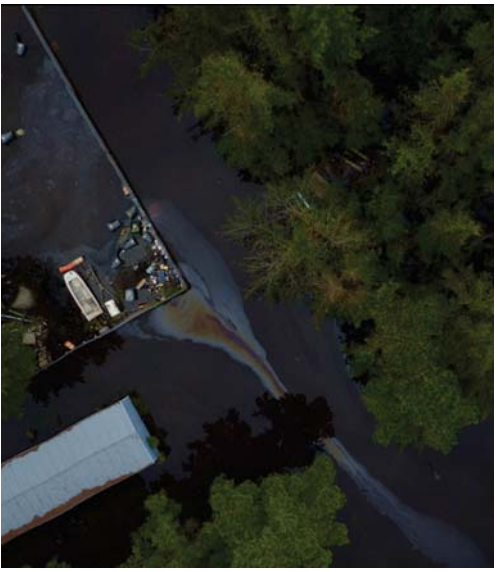








Southeastern North Carolina Regional Hazard Mitigation Plan

Submitted by **ESP Associates, Inc.**

DRAFT - February 2026

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SECTION 1
INTRODUCTION

This section provides a general introduction to the Southeastern NC Regional Hazard Mitigation Plan. It consists of the following five subsections:

- 1.1 Background
- 1.2 Purpose
- 1.3 Scope
- 1.4 Authority
- 1.5 Summary of Plan Contents

1.1 BACKGROUND

Natural hazards, such as floods, hurricanes, and wildfires are a part of the world around us. Their occurrence is natural and inevitable, and there is little we can do to control their force and intensity. We must consider these hazards to be legitimate and significant threats to human life, safety and property.

The Southeastern NC Region is located in the coastal plain and coastal areas of southeastern North Carolina and includes the counties of Brunswick, New Hanover, Onslow and Pender. This region is vulnerable to a wide range of natural hazards such as hurricanes, flooding, severe thunderstorms, and wildfires. It is also vulnerable to human-caused hazards, including chemical releases, hazardous material spills, and infectious disease. These hazards threaten the life and safety of residents and visitors in the Southeastern NC Region, and have the potential to damage or destroy both public and private property, disrupt the local economy and impact the overall quality of life of individuals who live, work, and vacation in the Southeastern NC Region.

While the threat from hazardous events may never be fully eliminated, there is much we can do to lessen their potential impact upon our community and our citizens. By minimizing the impact of hazards upon our built environment, we can prevent such events from resulting in disasters. The concept and practice of reducing risks to people and property from known hazards is generally referred to as *hazard mitigation*.

FEMA Definition of Hazard Mitigation:

"Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards."

Hazard mitigation techniques include both structural measures (such as strengthening or protecting buildings and infrastructure from the destructive forces of potential hazards) and non-structural measures (such as the adoption of sound land use policies and the creation of public awareness programs). It is widely accepted that the most effective mitigation measures are implemented at the local government level, where decisions on the regulation and control of development are ultimately

made. A comprehensive mitigation approach addresses hazard vulnerabilities that exist today and in the foreseeable future. Therefore, it is essential that projected patterns of future development are evaluated and considered in terms of how that growth will increase or decrease a community's overall hazard vulnerability.

A key component in the formulation of a comprehensive approach to hazard mitigation is to develop, adopt, and update as needed a local hazard mitigation plan. A hazard mitigation plan establishes the broad community vision and guiding principles for reducing hazard risk, and further proposes specific mitigation actions to eliminate or reduce identified vulnerabilities.

Brunswick, New Hanover and Pender counties first joined together in 2015 to develop the initial version of this plan. Prior to that, each County was operating under individual County-level hazard mitigation plans. Onslow County and participating municipalities in the County joined the regional planning effort starting with the 2021 update. This continued for the 2026 update. The process followed to update the plan is detailed in Section 2: Planning Process.

This plan documents the region's sustained efforts to incorporate hazard mitigation principles and practices into routine government activities and functions. At its core, the plan recommends specific actions to minimize hazard vulnerability and protect residents from losses to those hazards that pose the greatest risk. These mitigation actions go beyond simply recommending structural solutions to reduce existing vulnerability, such as elevation, retrofitting and acquisition projects. Local policies on community growth and development, incentives for natural resource protection, and public awareness and outreach activities are examples of other actions considered to more holistically reduce the Southeastern NC Region's vulnerability to identified hazards. The plan remains a living document, with implementation and evaluation procedures established to help achieve meaningful objectives and successful outcomes over time.

1.1.1 The Disaster Mitigation Act and the Flood Insurance Reform Acts

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) in order to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Section 322 of DMA 2000 emphasizes the need for state, local and Tribal 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 or Tribal government applying for federal mitigation grant funds. In short, if a jurisdiction is not covered by an approved mitigation plan, it will not be eligible for mitigation grant funds. These funds currently i(HMA) funds the Hazard Mitigation Grant Program (HMGP) and the Pre-Flood Mitigation Assistance (FMA) program, both of which 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 prepositioned and more apt to receive available mitigation funds before and after the next disaster strikes.

Major federal flood insurance legislation was passed in 2012 under the Biggert-Waters Flood Insurance Reform Act (P.L. 112-141) and the subsequent Homeowner Flood Insurance Affordability Act (HFIAA) in 2014 which revised Biggert-Waters. HFIAA established the requirement that a FEMA-approved Hazard Mitigation Plan is now required if communities wish to be eligible for any of the FEMA mitigation programs. These acts made several changes to the way the National Flood Insurance Program is to be run, including raises in rates to reflect true flood risk and changes in how Flood Insurance Rate Map

(FIRM) updates impact policyholders. These acts further emphasize Congress' focus on mitigating vulnerable structures.

The Southeastern NC Regional Hazard Mitigation Plan has been prepared in coordination with FEMA Region 4 and the North Carolina Division of Emergency Management (NCEM) to ensure that the Plan meets all applicable FEMA and state requirements for hazard mitigation plans. A *Local Mitigation Plan Review Tool*, found in Appendix C, provides a summary of federal and state minimum standards and notes the location where each requirement is met within the Plan. Additionally, the plan was developed in accordance with updated FEMA Region IV Review Standards that were provided in February of 2020.

1.2 PURPOSE

The purposes of the Southeastern NC Regional Hazard Mitigation Plan are to:

- Completely update the existing Southeastern NC Regional Hazard Mitigation Plan to demonstrate progress and reflect current conditions;
- Increase public awareness and education;
- Maintain grant eligibility for participating jurisdictions;
- Update the plan in accordance with Community Rating System (CRS) requirements, where applicable; and
- Maintain compliance with state and federal legislative requirements for local hazard mitigation plans.

1.3 SCOPE

The focus of the Southeastern NC Regional Hazard Mitigation Plan is on those hazards determined to be "high" or "moderate" risks to the Southeastern NC Region, as determined through a detailed hazard risk assessment. Other hazards that pose a "low" or "negligible" risk will continue to be evaluated during future updates to the Plan, but they may not be fully addressed until they are determined to be of high or moderate risk. This enables the participating counties to prioritize mitigation actions based on those hazards which are understood to present the greatest risk to lives and property.

The geographic scope (i.e., the planning area) for the Plan includes the Counties of Brunswick, New Hanover, Onslow and Pender as well as their incorporated jurisdictions. **Table 1.1** lists each of these counties and their participating jurisdictions.

TABLE 1.1: PARTICIPATING JURISDICTIONS IN THE SOUTHEASTERN NC REGIONAL HAZARD MITIGATION PLAN

Brunswick County	
Bald Head Island	Northwest
Belville	Oak Island
Boiling Spring Lakes	Ocean Isle Beach
Bolivia	Sandy Creek
Calabash	Shallotte
Carolina Shores	Southport
Caswell Beach	St. James
Holden Beach	Sunset Beach
Leland	Varnamtown
Navassa	
New Hanover County	
Carolina Beach	Wilmington
Kure Beach	Wrightsville Beach
Onslow County	
Jacksonville	Richlands
Holly Ridge	Swansboro
North Topsail Beach	
Pender County	
Atkinson	Surf City
Burgaw	Topsail Beach
Saint Helena	Watha

1.4 AUTHORITY

The Southeastern NC Regional Hazard Mitigation Plan has been developed in accordance with current state and federal rules and regulations governing local hazard mitigation plans and has been adopted by each participating jurisdiction in accordance with standard local procedures. Copies of the adoption resolutions for each participating jurisdiction are provided in Appendix A. The Plan shall be routinely monitored and revised to maintain compliance with the following provisions, rules, and 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);
- FEMA's Final Rule published in the Federal Register, at 44 CFR Part 201 (201.6 for local mitigation planning requirements);
- Flood Insurance Reform Act of 2004 (P.L. 108-264), Biggert-Waters Flood Insurance Reform Act of 2012 (P.L. 112-141) and the Homeowner Flood Insurance Affordability Act of 2014.

1.5 SUMMARY OF PLAN CONTENTS

The contents of this Plan are designed and organized to be as reader-friendly and functional as possible. While significant background information is included on the processes used and studies completed (i.e., risk assessment, capability assessment), this information is separated from the more meaningful planning outcomes or actions (i.e., mitigation strategy, mitigation action plan).

Section 2: ***Planning Process***, provides a complete narrative description of the process used to prepare the Plan. This includes the identification of participants on the planning team, and how the public and other stakeholders were involved. It also includes a detailed summary for each of the key meetings held, along with any associated outcomes.

The ***Community Profile***, located in Section 3, provides a general overview of the Southeastern NC Region, including prevalent geographic, demographic and economic characteristics. In addition, building characteristics and land use patterns are discussed. This baseline information provides a snapshot of the planning area and helps local officials recognize those social, environmental and economic factors that ultimately play a role in determining the region's vulnerability to hazards.

The Risk Assessment is presented in three sections: Section 4: ***Hazard Identification***; Section 5: ***Hazard Profiles***; and Section 6: ***Vulnerability Assessment***. Together, these sections serve to identify, analyze and assess hazards that pose a threat to the Southeastern NC Region. The risk assessment also attempts to define any hazard risks that may uniquely or exclusively affect specific areas of the Southeastern NC Region.

The Risk Assessment begins by identifying hazards that threaten the Southeastern NC Region. Next, detailed profiles are established for each hazard, building on available historical data from past hazard occurrences, spatial extent, and probability of future occurrence. This section culminates in a hazard risk ranking based on conclusions regarding the frequency of occurrence, spatial extent, and potential impact highlighted in each of the hazard profiles. In the vulnerability assessment, NCEM's Risk Management section's loss estimation methodology is used to evaluate known hazard risks by their relative long-term cost in expected damages. In essence, the information generated through the risk assessment serves a critical function as participating jurisdictions in the Southeastern NC Region seek to determine the most appropriate mitigation actions to pursue and implement—enabling it to prioritize and focus its efforts on those hazards of greatest concern and those structures or planning areas facing the greatest risk(s).

The ***Capability Assessment***, found in Section 7, provides a comprehensive examination of the capacity of the participating jurisdictions in the Southeastern NC Region to implement meaningful mitigation strategies and identifies opportunities to increase and enhance that capacity. Specific capabilities addressed in this section include planning and regulatory capability, staff and organizational (administrative) capability, technical capability, fiscal capability, and political capability. Information was obtained through the use of detailed survey questionnaires for local officials and an inventory and analysis of existing plans, ordinances and relevant documents. The purpose of this assessment is to identify any existing gaps, weaknesses or conflicts in programs or activities that may hinder mitigation efforts, and to identify those activities that should be built upon in establishing a successful and sustainable local hazard mitigation program.

The *Community Profile*, *Risk Assessment*, and *Capability Assessment* collectively serve as a basis for determining the goals for the Southeastern NC Regional Hazard Mitigation Plan, each contributing to the development, adoption and implementation of a meaningful and manageable *Mitigation Strategy* that is based on accurate background information.

The ***Mitigation Strategy***, found in Section 8, consists of broad hazard mitigation goal statements for the region as well as an analysis of hazard mitigation techniques for the Southeastern NC Region to consider in reducing hazard vulnerabilities. The strategy provides the foundation for a detailed ***Mitigation Action***

Plan, found in Section 9, which links specific mitigation actions for each county department or agency to locally-assigned implementation mechanisms and target completion dates. Together, these sections are designed to make the Plan both strategic, through the identification of long-term goals, and functional, through the identification of immediate and short-term actions that will guide day-to-day decision-making and project implementation.

In addition to the identification and prioritization of possible mitigation projects, emphasis is placed on the use of program and policy alternatives to help make the communities in the Southeastern NC Region less vulnerable to the damaging forces of hazards while improving the economic, social and environmental health of the community. The concept of multi-objective planning was emphasized throughout the planning process, particularly in identifying ways to link, where possible, hazard mitigation policies and programs with complimentary community goals related to disaster recovery, housing, economic development, recreational opportunities, transportation improvements, environmental quality, land development, and public health and safety.

Plan Maintenance, found in Section 10, includes the measures that the communities in the Southeastern NC Region will take to ensure the Plan's continuous long-term implementation. The procedures also include the manner in which the Plan will be regularly evaluated and updated to remain a current and meaningful planning document.

SECTION 2
PLANNING PROCESS

This section describes the planning process undertaken to develop the 2026 update of the Southeastern NC 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 nine subsections:

- 2.1 Overview of Hazard Mitigation Planning
- 2.2 History of Hazard Mitigation Planning in the Southeastern NC Region
- 2.3 Updating the Plan in 2026
- 2.4 The Southeastern NC Regional Hazard Mitigation Planning Committee
- 2.5 Community Meetings and Workshops
- 2.6 Involving the Public
- 2.7 Involving the Stakeholders
- 2.8 Documentation of Plan Progress
- 2.9 Southeastern NC Region CRS Planning Process Documentation

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 SOUTHEASTERN NC REGION

Prior to the development of the initial Southeastern NC Regional Hazard Mitigation Plan in 2016, each of the three counties and jurisdictions that originally participated in the regional plan (Brunswick, New Hanover and Pender Counties) had previously adopted separate county-level hazard mitigation plans. Each of the county-levels plans was developed using the multi-jurisdictional planning process recommended by the Federal Emergency Management Agency (FEMA).

For the development of the original regional plan, the aforementioned three counties, and a handful of municipalities that were maintaining their own separate plans, joined to develop the Southeastern NC Regional Hazard Mitigation Plan. The regional plan was developed to simplify planning efforts for the jurisdictions in the Southeastern NC Region and allowed resources to be shared amongst the participating jurisdictions to ease the administrative duties of all of the participants by combining the three existing County-level plans and a few municipal plans into one regional plan. The 2016 plan was an important and successful first start for regional hazard mitigation planning efforts and that success has carried over into the 2026 update of the plan.

For the previous update, Onslow County and the municipalities within the County joined the Southeastern NC Regional Hazard Mitigation Plan. Until the 2021 update of the regional plan, Onslow County had a separate plan for the County and the municipal jurisdictions within the County.

2.3 UPDATING THE PLAN IN 2026

FEMA requires hazard mitigation plans to be updated every five years to maintain eligibility for federal mitigation and public assistance funding. To prepare the 2026 Southeastern NC Regional Hazard Mitigation Plan, ESP Associates, Inc. was contracted by North Carolina Emergency Management to provide professional mitigation planning services.

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. A notable change in the 2026 update is the inclusion of substantial damage estimates. Communities must now include substantial damage estimates in their capability assessment to better understand potential financial impacts and vulnerabilities.

The 2026 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
Phase I – Planning Process	
§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
Phase II – Risk Assessment	
§201.6(c)(2)(i)	Step 4: Assess the Hazard
§201.6(c)(2)(ii) & (iii)	Step 5: Assess the Problem
Phase III – Mitigation Strategy	
§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
Phase IV – Plan Maintenance	
§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: Planning Process
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 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 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, found in Appendix C, 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 nine months beginning in May 2025. 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 SOUTHEASTERN NC REGION



2.4 THE SOUTHEASTERN NC REGIONAL HAZARD MITIGATION PLANNING COMMITTEE

To facilitate the initial development of the regional plan and its subsequent update, the participating jurisdictions established the Southeastern NC Regional Hazard Mitigation Planning 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 June 2025, the members of the Regional Hazard Mitigation Planning 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 Planning Committee members included:

- Participate in Regional Hazard Mitigation Planning Committee meetings and workshops
- Provide best available data as required for the risk assessment portion of the Plan
- Help update the Capability Assessment section of the plan and provide copies of any mitigation or hazard-related documents for review and incorporation into the Plan
- Support the update of the Mitigation Strategy, including the review, update and adoption of regional goal statements
- Help update existing mitigation actions and design and propose any appropriate new 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
- Support the adoption of the 2026 *Southeastern NC Regional Hazard Mitigation Plan*

Table 2.3 lists the members of the Regional Hazard Mitigation Planning Committee who were responsible for participating in the development of the Plan.

TABLE 2.3: MEMBERS OF THE SOUTHEASTERN NC REGIONAL HAZARD MITIGATION PLANNING COMMITTEE

NAME	ORGANIZATION/ROLE	6/19/25 Mtg	9/23/25 Mtg	11/20/25 Mtg	12/9/25 Mtg
Brunswick County					
Andrea, Ben	Planning & Inspection Direction, Town of Leland	X			
Boyett, Stephen	Development Services Administrator, Village of Bald Head Island	X	X	X	X
Brooks, Buddy	Emergency Management Deputy Director, Brunswick County		X		
Bunch, Helen	CZO & Planner, Brunswick County	X		X	X
Child, Sabra	Town Clerk, Town of Sandy Creek				X
Dycus, Keith	Development Services Director, Town of Ocean Isle Beach	X	X		
Evans, Timothy	Planning & Inspections Director, Town of Holden Beach	X		X	X
Fersinger, Kate	Community Development Planner, Town of Leland	X			
Galloway, Sylvia	Mayor Pro-Tem, Town of Varnamtown				X
Geise, Leslie	Emergency Management Planner, Brunswick County		X	X	X
Grimes, John	Emergency Management Chief, Town of Leland	X	X		
Hargrove, Gordon	City Manager, City of Boiling Spring Lakes	X			

NAME	ORGANIZATION/ROLE	6/19/25 Mtg	9/23/25 Mtg	11/20/25 Mtg	12/9/25 Mtg
Harrington, Adrienne	Smart Moves Consulting, Town of Belville	X			
Hewett, Timothy	Planning Director, Town of Holden Beach		X		
Hills, Diana	Health Services Preparedness Coordinator, Brunswick County			X	
Holland, Landin	Town Administrator/Planner, Town of Navassa	X	X	X	
Jackson, Kent	Assistant Town Manager, Town of Oak Island			X	
Kascak, Meagan	Communications Director, Brunswick County		X		
Kirkland, Matt	Development Services Director, Town of Oak Island	X			
McIntire, David	Emergency Management Director, Brunswick County	X	X	X	
Meehan, Maureen	Planning Director, City of Southport	X	X	X	
Merklinger, Amber	Communications Specialist, Brunswick County		X		
Meyer, Josh	Safety & Training Manager, Brunswick Regional Water & Sewer H2GO			X	
Morgan, Nicole	Assistant City Manager, City of Boiling Spring Lakes	X		X	X
Miller, Mel	Mayor, Town of Sandy Creek				X
Niemann, Sharon	Clerk, Town of Belville		X		
Pigott, Janna	Floodplain Manager, Town of Holden Beach		X		X
Price, Michael	Town Administrator, Town of Calabash	X			
Price, Suzanne	Planning/Zoning Administrator, City of Boiling Spring Lakes		X	X	X
Redwine, Carey	Fiscal Operations, Town of Holden Beach				X
Repp, Jeff	Town Manager, Town of St. James			X	
Satterfield, Ron	Director of Planning, Town of Sunset Beach	X			X
Smith, Kevin	Police Chief, City of Boiling Spring Lakes				X
Stachura, Jim	City Stormwater Engineer, City of Boiling Spring Lakes				X
Stanley, Leslie	Volunteer & Non-Profit Coordinator, Brunswick County		X	X	

NAME	ORGANIZATION/ROLE	6/19/25 Mtg	9/23/25 Mtg	11/20/25 Mtg	12/9/25 Mtg
Staradumsky, Chad	Planning Director, Town of Belville			X	
Taube, Steffan	Floodplain Administrator, Brunswick County				X
Thomas, Gracie	Code Administrator, Brunswick County				X
Walker, Bob	Executive Director, Brunswick Regional Water & Sewer H2GO		X		
Weber, Adrianna	Engineering Director, Brunswick Regional Water & Sewer H2GO		X		
Weigand, LeAnn	Executive Assistant/Clerk, Brunswick County		X		
Winters, Terri	REP Planner, Brunswick County		X		
New Hanover County					
Abbots, Gloria	Senior Planner, Town of Carolina Beach			X	
Anderson, Kelly	Recreation Assistant, City of Wilmington		X		
Fuller, Jason	Senior Emergency Management Specialist, New Hanover County	X			
Haley, Andrea	Planner, Town of Carolina Beach		X		
Harris, Craig	Emergency Management & Resiliency Coordinator, City of Wilmington	X	X	X	
Medlin, Terri	Emergency Management Assistant Director, New Hanover County	X	X	X	
Nagle, Debra	Administrative Specialist, New Hanover County		X		
Norris, Virginia	Long Range Planner, New Hanover Planner	X			
O'Quinn, Robert	Zoning Administration, Town of Wrightsville Beach	X			
Roth, Rebekah	Planning Director, New Hanover County			X	
Still, Steven	New Hanover County	X			
Vafier, Ken	Planning Manager, New Hanover County		X	X	
Wampler, Madelyn	Sustainability Manager, New Hanover County	X		X	
White, Bethany	Director of Development, Compliance, & Inspections, Town of Kure Beach		X		
Wilson, Tony	Planning & Inspections Director, Town of Wrightsville Beach		X	X	
Onslow County					

NAME	ORGANIZATION/ROLE	6/19/25 Mtg	9/23/25 Mtg	11/20/25 Mtg	12/9/25 Mtg
Ansell, Jennifer	Chief Zoning & Enforcement Officer, City of Jacksonville		X	X	
Brehmer, Rebecca	Planner, Town of Swansboro	X	X	X	
Derian, Alice	Town Manager, Town of North Topsail Beach	X	X		
Emory, Michelle	Floodplain Coordinator, Onslow County		X	X	
Fender, Alissa	Town Clerk, Town of Swansboro	X			
Hill, Deborah	Planning Director, Town of North Topsail Beach	X		X	
Howard, Franky	CEO, ONWASA			X	
Jones, Luther	Safety Officer, ONWASA		X		
Kinlaw, Bradley	Emergency Services Director, Onslow County		X		
King, Ryan	Planning Director, City of Jacksonville		X		
Kircher, Marsha-Gray	Community Development Administrator, Town of Holly Ridge	X	X		
Lawrence, Gregory	Floodplain Administrator, Town of Holly Ridge	X			
Massey, Ronald	Deputy City Manager, City of Jacksonville		X		
Miles, Stacie	Emergency Services Deputy Director, Onslow County	X	X		
Randall, Jacob	Fire Chief, Town of Swansboro	X	X	X	
Rhue, Nathan	Community Development Director, Town of Holly Ridge	X	X	X	
Skipper, Douglas	Building Inspector, Town of Holly Ridge	X		X	
Stryker, Aaron	Emergency Management Specialist, Onslow County			X	
Tallman, Edward	Fire Chief, City of Jacksonville	X	X	X	
Whitehead, Greg	Town Administrator, Town of Richlands	X	X	X	
Pender County					
Batson, Tommy	Emergency Management Director, Pender County	X	X	X	
Blake, Angela	Emergency Management Specialist, Pender County			X	
Dawson, Olivia,	Mayor, Town of Burgaw			X	
Duncan, Lee	Resilience Planner, Pender County	X	X	X	
Gantt, James	Town Manager, Town of Burgaw	X			
Horne, James	Emergency Management Director, Town of Surf City	X	X	X	

NAME	ORGANIZATION/ROLE	6/19/25 Mtg	9/23/25 Mtg	11/20/25 Mtg	12/9/25 Mtg
Jacobs, Shirley	Councilman, Saint Helena		X	X	
Meredith, Ron	Planning Director, Town of Burgaw	X	X	X	
Moore, Stephanie	Town Planner and Floodplain Manager, Town of Topsail Beach		X		
Norris, Virginia	Senior Planner, Pender County			X	
Smith, Jeremy	Community Development, Town of Surf City	X	X	X	
Waters, Marcy	Long Range Planner, Pender County		X		
Other Stakeholders					
Adams, Daniel	Local Government Services Director, Cape Fear COG			X	
Baker, Carl	Mitigation Plans Manager, NCEM	X	X	X	
Bartlett, Chip	Project Manager, Cape Fear COG			X	
DeLude, Hannah	Hazard Mitigation Planner, ESP Associates	X	X	X	
Flores, John	Hazard Mitigation Planner, ESP Associates	X	X	X	
Garrett, Steve	State NFIP Coordinator, NCEM		X		
Lorenzen, Robin	Area 5 Coordinator, NCEM	X		X	
Malone, Craig	Security & Emergency Manager, Cape Fear Public Utility Authority		X	X	
Mello, John	Hazard Mitigation Planner, NCEM	X	X		
Slaughter, Nathan	Department Manager, ESP Associates	X	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 frequently 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 THE SOUTHEASTERN NC REGIONAL HAZARD MITIGATION PLANNING TEAM

NAME	TITLE/AGENCY
Brunswick County	
Cook, Nancy	Mayor, Bolivia
Hicks, Chad	Town Administrator, Carolina Shores
Pierce, Joseph	Town Administrator, Caswell Beach
Strickland, Donna	City Clerk, Northwest
Dunwell, Paul	Fire Chief, Shallotte
Waring, Robert	Assistant Town Manager, Shallotte
Pender County	
Spivey, Jason	Mayor, Atkinson
Hall, Needham	Mayor, Watha

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 Southeastern NC Regional Hazard Mitigation Plan includes four counties and thirty-four 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 in Appendix D.

