5. Draft Plan Submitted in ~~January~~ June.



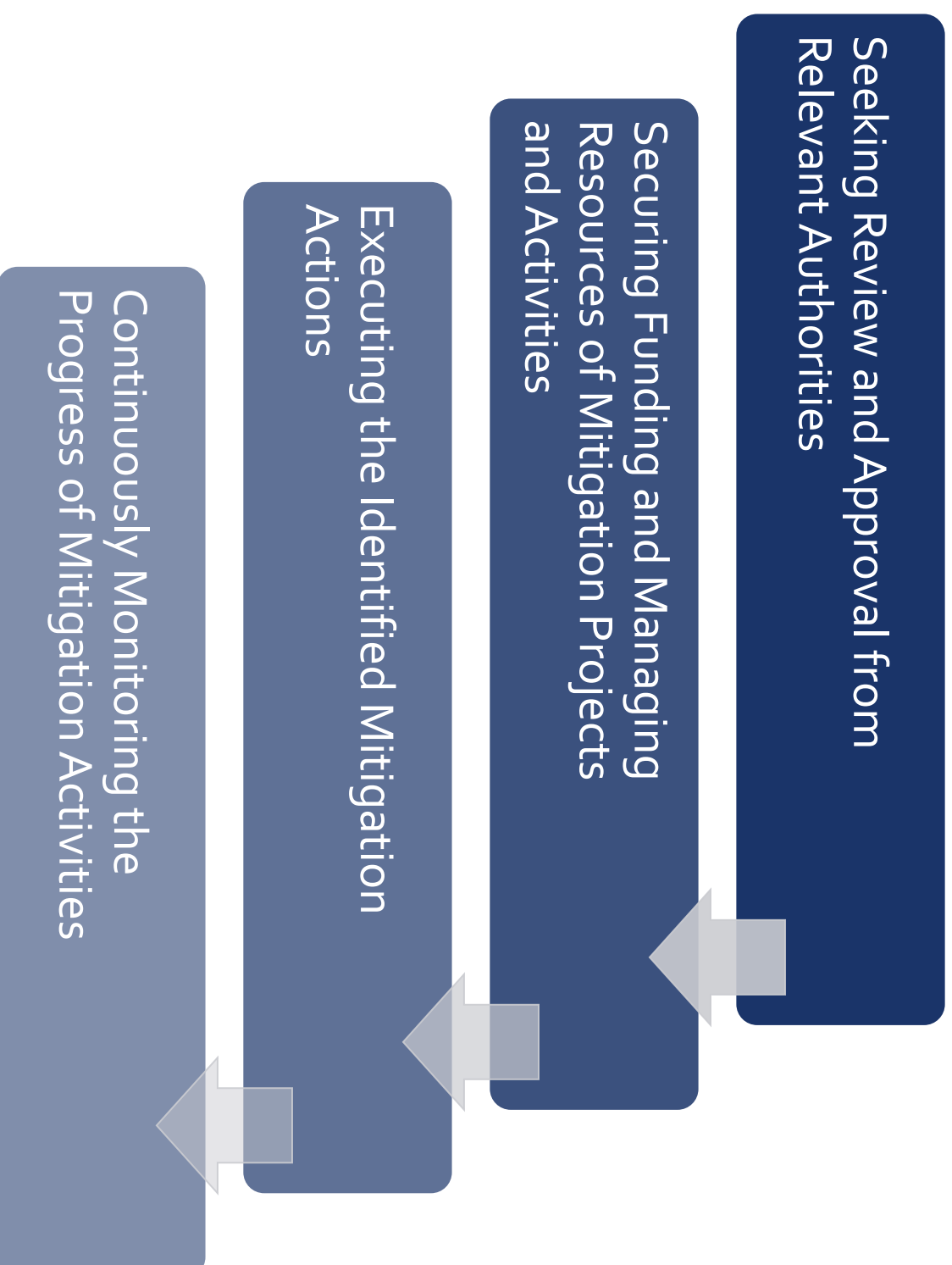
# Following Draft Plan Approval: Adopt & Implement the Plan





# Plan Update Process

## Step 4: Adoption and Implementation



# Information Needed for Capability Assessment & Mitigation Strategy!

- **Action Required:** Submit Regional Plan Updates for Capability Assessment.
- **Two-Week Submission Window:** Mitigation Action Plan Updates.
  - *Send to Ryan Cox & Danielle Taliaferro by Friday, June 13, 2025*



# Questions

Questions/Comments/Concerns



Ryan Cox – [rcox@consultinsight.com](mailto:rcox@consultinsight.com)

Danielle Taliaferro – [dtaliaferro@consultinsight.com](mailto:dtaliaferro@consultinsight.com)



Nathan Slaughter – [nslaughter@espassociates.com](mailto:nslaughter@espassociates.com)



Kelly Keefe – [Kelly.Keefe@aecom.com](mailto:Kelly.Keefe@aecom.com)

Adjourn –  
Thank you!