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: SOUTHEASTERN NC REGIONAL HAZARD MITIGATION PLANNING COMMITTEE MEETING SUMMARY

MEETING	MEETING TOPIC	DATE	LOCATION
County Leads – Internal Kickoff	1. Introduction to project team and county leads 2. Review of mitigation, project scope, and tentative project schedule 3. Discussion on stakeholder engagement and citizen contacts	5/28/25	Virtual Microsoft Teams
HMPC Mtg #1 – Project Kick-Off	1. Introduction to DMA requirements and the planning process 2. Review HMPC responsibilities and project schedule	6/19/25	411 North Front St. Wilmington, NC 28401
HMPC Mtg #2 – HIRA Mtg	1. Review Draft Hazard Identification and Risk Assessment (HIRA) 2. Review asset inventory and discuss critical facilities	9/23/25	3325 Old Ocean Hwy. Bolivia, NC 28422
HMPC Mtg #3 – Mitigation Strategy Mtg	1. Review Capability Assessment and Mitigation Strategies 2. Solicit comments and feedback	11/20/25	805 South Walker St. Burgaw, NC 28425
Brunswick County Briefing	1. Walkthrough action plan development process 2. Assist municipalities update existing or develop new mitigation actions	12/9/25	3325 Old Ocean Hwy. Bolivia, NC 28422

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 Southeastern NC Regional Hazard Mitigation Plan

was sought using several methods:

- Conducting open public meetings (virtual and in-person),
- 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 Appendix D.

TABLE 2.6: SOUTHEASTERN NC REGIONAL HAZARD MITIGATION PLAN UPDATE PUBLIC ENGAGEMENT OPPORTUNITIES AND MEASURES

OUTREACH TYPE	OUTREACH DESCRIPTION	DATE	LOCATION
Public Survey	• Shared online via municipal and county websites • Shared in-person at government and community facilities • Respondents could complete anonymously or provide name/email • Input used to inform potential mitigation strategies	-	Online ArcGIS Survey123
Project Website	• Provides general overview of mitigation and planning process • Summarizes project-specific timeline and tasks • Links to valuable resources including HMPC meeting minutes and presentations	-	Online ArcGIS StoryMaps
Public Notices	• Project updates shared on municipal and county websites • Links provided to existing plan and draft plan	-	Online Municipal Websites
Public Meeting #1	• Introduction hazard mitigation, planning process, and project timeline • County-specific breakout discussions with live Menti polling	8/18/25	Virtual Microsoft Teams
Public Meeting #2	• Introduction hazard mitigation, planning process, and project timeline	11/20/25	805 South Walker St. Burgaw, NC 28425

OUTREACH TYPE	OUTREACH DESCRIPTION	DATE	LOCATION
	• Update on project status and key HIRA findings • Overview of Mitigation Action Plan development		

The first public meeting for this plan update was held on August 18, 2025, within two months of the stakeholder kickoff meeting on June 19, 2025. Holding the public meeting early in the planning process ensured that community input was incorporated before major analyses and recommendations were finalized. This approach aligns with Community Rating System (CRS) guidance for early and ongoing public involvement under Activity 330 (Floodplain Management Planning) and demonstrates a commitment to transparent, inclusive plan development.

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 Appendix A.

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 the Southeastern NC Region.

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. In total, 1,470 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 Appendix D.

- Approximately 67 percent of survey respondents had been impacted by a disaster, primarily hurricanes and flooding.
- Respondents ranked Hurricanes and Coastal Hazards as the highest threat to their neighborhood (58 percent), followed by Flooding (28 percent), and then Severe Thunderstorms and High Winds (7percent).
- Approximately 56 percent of respondents have taken actions to make their homes more resistant to hazards and 91 percent are interested in making their homes more resistant to hazards.
- 79 percent of respondents do not know what office to contact regarding reducing their risks to hazards.
- Prevention and Emergency Services 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, including representatives from North Carolina Emergency Management (NCEM), and others (see subsequent subsections). Input from neighboring communities was also solicited through invitations to the public meetings (see Appendix D).

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 SENC 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 Southeastern NC 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 Appendix E.

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.

2.9 CRS COMMUNITY PLANNING PROCESS DOCUMENTATION

There are 20 communities in the Southeastern NC Region that participate in the CRS. They are:

- Bald Head Island
- Brunswick County
- Carolina Beach
- Carolina Shores
- Caswell Beach
- Holden Beach
- Jacksonville
- Kure Beach
- Leland
- New Hanover County
- North Topsail Beach
- Oak Island
- Ocean Isle Beach
- Onslow County
- Pender County
- Southport
- St. James
- Sunset Beach
- Topsail Beach
- Wrightsville Beach

As a participant in the NFIP's CRS program, each of these communities took additional steps during the 2026 update of this plan to meet the CRS requirements of Activity 510: Floodplain Management Planning and attempt to maximize the number of points the communities received for this activity for this plan. Specific to the planning process, the communities ensured the following activities took place:

County and municipal staff actively served on the Regional Hazard Mitigation Planning Committee throughout the process to represent a wide range of staff expertise in the areas of mitigation techniques. The staff and their associated area of expertise are listed in **Table 2.7**.

TABLE 2.7: CRS COUNTY AND CITY STAFF MEMBERS OF THE SOUTHEASTERN NC REGIONAL HAZARD MITIGATION PLANNING COMMITTEE AND THEIR AREA OF EXPERTISE

NAME	DEPARTMENT / AGENCY / TITLE	MITIGATION TECHNIQUE					
		PREVENTION MEASURES	PROPERTY PROTECTION	NATURAL RESOURCE PROTECTION	EMERGENCY SERVICES	STRUCTURAL PROJECTS	PUBLIC INFORMATION
Boyett, Stephen	Development Services Administrator, Village of Bald Head Island	X	X	X		X	X
McCall, Chris	Village Manager Bald Head Island	X	X	X	X	X	X
Bunch, Helen	CZO & Planner, Brunswick County	X	X	X			X
Geise, Leslie	Emergency Management Planner, Brunswick County	X	X	X	X	X	X
Abbots, Gloria	Senior Planner, Town of Carolina Beach	X		X			X
Haley, Andrea	Planner, Town of Carolina Beach	X		X			X
Evans, Timothy	Planning & Inspections	X	X	X			X

NAME	DEPARTMENT / AGENCY / TITLE	MITIGATION TECHNIQUE					
		PREVENTION MEASURES	PROPERTY PROTECTION	NATURAL RESOURCE PROTECTION	EMERGENCY SERVICES	STRUCTURAL PROJECTS	PUBLIC INFORMATION
	Director, Town of Holden Beach						
Pigott, Janna	Floodplain Manager, Town of Holden Beach	X	X	X		X	X
Ansell, Jennifer	Chief Zoning & Enforcement Officer, City of Jacksonville	X	X	X			X
Tallman, Edward	Fire Chief, City of Jacksonville	X	X		X		X
White, Bethany	Director of Development, Compliance, & Inspections, Town of Kure Beach	X	X	X			X
Kennedy, Edmund	Fire Chief, Town of Kure Beach	X	X		X		X
Andrea, Ben	Planning & Inspection Director, Town of Leland	X	X	X			X
Grimes, John	Emergency Management Chief, Town of Leland	X	X		X	X	X
Still, Steven	Emergency Management Director, New Hanover County	X	X		X	X	X
Vafier, Ken	Planning Manager, New Hanover County	X		X		X	X
Derian, Alice	Town Manager, Town of North Topsail Beach	X			X		X
Hill, Deborah	Planning Director, Town of North Topsail Beach	X		X		X	X
Jackson, Kent	Assistant Town Manager, Town of Oak Island	X			X		X
Kirkland, Matt	Development Services Director, Town of Oak Island	X	X	X			X
Dycus, Keith	Development Services Director,	X	X	X			X

NAME	DEPARTMENT / AGENCY / TITLE	MITIGATION TECHNIQUE					
		PREVENTION MEASURES	PROPERTY PROTECTION	NATURAL RESOURCE PROTECTION	EMERGENCY SERVICES	STRUCTURAL PROJECTS	PUBLIC INFORMATION
	Town of Ocean Isle Beach						
Whiteside, Justin	Town of Ocean Isle Beach	X	X	X	X	X	X
Emory, Michelle	Floodplain Coordinator, Onslow County	X	X	X		X	X
Miles, Stacie	Emergency Services Deputy Director, Onslow County	X	X		X	X	X
Batson, Tommy	Emergency Management Director, Pender County	X	X		X	X	X
Duncan, Lee	Resilience Planner, Pender County	X	X	X		X	X
Meehan, Maureen	Planning Director, City of Southport	X		X		X	X
Saldo, Noah	City Manager, City of Southport	X	X	X	X	X	X
Repp, Jeff	Town Manager, Town of St. James	X			X		X
Kelly, Diana	Deputy Emergency Management Director Town of St. James	X			X		X
Satterfield, Ron	Director of Planning, Town of Sunset Beach	X		X		X	X
Klamar, Ken	Interim Town Manager, Town of Sunset Beach	X	X	X	X	X	X
O'Quinn, Robert	Zoning Administration, Town of Wrightsville Beach	X	X	X			X
Wilson, Tony	Planning & Inspections Director, Town of Wrightsville Beach	X	X	X			X

Additionally, representatives and affiliates from a diverse range of federal and state agencies, educational institutions, healthcare systems, nonprofit organizations, advocacy groups, and private-sector entities participated by completing the public survey. Participating organizations included:

- National Park Service
- Environmental Protection Agency
- New Hanover County Schools, GFT, Inc.
- Cape Fear Sierra Club
- Coastal Plain Conservation Group
- American Red Cross
- Northend Flood Mitigation Alliance
- U.S. Green Building Council
- Cape Fear Community College
- Novant Health (Pender and New Hanover Regional Medical Center)
- Common Sense Swansboro
- University of North Carolina Wilmington
- Marine Corps Base Camp Lejeune
- National Weather Service
- North Carolina Coastal Federation
- Saratoga Hospital
- East Carolina University

Survey participation from these organizations provided valuable technical insight, institutional knowledge, and sector-specific perspectives that directly informed the identification of community concerns, hazard impacts, mitigation priorities, and outreach needs reflected in the plan update. Responses helped validate local risk perceptions, highlight critical facilities and vulnerable populations, and reinforce the importance of coordinated mitigation actions related to flooding, coastal hazards, climate resilience, public health, emergency response, environmental protection, and sustainable development.

SECTION 3
COMMUNITY PROFILE

This section of the plan provides a general overview of the Southeastern NC 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 Southeastern North Carolina (NC) Region is situated in the Southeastern Coastal Plain of North Carolina, bordered to the east by the Atlantic Ocean and to the south by the South Carolina state line. For the purposes of this plan, the Southeastern NC Region encompasses four counties: Brunswick, New Hanover, Onslow, and Pender. The planning area includes incorporated and unincorporated portions of the four identified counties along with 34 participating municipalities *(see Section 1: Introduction).*

The region comprises a total area of over 3,717 square miles. The land area, water area, and total 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 Land Area (Sq. Mi.)
Brunswick	850.1	199.5	1049.5
New Hanover	192.3	136.6	328.9
Onslow	762.08	143.1	905.2
Pender	871.3	62.9	934.2

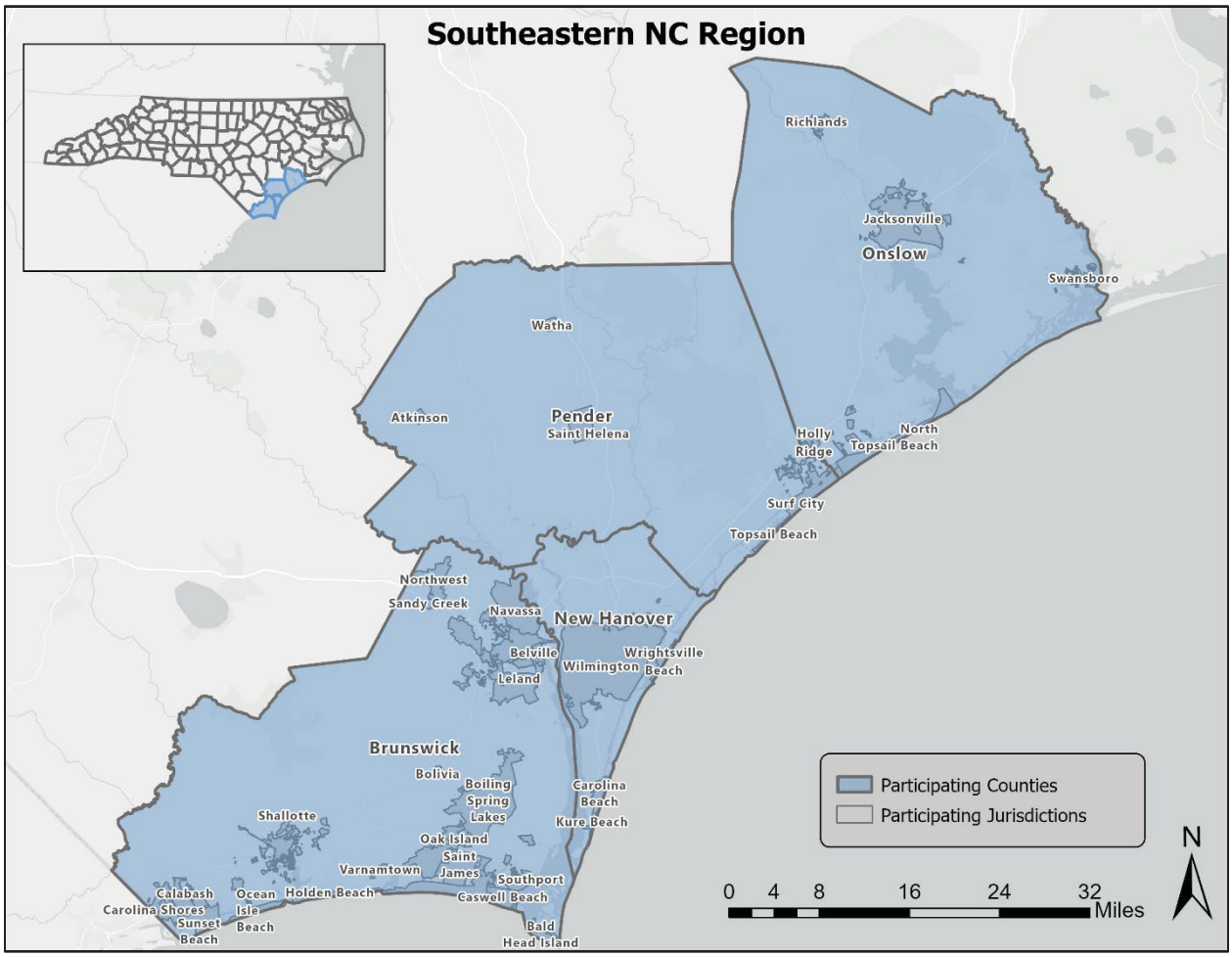
Source: US Census Bureau

The Southeastern NC Region is influenced by several metropolitan statistical areas (MSAs) within and surrounding the region. The prevalence of these areas impacts population density and growth, resource allocation and availability, infrastructure and services, and economic characteristics, all of which directly correlate with hazard mitigation planning and community capacity.

Relevant statistical areas are summarized below:

- Brunswick County falls within the Wilmington MSA,
- New Hanover County falls within the Wilmington MSA,
- Onslow County falls within the Jacksonville MSA, and
- Pender County falls within the Wilmington MSA.

FIGURE 3.1: SOUTHEASTERN NC REGION ORIENTATION MAP



According to the Köppen climate classification system, the Southeastern NC Region is categorized as a humid subtropical climate like much of North Carolina. This climate zone is described as "Mild with no dry season, hot summers, average temperature of warmest months is over 72˚F, average temperature of coldest months is under 64˚F, and year-round rainfall but highly variable."[1] Based on the National Centers for Environmental Information (NCEI) data, the region exhibits a temperate climate with an average annual temperature of 64.0°F over the last ten years. The average temperatures and precipitation of each of the participating counties is presented in **Table 3.2**.

[1] *National Oceanic and Atmospheric Administration*

TABLE 3:2 ANNUAL AVERAGE TEMPERATURES AND PRECIPITATION OF PARTICIPATING COUNTIES (2014-2024)

County	12-Month Avg Temp	January Avg Min Temp	January Avg Max Temp	June Avg Min Temp	June Avg Max Temp	12-Month Avg Rainfall
Brunswick	64.3 ˚F	35.3 ˚F	57.3 ˚F	68.7 ˚F	86.6 ˚F	57.97in
New Hanover	64.5 ˚F	35.2 ˚F	57.2 ˚F	68.7 ˚F	86.7 ˚F	61.65in
Onslow	63.5 ˚F	34.0 ˚F	56.2 ˚F	67.3 ˚F	86.3 ˚F	59.15in
Pender	63.6 ˚F	33.9 ˚F	56.2 ˚F	67.4 ˚F	86.7 ˚F	60.24in

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

Winter in the Southeastern NC Region is generally mild, with coastal moderation keeping temperatures warmer than inland or higher elevation areas. In January, the region experiences an average minimum temperature of 34.6°F and an average maximum temperature of 56.7°F. While winters are relatively moderate, conditions can still lead to occasional freezing events, particularly inland, as well as winter storms driven by low-pressure systems moving through the area. Coastal proximity reduces the likelihood of prolonged freezing conditions compared to higher elevations in other parts of the state.

Summers are hot and humid, with the influence of the Atlantic Ocean helping to moderate extreme highs but contributing to high humidity levels. In June, the region's average minimum temperature is 68.0°F, and the average maximum is 86.6°F, reflecting consistently warm conditions across coastal areas. While wildfire risk is generally lower than in drier inland areas, periods of extreme heat can still elevate local fire danger, especially during drought conditions.

The region lies within one of the wettest areas of North Carolina, averaging 59.75 inches of rainfall annually, or just under five inches per month. Precipitation is generally well-distributed throughout the year, with increased frequency during summer months due to thunderstorms and tropical systems. The coastal setting also increases exposure to heavy rainfall from tropical storms and hurricanes, which can bring intense, localized flooding. Fall months tend to be drier, though still humid, with occasional rainfall from late-season tropical systems.

3.1.1. Natural Features

The counties within the region fall within three separate river basins: Cape Fear, Lumber, and White Oak. Brunswick County falls within both Lumber and the Cape Fear River Basins, New Hanover County falls within Cape Fear and White Oak River Basins, Onslow County falls within Cape Fear and the White Oak River Basins (majority White Oak), and Pender County falls within Cape Fear and White Oak River Basins (majority Cape Fear). Details on each of the three (3) river basins are described in greater detail below.

- Cape Fear River Basin – As the largest river basin in North Carolina, the Cape Fear covers over 9,300 square miles. It forms in Chatham County where the Deep and Haw Rivers converge, ending in a 35-mile-long coastal estuary near Southport.
- Lumber River Basin – The Lumber River basin is a 3,343 square mile area that encompasses ten counties. The river's headwaters begin in the Sandhills region as Drowning Creek and extend 133 miles to the South Carolina border. The basin includes the Waccamaw River, the headwaters of the Little Pee Dee, and the coastal watershed of the Shallotte/Lockwoods Folly Rivers.

- White Oak River Basin – This basin spans 1,264 square miles and included the White Oak River, New River, Newport River, and North River, along with Boque and Core Sounds. It also contains large public areas like Croatan National Forest, Hoffman State Forest, and Camp Lejune.

The region is part of the larger Atlantic Intracoastal Waterway (AICW) system, which runs along the coast and connects major inlets. The AICW is a 3,000-mile inland water route that runs along the Atlantic and Gulf coasts of the United States, providing a protected navigation channel for both commercial and recreational boaters. The waterway connects rivers, sounds, and man-made canals, allowing vessels to travel between ports and coastal communities while avoiding the open Atlantic Ocean.

3.1.2. Parks, Preserves, and Conservation

The Southeastern NC Region contains significant wetlands and forested areas, many of which are preserved as conservation lands or game lands. Across the counties, these areas safeguard barrier islands, marshlands, maritime forests, and riverine systems that are integral to the region's environmental health and coastal economy.

- Brunswick County hosts a variety of coastal and inland protected areas. Bald Head Island Conservancy leads sea turtle monitoring and coastal habitat restoration, while Brunswick Nature Park offers over 900 acres of longleaf pine forest, wetlands, and kayak trails along Town Creek. Green Swamp Preserve, managed by The Nature Conservancy, protects over 17,000 acres of pocosin wetlands and rare plant habitats. Other conservation lands include Caswell Beach Dunes, Bird Island Coastal Reserve, and game lands managed for both wildlife habitat and hunting access.
- New Hanover County's conservation network includes Masonboro Island Reserve, which supports shorebird nesting and marine habitat. Carolina Beach State Park preserves unique coastal plant communities and provides trails, boating access, and environmental education. Airlie Gardens blends historic landscapes with habitat restoration along Bradley Creek, while municipal parks such as Halyburton Park incorporate longleaf pine restoration into public green spaces. The county also actively engages in living shoreline projects and wetland restoration to mitigate erosion and storm surge impacts.
- Onslow County contains Hammocks Beach State Park, which protects Bear Island along with salt marshes, maritime forests, and tidal creeks. The park also plays a role in sea turtle conservation and environmental education. Other notable areas include New River Waterfront Park and conservation initiatives coordinated with Marine Corps Base Camp Lejeune, where significant tracts of coastal forest, wetlands, and riverfront habitat are managed to balance military training with environmental stewardship.
- Pender County is home to Holly Shelter Game Land, a 75,000-acre preserve of pocosin wetlands, pine savannas, and Carolina bays, which serves as habitat for the endangered red-cockaded woodpecker and numerous rare plant species. Topsail Island's undeveloped sections and the Karen Beasley Sea Turtle Rescue and Rehabilitation Center contribute to marine conservation through habitat protection and species recovery. Other protected areas include Moores Creek National Battlefield, which incorporates both cultural heritage and wetland preservation, and several tracts within the North Carolina Coastal Reserve System.

Conservation in the region is supported through partnerships between local governments, non-profit organizations, State agencies, and Federal programs. Initiatives focus on longleaf pine forest restoration, wetland preservation, living shoreline construction, and invasive species control. The protection of barrier islands, estuaries, and wetlands not only preserves biodiversity but also serves as a natural defense against storm surge, flooding, and erosion. These areas provide critical ecosystem services, including water filtration, carbon storage, and fisheries support, making them essential to both environmental sustainability and community resilience.

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 Southeastern NC Region has 30 species 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
Amphibians	Neuse River Waterdog	Necturus Lewisi	Threatened	O
Birds	Red-Cockaded Woodpecker	Picoides Borealis	Threatened	B, NH, O, P
Birds	Rufa Red Knot	Calidris Canutus Rufa	Threatened	B, NH, O, P
Birds	Piping Plover	Charadrius Melodus	Threatened	B, NH, O, P
Birds	Roseate Tern	Sterna Dougallii Dougallii	Endangered	NH, O, P
Birds	Eastern Black Rail	Laterallus Jamaicensis ssp. Jamaicensis	Threatened	O, P
Birds	Black Rail	Laterallus Jamaicensis	Species of Concern	NH
Birds	Wood Stork	Mycteria Americana	Threatened	B, P
Clams	Atlantic Pigtoe	Fusconaia Masoni	Threatened	P
Fishes	Carolina Madtom	Noturus Furiosus	Endangered	O
Fishes	Shortnose Sturgeon	Acipenser Brevirostrum	Endangered	B, NH, O, P
Fishes	Waccamaw Silverside	Menidia Extensa	Threatened	B
Flowering Plants	Seabeach Amaranth	Amaranthus Pumilus	Threatened	B, NH, O, P
Flowering Plants	Rough-Leaved Loosestrife	Lysimachia Asperulaefolia	Endangered	B, NH, O, P

Group	Common Name	Scientific Name	Federal Status	Counties
Flowering Plants	Pondberry	Lindera Melissifolia	Endangered	O, P
Flowering Plants	Cooley's Meadowrue	Thalictrum Cooleyi	Endangered	B, NH, O, P
Flowering Plants	Golden Sedge	Carex Lutea	Endangered	NH, O, P
Flowering Plants	American Chaffseed	Schwalbea Americana	Endangered	P
Insects	Monarch Butterfly	Danaus Plexippus	Proposed Threatened	B, NH, O, P
Mammals	West Indian Manatee	Trichechus Manatus	Threatened	B, NH, O, P
Mammals	Northern Long-Eared Bat	Myotis Septentrionalis	Endangered	B, NH, O
Mammals	Tricolored Bat	Perimyotis Subflavus	Proposed Endangered	B, NH, O, P
Mammals	Little Brown Bat	Myotis Lucifugus	Under Review	B, NH, O, P
Reptiles	American Alligator	Alligator Mississippiensis	Similarity of Appearance (Threatened)	B, NH, O, P
Reptiles	Hawksbill Sea Turtle	Eretmochelys Imbricata	Endangered	B, NH, O, P
Reptiles	Leatherback Sea Turtle	Dermochelys Coriacea	Endangered	B, NH, O, P
Reptiles	Loggerhead Sea Turtle	Caretta Caretta	Threatened	B, NH, O, P
Reptiles	Kemp's Ridley Sea Turtle	Lepidochelys Kempii	Endangered	B, NH, O, P
Reptiles	Green Sea Turtle	Chelonia Mydas	Threatened	B, NH, O, P
Snails	Magnificent Ramshorn	Planorbella Magnifica	Endangered	B, NH, P

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

3.2 POPULATION AND DEMOGRAPHICS

From 2010 to 2024, the four-county region experienced substantial population growth, adding a combined 155,546 residents over the 14-year period. Brunswick County saw the most significant increase, growing by over 55 percent, while Pender County followed with a 34 percent rise. New Hanover and Onslow Counties experienced more moderate, yet still notable, growth rates of around 20 percent. The total population of the Southeastern NC Region reached 695,633 in 2024, which underscores the region's continued expansion. Population estimates from the US Census Bureau for 2010, 2013, 2016, and 2024 for each of the participating counties are presented in **Table 3.4**.