**Mitigation Strategy Meeting Minutes**  
**May 29, 2025 @ 2:30pm**

| Attendees                               |                                    |
|-----------------------------------------|------------------------------------|
| ❖ Ryan Cox, Insight                     | ❖ Joey Coleman, Bladen Co EM       |
| ❖ Danielle Taliaferro, Insight (scribe) | ❖ Renee Babson, Bladen Co EM       |
| ❖ Nathan Slaughter, ESP                 | ❖ Teresa Smith, Columbus County EM |
| ❖ Justin Hunt, Robeson County EM        | ❖ Josh Ward, Tabor City            |
| ❖ Darren Norris, Columbus Regional EM   | ❖ Angela Pitchford, Town of Maxton |
| ❖ Nancy Livingston, Town of Brunswick   | ❖ Ashli Barefoot                   |
| ❖ Victoria Carter, Town of Pembroke     | ❖ Jason Robinson                   |
| ❖ Kelly Keefe, AECOM                    |                                    |
| ❖ Carl Baker, NCEM                      |                                    |

- I. Opening/Introductions
- II. Agenda Review
- III. Critical Facilities Update
  - a. Thanks to all for the updates
- IV. Folks participating today
  - a. Ryan Cox
  - b. Nathan Slaughter
  - c. Kelly Keefe
- V. Housekeeping items
- VI. Meeting Objectives
- VII. Organize Resources – Step 2
  - a. Assessing capabilities as well
  - b. Between steps2-3
- VIII. Planning process update
  - a. Hazard Identification
  - b. Capability Assessment
  - c. AECOM/ESP has completed Vulnerability Assessment
- IX. Capability Overview (Nathan)
  - a. As a jurisdiction – how to mitigate hazards
  - b. What is the capacity and capability?
  - c. Indicators to look for
  - d. Grasp good understanding of what stake holders can sign up to do as part of the mitigation strategy
  - e. Review of indicators (Slide 10)
  - f. Indicator examples (Side 11)
  - g. Capability vs. Vulnerability Matrix (review slide 12)
    - i. Want High Capability with Low Vulnerability – Best Case Scenario
    - ii. Worst Case – Low Capability and High Vulnerability
- X. New FEMA Requirement on Substantial Flood Estimates (SDE) for Capability Assessment
  - a. Carl Baker in chat, *“Including the SDE procedures are a part of documenting NFIP compliance.”*
  - b. Nathan asks group to send email on how this is addressed
  - c. Smaller towns can defer to county – Can state that the county handles



- d. Ryan – has come up in a few communities that actually did not do anything with substantial damage. Created negative impact.
- e. Larger cities handle their own substantial damage
- f. Counties do it for a lot of local governments
- g. Can affect status with NFIP down the road!
- h. Nathan – been sharing this language with communities that has worked (reference slide 13)
- i. Teresa Smith – flood damage ordinance – is it supposed to specify who is responsible for this function?
  - i. Ryan – doesn't need a name, but a title is required.
  - ii. Ryan – can get a contact sent over
  - iii. Teresa – planning and zoning ordinance
  - iv. Carl may be able to figure that out
  - v. Teresa to email ordinance to Carl for review.
- j. Joey Coleman, Bladen also needs assistance
  - i. Joey will look at template and send it to Carl
- XI. Impact on Hazard Mitigation Actions
  - a. Want to make sure that we're looking at High Risk Vulnerabilities
  - b. Address both High Risk and moderate risk hazards
- XII. Mitigation Strategy Development
  - a. Step 3 – Comprehensive update
  - b. Need each region to review and update action plans
  - c. Purpose – Reduce vulnerability
  - d. Entails – Development, prioritization, and implementation of feasible measures to prevent, prepare for, respond to, and recover from potential disasters.
- XIII. Basic types of mitigation
  - a. Mitigation against hazard impacts on existing development
  - b. Ensuring future development is conducted in a way that does not increase vulnerability
- XIV. Mitigation Techniques
  - a. Prevention
  - b. Property Protection
  - c. Natural Resource Management
  - d. Structural Projects
  - e. Emergency Services
  - f. Education and Awareness
- XV. Technique examples (reference slide 20)
- XVI. Review of goals
  - a. Ryan asks group to review goals (side 21)
  - b. Open floor – anybody want to change/update/remove goal? No responses goals to remain for update
- XVII. Mitigation Action Update
  - a. Need input from regions, counties, and smaller communities that have actions
  - b. Review of example (slide 23-24)
  - c. Funding sources were updated as some were inaccurate
  - d. Gave some updates in project status/language
- XVIII. New Action Plans