TABLE 3.4: POPULATION COUNTS FOR PARTICIPATING COUNTIES

County	2010 Census Population	2013 Population Estimate	2016 Population Estimate	2024 Population Estimate	% Change 2010-2024
Brunswick	107,431	114,992	126,304	167,112	55.5%
New Hanover	202,667	212,921	224,809	243,444	20.1%
Onslow	177,772	192,354	192,314	215,000	20.9%
Pender	52,217	54,779	58,771	70,077	34.2%

Source: US Census Bureau, NC Office of State Budget and Management

According to 2019-2023 American Community Survey, the median age in the Southeastern NC Region is 41.3 years, ranging from 56.1 years in Brunswick County to 27.1 years in Onslow County. Of the population aged 25 years and over, 92.7 percent have a high school degree or higher and 33.5 percent have a bachelor's degree or higher. The racial demographics of the participating jurisdictions are presented in **Table 3.5.** Generally, white persons make up much of the population in the region, accounting for over 76 percent of the population. However, this may vary per jurisdiction.

TABLE 3.5: DEMOGRAPHICS OF PARTICIPATING COUNTIES

County	White, percent (2023)	Black or African American, percent (2023)	American Indian or Alaska Native, percent (2023)	Asian, percent (2023)	Native Hawaiian or Other Pacific Islander, Percent (2023)	Some other race, percent (2023)	Two or more races, percent (2023)
Brunswick	82.3%	8.1%	0.3%	0.6%	0.0%	2.3%	6.2%
New Hanover	77.4%	11.3%	0.2%	1.4%	0.0%	3.8%	5.9%
Onslow	69.2%	12.5%	0.8%	1.8%	0.1%	2.6%	12.8%
Pender	75.7%	12.4%	0.3%	0.7%	0.1%	5.4%	5.4%

*Hispanics may be of any race, so also are included in applicable race categories
Source: US Census Bureau

3.3 HOUSING, INFRASTRUCTURE AND LAND USE

3.3.1 Housing

According to the US Census Bureau, in 2023 there were an estimated 328,137 housing units in the Southeastern NC Region, the majority of which are single family homes. Housing information for the four participating counties is presented in **Table 3.6**.

TABLE 3.6: HOUSING DATA FOR PARTICIPATING JURISDICTIONS

County	2017 Housing Units	2023 Housing Units	2023 Owner-Occupied Housing Units (%)	2023 Vacant Housing Units (%)	2023 Medium Home Value Owner-Occupied
Brunswick	92,284	93,977	68.6%	31.4%	$314,700
New Hanover	107,369	117,236	87.3%	12.7%	$353,700
Onslow	77,453	85,917	84.4%	15.6%	$219,500

County	2017 Housing Units	2023 Housing Units	2023 Owner-Occupied Housing Units (%)	2023 Vacant Housing Units (%)	2023 Medium Home Value Owner-Occupied
Pender	28,115	31,007	77.9%	22.1%	$267,100

Source: US Census Bureau

The housing trends across the Southeastern NC Region highlight the necessity for a nuanced approach to hazard mitigation planning. As the region continues to evolve, understanding the unique characteristics and needs of each county will be essential for hazard mitigation. Key findings and themes are summarized below:

- Growth in Housing Units – All participating counties have experienced an increase in their housing stock since 2017. This growth indicates a trend toward urbanization and population influx.
- Owner-Occupied Housing Rates – All participating counties have a relatively high owner-occupancy rate, averaging 79.5 percent. This suggests a demographic that may be better positioned to undertake projects and/or renovations to mitigate risk as well as recover from potential hazards.
- Financial Resilience and Vulnerability – The regional differences in median home values highlight disparities in financial resilience. Onslow County has a lower median home value along, making residents more vulnerable to hazards.
- Focus on Renters – Despite the predominance of homeowners, the presence of renters (an average of 28 percent throughout the region) points to a critical need for inclusive hazard mitigation strategies. Renters may face unique challenges in disaster recovery, necessitating targeted resources and support to ensure they are not overlooked in planning efforts.

3.3.2 Infrastructure

Transportation

Key transportation routes through the Region include US 421 running north-south through Pender/New Hanover Counties, Interstate 40 running north-south from Wilmington to Raleigh, and US 76 extending from western North Carolina to Wilmington. The primary north-south route through the counties is US Highway 17. Highway 24 in Onslow County is a primary east-west route. CSX Transportation provides service running north-south from Raleigh and east-west from Charlotte to the Wilmington terminus. The CSX western route connects to the federal rail line serving the Sunny Point Ocean Terminal in Brunswick County. The Wilmington International Airport (ILM) or the Raleigh-Durham International Airport (RDU) are the primary providers of air transportation service.

Utilities

Electrical power in the Southeastern NC Region is provided by Duke Energy Progress and several electricity cooperatives. The electricity cooperatives servicing the region include Brunswick Electric, Jones-Onslow Electric Membership Cooperation (JOEMC), and Four County Electric Membership.

Water and sewer services are provided by many of the towns in the Southeastern NC Region as well as by Onslow Water and Sewer Authority (ONWASA), Pender County Utilities (PCU), which are county-wide water providers, and Cape Fear Utility Authority which provides service in New Hanover County. Although parts of the region require the use of wells and septic systems, much of the region is covered under either municipal or county providers.

Community Facilities

There are a number of public buildings and community facilities located throughout the Southeastern NC Region. According to the data collected for the vulnerability assessment (Section 6.4.1), there are 99 fire/EMS stations, 47 police stations, and 182 public schools located within the study area.

There are 274 medical care facilities located in the Southeastern NC Region, including hospitals, nursing homes, hospice care, and rehabilitation facilities. The largest is New Hanover Regional Medical Center, a 769-bed hospital located in Wilmington. Other hospitals in the region include Cape Fear Hospital, Onslow Memorial Hospital, Navy Medical Center Camp Lejeune, J. Arthur Dosher Memorial Hospital, Pender Memorial Hospital, and Brunswick Community Hospital.

In addition to its beaches, the Southeastern NC Region contains numerous local parks and recreation areas, including Brunswick Nature Park, Airlie Gardens, New River Waterfront Park, Hammocks Beach State Park, and Millers Pond Park. These facilities offer recreational opportunities to area residents and many visitors each year.

3.3.3 Land Use

Land use patterns in the Southeastern NC Region vary significantly across the four counties, shaped by coastal geography, transportation networks, and historical growth trends. The most concentrated development is found in and around the City of Wilmington in New Hanover County, the City of Jacksonville in Onslow County, and along the region's extensive Atlantic coastline, where residential, commercial, and tourism-based development takes advantage of direct access to the region's numerous barrier islands and beaches. Coastal communities such as Wrightsville Beach, Carolina Beach, Topsail Beach, and Oak Island illustrate this pattern, incorporating permanent residential neighborhoods with seasonal vacation properties, lodging, restaurants, and recreation-oriented businesses.

As illustrated in **Figure 3.1**, large expanses of unincorporated land remain across all four counties, accounting for a substantial portion of the region's total land area. These unincorporated areas include rural inland communities, low-density subdivisions, working farmlands, and large tracts of undeveloped forest and wetlands. While most of the region's population resides in incorporated municipalities, these areas also serve as the primary hubs for businesses, institutions, and higher-density residential development. Municipal cores such as Wilmington, Jacksonville, Burgaw, and Southport typically feature mixed-use zoning and concentrated commercial corridors.

Outside of these population centers, land use generally transitions to lower-density residential development interspersed with agricultural production and open space. Brunswick and Pender Counties, in particular, still maintain significant agricultural acreage, although some of these areas are experiencing gradual suburbanization due to regional growth pressures. Much of the undeveloped land in the interior is also comprised of wetlands, floodplains, and other environmentally sensitive areas that limit intensive development but provide important natural hazard mitigation benefits.

Although population growth in the region remains steady, it is occurring within a framework of managed development. Each participating jurisdiction utilizes a suite of land use tools, such as zoning ordinances, subdivision regulations, floodplain management ordinances, and comprehensive land use plans, to guide where and how growth takes place. The Capability Assessment in Section 7 of this plan provides an

overview of these tools for each jurisdiction, including their ability to address hazard risk reduction. These regulatory frameworks play a critical role in directing development away from high-risk hazard areas, protecting natural resources, and supporting long-term resilience across the region.

3.4 EMPLOYMENT AND INDUSTRY

The 2023 American Community Survey indicates that the median household income for Southeastern NC Region was $73,713 which is higher than the State's median household income ($69,904). Brunswick, New Hanover, and Pender Counties all have median household incomes exceeding $70,000 while Onslow County has a median household income of $67,597. **Table 3.7** provides a summary of key economic indicators for the region.

TABLE 3.7: KEY ECONOMIC INDICATORS FOR THE REGION

County	Population in Labor Force	Employed (%)	Unemployed (%)	Not in Labor Force (%)	Unemployment Rate (%)
Brunswick	69,307	46.6%	2.4%	50.9%	4.9%
New Hanover	132,916	63.0%	2.5%	34.4%	3.8%
Onslow	116,154	45.2%	2.2%	29.9%	4.6%
Pender	34,878	59.4%	3.4%	36.5%	5.4%

Source: US Census Bureau

Within the region, approximately 54.2 percent of the population is in the labor force. This is generally characteristic of all participating counties as well. The percentage of the population currently employed in the region is 53.5 percent, with three out of the four counties exceeding an employment rate of over 50 percent. According to the American Community Survey, the unemployment rate for the Southeastern NC Region overall was 4.6 percent. **Table 3.8** further breaks down jobs by occupation.

TABLE 3.8: OCCUPATION OF THOSE EMPLOYED IN THE REGION

County	Management, Business, Science & Arts (%)	Service (%)	Sales & Office (%)	Natural Resources, Construction & Maintenance (%)	Production, Transportation & Material Moving (%)
Brunswick	41.2%	19.1%	19.0%	8.9%	11.8%
New Hanover	47.8%	17.4%	18.9%	8.3%	7.6%
Onslow	35.9%	18.1%	22.0%	11.1%	12.9%
Pender	37.1%	10.5%	21.6%	16.4%	14.4%

The top industries in Brunswick County are (1) Management, Business, Science and Arts, (2) Service Industries and (3) Sales and Office. Top employers across the County include:

- Brunswick County Board of Public Education
- Brunswick County
- Wal-Mart Associates, Inc.
- Duke Energy Progress, Inc.
- Brunswick Community Hospital, LLC.

The top industries in New Hanover County are (1) Management, Business, Science and Arts, (2) Sales and Office, and (3) Service industries. Top employers across the County include:

- Novant Health New Hanover Regional
- New Hanover County School System
- UNC at Wilmington
- New Hanover County
- PPD Develop, LP

The top industries in Onslow County are (1) Management, Business, Science and Arts, (2) Sales and Office, and (3) Service industries. Top employers across the County include:

- Defense Ex Army Navy & Air Force
- Onslow County Board of Education
- Marine Corps Exchange Service
- Wal-Mart Associates, Inc.
- Onslow County

The top industries in Pender County are (1) Management, Business, Science and Arts, (2) Sales and Office, and (3) Natural Resources, Construction & Maintenance. Top employers across the County include:

- Pender County Board of Education
- Pender County
- Wal-Mart Associates, Inc.
- Pender County Memorial Hospital, Inc.
- Pender EMS and Fire, Inc.

SECTION 4
HAZARD IDENTIFICATION

This section describes how the planning team identified the hazards to be included in this plan. It consists of the following five subsections:

- 4.1 Overview
- 4.2 Disaster Declarations
- 4.3 Summary of Hazard Impacts Since Previous Plan
- 4.4 Hazard Evaluation
- 4.5 Hazard Identification Results

44 CFR Requirement

44 CFR Part 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.

4.1 OVERVIEW

The Southeastern NC Region is vulnerable to a wide range of natural and human-caused hazards that threaten life and property. Current FEMA regulations and guidance under the Disaster Mitigation Act of 2000 (DMA 2000) require, at a minimum, an evaluation of a full range of natural hazards. An evaluation of human-caused hazards (i.e., technological hazards, terrorism, etc.) is encouraged, though not required, for plan approval. The Southeastern NC Region has included a comprehensive assessment of both types of hazards to align with the North Carolina State Hazard Mitigation Plan.

Upon reviewing the full range of natural hazards suggested under FEMA planning guidance, the participating jurisdictions in the Southeastern NC Region have identified numerous hazards that are to be addressed in the Regional Hazard Mitigation Plan. These hazards were identified through an extensive process that utilized input from the Southeastern NC Regional Hazard Mitigation Planning Committee members, research of past disaster declarations in the participating counties[1], and review of the North Carolina State Hazard Mitigation Plan (2023). To maintain consistency, the Southeastern NC Regional Planning Committee agreed to assess the same hazards that were identified in the most recent update of the North Carolina State Hazard Mitigation Plan. A list of all previous hazards covered in the 2021 Southeastern NC Regional Hazard Mitigation Plan is viewable in **Table 4.1**, along with a summary of the hazards assessed in this 2026 update. Readily available information from reputable sources (such as federal and state agencies) was also evaluated to supplement information from these key sources.

[1] A complete list of disaster declarations for the Southeastern NC Region can be found below in **Section 4.2**.

TABLE 4.1: 2026 SOUTHEASTERN NC HAZARDS UPDATE

2021 Southeastern NC Identified Hazards		2026 Southeastern NC Identified Hazards		Subhazards covered in 2026 Plan
Natural Hazards	Drought	Drought	**Natural Hazards**	Agricultural Drought, Hydrological Drought
	Excessive Heat	Excessive Heat		
	Hurricane and Coastal Hazards	Hurricane and Coastal Hazards		High Wind/Torrential Rain, Nor'easters, Storm Surge, Rip Currents
	Tornadoes/Thunderstorms	Tornadoes/Thunderstorms		Hailstorm, Torrential Rain associated with Severe Thunderstorms, Thunderstorm Wind, Lightning, Waterspout, High Wind
	Severe Winter Weather	Severe Winter Weather		Freezing Rain, Snowstorms, Blizzards, Wind Chill, Extreme Cold
	Earthquakes	Earthquakes		
	Geological	Geological		Sinkholes, Coastal Erosion
	Dam Failure	Dam Failure		
	Flooding	Flooding		Flash flooding, Urban flooding
	Tsunami	Tsunami		
Other Hazards	Wildfire	Wildfire		
	Infectious Disease	Infectious Disease		Vector-Borne Disease, Foreign Animal Disease
Technological Hazards	Hazardous Substances	Hazardous Substances	**Technological Hazards**	Hazardous Materials, Hazardous Chemicals, Oil Spill, Road/Rail Incidents
	Radiological Emergency – Fixed Nuclear Facilities	Radiological Emergency – Fixed Nuclear Facilities		
	Terrorism	Terrorism		Chemical, Biological, Radiological, Nuclear, Explosive
	Cyber	Cyber		Mass power/utility disruption
	Electromagnetic Pulse	Electromagnetic Pulse		
		Civil Disturbance		
		Food Emergency		

Note: The hazards identified in an older version of the standalone Onslow County Plan varied only slightly from the hazards in the previous Southeastern NC Regional Plan, primarily in terms of minor terminology changes. One significant difference was that the Onslow County Plan identified Storm Surge as a separate hazard. Moving forward for any plan updates, Onslow County is now included within the planning region and storm surge is included as a subhazard of Hurricanes and Coastal Hazards.

4.2 DISASTER DECLARATIONS

Disaster declarations provide initial insight into the hazards that may impact the Southeastern NC regional planning area. Since 1984, twenty (20) presidential disaster declarations have been reported in the Southeastern NC Region, which can be seen in **Table 4.2** below. Of these disaster declarations, sixteen (16) were related to hurricanes and tropical storms, and three (3) were related to severe storms that included flooding and tornadoes. Another one (1) of the most recent declarations was a result of the global pandemic caused by COVID-19.

TABLE 4.2: DISASTER DECLARATION IN THE SOUTHEASTERN NC REGION

Year	Disaster Number	Description	Brunswick County	Onslow County	Pender County	New Hanover County
1984	724	HURRICANE DIANA	X		X	X
1989	844	HURRICANE HUGO	X			
1996	1127	HURRICANE BERTHA	X	X	X	X
1996	1134	HURRICANE FRAN	X	X	X	X
1998	1240	HURRICANE BONNIE	X	X	X	X
1999	1292	HURRICANE FLOYD	X	X	X	X
2003	1490	HURRICANE ISABEL	X	X	X	X
2005	1608	HURRICANE OPHELIA	X	X	X	X
2008	1801	TROPICAL STORM HANNA	X			X
2010	1942	SEVERE STORMS, FLOODING, AND STRAIGHT-LINE WINDS	X	X	X	X
2011	1969	SEVERE STORMS, FLOODING, TORNADOES		X		
2011	4019	HURRICANE IRENE	X	X	X	X
2016	4285	HURRICANE MATTHEW	X	X	X	X
2018	4393	HURRICANE FLORENCE	X	X	X	X
2019	4412	TROPICAL STORM MICHAEL	X			
2019	4465	HURRICANE DORIAN	X	X	X	X
2020	4487	COVID-19 PANDEMIC	X	X	X	X
2020	4543	SEVERE STORMS, TORNADOES, AND FLOODING			X	
2020	4568	HURRICANE ISAIAS	X	X	X	X
2024	4837	POTENTIAL TROPICAL CYCLONE EIGHT	X	X		X

4.3 SUMMARY OF HAZARD IMPACTS SINCE PREVIOUS PLAN

Since the approval date of the previous Southeastern NC Regional Hazard Mitigation Plan (4/19/2021) through the period of record (5/31/2025), there have been 233 hazard events recorded for the region in the National Centers for Environmental Information (NCEI) Storm Events Database. It is important to take note of those hazard events and consider them in the *Hazard Identification* section to help them ensure that the appropriate hazards are being considered in the risk assessment sections and in the Mitigation Strategy. **Table 4.3** documents the hazard events recorded. Details for some of these events are discussed in further detail in the *Hazard Profiles* section and in the plan's appendices.

TABLE 4.3: SUMMARY OF HAZARD EVENTS SINCE PREVIOUS PLAN

Hazard Type*	Number of Reported Events in Brunswick County	Number of Reported Events in New Hanover County	Number of Reported Events in Onslow County	Number of Reported Events in Pender County
Flash Flood	26	8	16	1
Flood	5	0	1	1
Hail	7	5	9	7
High Wind	1	6	1	3
Lightning	1	4	1	1
Thunderstorm Wind	8	26	43	16
Tornado	5	1	2	1
Tropical Storm	3	4	2	3
Winter Storm	3	4	3	4
Winter Weather	1	0	0	0
TOTAL NUMBER OF REPORTED EVENTS	**60**	**58**	**78**	**37**

*The hazard type names that NCEI uses are different than the names of hazards used in this plan; however, one can still get an understanding of the types of hazards that impact the region as the hazard types are similar in name.

4.4 HAZARD EVALUATION

Table 4.4 documents the evaluation process used for determining which of the initially identified hazards are considered significant enough to warrant further evaluation in the risk assessment. For each hazard considered, the table indicates whether the hazard was identified as a significant hazard to be further assessed, how this determination was made, and why this determination was made. The table works to summarize not only those hazards that *were* identified (and why) but also those that *were not* identified (and why not). Hazard events not identified for inclusion at this time may be addressed during future evaluations and updates of the risk assessment if deemed necessary by the Regional Hazard Mitigation Planning Committee during the plan update process.

TABLE 4.4: DOCUMENTATION OF THE HAZARD EVALUATION PROCESS

Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
NATURAL HAZARDS			
Avalanche	**NO**	• Review of FEMA National Risk Index • Review of US Forest Service National Avalanche Center website • Review of the NC State Hazard Mitigation Plan • Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• There is no risk of avalanche events in North Carolina. The United States avalanche hazard is limited to mountainous western states including Alaska, as well as some areas of low risk in New England. • Avalanche hazards are not discussed in the North Carolina State Hazard Mitigation Plan. • Avalanche was not included in the previous Southeastern NC Regional Hazard Mitigation Plan.
Drought	**YES**	• Review of FEMA National Risk Index • Review of the NC State Hazard Mitigation Plan • Review of the North Carolina Drought Monitor website • Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• There are reports of drought conditions in all of the last 25 years (2000-2025) in the Southeastern NC Region, according to the North Carolina Drought Monitor. • Droughts are discussed in NC State Hazard Mitigation Plan. • Drought is included in the previous Southeastern NC Regional Hazard Mitigation Plan.
Excessive Heat	**YES**	• Review of FEMA National Risk Index • Review of NOAA NCEI Storm Events Database • Review of the North Carolina State Hazard Mitigation Plan • Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• NCEI reported at least 31 heat and excessive heat events for the Southeastern NC counties between July 2011 and July 2024. • Excessive heat is discussed in the State Plan. • Excessive heat was included in the previous Southeastern NC Regional Hazard Mitigation Plan in tandem with the drought hazard.
Hurricane and Coastal Hazards	**YES**	• Review of FEMA National Risk Index • Review of NC State Hazard Mitigation Plan • Analysis of NOAA historical tropical cyclone tracks and National Hurricane Center Website • Review of NOAA NCEI Storm Events Database • Review of historical presidential disaster declarations	• The Atlantic and Gulf regions are most prone to landfall by hurricanes and tropical storms. • NOAA historical records indicate approximately 55 hurricanes, 38 tropical storms, and 34 tropical depressions have come within 75 miles of the Southeastern NC Region between 1851 and 2018. • Hurricane and coastal hazards are discussed in the State Plan.

Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
		• Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• Sixteen out of twenty disaster declarations in the Southeastern NC Region are directly related to hurricane and tropical storm events. • Hurricane and coastal hazards, including nor'easters, storm surge, and rip current sub-hazards were addressed in the previous Southeastern NC Regional Hazard Mitigation Plan.
Nor'easter	**YES (Assessed under Hurricanes/ Coastal Hazards)**	• Review of FEMA National Risk Index • Review of NC State Hazard Mitigation Plan • Review of NOAA NCEI Storm Events Database • Review of the previous Southeastern Regional Hazard Mitigation Plan	• Nor'easters are discussed in the State Plan. The coastal region, which includes the Southeastern NC Region, generally has the highest vulnerability in the state. • NCEI does not report any nor'easter activity for the Southeastern NC Region. However, nor'easters that have affected the region may have been recorded by NCEI as severe winter storms. • This hazard was addressed as a sub-hazard under Hurricane and Coastal Hazards in the previous Southeastern NC Regional Hazard Mitigation Plan.
Hailstorm	**YES (Assessed under Tornadoes/ Thunderstorms)**	• Review of FEMA National Risk Index • Review of NC State Hazard Mitigation Plan • Review of NOAA NCEI Storm Events Database • Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• Hailstorm events are discussed in the State Plan under the Tornadoes/Thunderstorm hazard. • NCEI reports at least 566 hailstorm events (0.75-inch size hail to 2.75 inches) for the Southeastern NC Region between January 1966 and May 2025. These events led to an estimated $82,350 in unadjusted property damage. • Hail is addressed under the Tornadoes/Thunderstorm hazard in the previous Southeastern NC Regional Hazard Mitigation Plan. Given the frequency of the event, individual analysis is warranted.
Lightning	**YES (Assessed under Tornadoes/**	• Review of FEMA National Risk Index • Review of NC State Hazard Mitigation Plan	• The central region of the Florida has the highest density of lightning strikes in the mainland U.S.; however, lightning strikes are

Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
	Thunderstorms)	• Review of NOAA NCEI Storm Events Database • Review of the previous Southeastern NC Regional Hazard Mitigation Plan • Review of Vaisala's NLDN Lightning Flash Density Map	experienced in nearly every region of the country. • Lightning events are discussed in the State Plan as part of the Tornadoes/Thunderstorm hazard. • NCEI reports at least 87 lightning events for the Southeastern NC Region between July 1996 and May 2025. These events have resulted in at least 9 deaths, 31 injuries, and $4.69M in unadjusted property damage. • Lightning is addressed under the Tornadoes/Thunderstorm hazard in the previous regional plan. Given the reported damage and deaths/injuries, individual analysis is warranted.
Tornadoes	**YES (Assessed under Tornadoes/ Thunderstorms)**	• Review of FEMA National Risk Index • Review of NC State Hazard Mitigation Plan • Review of NOAA NCEI Storm Events Database • Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• Tornado events are discussed in the State Plan. • NCEI reports at least 168 tornado events in the Southeastern NC Region between January 1951 and May 2025. These events have resulted in at least 109 injuries, 9 deaths, and over $26.92M in unadjusted property damage, with the most severe magnitude being an F3. • Tornado events were addressed in the previous Southeastern NC Regional Hazard Mitigation Plan.
Severe Thunderstorm	**YES (Assessed under Tornadoes/ Thunderstorms)**	• Review of FEMA National Risk Index • Review of NC State Hazard Mitigation Plan • Review of NOAA NCEI Storm Events Database • Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• Severe Thunderstorm events are discussed in the State Plan. Historical trends show severe thunderstorm events are often observed in the eastern parts of North Carolina, which includes the Southeastern NC Region. • NCEI reports at least 604 thunderstorm wind events in the Southeastern NC Region between January 1985 and May 2025. These events have resulted in 13 injuries and over $5.87M in unadjusted property damage.

Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
			• Severe thunderstorm events were addressed in the previous Southeastern Regional Hazard Mitigation Plan.
Severe Winter Weather	**YES**	• Review of FEMA National Risk Index • Review of NC State Hazard Mitigation Plan • Review of historical presidential disaster declarations • Review of NOAA NCEI Storm Events Database • Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• Winter storms affect every state in the continental U.S. and Alaska. • Severe winter weather events, including snowstorms and ice storms, are discussed in the State Plan. • NCEI reports that the counties in the Southeastern NC Region have been affected by at least 62 ice storms, winter storms, and winter weather events between January 1993 and May 2025. These events resulted in at least 2 deaths, 35 injuries, and over $185,000 in unadjusted property damage. • Winter weather events were addressed in the previous Southeastern NC Regional Hazard Mitigation Plan.
Earthquakes	**YES**	• Review of FEMA National Risk Index • Review of NC State Hazard Mitigation Plan • Review of the previous Southeastern NC Regional Hazard Mitigation Plan • Review of USGS Earthquake Hazards Program website • Review of NOAA NCEI and USGS records	• Earthquake events are discussed in the State Plan and counties of the Southeastern NC Region are considered to be at moderate risk of an earthquake event. • The previous Southeastern NC Regional Hazard Mitigation Plan addressed earthquakes. • Earthquakes have occurred in and around the State of North Carolina in the past. The state is affected by the Charleston and the New Madrid (near Missouri) Fault lines which have generated a magnitude 8.0 earthquake in the last 200 years. • According to USGS seismic hazard maps, the peak ground acceleration (PGA) with a 10% probability of exceedance in 50 years for the Southeastern NC Region ranges from 1 to 4%g. FEMA recommends that earthquakes be further evaluated for mitigation purposes in areas with a PGA of 3%g or more.

Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
Expansive Soils	**NO**	• Review of FEMA National Risk Index • Review of NC State Hazard Mitigation Plan • Review of USDA Soil Conservation Service's Soil Survey • Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• Expansive soils are not included as a hazard in the State Plan. • According to FEMA and USDA sources, the Southeastern NC Region is in an area that has a "little to no" clay swelling potential. • The previous Southeastern NC Regional Hazard Mitigation Plan did not identify expansive soils.
Geological (Sinkholes, Coastal Erosion)	**YES**	• Review of FEMA National Risk Index • Review of NC State Hazard Mitigation Plan • Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• The State Plan delineates certain areas susceptible to land subsidence, sinkholes, and/or coastal erosion hazards, and counties of the Southeastern NC Region are included in these areas. • The previous Southeastern NC Regional Hazard Mitigation Plan addressed geological hazards including sinkholes and coastal erosion. • Coastal erosion is an increasingly significant concern for the region.
Dam Failure	**YES**	• Review of NC State Hazard Mitigation Plan • Review of North Carolina Dam Safety Program's NC Dam Inventory • Review of U.S. Army Corps of Engineers National Inventory of Dams database • Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• Dam failure is discussed in the State Plan. • Of the 38 dams reported for the Southeastern NC Region in the NC State Dam Inventory, 10 are considered high hazard. (High hazard is defined as "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.") • The previous Southeastern NC Regional Hazard Mitigation Plan identified dam failure as a hazard.
Flooding	**YES**	• Review of FEMA National Risk Index • Review of NC State Hazard Mitigation Plan • Review of historical disaster declarations • Review of NOAA NCEI Storm Events Database	• The flood hazard is discussed thoroughly in the State Plan. • Nearly all presidential disaster declarations for the region have been flood-related and/or caused by hurricane or tropical storm related events.

Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
		• Review of FEMA's NFIP Community Status Book and Community Rating System (CRS) • Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• NCEI reports that the Southeastern NC Region has been affected by at least 410 significant flood and flash flood events between January 1997 and May 2025. These events caused at least 1 death, 2 injuries, and over $21.6M in unadjusted property damage. • Nearly all jurisdictions of the region participate in the NFIP. • The previous Southeastern NC Regional Hazard Mitigation Plan identified flooding as a hazard.
Storm Surge	**YES (Assessed under Hurricanes/ Coastal Hazards)**	• Review of FEMA National Risk Index • Review of NC State Hazard Mitigation Plan • Review of the previous Southeastern NC Regional Hazard Mitigation Plan • Review of NOAA NCEI Storm Events Database	• Storm surge is discussed in the State Plan. • The previous Southeastern NC Regional Hazard Mitigation Plan included storm surge as a hazard. • NCEI reports that the Southeastern NC Region has been affected by at least 8 significant storm surge events between January 1997 and May 2025, with over $8M in unadjusted property damage.
Tsunami	**YES**	• Review of FEMA National Risk Index • Review of NC State Hazard Mitigation Plan • Review of the previous Southeastern NC Regional Hazard Mitigation Plan • Review of FEMA "How-to" mitigation planning guidance (Publication 386-2, "Understanding Your Risks – Identifying Hazards and Estimating Losses").	• No record exists of a catastrophic Atlantic basin tsunami impacting the mid-Atlantic coast of the United States. • Tsunami inundation zone maps are not available for communities located along the U.S. East Coast. • Tsunamis are not discussed in the latest version of the State Plan. • Tsunami was not addressed as a hazard in the previous Southeastern NC Regional Hazard Mitigation Plan. • FEMA mitigation planning guidance suggests that locations along the U.S. East Coast have a relatively low tsunami risk and need not conduct a tsunami risk assessment at this time.

Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
Volcano	**NO**	• Review of FEMA National Risk Index • Review of NC State Hazard Mitigation Plan • Review of USGS Volcano Hazards Program website • Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• There are no active volcanoes in North Carolina. • There has not been a volcanic eruption in North Carolina in over 1 million years. • No volcanoes are located near the Southeastern NC Region.
Wildfires	**YES**	• Review of FEMA National Risk Index • Review of NC State Hazard Mitigation Plan • Review of the previous Southeastern NC Regional Hazard Mitigation Plan • Review of Southern Wildfire Risk Assessment (SWRA) Data • Review of the NC Forest Service website	• Wildfires are identified as a hazard in the State Plan. • The previous Southeastern NC Regional Hazard Mitigation Plan included wildfire as a hazard. • A review of SWRA data indicates that there are areas of elevated concern in the Southeastern NC Region. • According to the North Carolina Forest Service, the Southeastern NC Region experiences an average of 94 fires each year which burns a combined average of 3,988 acres each year. • Wildfire hazard risks will increase as low-density development along the wildland urban interface (WUI) increases.
Infectious Disease	**YES**	• Review of the NC State Hazard Mitigation Plan • Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• Infectious Disease is identified as a hazard in the State Plan and is included for consistency. • Infectious Disease has caused one of the twenty disaster declarations in the Southeastern NC Region.
TECHNOLOGICAL HAZARDS			
Hazardous Substances	**YES**	• Review of the NC State Hazard Mitigation Plan • Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• Hazardous Substances are identified as a hazard in the State Plan. • The previous Southeastern NC Regional Hazard Mitigation Plan includes hazardous substances as a hazard of concern. • This update assesses hazardous materials, hazardous chemicals, and oil spills under this hazard.

Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
Radiological Emergency – Fixed Nuclear Facilities	**YES**	• Review of the NC State Hazard Mitigation Plan • Review of the previous Southeastern NC Regional Hazard Mitigation Plan • Review of IAEA list of fixed nuclear power stations in the United States • Discussion with local officials about location of nuclear power stations	• The Brunswick Nuclear Plant is located just north of Southport, North Carolina on the Cape Fear River in Brunswick County. • Nuclear events can sometimes be caused by natural hazards and deserve some attention in this plan due to some areas of the region being in the 10-mile evacuation zone for the Brunswick Nuclear Plant.
Terrorism	**YES**	• Review of the NC State Hazard Mitigation Plan • Review of the previous Southeastern NC Regional Hazard Mitigation Plan • Review of local official knowledge	• Terrorism is identified as a hazard in the State Plan. • The previous Southeastern NC Regional Hazard Mitigation Plan included terrorism as a hazard. • This hazard will assess chemical, biological, radiological, nuclear, and explosive terrorism events.
Cyber Security	**YES**	• Review of NC State Hazard Mitigation Plan • Review of NC State Emergency Operations Plan • Review of the previous Southeastern NC Regional Hazard Mitigation Plan	• Changing future conditions encourage the assessment of the possibility of a cyberattack with the increase in global technology. • Cyber Security is a concern included in the North Carolina Emergency Operations Plan.
Electromagnetic Pulse	**YES**	• Review of NC State Hazard Mitigation Plan	• Changing future conditions encourage the assessment of the possibility of an electromagnetic pulse with the increase in global technology.
Civil Disturbance	**YES**	• Review of NC State Hazard Mitigation Plan	• Changing future conditions and social systems encourage the assessment of the possibility of a civil disturbance incident.
Food Emergency	**YES**	• Review of NC State Hazard Mitigation Plan	• Changing future conditions and food systems encourage the assessment of the possibility of a food emergency.

4.5 HAZARD IDENTIFICATION RESULTS

Table 4.5 provides a summary of the hazard identification and evaluation process noting which of the of the initially identified hazards are considered significant enough for further evaluation through this Plan's risk assessment (marked with a "☑").

TABLE 4.5: SUMMARY RESULTS OF THE HAZARD IDENTIFICATION AND EVALUATION PROCESS

NATURAL HAZARDS	TECHNOLOGICAL HAZARDS
☐ Avalanche	☑ Hazardous Substances
☑ Drought	☑ Radiological Emergency – Fixed Nuclear Facilities
☑ Excessive Heat	☑ Terrorism
☑ Hurricane and Coastal Hazards	☑ Cyber Security
☑ Nor'easter***	☑ Electromagnetic Pulse
☑ Hailstorm**	☑ Civil Disturbance
☑ Lightning**	☑ Food Emergency
☑ Tornadoes/Thunderstorms	
☑ Severe Winter Weather	
☑ Earthquakes	
☐ Expansive Soils	
☑ Geological (Sinkholes, Coastal Erosion)	
☑ Dam Failure	
☑ Flooding	
☑ Storm Surge***	
☑ Tsunami	
☐ Volcano	
☑ Wildfires	
☑ Infectious Disease	

☑ = Hazard considered significant enough for further evaluation in the regional hazard risk assessment.

** = Hazard is assessed as a sub-hazard under the Tornadoes/Thunderstorms profile.

*** = Hazard is assessed as a sub-hazard under the Hurricane and Coastal Hazards profile.

SECTION 5
HAZARD PROFILES

This section of the plan provides a detailed assessment of the hazards identified to pose a threat to the Southeastern North Carolina Region. The remainder of this section is comprised of the following subsections.

- 5.1: Overview
- 5.2: Study Area
- 5.3: Drought
- 5.4: Excessive Heat
- 5.5: Hurricanes and Coastal Hazards
- 5.6: Tornadoes/Thunderstorms
- 5.7: Severe Winter Weather
- 5.8: Earthquakes
- 5.9: Geological
- 5.10: Dam Failure
- 5.11: Flooding
- 5.12: Tsunamis
- 5.13: Wildfire
- 5.14: Infectious Disease
- 5.15: Hazardous Substances
- 5.16: Radiological Emergency – Fixed Nuclear Facilities
- 5.17: Terrorism
- 5.18: Cyber
- 5.19: Electromagnetic Pulse
- 5.20: Civil Disturbance
- 5.21: Food Emergency
- 5.22: Conclusions on Hazard Risk
- 5.23 Final Determinations

44 CFR Requirement
44 CFR Part 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.

5.1 OVERVIEW

This section includes detailed hazard profiles for each of the hazards identified in the previous section (*Hazard Identification*) as significant enough for further evaluation in the Southeastern NC Region hazard risk assessment by creating a hazard profile. Each hazard profile includes a general description of the hazard, its location and extent, notable historical occurrences and the probability of future occurrences. Each profile also includes specific items noted by members of the Southeastern NC Regional Hazard Mitigation Planning Committee as it relates to unique historical or anecdotal hazard information for the counties in the Southeastern NC Region or a participating municipality within them.

After reviewing the list of assessed hazards from the previous update, the Southeastern NC Regional Hazard Mitigation Planning Committee agreed to amend the hazards in order to be consistent with the State of North Carolina Hazard Mitigation Plan. This required some of the hazard names to be changed and additional hazards were included in the assessment.

The following hazards were identified:

- **Natural**
  - Drought
  - Excessive Heat
  - Hurricanes and Coastal Hazards
  - Tornadoes/Thunderstorms (including hailstorms and lightning)
  - Severe Winter Weather
  - Earthquake
  - Geological (including sinkholes and coastal erosion)
  - Dam Failure
  - Flooding
  - Tsunamis
  - Wildfire
  - Infectious Disease
- **Technological**
  - Hazardous Substances
  - Radiological Emergency – Fixed Nuclear Facilities
  - Terrorism
  - Cyber Security
  - Electromagnetic Pulse
  - Civil Disturbance
  - Food Emergency

The following hazards were identified in the left column below along with "compounding hazards" that may either (1) act as a key driver or (2) lead to secondary risks associated with the primary hazard:

HAZARD	COMPOUNDING - NATURAL											COMPOUNDING - TECHNOLOGICAL						
	Drought	Excessive Heat	Hurricane and Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Geological	Dam Failure	Flooding	Wildfires	Infectious Disease	Hazardous Substances	Radiological Emergency	Terrorism	Cyber	Electromagnetic Pulse	Civil Disturbance	Food Emergency
NATURAL HAZARDS																		
DROUGHT (6)		•			•		•		•	•								•
EXCESSIVE HEAT (7)	•			•			•		•	•	•							•
HURRICANE AND COASTAL HAZARDS (9)				•			•	•	•		•	•	•				•	•
TORNADOES/ THUNDERSTORMS (6)		•	•				•		•	•		•						
SEVERE WINTER WEATHER (6)	•			•			•		•		•							•
EARTHQUAKES (6)							•	•	•			•	•				•	

GEOLOGICAL (9)	●	●	●	●	●	●		●	●			●						
DAM FAILURE (5)			●			●	●		●					●				
FLOODING (12)	●	●	●	●	●	●	●	●			●	●					●	●
WILDFIRES (5)	●	●		●								●					●	
INFECTIOUS DISEASE (8)		●	●		●				●			●		●			●	●
TECHNOLOGICAL HAZARDS																		
HAZARDOUS SUBSTANCES (11)			●	●		●	●		●	●	●		●	●			●	●
RADIOLOGICAL EMERGENCY (8)			●			●						●		●	●	●	●	●
TERRORISM (7)								●			●	●	●		●	●	●	
CYBER SECURITY(4)													●	●		●	●	
ELECTROMAGNETIC PULSE (4)													●	●	●		●	
CIVIL DISTURBANCE (10)			●			●			●	●	●	●	●	●	●	●		
FOOD EMERGENCY (8)	●	●	●		●				●		●	●	●					

This 2026 plan update cycle also explicitly recognizes the threat of climate change as a real concern for the Southeastern NC Region as it relates to how it will impact the hazards that can affect the area. As the Earth's climate warms, changing global weather patterns, future development in both urban and rural areas, and changing local and global environmental conditions are anticipated based on historical trends and future projections. Recent studies demonstrate that North Carolina will experience a wide variety of negative effects due to climate change[1]. Additionally, the United States Environmental Protection Agency (EPA) reports as of August 2016 that most of North Carolina has warmed by one-half to one degree (F) in the last century, and the sea level is rising about one inch every decade. Some of the impacts of climate change over the next fifty (50) years are expected to include, but potentially not be limited to, more frequent and/or more intense hazard events, increased vulnerability of the built environment to hazards, increased number of extreme heat days, increased risks of heat stroke and other heat-related illnesses, reduced crop yields, and livestock harms.

In response to this growing body of information, each hazard profile now includes a subsection titled ***Changing Future Conditions*** that discusses how the hazard, and thus how it impacts the Southeastern NC Region, may be expected to change in the future. Where applicable, climate change is specifically addressed in those subsections.

[1] *2020 North Carolina Climate Science Report* (https://ncics.org/programs/nccsr/)

5.2 STUDY AREA

The Southeastern North Carolina Region includes four counties: Brunswick, New Hanover, Onslow and Pender. **Table 5.1** provides a summary table of the participating jurisdictions within each county. In addition, **Figure 5.1** provides a base map, for reference, of the Southeastern North Carolina Region.

TABLE 5.1: PARTICIPATING JURISDICTIONS

Brunswick County	
Bald Head Island	Northwest
Belville	Oak Island
Boiling Spring Lakes	Ocean Isle Beach
Bolivia	Sandy Creek
Calabash	Shallotte
Carolina Shores	Southport
Caswell Beach	St. James
Holden Beach	Sunset Beach
Leland	Varnamtown
Navassa	Unincorporated Brunswick County
New Hanover County	
Carolina Beach	Wilmington
Kure Beach	Wrightsville Beach
Unincorporated New Hanover County	
Onslow County	
Jacksonville	Richlands
Holly Ridge	Swansboro
North Topsail Beach	Unincorporated Onslow County
Pender County	
Atkinson	Surf City
Burgaw	Topsail Beach
Saint Helena	Watha
Unincorporated Pender County	

FIGURE 5.1: SOUTHEASTERN NC REGION BASE MAP

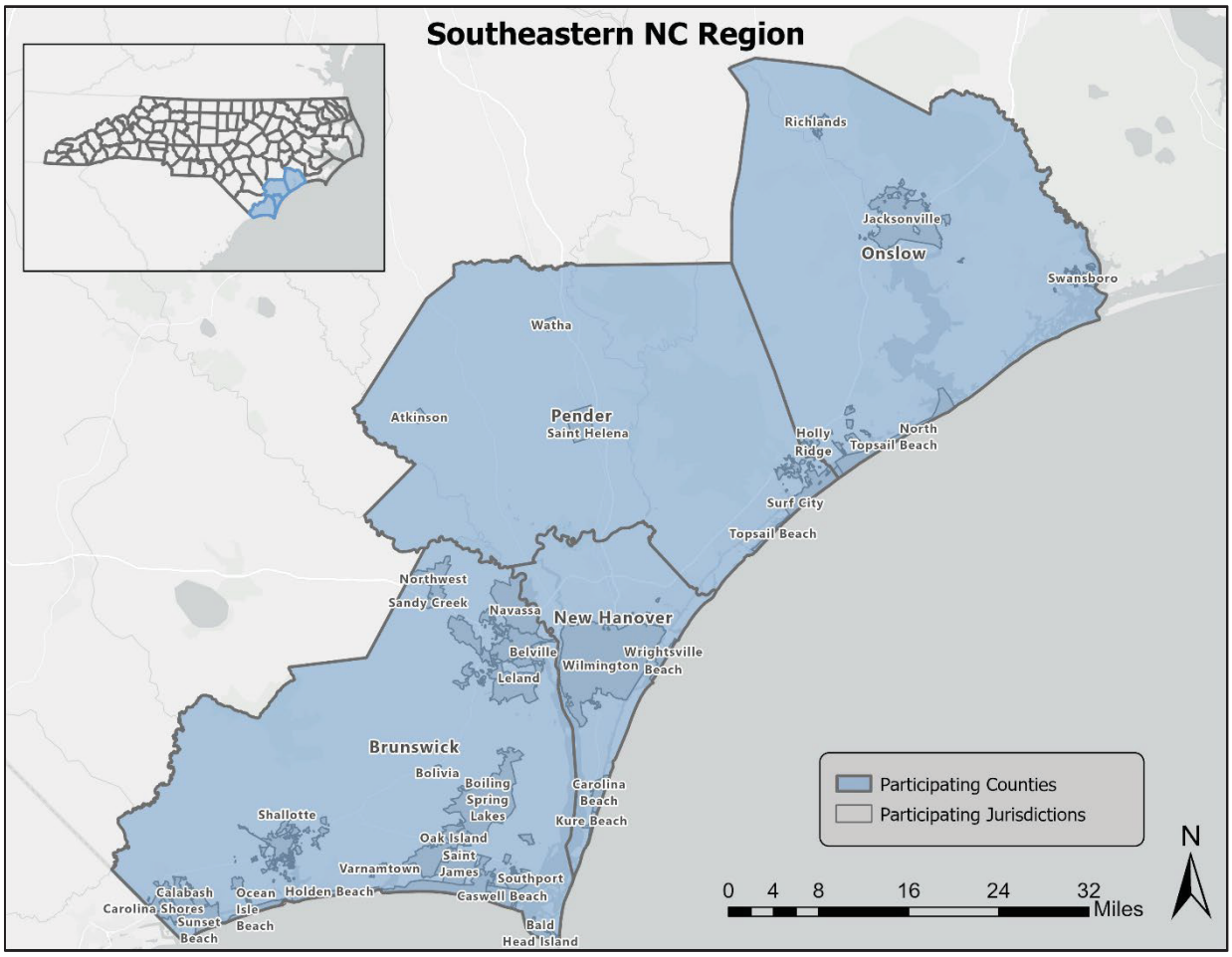


Table 5.2 below lists each significant hazard for the Southeastern North Carolina Region and identifies whether it has been determined to be a specific hazard of concern for the municipal jurisdictions and each of the countywide unincorporated areas. This is based on the best available data and information from the Southeastern NC Regional Hazard Mitigation Planning Committee. (● = hazard of concern)

TABLE 5.2 SUMMARY OF IDENTIFIED HAZARD EVENTS

Jurisdiction	Natural												Technological						
	Drought	Excessive Heat	Hurricane and Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Geological	Dam Failure	Flooding	Tsunami	Wildfires	Infectious Disease	Hazardous Substances	Radiological Emergency	Terrorism	Cyber	Electromagnetic Pulse	Civil Disturbance	Food Emergency
Brunswick County																			
Bald Head Island	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Belville	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Boiling Spring Lakes	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Bolivia	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Calabash	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Carolina Shores	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Holden Beach	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Leland	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Navassa	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Northwest	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Oak Island	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ocean Isle Beach	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Sandy Creek	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Shallotte	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Southport	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
St. James	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Sunset Beach	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Varnamtown	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Unincorporated Area	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
New Hanover County																			
Carolina Beach	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Kure Beach	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Wilmington	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Wrightsville Beach	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Unincorporated Area	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Pender County																			
Atkinson	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Burgaw	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
St. Helena	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Surf City	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Topsail Beach	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Unincorporated Area	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Onslow County																			
Holly Ridge	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Jacksonville	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
North Topsail Beach	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Richlands	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Swansboro	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Watha	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Unincorporated Area	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

NATURAL HAZARDS

5.3 DROUGHT

5.3.1 Background and 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 temperature, high winds, and low humidity can exacerbate drought conditions. In addition, human actions and demands for water resources can hasten drought-related impacts. Drought categories are based on streamflow, groundwater levels, the amount of water stored in reservoirs, soil moisture, the time of year and other relevant factors for assessing the extent and severity of dry conditions.

Droughts are typically classified into one of four types: 1) meteorological, 2) hydrologic, 3) agricultural, or 4) socioeconomic. **Table 5.3** presents definitions for these types of droughts.

TABLE 5.3 DROUGHT CLASSIFICATION DEFINITIONS

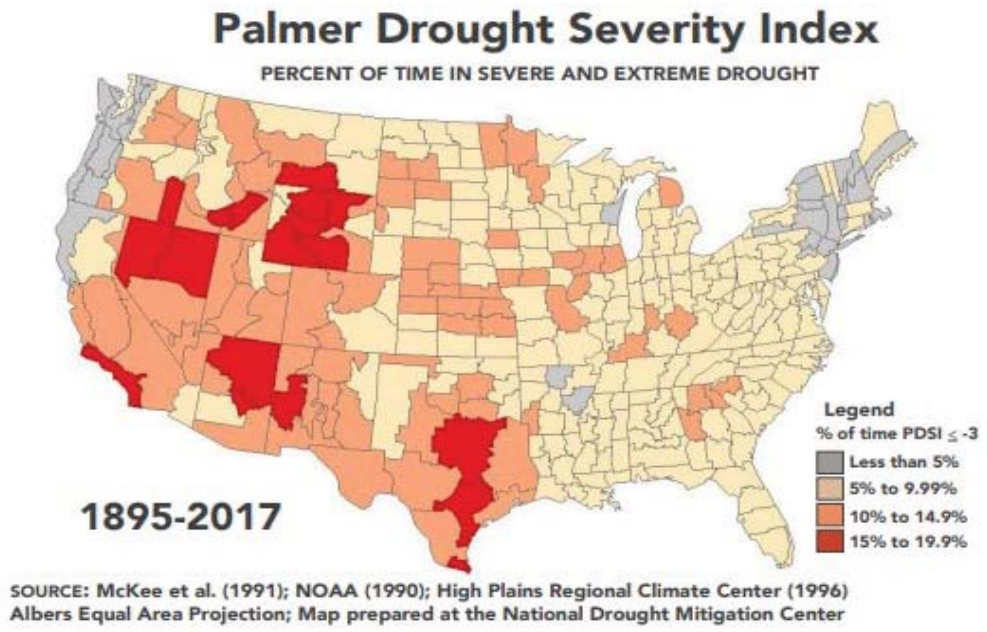
Meteorological Drought	The degree of dryness or departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
Hydrologic Drought	The effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
Agricultural 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 extended over a number of 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 -0.1 (incipient dry spell) to -4.0 (extreme drought). Evident in **Figure 5.2**, 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.

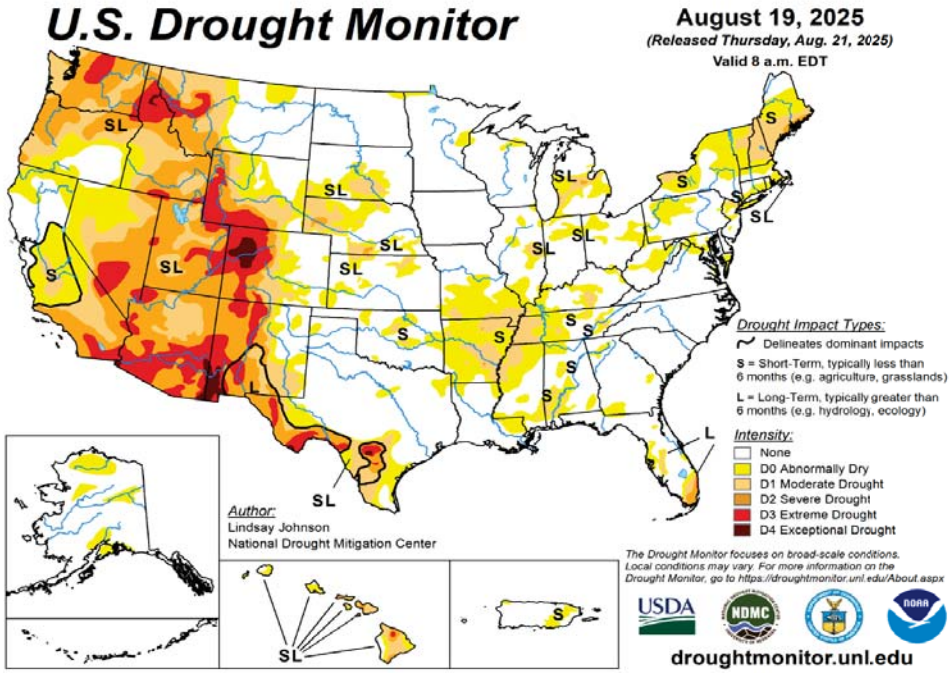
FIGURE 5.2: PALMER DROUGHT SEVERITY INDEX SUMMARY



Source: National Drought Mitigation Center

The figure above is the most updated version of the Palmer Drought Severity Index; however, the US Drought Monitor is updated on a weekly basis. An archived map from August 2025 can be seen below in **Figure 5.3** to reflect more current drought conditions in the US.