- a. Brainstorming session – potential actions that should be added to existing action plan?
  - b. Goals are staying the same - what are other community objectives
  - c. Bladen is looking for new EOC – add to plan
    - i. Build a more hardened facility that can withstand severe weather – could be funded by one of the HM Grants
  - d. Carl – BRIC 2024 was defunded; NC is still accepting apps for folks who submitted LOI – label under HMA (Hazard Mitigation Assistance)
  - e. Ryan – believes BRIC may return with new regulations
  - f. Carl agrees – nothing said it was gone forever
  - g. Regarding mitigation strategies – Ryan, Carl, Kelly, Nathan are great resources
  - h. Carl adds link to chat [https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas\\_02-13-2013.pdf](https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas_02-13-2013.pdf) - mitigation ideas handbook
  - i. Kelly – first step in mitigation is getting it in the plan – handbook is very helpful
- XXIX. Mitigation Strategy Examples (slides 26-28)
- a. Nathan mentions adding any mitigation plans into the plan for funding purposes. HMA will ask where it is noted in the plan
  - b. Question regarding
- XX. Schedule meeting for two weeks from today – need actions back asap
- a. If there are any questions, please reach out.
  - b. Nathan, Kelly, and Ryan are great resources
  - c. Separate meetings can be scheduled if necessary
- XXI. Need SDE procedures
- XXII. Draft plan slated for submittal for end of June
- XXIII. Nathan – existing plan expires in October this year
- a. Need to submit draft to Carl and team at NCEM then it goes to FEMA
  - b. Need ample time to review.
- XXIV. Don't want anyone's plan to expire
- XXV. Upon approval - every jurisdiction will need to adopt the plan
- a. Will have resolution ready for each
  - b. Needs to be added to agendas for adoption early enough
  - c. Early/Mid-September – may send out resolutions for adoption. Could be sooner
  - d. Nathan – once plan is submitted to NCEM, before it's sent to FEMA, we can start with adoptions.
  - e. Adopting the “approved” version
- XXVI. Nathan – will send out sample resolutions once draft plan is sent. Possibly July timeframe
- XXVII. Schedule meeting for June 13 – 45min – hour to fill gaps and check on any outstanding items.
- XXVIII. Questions/Comments/Concerns
- XXIX. Open floor/Wrap up

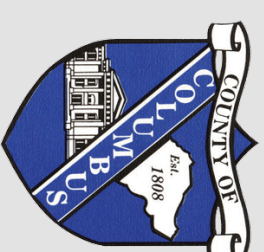
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# BCR Regional HMP 2025 Update: Public Meeting – Review Draft Plan

2025 Hazard Mitigation Plan Update

June 26, 2025

Virtual Meeting



# Introductions

---

Welcome!

Reminder  
to Sign-In



# Purpose

- ❖ Share the draft of the Regional Hazard Mitigation Plan
- ❖ Present key findings and proposed mitigation strategies
- ❖ Gather final public input before plan submission & adoption





Step 1: Organize to Prepare the Plan

Step 2: Involve the Public (*ongoing*)

Step 3: Coordinate (*ongoing*)

Step 4: Assess the Hazard

Step 5: Assess the Problem

Step 6: Set Goals

Step 7: Review Possible Activities

**Step 8: Draft an Action Plan (current)**

Step 9: Adopt the Plan

Step 10: Implement, Evaluate, & Revise the Plan

# Planning Process



# Plan Structure -Overview

1. Introduction
2. Planning Process
3. Planning Area Profile
4. Risk Assessment
5. Capability Assessment
6. Mitigation Strategy
7. Mitigation Action Plans
8. Plan Maintenance
9. Plan Adoption



1. Introduction

- I. Background
- II. Purpose and Authority
- III. Scope
- IV. References
- V. Plan Organization

Provides context and justification for the plan

2. Planning Process

- I. Purpose and Vision
- II. What's Changed in the Plan
- III. Preparing the Plan
- IV. Hazard Mitigation Planning Committee
- V. Meetings and Workshops
- VI. Involving the Public
- VII. Outreach Efforts
- VIII. Involving the Stakeholders
- IX. Documentation of Plan Progress



Explains the steps followed to prepare the plan and documents the process

Plan Structure  
Sections

3. **Planning Area Profile**

- I. Geography and Environment
- II. Population and Demographics
- III. Parcels and Buildings
- IV. Historic Properties
- V. Housing
- VI. Infrastructure
- VII. Current and Future Land Use
- VIII. Employment and Industry
- IX. Social Vulnerability
- X. Jurisdiction Information