FIGURE 5.3: US DROUGHT MONITOR (AS OF AUGUST 2025)



Source: U.S. 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 (**Figure 5.2**), Eastern North Carolina has a relatively high risk for drought hazards as compared to the rest of the State. However, local areas may experience much more severe and/or frequent drought events than what is represented on the Palmer Drought Severity Index map. Further, it is assumed that the Southeastern NC 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.

5.3.3 Historical Occurrences

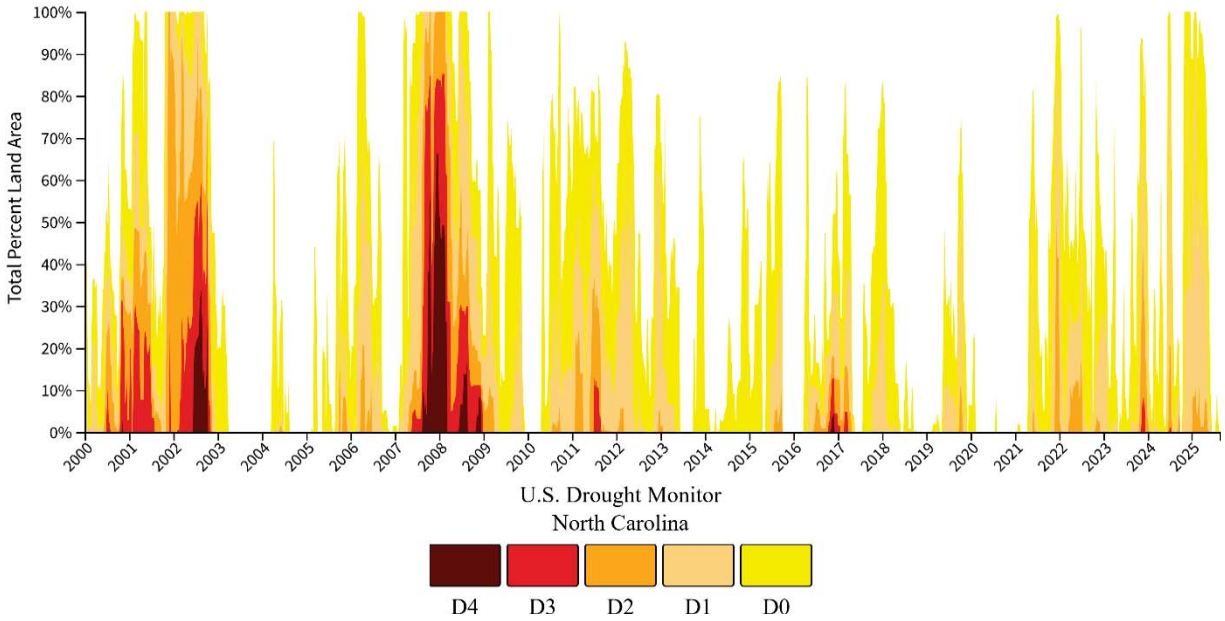
The North Carolina Drought Management Advisory Council also reports data on North Carolina drought conditions from 2000 to 2025 through the North Carolina Drought Monitor. It classifies drought conditions using the scale set by the US Drought Monitor, which classifies conditions on a scale of D0 to D4. Each class is further explained in **Table 5.4.**

TABLE 5.4: USDM DROUGHT CLASSIFICATIONS

Scale	Description	Impacts
D0	**Abnormally Dry**	- Short-term dryness slowing planting, growth of crops - Some lingering water deficits - Pastures or crops not fully recovered
D1	**Moderate Drought**	- Some damage to crops, pastures - Some water shortages developing - Voluntary water-use restrictions requested
D2	**Severe Drought**	- Crop or pasture loss likely - Water shortages common - Water restrictions imposed
D3	**Extreme Drought**	- Major crop/pasture losses - Widespread water shortages or restrictions
D4	**Exceptional Drought**	- Exceptional and widespread crop/pasture losses - Shortages of water creating water emergencies

Data from the North Carolina Drought Management Advisory Council and National Integrated Drought Information System (NIDIS) were used to ascertain historical drought events in the Southeastern NC Region. Since 2000, the longest duration of drought (D1-D4) in North Carolina lasted 155 weeks beginning on January 4, 2000, and ending on December 17, 2002. The most intense period of drought occurred during the week of December 11, 2007, where D4 affected 66.2% of North Carolina land. **Figure 5.4** shows the percentage area of North Carolina that has experienced drought conditions from 2000 to 2025.

FIGURE 5.4: NORTH CAROLINA DROUGHT CONDITIONS (2000-2025)



Source: NIDIS, Drought.gov, US Drought Portal

According to the North Carolina Drought Monitor, at least one of the four counties in the Southeastern NC Region had drought occurrences (including abnormally dry) in all the last 24 years (2001-2025) (**Table 5.5**). 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 a majority of the county may be in a less severe condition.

TABLE 5.5: SUMMARY OF DROUGHT EVENTS IN THE SOUTHEASTERN NC REGION

Year	Brunswick County	New Hanover County	Onslow County	Pender County
2001	Severe Drought	Severe Drought	Severe Drought	Severe Drought
2002	Extreme Drought	Severe Drought	Severe Drought	Severe Drought
2003	Abnormally Dry	Normal	Normal	Normal
2004	Abnormally Dry	Abnormally Dry	Abnormally Dry	Abnormally Dry
2005	Abnormally Dry	Abnormally Dry	Abnormally Dry	Abnormally Dry
2006	Abnormally Dry	Abnormally Dry	Abnormally Dry	Abnormally Dry
2007	Extreme Drought	Extreme Drought	Extreme Drought	Exceptional Drought
2008	Extreme Drought	Extreme Drought	Extreme Drought	Extreme Drought
2009	Moderate Drought	Abnormally Dry	Abnormally Dry	Moderate Drought
2010	Moderate Drought	Abnormally Dry	Abnormally Dry	Moderate Drought
2011	Extreme Drought	Extreme Drought	Extreme Drought	Extreme Drought
2012	Severe Drought	Severe Drought	Severe Drought	Severe Drought
2013	Abnormally Dry	Abnormally Dry	Abnormally Dry	Abnormally Dry
2014	Abnormally Dry	Abnormally Dry	Abnormally Dry	Abnormally Dry
2015	Abnormally Dry	Normal	Abnormally Dry	Abnormally Dry
2016	Abnormally Dry	Abnormally Dry	Abnormally Dry	Abnormally Dry
2017	Moderate Drought	Abnormally Dry	Abnormally Dry	Abnormally Dry
2018	Moderate Drought	Normal	Abnormally Dry	Abnormally Dry
2019	Moderate Drought	Moderate Drought	Moderate Drought	Moderate Drought

Year	Brunswick County	New Hanover County	Onslow County	Pender County
2020	Abnormally Dry	Abnormally Dry	Abnormally Dry	Abnormally Dry
2021	Severe Drought	Severe Drought	Severe Drought	Severe Drought
2022	Moderate Drought	Severe Drought	Severe Drought	Severe Drought
2023	Moderate Drought	Moderate Drought	Moderate Drought	Moderate Drought
2024	Moderate Drought	Moderate Drought	Moderate Drought	Severe Drought
2025	Severe Drought	Severe Drought	Severe Drought	Severe Drought

Source: North Carolina Drought Monitor

According to the North Carolina Drought Management Advisory Council, the year 2007 was recorded as the driest year by the National Weather Service in more than 100 years in North Carolina and was #1 in the 2007 statewide temperature ranks. Records were set in many areas for number of days of low humidity and number of days with temperatures above 90 °F[2].

As a result of the drought, 59 North Carolina counties were declared disaster areas because of crop losses by the U.S. Department of Agriculture. This included Brunswick, New Hanover, Onslow and Pender. The disaster declaration was made because of major losses for at least one major crop and significant losses on corn, soybeans, hay and pasture and other forage crops[3].

5.3.4 Changing Future Conditions

According to findings from the 2020 North Carolina Climate Science Report[4], it is very likely that average temperatures and the number of very warm nights will both continue to increase throughout North Carolina. Annual average temperatures have been consistently above normal in the state since the 1990s, with the most recent 10-year span (2009-2018) marking the warmest 10-year period on its record. Additionally, by 2050, climate models project that the annual average temperature in North Carolina (compared to the 1996-2015 average temperature) will increase by 2 to 4°F under a lower emissions scenario and by 2 to 5°F under a higher emissions scenario. 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.

5.3.5 Probability of Future Occurrences

Based on historical occurrence information, it is assumed that all of the Southeastern NC Region has a probability level of likely (10 to 100 percent annual probability) for future drought events. This hazard may vary slightly by location, but each area has an equal probability of experiencing a drought. While reports indicate that there is a much lower probability for extreme, long-lasting drought conditions. As of 2025, the FEMA National Risk Index[5] rates the drought hazard as “relatively low” in Brunswick County, Onslow County, and Pender County compared to “very low” in New Hanover County.

[2] North Carolina Drought Management Advisory Council Activities Report (2008)
[3] WRAL News. (2008). https://www.wral.com/news/local/story/3931506/
[4] North Carolina Climate Science Report. (2020). https://ncics.org/programs/nccsr/
[5] FEMA National Risk Index (https://hazards.fema.gov/nri/)

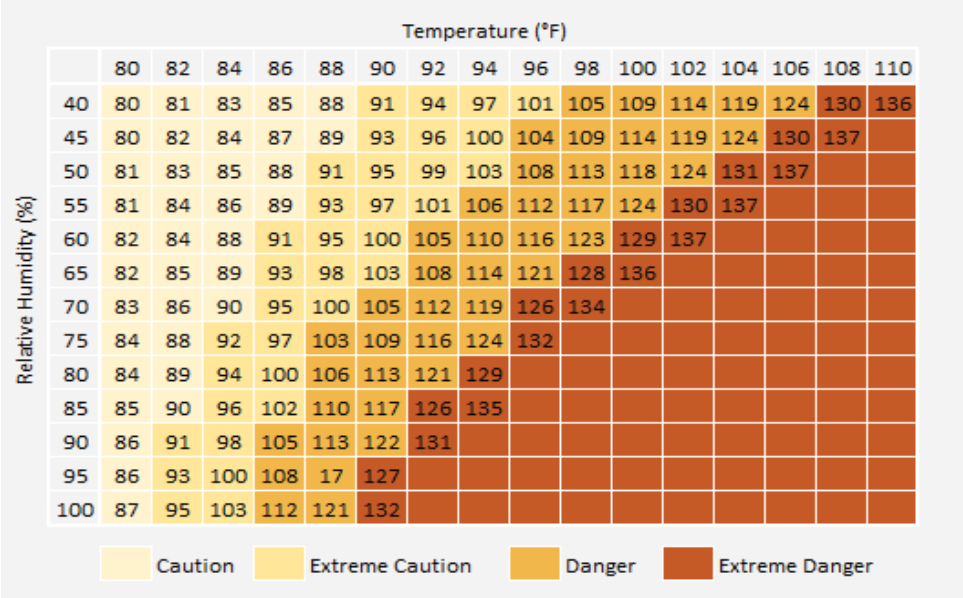
5.4 EXCESSIVE HEAT

5.4.1 Background and 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, there is no universal definition for extreme heat because "the definition of "extreme" can vary depending on the location and typical climate." 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[6, 7]. 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.

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[8]. The National Weather Service devised the Heat Index as a mechanism to better inform the public of heat dangers. The Heat Index Chart, shown in **Figure 5.5**, uses air temperature and humidity to determine the heat index or apparent temperature. **Table 5.6** shows the dangers associated with different heat index temperatures. Some populations, such as the elderly and young, are more susceptible to heat danger than other segments of the population.

FIGURE 5.5: NWS HEAT INDEX CHART



Source: NOAA, National Weather Service

[6] NWS Heat Forecast Tools (https://www.weather.gov/safety/heat-index)
[7] NWS Heat Safety (https://www.weather.gov/safety/heat-ww)
[8] Associated Press Climate (https://apnews.com/article/record-heat-deadly-climate-change-humidity-south-11de21a526e1cbe7e306c47c2f12438d)

TABLE 5.6: HEAT DISORDERS ASSOCIATED WITH HEAT INDEX TEMPERATURE

Heat Index Temperature (Fahrenheit)	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°	Sunstroke, heat cramps, and heat exhaustion likely, and heatstroke possible with prolonged exposure and/or physical activity
130° or higher	Heatstroke or 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.

5.4.2 Location and Spatial Extent

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

5.4.3 Historical Occurrences

Data from the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI)[9] was used to determine historical excessive heat and heat wave events in the Southeastern NC Region between January 1950 and April 2025. The results are reported in **Table 5.7** below:

TABLE 5.7: EXCESSIVE HEAT OCCURRENCES (1950-2025)

County	Number of Events	Deaths/ Injuries	Property Damage
Brunswick County	7	0/0	$0
New Hanover County	7	0/0	$0
Onslow County	10	0/0	$0
Pender County	7	0/0	$0
Southeastern NC Regional Total	**31**	**0/0**	**$0**

Source: NCEI

[9] **Note for all NOAA NCEI data**: These records represent the best available data for a variety of natural hazards and may only represent a partial total of the actual number of events occurring within a given county or planning region due to inconsistencies in collection, validation, and entry of official records. These gaps in hazard event records will be supplemented with any local information or other authoritative sources where available.

In addition, information from the State Climate Office in North Carolina was reviewed to obtain historical temperature records in the region. Temperature information has been reported since 1890. The recorded maximum temperature for each county can be found below in **Table 5.8**:

TABLE 5.8: HIGHEST RECORDED TEMPERATURE

Location	Date	Temperature (°F)
Brunswick County	8/22/1983	103
New Hanover County	6/27/1952	104
Onslow County	6/21/1990	104
Pender County	6/21/1933	105
Southeastern NC Region Maximum Temperature	--	**105**

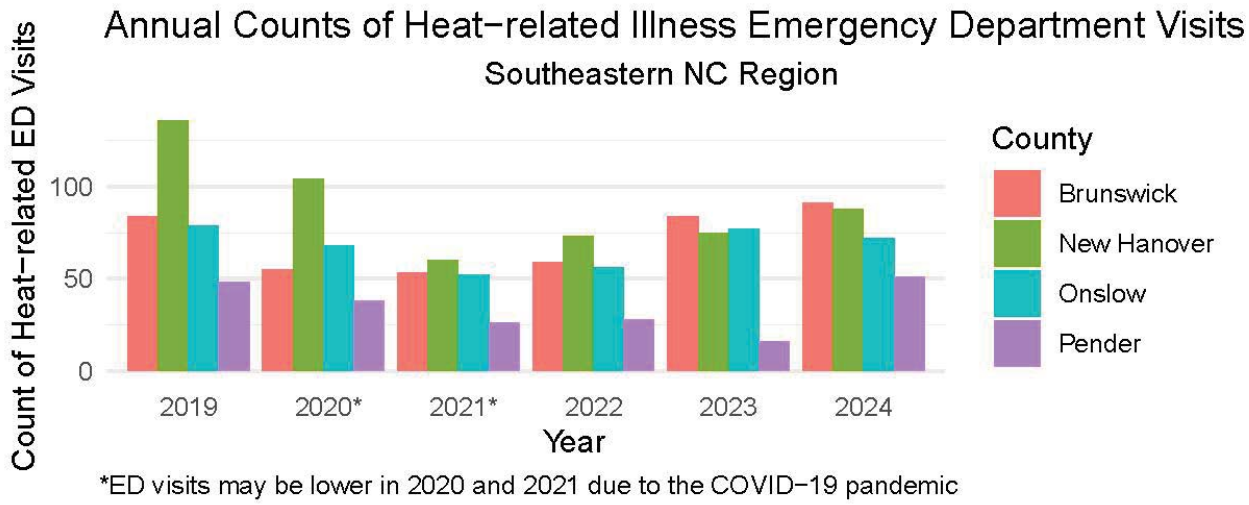
Source: State Climate Office of North Carolina

The State Climate Office also reports average maximum temperatures in various locations in the region. The most centralized location is Wilmington International Airport (New Hanover County). **Table 5.9** shows the average maximum temperatures by month from 2023-2025 at the Wilmington observation station, which can be used as a general comparison for the region.

TABLE 5.9: AVERAGE MAXIMUM TEMPERATURE IN WILMINGTON INTERNATIONAL AIRPORT, WILMINGTON, NEW HANOVER COUNTY

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Avg. Max (°F)	60.1	62.6	70.8	76.2	83.5	88.9	90.2	87.9	83.7	78.2	71.2	60.9

Additional data for heat-related illnesses reported in the region is discussed in detail below.



The figure above shows the annual count of emergency department visits for heat-related illness in the Southeastern NC 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 Brunswick County ranged from 53 visits in 2021 to 91 visits in 2024. The annual count of emergency department visits for heat-related illness in New Hanover County ranged from 60 visits in 2021 to 136 visits in 2019. The annual count of emergency

department visits for heat-related illness in Onslow County ranged from 15 visits in 2021 to 79 visits in 2019. The annual count of emergency department visits for heat-related illness in Pender County ranged from 16 visits in 2023 to 51 visits in 2024.

5.4.4 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 21 years (2005-2025). Furthermore, the last 16 years (2010-2025) indicated the greatest number of very warm nights recorded despite no significant increase in the frequency of very hot days[10].

The State Climate Office of North Carolina provides county-specific climate projections on the North Carolina Resilience Exchange. These projections, which are based on the Fifth National Climate Assessment, anticipate that the number of days above 90°F in all counties, especially Onslow County, will increase by the 2060s. The number of days above 95°F is also anticipated to increase substantially by the 2060s. The same dataset shows that nighttime temperatures, which have historically surpassed 70°F on 64 nights per year in New Hanover County, will surpass 70°F between 95 and 107 nights per year, on average. The data for nighttime temperature projections is similarly significant for other counties of the region[11].

Location	Average Number of Days each Year with Daytime Temperatures Over 90°F	
	Historical Number of Days	Projected Number of Days by the 2060s
Brunswick County	39	74-88
New Hanover County	41	77-91
Onslow County	45	81-95
Pender County	48	28-41
	Average Number of Days each Year with Daytime Temperatures Over 95°F	
	Historical Number of Days	Projected Number of Days by the 2060s
Brunswick County	5	19-30
New Hanover County	6	22-33
Onslow County	7	25-36
Pender County	8	28-41
	Average Number of Days each Year with Nighttime Lows Over 70°F	
	Historical Number of Nights	Projected Number of Nights by the 2060s
Brunswick County	57	88-101
New Hanover County	64	95-107
Onslow County	41	72-84
Pender County	48	83-95

Source: State Climate Office of North Carolina

Nights that do not go below 70°F make it hard for our bodies 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 other vulnerable populations.

[10] NOAA NCEI 2022 State Climate Summaries (https://statesummaries.ncics.org/chapter/nc/)
[11] NC Resilience Exchange (https://www.resilienceexchange.nc.gov/understand-your-vulnerabilities/climate-observations-and-projections)

5.4.5 Probability of Future Occurrences

Based on historical occurrence information, it is assumed that all of the Southeastern NC Region has a probability level of likely (10 to 100 percent annual probability) for future excessive heat events to impact the region.

5.5 HURRICANE AND COASTAL HAZARDS

5.5.1 Background and Description

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 counter-clockwise 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. The majority of 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 (6).

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 Wind Scale (**Table 5.10**), which rates hurricane intensity on a scale of 1 to 5, with 5 being the most intense.

TABLE 5.10: SAFFIR-SIMPSON WIND 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

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 5.11** 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 5.11: 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 crafts 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.	

Sources: National Hurricane Center; Federal Emergency Management Agency

Nor'easters

The nor'easter is a particularly devasting type of coastal storm, named for the winds that blow in from the northeast and drive the storm up the US East Coast alongside the Gulf Stream, a band of warm water that lies off the Atlantic coast. They can cause substantial damage to coastal areas due to their associated strong winds and heavy surf conditions. They are caused by the interaction of the jet stream with horizontal temperature gradients and generally occur during the fall and winter months when moisture and cold air are plentiful. Nor'easters are known for dumping heavy amounts of rain and snow, producing hurricane-force winds, and creating high surf conditions that causes severe beach erosion and coastal flooding.

Rip Currents

A rip current is an extremely dangerous hazard, killing approximately 100 people each year (according to the National Weather Service). Rip currents form in the surf-zone as waves disperse. According to NOAA, waves break on the sandbar, move towards the beach, and then return to the ocean through a channel. Water becomes trapped between the beach and the sandbar, causing the water to move away from the beach in a narrow, river-like channel. There are three parts to a rip current: 1) the feeder; 2) the neck; and 3) the head. The feeder current flows parallel to the shore, converging at the neck and flowing, as a rip current, towards the head. At the head, the current expands and releases slack. Rip currents are typically mushroom-shaped and brown in color due to sand being picked up. However, some may have no color at all. Rip currents also vary in size and shape.

According to the National Oceanic and Atmospheric Administration, there are four different types of rip currents including traveling, fixed, permanent, and flash.

- Flash: A flash current is short in duration (less than 10 minutes) and is enhanced by large swell. This causes unpredictable conditions where they occur.
- Permanent: This type of rip current develops along jetties, groins, and piers.
- Fixed: These rip currents are dependent upon the shape of bays, coasts, reefs, or sandbars.
- Traveling: This type of rip current forms along long beach currents which run parallel to the beach. The long beach current pushes the rip away from its original location, weakening it.

Rip currents form along coastal areas in large bodies of water including oceans and the Great Lakes. All of the coastal areas in the Southeastern NC Region are uniformly at-risk to rip currents. Further, these areas are equally susceptible to any of the four types of rip currents. The Fort Fisher revetment in New Hanover County is notorious for permanent rip current occurrences. Piers throughout the region also have permanent rip currents. The most dangerous rip currents of any type occur during high surf conditions when wave height and wave period are the highest.

5.5.2 Location and Spatial Extent

Hurricanes and coastal hazards threaten the entire Atlantic and Gulf seaboard of the United States. North Carolina's geographic location of the Atlantic Ocean and its proximity to the Gulf Stream make it prone to hurricanes. In fact, North Carolina has experienced the fourth greatest amount of landfalling hurricanes of any state in the twentieth century (trailing Florida, Texas, and Louisiana). All areas in the Southeastern NC Region are equally susceptible to hurricane and coastal hazards.

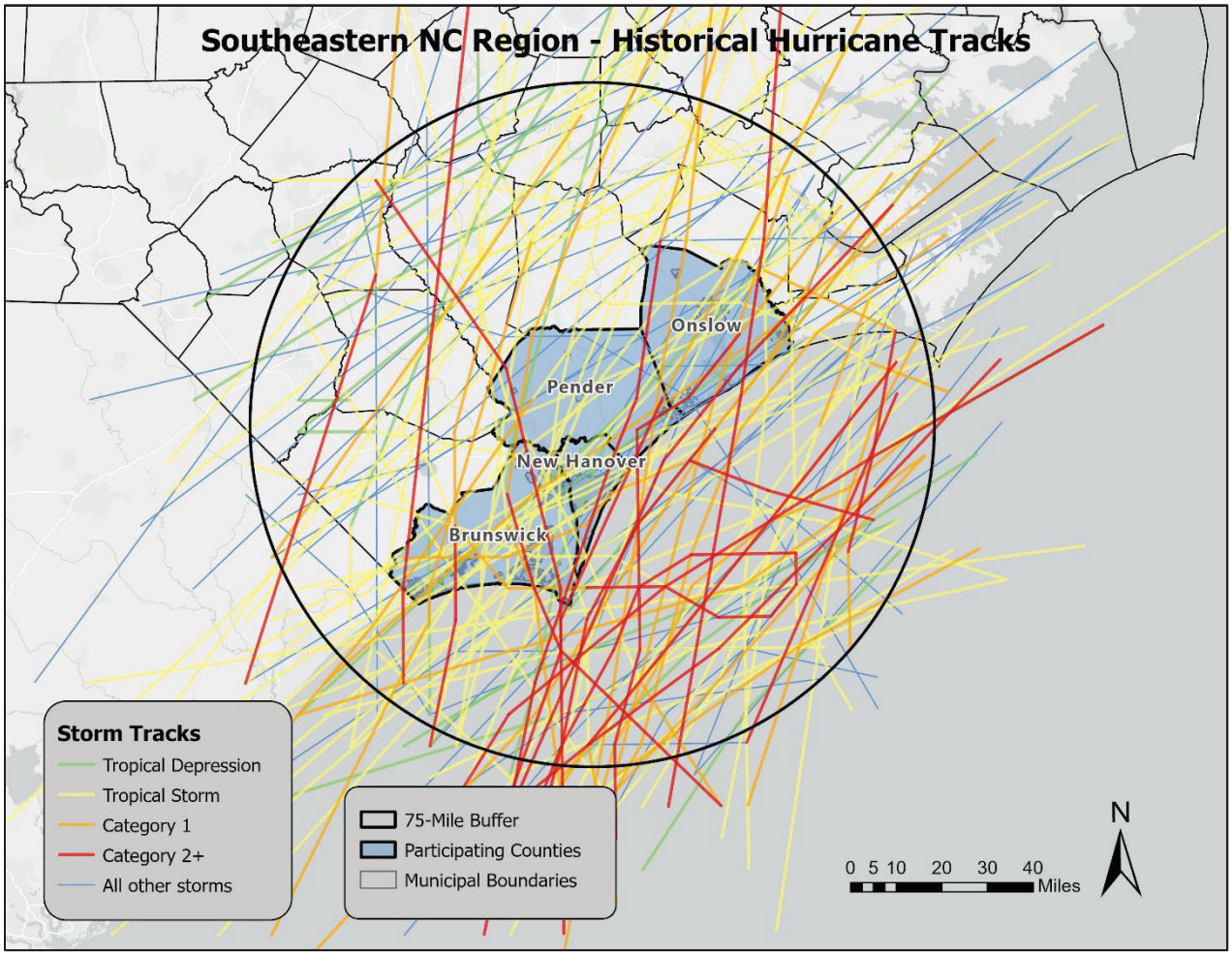
5.5.3 Historical Occurrences

North Carolina has an extensive hurricane history dating back to colonial times. During the nineteenth century, storms occurred in 1837, 1846, 1856, 1879, 1883, and 1899. During the 1950s, North Carolina was impacted by several hurricanes, including Hazel, Connie, Diane, and Ione. Between 1960 - 1990, there was a decrease in landfalling hurricanes, with the exception of Hurricane Donna in 1960, Hurricane Diana in 1984, and Hurricane Hugo in 1989. Recent history has included a number of hurricanes/tropical storms, including several major storms, with Emily (1993), Opal (1995), Bertha (1996), Fran (1996), Bonnie (1998), Dennis (1999), Floyd (1999), Isabel (2003), Charley (2004), Ophelia (2005), Ernesto (2006), Irene (2011), Andrea (2013), Arthur (2014), Matthew (2016), Florence (2018), and Dorian (2019) all leaving their mark on North Carolina. These storms had varying impacts on the Southeastern NC Region.