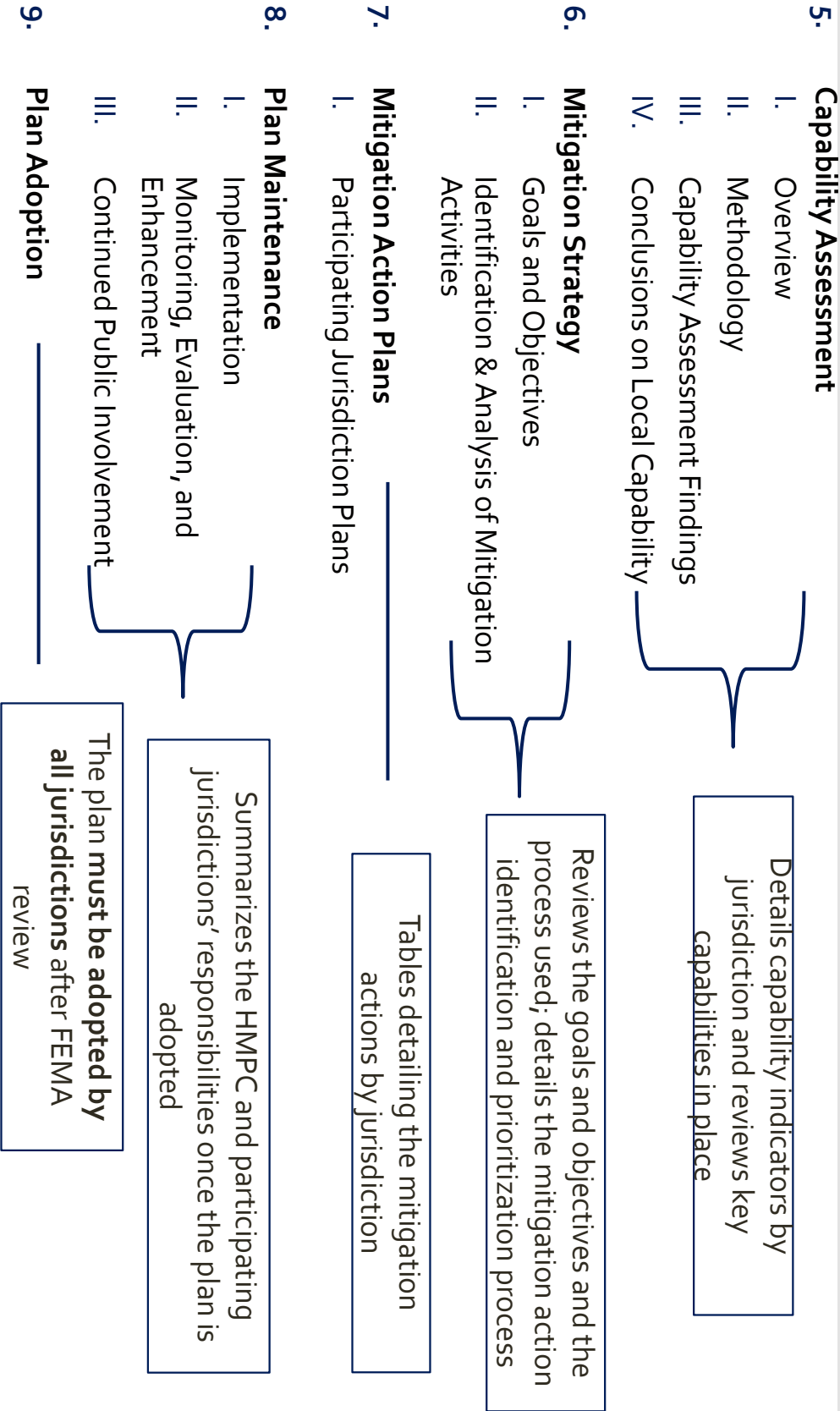
Provides an overview of the current conditions in the planning area by participating jurisdiction

4. **Risk Assessment**

- I. Overview
- II. Hazard Identification
- III. Assessment Methodology and Assumptions
- IV. Asset Inventory
- V. Hazard Profiles, Analysis, and Vulnerability
- VI. Conclusions on Hazard Risk

Identifies hazards, exposure, and vulnerability and prioritizes hazards for mitigation

Plan Structure  
Sections



# Plan Structure

## Sections



**A. Community Annexes**

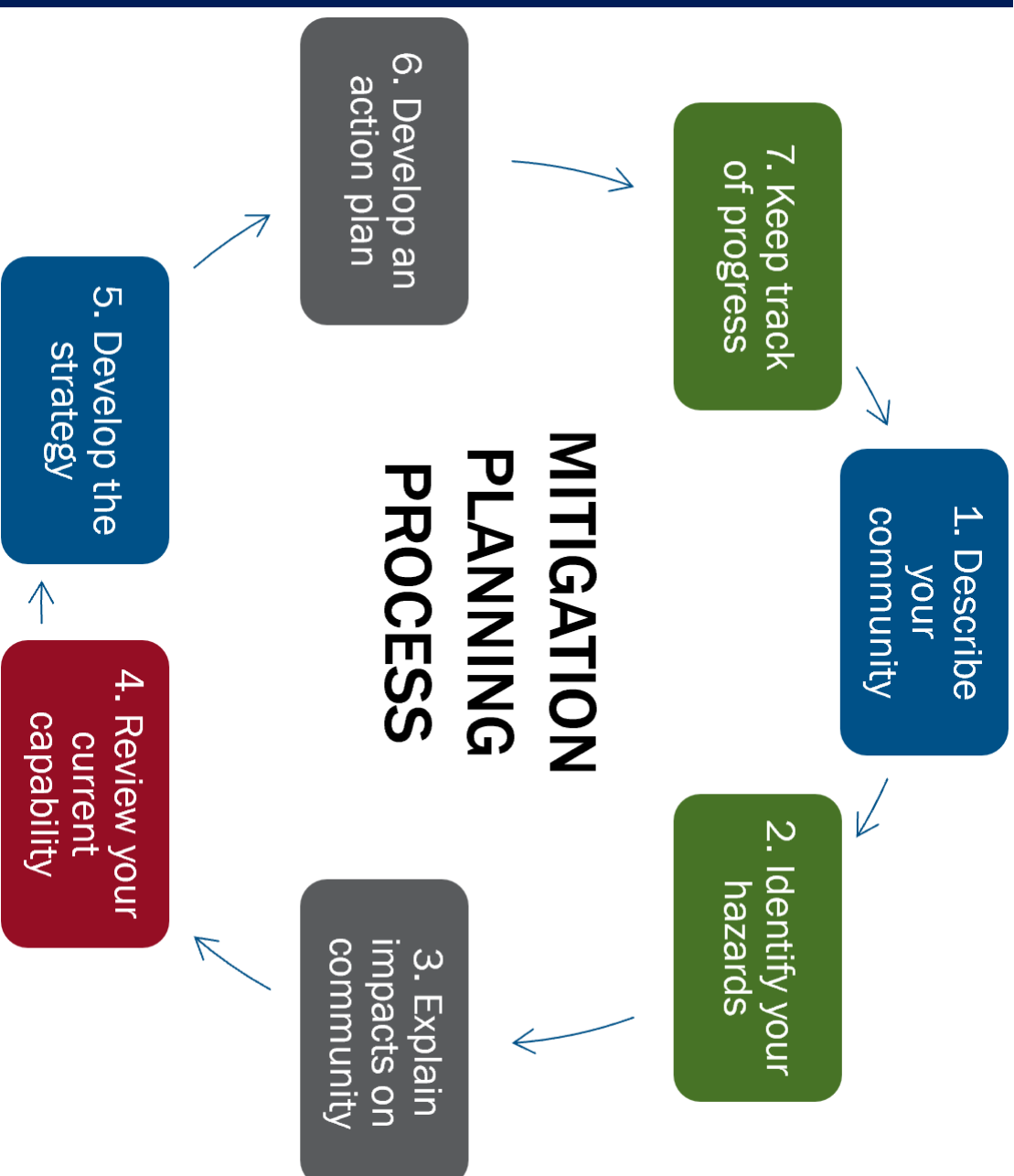
- i. Risk Assessment Maps and Tables
- ii. Mitigation Action Plans

**B. Appendices**

- i. Plan Review Tool
- ii. Planning Process Documentation
- iii. Mitigation Alternatives
- iv. References

**Plan Structure**  
*Supporting Information*

# Major Plan Components



# Hazards Profiled

## Natural Hazards:

- Dam Failure
- Drought
- Earthquake
- Extreme Heat
- Flood
- Hurricane & Tropical Storm
- Infectious Disease
- Landslide
- Severe Weather (Hail, Lightning, Thunderstorms)
- Severe Winter Storm
- Tornado
- Wildfire

## Technological & Human-Caused Hazards:

- Hazardous Materials Incident
- Cyber Threat
- Radiological Emergency
- Terrorism



## Hazard Mitigation Plan Goals



Goal 1 - Promote the public health, safety, and general welfare of residents and minimize public and private losses due to natural hazards.



Goal 2 - Reduce the risk and impact of future natural disasters by regulating development in known high hazard areas.



Goal 3 - Pursue funds to reduce the risk of natural hazards to existing developments where such hazards are clearly identified, and the mitigation efforts are cost-effective.



Goal 4 - Effectively expedite post-disaster reconstruction.



Goal 5 - Provide education to citizens that will empower them to protect themselves and their families from natural hazards.