The National Centers for Environmental Information (NCEI) reported 70 tropical storm and 21 hurricane-related events in the Southeastern NC Region between January 1950 and May 2025. However, information from the National Hurricane Center, contained in **Table 5.12**, also shows there have been a significant number of tropical storm and hurricane related events in the region. The most recent disaster declarations for the region were made in 2024 (Potential Tropical Cyclone Eight), 2020 (Hurricane Isaias), 2019 (Hurricane Dorian), 2018 (Hurricane Florence), 2016 (Hurricane Matthew), and 2011 (Hurricane Irene)[12].

Figure 5.6 below shows the track of each recorded storm based on updated NOAA National Hurricane Center records.

FIGURE 5.6: HISTORICAL HURRICANE STORM TRACKS WITHIN 75 MILES OF THE SOUTHEASTERN NC REGION



Source: NOAA, National Hurricane Center

According to the NOAA National Hurricane Center's historical storm track records, approximately 127 tracks of hurricanes, tropical storms, or tropical depressions have passed within 75 miles of the

[12] All of the participating counties were declared disaster areas for these particular storms. A complete list of historical disaster declarations, including the affected counties, can be found in Section 4: *Hazard Identification*.

Southeastern NC Region since 1850.[13] This total includes 55 hurricanes, 38 tropical storms, and 34 tropical depressions. Of the recorded storm events, two (2) Category 4 Hurricanes and four (4) Category 3 storms have traveled directly through the Southeastern NC Region. **Table 5.12** provides for each event the date of occurrence, name (if applicable), maximum wind speed (as recorded within 75 miles of the Southeastern NC Region) and maximum category of the storm based on the Saffir-Simpson Scale.

TABLE 5.12 HISTORICAL STORM TRACKS WITHIN 75 MILES OF THE SOUTHEASTERN NC REGION (1850–2025)

Storm Name	Formation Date	Maximum Wind Speed (knots)	Maximum Storm Category
UNNAMED 2024	9/15/2024	100	H3
OPHELIA 2023	9/21/2023	110	H3
IDALIA 2023	8/26/2023	90	H2
IAN 2022	9/22/2022	100	H3
COLIN 2022	7/1/2022	70	H1
ELSA 2021	6/30/2021	80	H1
CLAUDETTE 2021	6/17/2021	100	H3
ETA 2020	10/31/2020	100	H3
ISAIAS 2020	7/28/2020	120	H4
FAY 2020	7/5/2020	105	H3
ARTHUR 2020	5/16/2020	75	H1
NESTOR 2019	10/17/2019	95	H2
DORIAN 2019	8/24/2019	115	H4
FLORENCE 2018	8/30/2018	105	H3
UNNAMED 2017	8/27/2017	95	H2
MATTHEW 2016	9/28/2016	75	ET
JULIA 2016	9/13/2016	70	H1
HERMINE 2016	8/28/2016	130	H4
COLIN 2016	6/5/2016	75	H1
BONNIE 2016	5/27/2016	140	H5
ANA 2015	5/6/2015	160	H5
ARTHUR 2014	6/28/2014	125	H4
ANDREA 2013	6/5/2013	85	H2
BERYL 2012	5/25/2012	95	H2
ALBERTO 2012	5/19/2012	115	H4
IRENE 2011	8/21/2011	120	H4
HANNA 2008	8/28/2008	130	H4
CRISTOBAL 2008	7/19/2008	125	H4
GABRIELLE 2007	9/8/2007	115	H4

[13] These storm track statistics do not include extra-tropical storms. Though these related hazard events are less severe in intensity, they may cause significant local impact in terms of rainfall and high winds.

Storm Name	Formation Date	Maximum Wind Speed (knots)	Maximum Storm Category
BARRY 2007	5/31/2007	100	H3
ERNESTO 2006	8/24/2006	85	H2
ALBERTO 2006	6/10/2006	95	H2
OPHELIA 2005	9/6/2005	75	H1
GASTON 2004	8/27/2004	70	H1
CHARLEY 2004	8/9/2004	115	H4
BONNIE 2004	8/3/2004	65	H1
ALEX 2004	7/31/2004	105	H3
ISABEL 2003	9/6/2003	100	H3
KYLE 2002	9/20/2002	135	H4
ARTHUR 2002	7/14/2002	70	H1
ALLISON 2001	6/5/2001	145	H5
HELENE 2000	9/15/2000	130	H4
GORDON 2000	9/14/2000	65	H1
IRENE 1999	10/12/1999	105	H3
FLOYD 1999	9/7/1999	85	H2
DENNIS 1999	8/24/1999	145	H5
EARL 1998	8/31/1998	160	H5
BONNIE 1998	8/19/1998	115	H4
DANNY 1997	7/16/1997	100	H3
JOSEPHINE 1996	10/4/1996	110	H3
FRAN 1996	8/23/1996	90	H2
BERTHA 1996	7/5/1996	100	H3
ARTHUR 1996	6/17/1996	100	H3
ALLISON 1995	6/3/1995	100	H3
GORDON 1994	11/8/1994	70	H1
UNNAMED 1994	7/20/1994	90	H2
UNNAMED 1987	9/7/1987	120	H4
ARLENE 1987	8/8/1987	110	H3
CHARLEY 1986	8/13/1986	95	H2
KATE 1985	11/15/1985	115	H4
ISABEL 1985	10/7/1985	60	TS
ISIDORE 1984	9/25/1984	95	H2
DIANA 1984	9/8/1984	70	H1
UNNAMED 1982	6/18/1982	70	H1
DENNIS 1981	8/7/1981	130	H4
BOB 1979	7/9/1979	75	H1
CLARA 1977	9/5/1977	75	H1
UNNAMED 1976	9/13/1976	140	H5
HALLIE 1975	10/24/1975	85	H2

Storm Name	Formation Date	Maximum Wind Speed (knots)	Maximum Storm Category
AMY 1975	6/27/1975	55	TS
UNNAMED 1973	6/24/1973	115	H4
UNNAMED 1973	6/24/1973	100	H3
UNNAMED 1972	7/10/1972	120	H4
AGNES 1972	6/14/1972	130	H4
UNNAMED 1971	9/8/1971	75	H1
GINGER 1971	9/6/1971	115	H4
DORIA 1971	8/20/1971	100	H3
UNNAMED 1970	8/7/1970	85	H2
ALMA 1970	5/17/1970	95	H2
GLADYS 1968	10/13/1968	75	H1
UNNAMED 1968	9/10/1968	60	TS
DOLLY 1968	8/10/1968	65	H1
ABBY 1968	6/1/1968	115	H4
DORIA 1967	9/4/1967	105	H3
UNNAMED 1967	6/15/1967	70	H1
ALMA 1966	6/5/1966	105	H3
UNNAMED 1965	6/13/1965	135	H4
ISBELL 1964	10/9/1964	95	H2
DORA 1964	8/28/1964	105	H3
UNNAMED 1964	7/23/1964	130	H4
GINNY 1963	10/17/1963	65	H1
ALMA 1962	8/26/1962	105	H3
UNNAMED 1962	6/29/1962	50	TS
UNNAMED 1961	9/12/1961	85	H2
DONNA 1960	8/29/1960	70	H1
BRENDA 1960	7/27/1960	160	H5
UNNAMED 1959	8/2/1959	80	H1
CINDY 1959	7/4/1959	130	H4
HELENE 1958	9/21/1958	140	H5
UNNAMED 1956	10/14/1956	110	H3
FLOSSY 1956	9/20/1956	100	H3
IONE 1955	9/10/1955	70	H1
DIANE 1955	8/7/1955	100	H3
CONNIE 1955	8/3/1955	100	H3
HAZEL 1954	10/5/1954	100	H3
CAROL 1954	8/25/1954	120	H4
UNNAMED 1954	5/28/1954	110	H3
BARBARA 1953	8/11/1953	75	H1
UNNAMED 1952	8/27/1952	95	H2

Storm Name	Formation Date	Maximum Wind Speed (knots)	Maximum Storm Category
UNNAMED 1949	9/11/1949	115	H4
UNNAMED 1947	9/20/1947	95	H2
UNNAMED 1946	10/5/1946	80	H1
UNNAMED 1945	6/20/1945	130	H4
UNNAMED 1944	10/12/1944	75	H1
UNNAMED 1942	10/10/1942	75	H1
UNNAMED 1941	10/3/1941	65	ET
UNNAMED 1937	7/29/1937	140	H5
UNNAMED 1935	8/29/1935	105	H3
UNNAMED 1934	9/1/1934	70	H1
UNNAMED 1932	9/9/1932	125	H4
UNNAMED 1930	8/29/1930	55	TS
UNNAMED 1928	9/6/1928	120	H4
UNNAMED 1925	11/27/1925	130	H4
UNNAMED 1924	9/27/1924	125	H4
UNNAMED 1920	9/19/1920	100	H3
UNNAMED 1918	8/23/1918	85	H2
UNNAMED 1916	9/4/1916	95	H2
UNNAMED 1913	8/30/1913	115	H4
UNNAMED 1912	9/2/1912	105	H3
UNNAMED 1910	8/23/1910	105	H3
UNNAMED 1908	8/30/1908	135	H4
UNNAMED 1907	6/24/1907	105	H3
UNNAMED 1906	9/3/1906	85	H2
UNNAMED 1904	9/8/1904	145	H5
UNNAMED 1901	7/4/1901	130	H4
UNNAMED 1900	10/10/1900	140	H5
UNNAMED 1899	10/2/1899	95	H2
UNNAMED 1897	9/20/1897	115	H4
UNNAMED 1894	9/18/1894	105	H3
UNNAMED 1893	9/25/1893	100	H3
UNNAMED 1889	6/15/1889	135	H4
UNNAMED 1888	10/8/1888	115	H4
UNNAMED 1887	10/9/1887	125	H4
UNNAMED 1886	6/27/1886	105	H3
UNNAMED 1885	9/24/1885	90	H2
UNNAMED 1883	09/04/1883	125	H4
UNNAMED 1882	09/21/1882	120	H4
UNNAMED 1881	09/07/1881	130	H4
UNNAMED 1880	09/06/1880	140	H5

Storm Name	Formation Date	Maximum Wind Speed (knots)	Maximum Storm Category
UNNAMED 1879	8/13/1880	140	H5
UNNAMED 1878	10/18/1878	130	H4
UNNAMED 1877	9/21/1877	105	H3
UNNAMED 1876	9/12/1876	70	H1
UNNAMED 1874	9/25/1874	100	H3
UNNAMED 1873	9/18/1873	95	H2
UNNAMED 1872	10/22/1872	120	H4
UNNAMED 1871	08/17/1871	145	H5
UNNAMED 1868	10/1/1868	115	H4
UNNAMED 1867	6/21/1867	100	H3
UNNAMED 1863	9/16/1863	75	TS
UNNAMED 1861	9/27/1861	70	H1
UNNAMED 1857	9/6/1857	160	H5
UNNAMED 1856	8/25/1856	130	H4
UNNAMED 1854	9/7/1854	75	H1
UNNAMED 1852	8/19/1852	105	H3
UNNAMED 1851	8/16/1851	160	H5

Source: NOAA, National Hurricane Center (Historical Hurricane Tracks)

Below are brief descriptions of several storms in recent history which had a significant impact on the region.

Hurricane Bertha – July 5 to July 12, 1996
Hurricane Bertha formed on July 5, 1996. As a Category One hurricane, Bertha moved across the northeastern Caribbean. The storm's highest sustained winds reached 115 mph north of Puerto Rico. Bertha made landfall near Wilmington on July 12 as a Category Two hurricane, with estimated winds of 105 mph. Bertha claimed two lives in North Carolina and did substantial damage to agricultural crops and forestland. Storm surge flooding and beach erosion were severe along the coast. Damages were estimated to exceed $60 million for homes and structures, and over $150 million for agriculture. Corn, tobacco, and other crops received severe damage from the storm. Rainfall totals of over 5 inches were common in eastern North Carolina, resulting in widespread flooding and power outages. The Southeastern NC Region experienced approximately $17,500,000 in crop damage and $27,000,000 in property damage.

Hurricane Fran – August 23 to September 5, 1996
Hurricane Fran was the most destructive hurricane of the 1996 season. The storm was created on August 23, reaching hurricane status on August 29, while about 450 miles to the northeast of the Leeward Islands. It strengthened to a Category Three hurricane northeast of the central Bahamas on September 4. Hurricane Fran, with winds estimated at 115 mph, made landfall over Cape Fear on the evening of September 5, then continued northward over the eastern United States causing widespread damage. Fran was responsible for 34 deaths overall (24 in North Carolina alone), mostly caused by flash flooding in the Carolinas, Virginia, West Virginia, and Pennsylvania.

The storm surge on the North Carolina coast destroyed or seriously damaged thousands of beach front structures. Immediately following the storm, nearly 1.8 million people were without electrical power.

Most electrical service was restored within 8-10 days. In Brunswick County, storm surge was around 6 feet, with beach erosion around 15 feet on the eastern islands. Seven beach houses on the east end of Holden Beach were damaged or destroyed. The storm passed through New Hanover County with winds gusting around 110 mph, storm surge 12 feet above mean sea level (MSL), and 40 foot beach erosion destroying most docks and piers. Pleasure Island was hardest hit, as 25 homes were carried off foundations and many others badly damaged. Wrightsville Beach was not hit as hard, but 15 homes were at least 75% damaged. In Wilmington, 14 homes were destroyed and 385 homes suffered major damage. In Pender County, a 12-foot storm surge on Topsail Island caused 40 feet of beach erosion and wiped out dunes as overwash destroyed most of the first row of beach houses and heavily damaged the rest. More than 890 businesses and 30,000 homes were damaged by the storm which also damaged or destroyed 8.25 million acres of forest. The damage in North Carolina alone was estimated at $5.2 billion. The Southeastern NC Region experienced approximately $385,000,000 in property damage, $49,000,000 in crop damages, and two (2) deaths. The agricultural damage was the greatest in Pender County.

Hurricane Bonnie – August 19 to 30, 1998
Hurricane Bonnie originated as a tropical wave over Africa. It slowly increased speed and made its way across the Atlantic, near the Leeward Islands and then Hispaniola. It made landfall near Wilmington as a border Category 2/3 hurricane with approximately 115 mph winds and a diameter of 400 miles on August 27, 1998. Rainfall totals between 8-11 inches were recorded in portions of eastern North Carolina. Storm surge ranged from 5-8 feet with most barrier island overwash from the sound side, not the ocean side. The storm slowly moved off land on August 28, 1998. In its wake, the total damage was estimated in the $1 billion range. There was an estimated $360 million in insured property damage, including $240 million in North Carolina alone. The Southeastern NC Region experienced approximately $72,200,000 in property damage.

Hurricane/Tropical Storm Dennis – August 24 to September 7, 1999
Hurricane Dennis developed over the eastern Bahamas on August 26, 1999, and drifted parallel to the southeastern United States from the 26th to the 30th. The center of Dennis approached within 60 miles of the Carolina coastline on August 30th as a strong Category 2 hurricane. Although the storm never made landfall, rainfall approached ten inches in coastal southeastern North Carolina, and beach erosion was substantial. Dennis made a return visit in September as a tropical storm, moving west-northwest through eastern and central North Carolina and then lingering off the coast for several days.

For most counties, Tropical Storm Dennis left relatively little in its wake although on the Outer Banks beach erosion and the storm tide effects were extreme. Unfortunately, the hurricane approached eastern North Carolina during one of the highest astronomical tides of the month. For almost a week after Tropical Storm Dennis made landfall, associated rain fell on inland counties. This allowed most of the rivers to rise above flood stage which set the stage for the next hurricane, Hurricane Floyd and its associated record flooding.

Hurricane Floyd – September 7 to 18, 1999
Hurricane Floyd brought flooding rains, high winds, and rough seas to a good portion of the United States coastline from September 14th through the 18th. Although Hurricane Floyd reached Category 4 intensity in the Bahamas, it weakened to a Category 2 hurricane by the time it made landfall in North Carolina. Due to Floyd's large size, heavy rainfall covered a larger area and lasted longer than a typical Category 2 storm. Flooding caused major problems across the region resulting in at least 77 deaths and damages estimated in the billions. In North Carolina alone, 7,000 homes were destroyed; 17,000 homes were inhabitable; and 56,000 homes were damaged.

Extreme flooding was experienced across most counties. Inland flooding exceeded Hurricane Bertha, Fran, Bonnie, and Dennis combined. Most counties reported their worst flooding ever. The Northeast Cape Fear River had the worst flood of the century, while the Black River flood was the worst since 1945. Unbelievable numbers of homes were covered with water and over half a million customers throughout the warning area were without power. High water closed most roads, including US 17, isolating many areas. A dam failed at Boiling Spring Lakes, inundating the area. In Pender County, more than 3,000 hogs, 90,000 turkeys, and 200 cows were lost due to drowning. Animal waste and septic tanks added pollution to the flooding. Two human fatalities occurred as motorists drove into flooded parts of highways. Unofficially the flooding from Hurricane Floyd has been compared to a 500-year flood.

Hurricane Isabel – September 6 to 19, 2003

Hurricane Isabel began her path to the east coast of the United States as a tropical storm around September 6, 2003. On September 7th, Isabel was upgraded to a hurricane with 90 mile per hour (mph) sustained winds. By September 8th, Isabel became the third major hurricane of the year at Category 4 with winds reaching almost 135 mph. Isabel continued her path towards the east coast with a well-formed eye and catastrophic winds that eventually reached 160 mph on September 11, 2003. According to the National Oceanic and Atmospheric Administration (NOAA), at that point Isabel's hurricane force winds extended 60 miles out from the center and tropical storm force winds extended approximately 185 miles out. The storm began to weaken and on September 16 it was reduced to Category 2. Large ocean swells and dangerous surf conditions were experienced from South Carolina to New Jersey.

The hurricane made landfall on September 19th along the southern Outer Banks. Widespread power outages were experienced in eastern North Carolina and Virginia. The fringe of Isabel's circulation caused offshore winds gusting near 60 mph along the beaches of Pender, New Hanover, and Brunswick counties. Damage was minimal, mainly to scattered tree limbs and some roof shingles. Beach erosion damaged a roadway on Bald Head Island in Brunswick County.

Hurricane Ophelia – September 6 to September 17, 2005

Category one Hurricane Ophelia, with maximum sustained winds of 85 mph, approached the North Carolina coast on September 13th. The hurricane remained offshore brushing the southern coastal counties of North Carolina on September 14th and 15th. The large eyewall (50 miles in diameter) was over New Hanover, Pender, and Brunswick counties with hurricane strength wind gusts reported at Wrightsville Beach. There were unofficial reports of wind gusts to 84 mph at Bald Head Island and Kure Beach. Rainfall was heaviest in the eastern portion of Brunswick County. Average rainfall over the Southeastern NC Region ranged from 6 to 10 inches. The storm continued to track slowly northeast. Ophelia brushed by Outer Banks Hyde and Dare counties on September 16th with hurricane-force wind gusts. Damage to the Southeastern NC Region was mainly minor roof damage and flooding. There were moderate reports of downed trees, and the utility company reported over 51,000 people without power at the height of the storm. Beach erosion was also a problem. A long-shore current gouged a five (5) foot escarpment along the coast of New Hanover and Pender counties. Damage to the area and the cost for cleanup was $6 million for Pender and New Hanover counties, with $2.3 million for Brunswick County. Most of the money went to the cleanup of storm debris.

Hurricane Irene – August 26 to 27, 2011

Hurricane Irene made landfall during the morning of the 27th, near Cape Lookout, as a large Category 1 hurricane. Due to the large size of the hurricane, strong damaging winds, major storm surge, and flooding rains were experienced across much of eastern North Carolina. Several destructive tornados

occurred during the evening of the 26th associated with the hurricane. Millions of dollars in damages were reported across the area. Property and crop damages were estimated to be 209 million dollars. Storm surge damages were estimated at 420 million dollars. Across the Southeastern NC Region, winds gusting as high as 60 mph resulted in downed trees and power lines with power outages. Rainfall amounts across the Region ranged from three to over eight inches resulting in flooding of roads and low-lying areas. The Southeastern NC Region experienced approximately $4.35 million in property damage.

Hurricane Matthew – October 8, 2016

Hurricane Matthew was an extraordinarily severe and sustained event that brought record-level flooding to many areas in eastern North Carolina's coastal plain, sound, and coastal communities. Hurricane Matthew hit North Carolina on October 8, 2016, as a Category 1 storm. Communities were devastated by this slow-moving storm primarily by widespread rainfall. During a 36-hour period, up to 18 inches of heavy rainfall inundated areas in central and eastern North Carolina. Riverine flooding began several days after Hurricane Matthew passed and lasted for more than two weeks. New rainfall records were set in 17 counties in the Tar, Cape Fear, Cashie, Lumber, and Neuse River watersheds. Entire towns were flooded as water levels throughout eastern North Carolina crested well above previously seen stages. During the peak of the hurricane, 800,000 households lost power and 635 roads were closed, including a section of I-40 West in Johnston County that was closed for seven days, and sections of I-95 North and South in Robeson and Cumberland Counties that were closed for 10 days. Approximately 88,000 homes were damaged, and 4,424 residences were completely destroyed. Losses totaled more than $967 million, representing an economic loss as high as 68 percent of the damage, or $659 million, not expected to be covered by insurance or FEMA assistance.

Hurricane Florence – September 14 to 17, 2018

Hurricane Florence was a powerful and long-lived Cape Verde hurricane that caused catastrophic damage in the Carolinas in September 2018. As it made landfall in Wrightsville Beach, North Carolina on September 14th, Florence was reduced in power to Category 1 on the Saffir-Simpson scale. The storm dropped a record level of rain across the entire state. By September 17, Florence had dropped 33.90 inches of rain and was estimated to have caused between $2.8 to 5 billion in damage across the affected area.

Rip Currents

A total of 74 rip current events have been documented by NOAA NCEI in the Southeastern NC Region between January 1996 to May 2025, resulting in at least 34 deaths and 11 injuries. The probability of future rip current occurrences is "likely." This hazard occurs naturally along the shorelines of the Southeastern NC Region. Inclement weather conditions may increase the severity of this hazard. This is a very dangerous natural hazard in the Southeastern NC Region that, unlike other hazards, only affects life instead of property. Therefore, no vulnerability assessment will be performed in Section 6, Vulnerability Assessment.

Storm Surge

A total of 10 storm surge events have been documented by NOAA NCEI in the Southeastern NC Region between January 1996 and May 2025, resulting in over $8,000,000 in property damage according to those reports. Storm surges generally occur with most coastal storms (hurricanes, tropical storms, nor'easters).

5.5.4 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 found to the west 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 from the late 1990s through today have been notably active in terms of hurricane formation and local damage, including Hurricanes Dennis, Floyd, Frances, Ivan, Matthew, Florence, and Helene. Climate change 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[14].

5.5.5 Probability of Future Occurrences

Given the coastal location of the region, it is more than likely to be affected by a significant number of hurricanes and tropical storms. Further, there is a high probability that the region will be affected by powerful coastal storms due to its proximity to the Atlantic Ocean and Gulf Stream. Coastal storm events are known for dumping heavy amounts of rain and snow, producing hurricane-force winds, and creating high surf that causes severe erosion and coastal flooding. Based on historical evidence, the probability level of future occurrence is likely (10 to 100 percent annual probability). As of 2025, the FEMA National Risk Index rates the hurricane hazard as “relatively high” in Brunswick County, Onslow County, and Pender County compared to “very high” in New Hanover County.

5.6 TORNADOES/THUNDERSTORMS

For the purpose of maintaining consistency with the State of North Carolina Hazard Mitigation Plan, this section will assess tornadoes and thunderstorms, which also include hailstorms and lightning.