Goal 6 - Protect the fragile natural and scenic areas of the Region, particularly those areas that protect drinking water supplies.

# Mitigation Action Plans

Example from Bladen County – all jurisdictions included

| Action Number                                                                                                                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Project Status                                                                                                                                            | Goal Addressed (see p. 8-4) | Hazards Addressed                                     | Priority | Responsible Party/Dept.                                                                                                                             | Funding Sources | Cost Estimate | Timeframe |
|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------|-----------|
| Bladen County and all Participating Jurisdictions (Bladenboro, Clarkton, Dublin, East Arcadia, Elizabethtown, Tarheel, White Lake) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                           |                             |                                                       |          |                                                                                                                                                     |                 |               |           |
| B-1                                                                                                                                | Bladen County and all jurisdictions will review the County's Comprehensive Land Use Plan annually to ensure that the Future Land Use Map adequately delineates portions <sup>WLP</sup> of the County deemed unsuitable for development due to existing environmental conditions.                                                                                                                                                                                                                                                   | Ongoing and to be continued, the Land Use Plan is reviewed by Bladen County on a yearly basis to ensure that future land use is suitable for development. | 1, 2, 6                     | Flood, Wildfire, Hurricane                            | Medium   | <ul style="list-style-type: none"><li>• Bladen County Planning</li><li>• Municipal Administrations</li><li>• Bladen County MAC</li></ul>            | GF              | Low           | Low       |
| B-2                                                                                                                                | Bladen County, as well as all municipal jurisdictions participating in the NFIP program (Bladen County (unincorporated), Bladenboro, Clarkton, East Arcadia, Elizabethtown, and White Lake) will review their respective Flood Damage Prevention, Ordinances to assess whether any revision and/or updates have been mandated by FEMA or NCEM. Additionally, jurisdictions will consider whether regulatory options are available to provide for more effective floodplain management.                                             | To be continued, Bladen County is currently elevating properties that are in the floodplain and acquiring repetitive loss properties due to flooding.     | 1, 2, 6                     | Flood                                                 | Medium   | <ul style="list-style-type: none"><li>• Bladen County Planning</li><li>• Municipal Administrations</li><li>• Governing Boards</li></ul>             | GF, NCDPS       | Low           | Low       |
| P-3                                                                                                                                | Bladen County, as well as all participating municipal jurisdictions, will continue to enforce the NC State Building Code. Local Government Inspections Staff will recertify the NC State Building Code as the adopted local regulation applying to all construction activities on an annual basis. Through enforcement of the NC State Building Code, all jurisdictions will work to ensure that all structures, including manufactured homes, are properly anchored to minimize potential impacts stemming from a disaster event. | Ongoing and to be continued, Bladen County adheres to all NC building code regulations and attends con-ed to stay current with all changes.               | 2                           | Dam/Levee, Flood, Hurricane, Severe Weather, Wildfire | High     | <ul style="list-style-type: none"><li>• Bladen County Building Inspections</li><li>• Municipal Administrations</li></ul>                            | GF              | Low           | Low       |
| B-4                                                                                                                                | Bladen County, including all municipal jurisdictions participating in the NFIP program, (Bladenboro, Clarkton, Elizabethtown) will maintain and update local Flood Insurance Rate Maps (FIRM) on the County Geographic Information System (GIS). These maps will be reviewed and formally updated as revisions become available through the North Carolina Floodplain Mapping Program.                                                                                                                                             | Ongoing and to be continued, Bladen County continues to maintain all FIRM maps to remain eligible with NFIP.                                              | 1, 2                        | Flood                                                 | Medium   | <ul style="list-style-type: none"><li>• Bladen County Planning</li><li>• Municipal Administrations</li><li>• Governing Boards</li></ul>             | GF, NCDPS       | Medium        | Low       |
| B-5                                                                                                                                | Bladen County will consider establishing a freeboard requirement for all development located within a defined flood hazard area. (Refer to municipal strategy statements for their respective freeboard requirement, if applicable)                                                                                                                                                                                                                                                                                                | To be continued, Bladen County continues to enforce a 2-foot free board following the Bladen County floodplain ordinance.                                 | 1, 2                        | Flood                                                 | High     | <ul style="list-style-type: none"><li>• Bladen County Building Inspections</li><li>• Municipal Administrations</li><li>• Governing Boards</li></ul> | GF              | Medium        | High      |



# Plan Implementation & Maintenance

# HMPC Role in Implementation & Maintenance

- If deemed appropriate/requested, report **annually or as needed** on the status of plan implementation and recommended revisions
  - CRS communities should conduct reviews regularly (e.g., quarterly) to maximize credit
- Pursue implementation of mitigation actions
- Monitor funding opportunities
- Ensure continued public involvement
- Integrate the plan with other planning efforts
- The plan will continue to be updated **every five years** as per standard regulations
  - **Next update** (anticipated): 2030



# Integration With Other Plans

## Integration of the 2020 Hazard Mitigation Plan:

- How was the existing Wake HMP integrated with your jurisdiction?