5.6.1 Background and Description

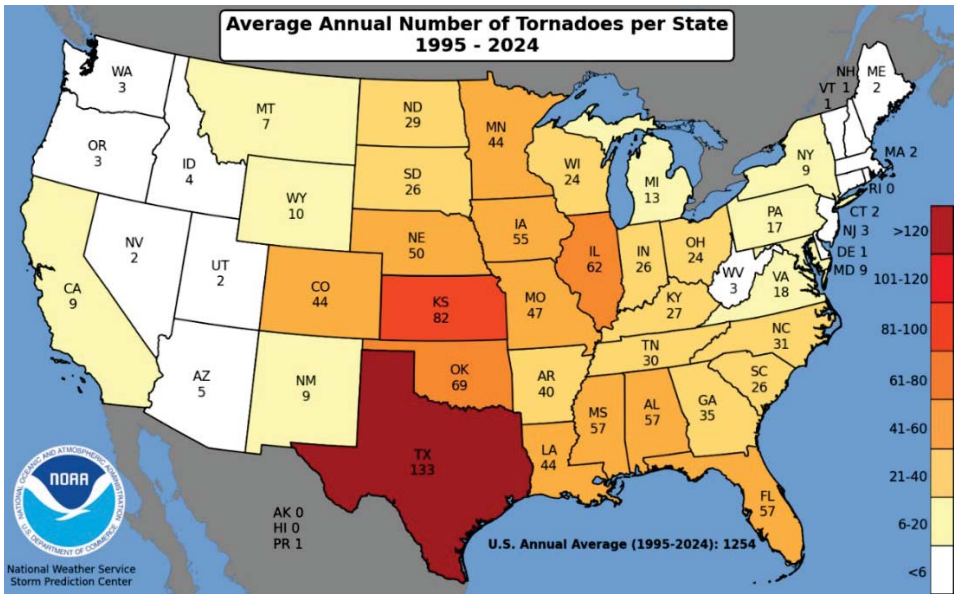
Tornado

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud extending to the ground. Tornadoes are most often generated by thunderstorm activity (but sometimes result from hurricanes and other tropical storms) when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The damage caused by a tornado is a result of the high wind velocity and wind-blown debris, also accompanied by lightning or large hail. According to the National Weather Service, tornado wind speeds normally range from 40 miles per hour to more than 300 miles per hour. The most violent tornadoes have rotating winds of 250 miles per hour or more and are capable of causing extreme destruction and turning normally harmless objects into deadly missiles.

Each year, an average of over 800 tornadoes is reported nationwide, resulting in an average of 80 deaths and 1,500 injuries.[15] According to the NOAA Storm Prediction Center (SPC), the highest concentration of tornadoes in the United States has been in Oklahoma, Texas, Kansas and Florida respectively. Although the Great Plains region of the Central United States does favor the development of the largest and most dangerous tornadoes (earning the designation of “tornado alley”), Florida experiences the greatest number of tornadoes per square mile of all U.S. states (SPC, 2002). **Figure 5.7** shows the average annual tornado activity in the United States per state (1995-2024).

[14] NOAA NCEI 2022 State Climate Summaries (https://statesummaries.ncics.org/chapter/nc/)
[15] NOAA, 2009

FIGURE 5.7: TORNADO ACTIVITY IN THE UNITED STATES



Sources: NOAA SPC

Tornadoes are more likely to occur during the months of March through May and are most likely to form in the late afternoon and early evening. Most tornadoes are a few dozen yards wide and touch down briefly, but even small short-lived tornadoes can inflict tremendous damage. Highly destructive tornadoes may carve out a path over a mile wide and several miles long.

The destruction caused by tornadoes ranges from light to inconceivable depending on the intensity, size and duration of the storm. Typically, tornadoes cause the greatest damage to structures of light construction, including residential dwellings (particularly mobile homes). Tornadic magnitude is reported according to the Fujita and Enhanced Fujita Scales. Tornado magnitudes prior to 2005 were determined using the traditional version of the Fujita Scale (**Table 5.13**). Tornado magnitudes that were determined in 2005 and later were determined using the Enhanced Fujita Scale (**Table 5.14**).

TABLE 5.13: THE FUJITA SCALE (EFFECTIVE PRIOR TO 2005)

F-Scale Number	Intensity Phrase	Wind Speed	Type of Damage Done
F0	**Gale tornado**	40-72 mph	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.
F1	**Moderate tornado**	73-112 mph	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 may be destroyed.
F2	**Significant tornado**	113-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.

F-Scale Number	Intensity Phrase	Wind Speed	Type of Damage Done
F3	Severe tornado	158-206 mph	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted
F4	Devastating tornado	207-260 mph	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	Incredible tornado	261-318 mph	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.
F6	Inconceivable tornado	319-379 mph	These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds. Missiles, such as cars and refrigerators would do serious secondary damage that could not be directly identified as F6 damage. If this level is ever achieved, evidence for it might only be found in some manner of ground swirl pattern, for it may never be identifiable through engineering studies

Source: National Weather Service

TABLE 5.14 THE ENHANCED FUJITA SCALE (EFFECTIVE 2005 AND LATER)

EF-SCALE NUMBER	INTENSITY PHRASE	3 SECOND GUST (MPH)	TYPE OF DAMAGE DONE
EF0	GALE	65–85	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages to sign boards.
EF1	MODERATE	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 may be destroyed.
EF2	SIGNIFICANT	111–135	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
EF3	SEVERE	136–165	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.
EF4	DEVASTATING	166–200	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
EF5	INCREDIBLE	Over 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.

Source: National Weather Service

Thunderstorms

Thunderstorms can produce a variety of accompanying hazards including wind (discussed here), hail, and lightning[16]. Although thunderstorms generally affect a small area, they are very dangerous and may cause substantial property damage.

Three conditions need to occur for a thunderstorm to form. First, it needs moisture to form clouds and rain. Second, it needs unstable air, such as warm air that can rise rapidly (this often referred to as the "engine" of the storm). Third, thunderstorms need lift, which comes in the form of cold or warm fronts, sea breezes, mountains, or the sun's heat. When these conditions occur simultaneously, air masses of varying temperatures meet, and a thunderstorm is formed. These storm events can occur singularly, in lines, or in clusters. Further, they can move through an area very quickly or linger for several hours.

According to the National Weather Service, more than 100,000 thunderstorms occur each year, though only about 10 percent of these storms are classified as "severe". A severe thunderstorm occurs when the storm produces at least one of these three elements: 1) Hail of three-quarters of an inch; 2) Tornado; 3) Winds of at least 58 miles per hour.

Thunderstorm events have the capability of producing straight-line winds that can cause severe destruction to communities and threaten the safety of a population. Such wind events, sometimes separate from a thunderstorm event, are common throughout the Southeastern NC Region. High winds can form due to pressure of the Northeast coast that combines with strong pressure moving through the Ohio Valley. This creates a tight pressure gradient across the region, resulting in high winds which increase with elevation. It is common for wind gusts to reach 30 to 60 miles per hour during winter.

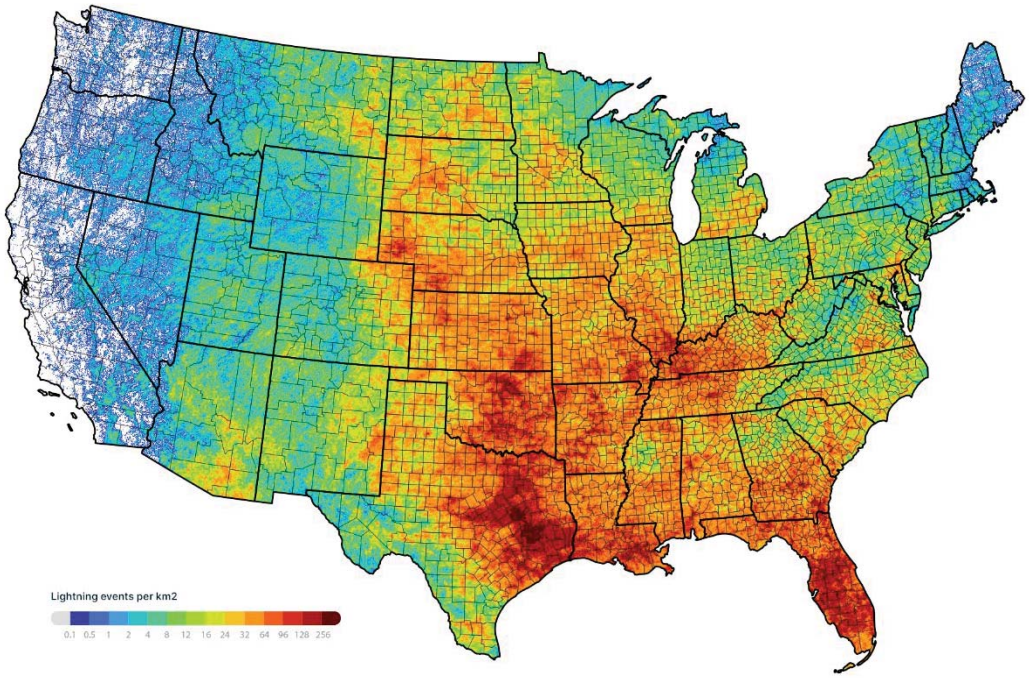
Downbursts are also possible with thunderstorm events. Such events are an excessive burst of wind in excess of 125 miles per hour. They are often confused with tornadoes. Downbursts are caused by down drafts from the base of a convective thunderstorm cloud. It occurs when rain-cooled air within the cloud becomes heavier than its surroundings. Thus, air rushes towards the ground in a destructive yet isolated manner. There are two types of downbursts. Downbursts less than 2.5 miles wide, duration less than 5 minutes and winds up to 168 miles per hour are called "microbursts." Larger events greater than 2.5 miles at the surface and longer than 5 minutes with winds up to 130 miles per hour are referred to as "macrobursts."

Lightning

Lightning is a discharge of electrical energy resulting from the buildup of positive and negative charges within a thunderstorm, creating a "bolt" when the buildup of charges becomes strong enough. This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Lightning rapidly heats the sky as it flashes but the surrounding air cools following the bolt. This rapid heating and cooling of the surrounding air causes thunder which often accompanies lightning strikes. While most often affiliated with severe thunderstorms, lightning may also strike outside of heavy rain and might occur as far as 10 miles away from any rainfall. **Figure 5.8** shows a lightning flash density map for the years 2016-2024 based upon data provided by Vaisala's U.S. National Lightning Detection Network (NLDN®).

[16] Lightning and hail hazards are discussed as separate hazards in this section.

FIGURE 5.8: LIGHTNING FLASH DENSITY IN THE UNITED STATES



Source: Vaisala U.S. National Lightning Detection Network 2024 Annual Report

Lightning strikes occur in very small, localized areas. For example, they may strike a building, electrical transformer, or even a person. According to FEMA, lightning injures an average of 300 people and kills 80 people each year in the United States. Direct lightning strikes can also cause significant damage to buildings, critical facilities, and infrastructure largely by igniting a fire. Lightning is also responsible for igniting wildfires that can result in widespread damage to property.

Hailstorms

Hailstorms are a potentially damaging outgrowth of severe thunderstorms (discussed separately). Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to the rapid rising of warm air into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until they develop to a sufficient weight and fall as precipitation. Hail typically takes the form of spheres or irregularly-shaped masses greater than 0.75 inches in diameter. The size of hailstones is a direct function of the size and severity of the storm. High velocity updraft winds are required to keep hail in suspension in thunderclouds. The strength of the updraft is a function of the intensity of heating at the Earth's surface. Higher temperature gradients relative to elevation above the surface result in increased suspension time and hailstone size. **Table 5.15** shows the TORRO Hailstorm Intensity Scale which is a way of measuring hail severity.

TABLE 5.15: TORRO HAILSTORM INTENSITY SCALE

	Intensity Category	Typical Hail Diameter (mm)*	Probable Kinetic Energy, J-m^2	mm to inch conversion (inches)	Typical Damage Impacts
H0	Hard Hail	5	0-20	0 – 0.2	No damage
H1	Potentially Damaging	5-15	>20	0.2 – 0.6	Slight general damage to plants, crops
H2	Significant	10-20	>100	0.4 – 0.8	Significant damage to fruit, crops, vegetation
H3	Severe	20-30	>300	0.8 – 1.2	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25-40	>500	1.0 – 1.6	Widespread glass damage, vehicle bodywork damage
H5	Destructive	30-50	>800	1.2 – 2.0	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-60		1.6 – 2.4	Bodywork of grounded aircraft dented, brick walls pitted
H7	Destructive	50-75		2.0 – 3.0	Severe roof damage, risk of serious injuries
H8	Destructive	60-90		1.6 – 3.5	(Severest recorded in the British Isles) Severe damage to aircraft bodywork
H9	Super Hailstorms	75-100		3.0 – 3.9	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	>100			Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Source: Tornado and Storm Research Organisation (https://www.torro.org.uk/research/hail/hscale)

5.6.2 Location and Spatial Extent

Tornado

Tornadoes occur throughout the state of North Carolina, and thus in the Southeastern NC 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 Southeastern NC Region is uniformly exposed to this hazard.

Thunderstorm

A thunderstorm event is an atmospheric hazard and thus has no geographic boundaries. It is typically a widespread event that can occur in all regions of the United States. However, thunderstorms are most common in the central and southern states because atmospheric conditions in those regions are favorable for generating these powerful storms. Also, the Southeastern NC region typically experiences several straight-line wind events each year. These wind events can and have caused extensive damage. It is assumed that the Southeastern NC Region has uniform exposure to a thunderstorm event and/or straight-line winds, and the spatial extent of an impact would be potentially large.

Lightning

It is assumed that the Southeastern NC Region is uniformly exposed to lightning. Lightning occurs randomly; therefore, it is impossible to predict where and with what frequency it will strike.

Hailstorm

Hailstorms frequently accompany thunderstorms, so their locations and spatial extents coincide. It is assumed that the Southeast NC Region is uniformly exposed to severe thunderstorms; therefore, all areas of the region are equally exposed to hail which may be caused by such storms.

5.6.3 Historical Occurrences

Tornado

According to the National Centers for Environmental Information, there have been a total of 169 recorded tornado events in the Southeastern NC Region between 1950 and April 2025 (**Table 5.19**), resulting in nearly $27 million in unadjusted property damage.[17] In addition, at least 9 deaths and 109 injuries were reported. The greatest reported magnitude in the Southeastern NC Region was an EF3 tornado in Onslow County as of April 16, 2011. It is important to note that only tornadoes that have been reported and officially recorded by NOAA are factored into this risk assessment. It is likely that a high number of occurrences have gone unreported over the past 75+ years.

TABLE 5.19: SUMMARY OF TORNADO OCCURRENCES IN THE SOUTHEASTERN NC REGION

Location	Number of Occurrences	Deaths/Injuries	Property Damage
Brunswick County	**44**	**3/11**	**$4,184,000**
Bald Head Island	1	0/0	$0
Belville	0	0/0	$0
Boiling Spring Lakes	0	0/0	$0
Bolivia	0	0/0	$0
Calabash	0	0/0	$0
Carolina Shores	0	0/0	$0
Holden Beach	2	0/0	$10000
Leland	2	0/0	$2000
Navassa	0	0/0	$0
Northwest	0	0/0	$0
Oak Island	0	0/0	$0
Ocean Isle Beach	0	0/0	$0
Sandy Creek	0	0/0	$0
Shallotte	2	0/0	$0
Southport	3	0/0	$5,000
St. James	0	0/0	$0
Sunset Beach	0	0/0	$0
Varnamtown	0	0/0	$0
Unincorporated Area	34	3/11	$4,167,000
New Hanover County	**32**	**0/8**	**$2,401,000**
Carolina Beach	1	0/0	$3,000
Kure Beach	0	0/0	$0
Wilmington	5	0/4	$415,000
Wrightsville Beach	0	0/0	$0
Unincorporated Area	17	0/4	$1,983,000
Onslow County	**48**	**3/59**	**$15,421,250**
Holly Ridge	0	0/0	$0
Jacksonville	7	0/0	$130,000
North Topsail Beach	0	0/0	$0

[17] These tornado events are only inclusive of those reported by the National Centers for Environmental Information (NCEI). It is likely that additional tornadoes have occurred in the Southeastern NC Region. As additional local data becomes available, this hazard profile will be amended.

Location	Number of Occurrences	Deaths/Injuries	Property Damage
Richlands	4	0/7	$2,045,000
Swansboro	1	0/0	$10,000
Unincorporated Area	36	3/52	$13,236,250
Pender County	**45**	**3/31**	**$4,945,000**
Atkinson	4	0/0	$249,000
Burgaw	2	0/0	$50,000
St. Helena	0	0/0	$0
Surf City	2	0/0	$12,000
Topsail Beach	0	0/0	$0
Watha	1	0/0	$35,000
Unincorporated Area	36	3/31	$4,599,000
Southeastern NC Regional Total	**169**	**9/109**	**$26,951,250**

Source: National Centers for Environmental Information

Thunderstorm

According to NCEI, there have been 717 reported thunderstorm and high wind events in the Southeastern NC Region since 1950[18]. These events caused over $5.9 million in unadjusted property damage. There were at least 15 reported injuries, but no fatalities associated with these thunderstorm events in the Southeastern NC Region. **Table 5.18** summarizes this information. **Appendix H** presents detailed thunderstorm event reports including date, magnitude, and associated damages for each event.

TABLE 5.18: SUMMARY OF THUNDERSTORM OCCURRENCES

Location	Number of Occurrences	Deaths/Injuries	Property Damage
Brunswick County	**147**	**0/1**	**$687,500**
Bald Head Island	0	0/0	$0
Belville	0	0/0	$0
Boiling Spring Lakes	0	0/0	$0
Bolivia	3	0/0	$0
Calabash	0	0/0	$0
Carolina Shores	0	0/0	$0
Holden Beach	2	0/1	$0
Leland	11	0/0	$165,000
Navassa	0	0/0	$0
Northwest	2	0/0	$0
Oak Island	0	0/0	$0
Ocean Isle Beach	1	0/0	$0
Sandy Creek	0	0/0	$0
Shallotte	2	0/0	$23,000
Southport	13	0/0	$95,000
St. James	0	0/0	$0
Sunset Beach	1	0/0	$0
Varnamtown	2	0/0	$4,000
Unincorporated Area	113	0/0	$400,500
New Hanover County	**185**	**0/5**	**$2,010,000**
Carolina Beach	1	0/0	$5,000
Kure Beach	2	0/0	$42,000
Wilmington	41	0/1	$735,500
Wrightsville Beach	7	0/0	$751,000
Unincorporated Area	134	0/4	$477,000

[18] These thunderstorm events are only inclusive of those reported by the National Centers for Environmental Information (NCEI). It is likely that additional events have occurred in the Southeastern NC Region. As additional local data becomes available, this hazard profile will be amended.

Location	Number of Occurrences	Deaths/Injuries	Property Damage
Onslow County	**233**	**0/2**	**$316,900**
Holly Ridge	3	0/0	$0
Jacksonville	15	0/0	$15,000
North Topsail Beach	3	0/0	$0
Richlands	10	0/0	$88,400
Swansboro	11	0/0	$45,000
Unincorporated Area	191	0/2	$168,500
Pender County	**152**	**0/7**	**$2,900,000**
Atkinson	4	0/0	$1,000
Burgaw	17	0/0	$85,000
St. Helena	0	0/0	$0
Surf City	11	0/0	$7,000
Topsail Beach	5	0/0	$20,000
Watha	7	0/0	$5,000
Unincorporated Area	108	0/7	$2,782,000
Southeastern NC Regional Total	**717**	**0/15**	**$5,914,400**

Lightning

According to the National Centers for Environmental Information, there have been a total of 88 recorded lightning events in the Southeastern NC Region between January 1950 and April 2025.[19] These events resulted in over $4,692,500 in unadjusted property damage, as listed in summary **Table 5.17**. Further, lightning resulted in at least 9 fatalities and 31 injuries throughout the Southeastern NC Region. Detailed information on historical lightning events can be found in **Appendix F.**

TABLE 5.17: SUMMARY OF LIGHTNING OCCURRENCES

Location	Number of Occurrences	Deaths/Injuries	Property Damage
Brunswick County	**29**	**1/2**	**$1,390,000**
Bald Head Island	0	0/0	$0
Belville	0	0/0	$0
Boiling Spring Lakes	0	0/0	$0
Bolivia	0	0/0	$0
Calabash	0	0/0	$0
Carolina Shores	0	0/0	$0
Holden Beach	1	0/0	$700,000
Leland	2	0/0	$125,000
Navassa	0	0/0	$0
Northwest	0	0/0	$0
Oak Island	0	0/0	$0
Ocean Isle Beach	0	0/0	$0
Sandy Creek	0	0/0	$0
Shallotte	3	1/0	$115,000
Southport	3	0/0	$162,000
St. James	0	0/0	$0
Sunset Beach	0	0/0	$0
Varnamtown	2	0/1	$35,000
Unincorporated Area	18	0/1	$883,000
New Hanover County	**40**	**5/17**	**$1,108,000**
Carolina Beach	3	0/10	$0
Kure Beach	0	0/0	$0

[19] These lightning events are only inclusive of those reported by the National Centers for Environmental Information (NCEI). It is likely that additional lightning events have occurred in the Southeastern NC Region. As additional local data becomes available, this hazard profile will be amended.

Location	Number of Occurrences	Deaths/Injuries	Property Damage
Wilmington	14	2/3	$279,000
Wrightsville Beach	3	1/2	$100,000
Unincorporated Area	20	2/5	$729,000
Onslow County	**6**	**2/2**	**$2,007,500**
Holly Ridge	0	0/0	$0
Jacksonville	1	0/0	$2,000,000
North Topsail Beach	0	0/0	$0
Richlands	0	0/0	$0
Swansboro	1	0/0	$2,000
Unincorporated Area	4	2/2	$5,500
Pender County	**13**	**1/10**	**$187,000**
Atkinson	0	0/0	$0
Burgaw	2	0/0	$45,000
St. Helena	0	0/0	$0
Surf City	2	0/0	$10,000
Topsail Beach	1	1/4	$0
Watha	0	0/0	$0
Unincorporated Area	8	0/6	$132,000
Southeastern NC Regional Total	**88**	**9/31**	**$4,692,500**

Source: National Centers for Environmental Information

Hailstorm

According to the National Centers for Environmental Information, 569 recorded hailstorm events have affected the Southeastern NC Region between January 1950 and April 2025.[20] **Table 5.16** is a summary of the hail events in the Southeastern NC Region. **Appendix F** provides detailed information about each event that occurred within the counties. Although hail can occur anywhere, hail occurrences resulted in over $82,000 in unadjusted property damage, most of which was reported in Brunswick County. Hail ranged in diameter from 0.75 inches to 2.75 inches. It should be noted that hail is notorious for causing substantial damage to cars, roofs, and other areas of the built environment, so it is likely that damages are greater than the reported value. Further, a single storm event may have affected multiple counties.

TABLE 5.16: SUMMARY OF HAIL OCCURRENCES

Location	Number of Occurrences	Deaths/Injuries	Property Damage
Brunswick County	**139**	**0/0**	**$47,650**
Bald Head Island	0	0/0	$0
Belville	0	0/0	$0
Boiling Spring Lakes	0	0/0	$0
Bolivia	7	0/0	$250
Calabash	3	0/0	$1,000
Carolina Shores	0	0/0	$0
Holden Beach	5	0/0	$1,200
Leland	27	0/0	$0
Navassa	0	0/0	$0
Northwest	2	0/0	$0
Oak Island	0	0/0	$0

[20] These hail events are only inclusive of those reported by the National Centers for Environmental Information (NCEI). It is likely that additional hail events have affected the Southeastern NC Region. As additional local data becomes available, this hazard profile will be amended.

Location	Number of Occurrences	Deaths/Injuries	Property Damage
Ocean Isle Beach	0	0/0	$0
Sandy Creek	0	0/0	$0
Shallotte	6	0/0	$0
Southport	8	0/0	$0
St. James	0	0/0	$0
Sunset Beach	0	0/0	$0
Varnamtown	1	0/0	$0
Unincorporated Area	109	0/0	$45,200
New Hanover County	**112**	**0/0**	**$17,450**
Carolina Beach	7	0/0	$6,000
Kure Beach	1	0/0	$3,000
Wilmington	48	0/0	$0
Wrightsville Beach	0	0/0	$0
Unincorporated Area	56	0/0	$8,450
Onslow County	**193**	**0/0**	**$0**
Holly Ridge	3	0/0	$0
Jacksonville	21	0/0	$0
North Topsail Beach	1	0/0	$0
Richlands	11	0/0	$0
Swansboro	11	0/0	$0
Unincorporated Area	146	0/0	$0
Pender County	**125**	**0/0**	**$17,250**
Atkinson	5	0/0	$3,000
Burgaw	10	0/0	$600
St. Helena	0	0/0	$0
Surf City	2	0/0	$0
Topsail Beach	1	0/0	$0
Wartha	9	0/0	$0
Unincorporated Area	98	0/0	$13,650
Southeastern NC Regional Total	**569**	**0/0**	**$82,350**

Source: National Centers for Environmental Information

5.6.4 Changing Future Conditions

Tornadoes are among the most difficult hazards to link definitively to changes in climate, partially because they are both relatively small and short-lived events when compared against wildfires, heat waves, and other climate disasters with a larger temporal and/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[21]. 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.

Changing weather patterns related to climate change may also result in more frequent and more severe storms (thunderstorms, lightning, and hail) throughout the Southeastern Region. According to the National Aeronautics and Space Administration (NASA), severe storm events are likely to become more frequent and intense throughout the Southeast due to radical changes in weather extremes[22].

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

[22] NASA Climate Change Effects (https://science.nasa.gov/climate-change/effects/)

5.6.5 Probability of Future Occurrences

Tornado

According to historical information, tornado events are not an annual occurrence for the region. However, given the region's location in the southeastern United States and history of tornadoes, an occurrence is possible every few years. While the majority of the reported tornado events are small in terms of size, intensity, and duration, there is the potential for strong tornadoes in the region. The probability of future tornado occurrences affecting the Southeastern NC Region is possible (1 to 10 percent annual probability). As of 2025, the FEMA National Risk Index rates the tornado hazard as "relatively moderate" in all counties of the region.

Thunderstorm

Given the high number of previous events, it is certain that wind events, including straight-line wind and thunderstorm wind, will occur in the future. This results in a probability level of highly likely (100 percent annual probability) for future wind events for the entire planning area. As of 2025, the FEMA National Risk Index rates the strong wind hazard as "relatively moderate" in Brunswick County and Pender County compared to "relatively low" in New Hanover County and Onslow County.

Lightning

Although there was not a high number of historical lightning events reported throughout the Southeastern NC Region via NCEI data, it is understood that lightning occurs with most severe thunderstorm events, even if it goes unreported to NCEI. In fact, lightning events will assuredly happen on an annual basis, though not all events will cause damage. According to Vaisala's U.S. National Lightning Detection Network (NLDN®), the Southeastern NC Region is located in an area of the country that experienced an average of 12 to 24 events per square kilometer per year between 2016 and 2024. Therefore, the probability of future events are highly likely (100 percent annual probability). It can be expected that future lightning events will continue to threaten life and cause minor property damage throughout the region. As of 2025, the FEMA National Risk Index rates the lightning hazard as "relatively high" in Brunswick County, New Hanover County, and Onslow County compared to "relatively moderate" in Pender County.