## Plans for Future Integration:

- How will you integrate this plan update? Any notable changes?

### Examples:

- Comprehensive Plan / Land Use Plans (LUP)
- Capital Improvement Programs / Plans (CIP)
- Emergency Operations Plans (EOP)
- Ordinances / Policies

# Integration With Other Plans

| Jurisdiction          | Hazard Mitigation Plan | Comprehensive Land Use Plan | Floodplain Management Plan | Open Space Management Plan | Stormwater Management Plan | Emergency Operations Plan | SARA Title III Plan | Radiological Emergency Plan | Continuity of Operations Plan | Evacuation Plan | Disaster Recovery Plan | Capital Improvements Plan | Economic Development Plan | Historic Preservation Plan | Transportation Plan | Flood Damage Prevention Ordinance | Zoning Ordinance | Subdivision Ordinance | Site Plan Review Requirements | Unified Development Ordinance | Post-Disaster Redevelopment Ordinance | Building Code | Fire Code | Community Wildfire Protection Plan | National Flood Insurance Program | Community Rating System |
|-----------------------|------------------------|-----------------------------|----------------------------|----------------------------|----------------------------|---------------------------|---------------------|-----------------------------|-------------------------------|-----------------|------------------------|---------------------------|---------------------------|----------------------------|---------------------|-----------------------------------|------------------|-----------------------|-------------------------------|-------------------------------|---------------------------------------|---------------|-----------|------------------------------------|----------------------------------|-------------------------|
| Bladen County         | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           | ✓                             | ✓               | ✓                      | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             |                               | ✓                                     | ✓             | ✓         | ✓                                  | ✓                                | ✓                       |
| Town of Tar Heel      | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           | ✓                             | ✓               | ✓                      | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             |                               | ✓                                     | ✓             | ✓         | ✓                                  | ✓                                | ✓                       |
| Columbus County       | ✓                      | ✓                           | ✓                          | ✓                          | ✓                          | ✓                         | ✓                   |                             | ✓                             | ✓               |                        | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Brunswick     | ✓                      | ✓                           | ✓                          | ✓                          | ✓                          | ✓                         | ✓                   | ✓                           | ✓                             | ✓               |                        | ✓                         | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Cerro Gordo   | ✓                      | ✓                           | ✓                          | ✓                          | ✓                          | ✓                         | ✓                   | ✓                           | ✓                             | ✓               |                        | ✓                         | ✓                         |                            | ✓                   | ✓                                 |                  | ✓                     | ✓                             |                               |                                       | ✓             | ✓         | ✓                                  |                                  |                         |
| Town of Orrum         | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           |                               |                 |                        |                           | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             |                               |                                       | ✓             | ✓         |                                    | ✓                                |                         |
| Town of Parkton       | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           |                               |                 |                        |                           | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             |                               |                                       | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Lumber Bridge | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           |                               |                 |                        |                           | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         |                                    | ✓                                |                         |
| Town of White Lake    | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           | ✓                             | ✓               | ✓                      | ✓                         | ✓                         |                            | ✓                   | ✓                                 |                  | ✓                     | ✓                             |                               | ✓                                     | ✓             | ✓         | ✓                                  | ✓                                | ✓                       |
| Town of East Arcadia  | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           | ✓                             | ✓               | ✓                      | ✓                         | ✓                         |                            | ✓                   | ✓                                 |                  | ✓                     | ✓                             |                               | ✓                                     | ✓             | ✓         | ✓                                  | ✓                                | ✓                       |
| Town of Marietta      | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           |                               |                 |                        |                           | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             |                               |                                       | ✓             | ✓         |                                    | ✓                                |                         |
| Town of Maxton        | ✓                      |                             |                            |                            | ✓                          | ✓                         |                     |                             |                               |                 |                        | ✓                         | ✓                         |                            |                     | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         |                                    | ✓                                |                         |
| Town of Pembroke      | ✓                      | ✓                           | ✓                          | ✓                          |                            |                           | ✓                   |                             |                               |                 |                        |                           | ✓                         |                            |                     | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             | ✓                                     | ✓             | ✓         |                                    | ✓                                |                         |
| Town of Saint Pauls   | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   | ✓                           |                               |                 |                        |                           | ✓                         |                            | ✓                   | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       | ✓             | ✓         | ✓                                  | ✓                                |                         |
| Town of Proctorville  | ✓                      | ✓                           | ✓                          | ✓                          |                            | ✓                         | ✓                   |                             |                               |                 |                        |                           | ✓                         |                            |                     | ✓                                 | ✓                | ✓                     | ✓                             | ✓                             |                                       |               |           | ✓                                  |                                  |                         |



# Completing the Planning Process

1. Final plan components compiled into a complete draft for review
2. Comments to be incorporated within final draft
3. Final draft submitted to the State for review (NCCEM)
4. Following State review, the final draft will be submitted to FEMA for final review
  - Official plan approval letter(s) to follow
5. Adoption can begin as soon as we receive the green light from NCCEM
6. **All jurisdictions must adopt the plan**





# Next Steps

1. Final plan submission timeline
2. Adoption process for each jurisdiction
3. How the public can continue to be involved



# Questions

Questions/Comments/Concerns



Ryan Cox – [rcox@consultinsight.com](mailto:rcox@consultinsight.com)

Danielle Taliandro – [dtaliandro@consultinsight.com](mailto:dtaliandro@consultinsight.com)



Nathan Slaughter – [nslaughter@espassociates.com](mailto:nslaughter@espassociates.com)



Kelly Keefe – [Kelly.Keefe@aecom.com](mailto:Kelly.Keefe@aecom.com)

Thank you!



**Meeting Minutes – Thursday, June 26, 2025**  
**Bladen-Columbus-Robeson RHMP**  
**Public Meeting #2**

| Online (Virtual) Attendees                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Daniel Taliaferro, Insight Consulting</li><li>• Bobbie Faircloth, Columbus County</li><li>• Josh Ward, Tabor City</li><li>• Benjamin Rappaport, Border Belt Independent</li><li>• Heidi Perez, Border Belt Independent</li></ul> | <ul style="list-style-type: none"><li>• Nathan Slaughter, ESP Associates</li><li>• Jeff Gause, US Cold Storage Inc.</li><li>• Teresa Duncan, Bladen County</li><li>• Joey Coleman, Bladen County</li><li>• Nathan Jones, UNCP</li><li>• Kelly Keefe, AECOM</li></ul> |

Begin Meeting (Nathan Slaughter)

- I. Welcome & Introductions
  - a. Nathan Slaughter opens meeting, confirms recording
  - b. Introduces purpose: Final public outreach for 2025 hazard mitigation plan update
- II. Purpose & Goals
  - a. FEMA requirement for hazard mitigation plan to qualify for funding
  - b. Presentation of draft plan, key findings, mitigation strategies, goals
  - c. Encourage feedback and contact info sharing via chat
- III. Planning Process Overview
  - a. Involvement of regional planning committee (counties & municipalities)
  - b. Multiple meetings, hazard assessment, goal & strategy development
  - c. Draft nearing completion, expected within a week
- IV. Structure & Content of Draft Plan
  - a. Comprised of 9 sections:
    - i. Introduction (purpose, scope, authority)
    - ii. Planning process (committee, outreach)
    - iii. Planning area overview
    - iv. Risk assessment (hazard ID, impacts, vulnerability, PRI)
    - v. Capability assessment (resources & policies)
    - vi. Mitigation strategy (goals, actions)
    - vii. Action plan (community activities)
    - viii. Plan maintenance (implementation, updates)
    - ix. Adoption resolutions (jurisdiction approvals)
  - b. Appendices & references
- V. Hazard & Risk Assessment
  - a. Inclusion of natural & man-made hazards (cyber, infectious disease, heat)

- b. Hazard mapping, historical impact, vulnerability analysis
- c. PRI scoring highlights high/medium risks:
  - i. Severe weather, hurricanes, tropical storms, cyber threats

VI. Community Capabilities

- a. All communities scored high to moderate
  - i. No jurisdictions scored limited capacity
- b. County governments generally have more resources than smaller municipalities

VII. Goals of the Plan

- a. Promote health, safety, welfare; minimize losses
- b. Reduce risk via development regulation
- c. Pursue funding for hazard reduction in existing structures
- d. Expedite post-disaster recovery
- e. Educate citizens, protect natural/scenic areas (water supplies)
- f. Goals reviewed every five years

VIII. Countrywide Hazard Mitigation Planning

- a. Required for communities nationwide
- b. Rationale & importance explained by Nathan & Rappaport
- c. Funding streams (buyouts, elevation projects) linked to plan
- d. Importance for communities still recovering from past disasters
- e. Plan ensures eligibility for future funding
- f. Involvement in reporting environmental issues & regional resilience

IX. Questions & Final Remarks

- a. Open floor for questions
- b. Nathan encourages monitoring website for draft updates
- c. Thanks & closing statement

X. Action Items & Next Steps

- a. Distribute draft plan (within a week)
- b. Collect & review feedback
- c. Community adoption resolutions
- d. Finalize & submit to FEMA
- e. Ongoing public involvement & plan updates

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