Hailstorm

Given that severe thunderstorm events will remain a frequent occurrence for the Southeastern NC Region, the probability of future hail occurrences is highly likely (100 percent annual probability). It can be expected that future hail events will continue to cause minor damage to property and vehicles throughout the region. Further, hail is an atmospheric hazard, so it is assumed that the entire Southeastern NC Region has equal exposure to this hazard. As of 2025, the FEMA National Risk Index rates the hail hazard as "relatively low" in New Hanover County, Onslow County, and Pender County compared to "very low" in Brunswick County.

5.7 SEVERE WINTER WEATHER

5.7.1 Background and Description

Severe winter weather can range from moderate snow over a period of a few hours to blizzard conditions with blinding wind-driven snow that lasts for several days. Events may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Some winter storms might be large enough to affect several states, while others might affect only localized areas. Occasionally, heavy snow might also cause significant property damage, such as roof collapses on older buildings.

All severe winter weather events have the potential to present dangerous conditions to the affected area. Larger snowfalls pose a greater risk, reducing visibility due to blowing snow and making driving conditions treacherous. A heavy snow event is defined by the National Weather Service as an accumulation of 4 or more inches in 12 hours or less. A blizzard is the most severe form of winter storm. It combines low temperatures, heavy snow, and winds of 35 miles per hour or more, which reduces visibility to a quarter mile or less for at least three hours. Winter storms are often accompanied by sleet, freezing rain, or an ice storm. Such freeze events are particularly hazardous as they create treacherous surfaces.

Ice storms are defined as storms with significant amounts of freezing rain and are a result of cold air damming (CAD). CAD is a shallow, surface-based layer of relatively cold, stably-stratified air entrenched against the eastern slopes of the Appalachian Mountains. With warmer air above, falling precipitation in the form of snow melts, then becomes either super-cooled (liquid below the melting point of water) or re-freezes. In the former case, super-cooled droplets can freeze on impact (freezing rain), while in the latter case, the re-frozen water particles are ice pellets (or sleet). Sleet is defined as partially frozen raindrops or refrozen snowflakes that form into small ice pellets before reaching the ground. They typically bounce when they hit the ground and do not stick to the surface. However, it does accumulate like snow, posing similar problems and has the potential to accumulate into a layer of ice on surfaces. Freezing rain, conversely, usually sticks to the ground, creating a sheet of ice on the roadways and other surfaces.

All the winter storm elements (wind chill, snow, sleet, ice, etc.) have the potential to pose significant hazards to a community. Even small accumulations can down power lines and tree limbs and create hazardous driving conditions. Further, communication and power may be disrupted for days.

5.7.2 Location and Spatial Extent

Nearly the entire continental United States is susceptible to winter storm and freeze events. Some ice and winter storms may be large enough to affect several states, while others might affect limited, localized areas. The degree of exposure typically depends on the normal expected severity of local winter weather. The Southeastern NC Region is vulnerable to severe winter weather conditions, although occurrences are less frequent than in other parts of the State. Given the atmospheric nature of the hazard, the entire region has uniform exposure to a winter storm.

5.7.3 Historical Occurrences

The extent of winter storms can be measured by the amount of snowfall received (in inches). The greatest one-day snowfall recorded in the Southeastern NC Region was on March 3, 1980, which resulted in approximately 20 inches of snowfall in parts of Onslow County.

According to the National Centers for Environmental Information, there have been a total of 31 recorded winter storm events in the Southeastern NC Region since 1996 (**Table 5.20**).[23] The property damage amounts associated with these events may be underreported but are the best available data at this time. The results will be updated in the future should better data become available.

TABLE 5.20: SUMMARY OF SEVERE WINTER WEATHER EVENTS

Location	Number of Occurrences	Deaths/Injuries	Property Damage
Brunswick County	10	0/0	$0
New Hanover County	14	0/0	$0
Onslow County	33	1/35	$145,000
Pender County	16	2/0	$40,000
TOTAL	**73**	**3/35**	**$185,000**

Source: National Centers for Environmental Information

5.7.4 Changing Future Conditions

According to recent climate 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[24]. The increased atmospheric moisture of warmer conditions year-round also helps to intensify the 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[25].

5.7.5 Probability of Future Occurrences

The Southeastern NC Region is unlikely to be hit with severe blizzard conditions (e.g., high winds and blowing snow), but it is subject to freezing rain, icy conditions, and snowfall. Based on historical information and the geographic location of the Southeastern NC area, winter storms events will remain a possible (between 1 and 10 percent annual probability) occurrence in the Southeastern NC Region. As of 2025, the FEMA National Risk Index rates the winter weather hazard as “very high” in Onslow County compared to “relatively high” in New Hanover County and “relatively moderate in Brunswick County and Pender County.

[23] These ice and winter storm events are only inclusive of those reported by the National Centers for Environmental Information (NCEI). It is likely that additional winter storm conditions have affected the Southeastern NC Region. In addition, the events are reported by county, so many of these storms likely affected all of the counties and their respective municipalities.
[24] NOAA Winter 2022 Climate Report (https://www.ncei.noaa.gov/access/monitoring/monthly-report/national/202202)
[25] U.S. Climate Resilience Toolkit, Southeast (https://toolkit.climate.gov/regions/southeast)

5.8 EARTHQUAKES

5.8.1 Background and Description

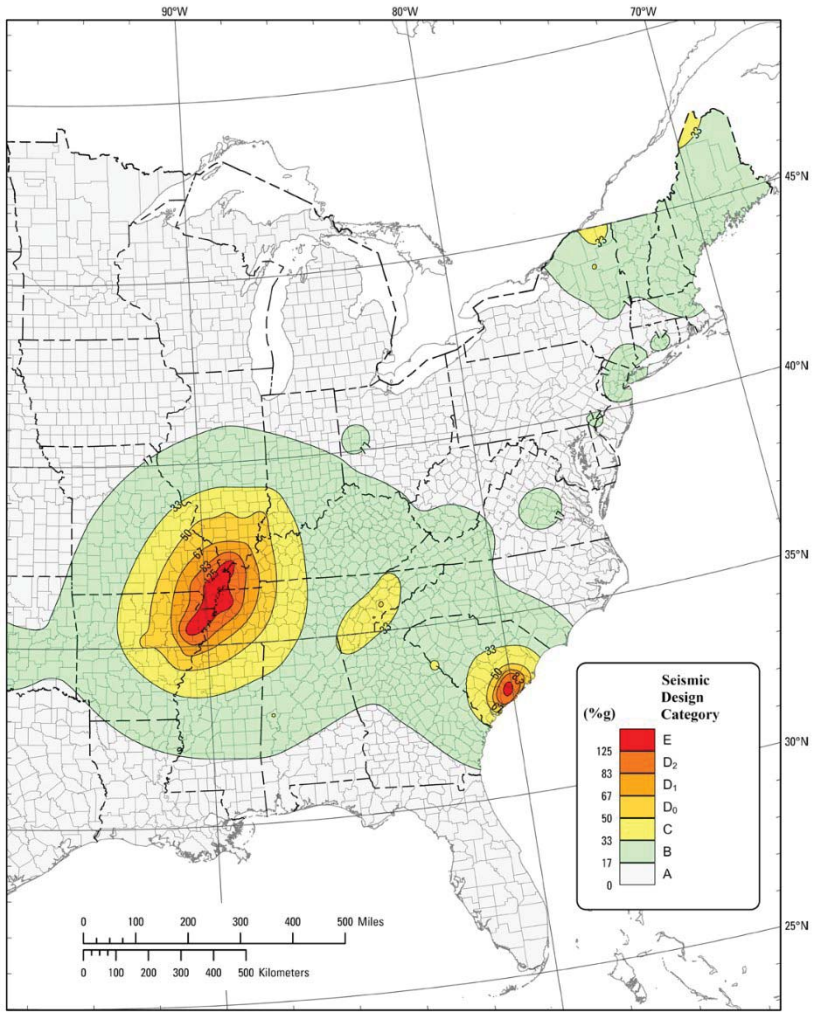
An earthquake is movement or trembling of the ground produced by sudden displacement of rock in the Earth's crust. Earthquakes result from crustal strain, volcanism, landslides or the collapse of caverns. Earthquakes can affect hundreds of thousands of square miles, cause damage to property measured in the tens of billions of dollars, result in loss of life and injury to hundreds of thousands of persons; and disrupt the social and economic functioning of the affected area.

Most property damage and earthquake-related deaths are caused by the failure and collapse of structures due to ground shaking. The level of damage depends upon the amplitude and duration of the shaking, which are directly related to the earthquake size, distance from the fault, site and regional geology. Other damaging earthquake effects include landslides, the down-slope movement of soil and rock (mountain regions and along hillsides), and liquefaction, in which ground soil loses the ability to resist shear and flows much like quick sand. In the case of liquefaction, anything relying on the substrata for support can shift, tilt, rupture or collapse.

Most earthquakes are caused by the release of stresses 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.

The greatest earthquake threat in the United States is along tectonic plate boundaries and seismic fault lines located in the central and western states; however, the Eastern United State does face moderate risk to less frequent, less intense earthquake events. **Figure 5.9** shows relative seismic risk for the United States.

FIGURE 5.9: EASTERN UNITED STATES EARTHQUAKE HAZARD MAP



SEISMIC DESIGN CATEGORIES FOR DEFAULT SITE CONDITIONS
FOR THE CONTERMINOUS UNITED STATES (EASTERN)

Source: Federal Emergency Management Agency

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 (**Table 5.21**). Each unit increase in magnitude on the Richter Scale corresponds to a 10-fold increase in wave amplitude, or a 32-fold increase in energy. Intensity is most commonly measured using the Modified Mercalli Intensity (MMI) Scale based on direct and indirect measurements of seismic effects. The scale levels are typically described using roman numerals, ranging from "I" corresponding to imperceptible (instrumental) events to "XII" for catastrophic (total destruction). A detailed description of the Modified Mercalli Intensity Scale of earthquake intensity and its correspondence to the Richter Scale is given in **Table 5.22**.

TABLE 5.21: RICHTER SCALE

Richter Magnitudes	Earthquake Effects
< 3.5	Generally not felt but recorded.
3.5 - 5.4	Often felt but rarely causes damage.
5.4 - 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 >	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

Source: Federal Emergency Management Agency

TABLE 5.22: MODIFIED MERCALLI INTENSITY SCALE FOR EARTHQUAKES

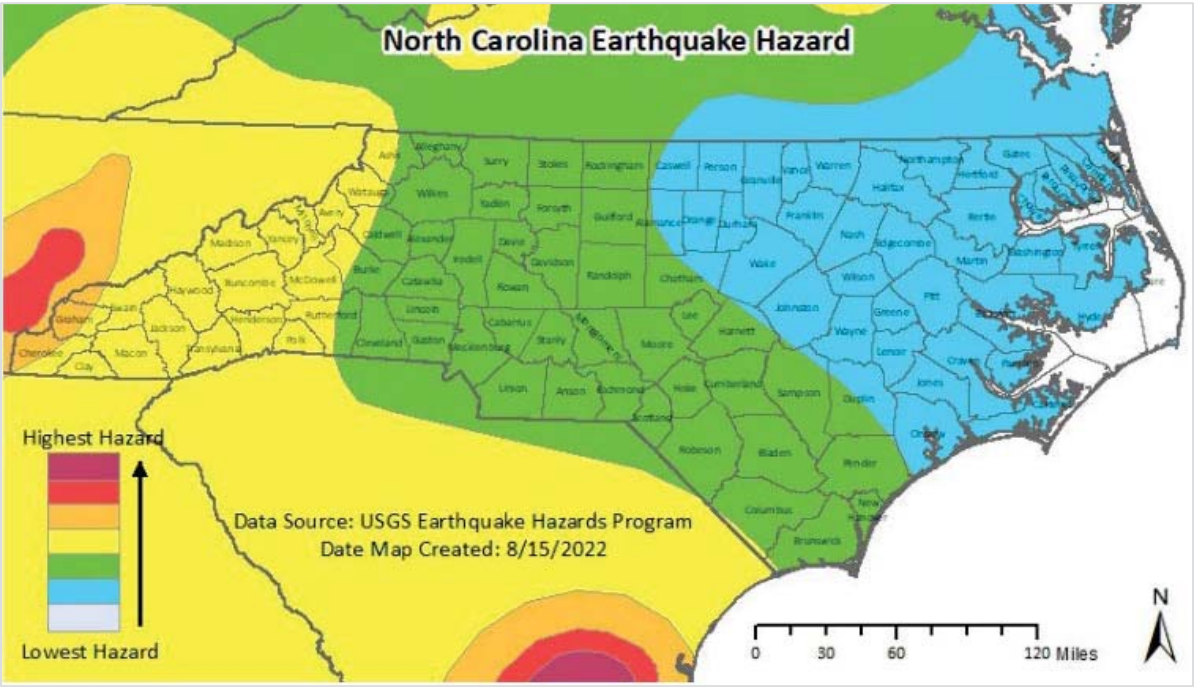
Scale	Intensity	Description of Effects	Corresponding Richter Scale Magnitude
I	Not felt	Not felt except by a very few under especially favorable conditions.	
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.	< 4.2
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.	
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.	< 4.8
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.	< 5.4
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.	< 6.1
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.	
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.	< 6.9
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.	< 7.3

Source: Federal Emergency Management Agency

5.8.2 Location and Spatial Extent

Approximately two-thirds of North Carolina are subject to earthquakes, with the western and southeast region 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 of these faults have generated earthquakes measuring greater than 8 on the Richter Scale during the last 200 years. In addition, there are several smaller fault lines throughout North Carolina. **Figure 5.10** is a map showing geological and seismic information for North Carolina.

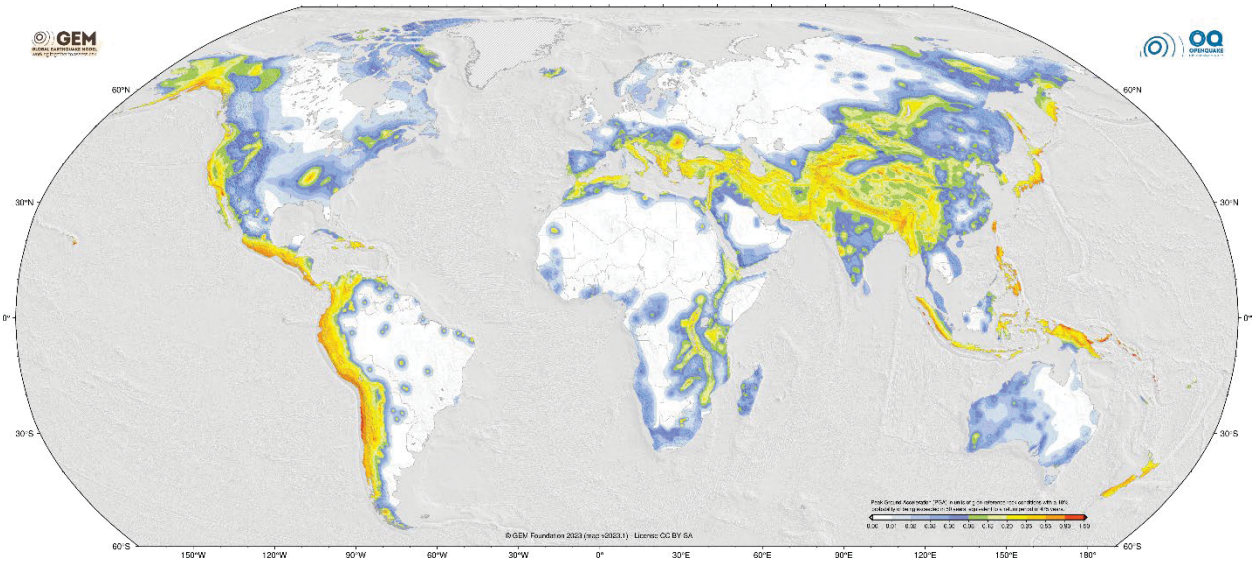
FIGURE 5.10: GEOLOGICAL AND SEISMIC INFORMATION FOR NORTH CAROLINA



Source: North Carolina Geological Survey

Figure 5.11 shows the intensity level associated with the Southeastern NC Region, based on the national USGS map of peak acceleration with 10 percent probability of exceedance in 50 years. It is the probability that ground motion will reach a certain level during an earthquake. The data show 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 10 percent probability of exceedance in 50 years. The map was compiled by the U.S. Geological Survey (USGS) Geologic Hazards Team, which conducts global investigations of earthquake, geomagnetic, and landslide hazards. According to this map, the Southeastern NC Region is split between three zones ranging from level "1" to "4" ground acceleration. This indicates that the region as a whole exists within an area of low to moderate seismic risk.

FIGURE 5.11: PEAK ACCELERATION WITH 10 PERCENT PROBABILITY OF EXCEEDANCE IN 50 YEARS



Source: Global Earthquake Model, 2023

5.8.3 Historical Occurrences

At least 42 earthquakes are known to have affected the Southeastern NC Region since 1638. The strongest of these measured a V on the Modified Mercalli Intensity (MMI) scale. **Table 5.23** provides a summary of earthquake events reported by the USGS and NOAA between 1638 and 2025[26].

TABLE 5.23: SUMMARY OF SEISMIC ACTIVITY

Location	Number of Occurrences	Greatest MMI Reported	Richter Scale Equivalent
Brunswick County	**14**	**IV**	**< 4.8**
Bald Head Island	0	--	--
Belville	0	--	--
Boiling Spring Lakes	1	V	< 4.8
Bolivia	3	--	--
Calabash	0	--	--
Carolina Shores	0	--	--
Holden Beach	0	--	--
Leland	0	--	--
Navassa	0	--	--
Northwest	0	--	--
Oak Island	0	--	--
Ocean Isle Beach	0	--	--
Sandy Creek	0	--	--
Shallotte	3	III	< 4.2
Southport	7	IV	< 4.8
St. James	0	--	--

[26] Due to reporting mechanisms, not all earthquake events may be property recorded here. Further, some are missing data, such as the epicenter location, due to a lack of widely-used technology. In these instances, a value of "unknown" is reported.

Location	Number of Occurrences	Greatest MMI Reported	Richter Scale Equivalent
Sunset Beach	0	--	--
Varnamtown	0	--	--
Unincorporated Area	0	--	--
New Hanover County	**25**	**V**	**< 4.8**
Carolina Beach	6	IV	< 4.8
Kure Beach	3	V	< 4.8
Wilmington	12	V	<4.8
Wrightsville Beach	4	IV	< 4.8
Unincorporated Area	0	--	--
Onslow County	**1**	**V**	**< 4.8**
Holly Ridge	0	--	--
Jacksonville	0	--	--
North Topsail Beach	0	--	--
Richlands	1	V	< 4.8
Swansboro	0	--	--
Unincorporated Area	0	--	--
Pender County	**2**	**IV**	**< 4.8**
Atkinson	0	--	--
Burgaw	1	III	< 4.2
St. Helena	0	--	--
Surf City	1	IV	< 4.8
Topsail Beach	0	--	--
Watha	0	--	--
Unincorporated Area	0	--	--
Southeastern NC Regional Total	**42**	**V**	**< 4.8**

Source: National Centers for Environmental Information, U.S. Geological Survey
Note: No further details about these events were found. Future updates of the plan will attempt to provide more context to previously reported earthquake events.

In addition to those earthquakes specifically affecting the Southeastern NC Region, a list of earthquakes that have caused damage throughout North Carolina is presented below in **Table 5.24**.

TABLE 5.24: DAMAGING EARTHQUAKE EVENTS IN NORTH CAROLINA

Date	Location	Richter Scale (Magnitude)	MMI (Intensity)	MMI in North Carolina
12/16/1811 - 1	NE Arkansas	8.5	XI	VI
12/16/1811 - 2	NE Arkansas	8.0	X	VI
12/18/1811 - 3	NE Arkansas	8.0	X	VI
01/23/1812	New Madrid, MO	8.4	XI	VI
02/071812	New Madrid, MO	8.7	XII	VI
04/29/1852	Wytheville, VA	5.0	VI	VI
08/31/1861	Wilkesboro, NC	5.1	VII	VII
12/23/1875	Central Virginia	5.0	VII	VI
08/31/1886	Charleston, SC	7.3	X	VII
05/31/1897	Giles County, VA	5.8	VIII	VI
01/01/1913	Union County, SC	4.8	VII	VI
02/21/1916	Asheville, NC	5.5	VII	VII
07/08/1926	Mitchell County, NC	5.2	VII	VII
11/03/1928	Newport, TN	4.5	VI	VI
05/13/1957	McDowell County, NC	4.1	VI	VI
07/02/1957	Buncombe County, NC	3.7	VI	VI

Date	Location	Richter Scale (Magnitude)	MMI (Intensity)	MMI in North Carolina
11/24/1957	Jackson County, NC	4.0	VI	VI
10/27/1959 **	Chesterfield, SC	4.0	VI	VI
07/13/1971	Newry, SC	3.8	VI	VI
11/30/1973	Alcoa, TN	4.6	VI	VI
11/13/1976	Southwest Virginia	4.1	VI	VI
05/05/1981	Henderson County, NC	3.5	VI	VI
08/09/2020	Sparta, NC	5.1	VI	VI

*** Conflicting reports on this event, intensity in North Carolina could have been either V or VI*
Source: This information compiled by Dr. Kenneth B. Taylor and provided by Tiawana Ramsey of NCEM. Information was compiled from the National Earthquake Center, Earthquakes of the US by Carl von Hake (1983), and a compilation of newspaper reports in the Eastern Tennessee Seismic Zone compiled by Arch Johnston, CERI, Memphis State University (1983).

5.8.4 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[27]. 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 around the mountains and cause residual structural damage over a large area. Current building and development practices may account for this hazard in their designs, but significant portions of existing development, especially in more rural or older areas, will remain vulnerable to earthquakes without any new structural interventions. Earthquakes are primarily influenced by tectonic processes and although they could potentially be affected by climate factors such as droughts these connections remain unclear[28].

5.8.5 Probability of Future Occurrences

The probability of significant, damaging earthquake events affecting the Southeastern NC Region is unlikely. However, it is likely that future earthquakes resulting in light to moderate perceived shaking and damages ranging from none to very light will affect the region. Earthquake event probability for the region is estimated between 1 and 10 percent annual probability (possible). As of 2025, the FEMA National Risk Index rates the earthquake hazard as “relatively low” in Brunswick County, New Hanover County, and Onslow County compared to “very low” in Pender County.

[27] NCDEQ Earthquakes (https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/north-carolina-geological-survey/geologic-hazards/earthquakes-north-carolina)
[28] NASA Science (https://science.nasa.gov/earth/climate-change/can-climate-affect-earthquakes-or-are-the-connections-shaky/#h-getting-the-big-picture-of-the-earth-system-s-interconnectivity)

5.9 GEOLOGICAL

5.9.1 Background and Description

For the purposes of maintaining consistency with the State of North Carolina Hazard Mitigation Plan, this section will assess geological hazards affecting the region which include sinkholes and coastal erosion.

Sinkholes

According to the United States Geological Survey, a sinkhole is an area of ground that has no natural external surface drainage--when it rains, all the water stays inside the sinkhole and typically drains into the subsurface. Sinkholes can vary from a few feet to hundreds of acres and from less than 1 to more than 100 feet deep. Some are shaped like shallow bowls or saucers whereas others have vertical walls.

Sinkholes are common where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that can naturally be dissolved by groundwater circulating through them. As the rock dissolves, spaces and caverns develop underground. Sinkholes are dramatic because the land usually stays intact for a while until the underground spaces just get too big. If there is not enough support for the land above the spaces, then a sudden collapse of the land surface can occur. These collapses can be small, or, as **Figure 5.12** below shows, they can be huge and can occur where a house or road is on top[29].

FIGURE 5.12: SINKHOLE IN NORTH CAROLINA



Source: NCEM

Coastal Erosion

Coastal or beach erosion is the wearing away of the beach and dune sediments due to winds, tidal currents, or wave action. Erosion is typically event-driven and tends to happen during periods of strong winds, high tides and waves, such as a storm; however, continued erosion wears away the coastal profile and can create imbalance on shorelines. An eroding beach may lose feet of sand per year.

[29] *Sinkholes. United States Geological Survey. Retrieved from: https://www.usgs.gov/water-science-school/science/sinkholes*

There are two types of soil erosion: wind erosion and water erosion. Wind erosion can cause significant soil loss. Winds blowing across sparsely vegetated or disturbed land can pick up soil particles and carry them through the air, thus displacing them. Water erosion can occur over land or in streams and channels. Water erosion that takes place over land may result from raindrops, shallow sheets of water flowing off the land, or shallow surface flow, which becomes concentrated in low spots. Stream channel erosion may occur as the volume and velocity of water flow increases enough to cause movement of the streambed and bank soils. Major storms, such hurricanes in coastal areas, may cause significant erosion by combining high winds with heavy surf and storm surge to significantly impact the shoreline.

An area's potential for erosion is determined by four factors: soil characteristics, vegetative cover, climate or rainfall, and topography. Soils composed of a large percentage of silt and fine sand is most susceptible to erosion. As the clay and organic content of these soils increases, the potential for erosion decreases. Well-drained and well-graded gravels and gravel-sand mixtures are the least likely to erode. Coarse gravel soils are highly permeable and have a good capacity for absorption, which can prevent or delay the amount of surface runoff. Vegetative cover can be very helpful in controlling erosion by shielding the soil surface from falling rain, absorbing water from the soil, and slowing the velocity of runoff. Runoff is also affected by the topography of the area including size, shape, and slope. The greater the slope length and gradient, the more potential an area has for erosion. Climate can affect the amount of runoff, especially the frequency, intensity, and duration of rainfall and storms. When rainstorms are frequent, intense, or of long duration, erosion risks are high. Seasonal changes in temperature and rainfall amounts define the period of highest erosion risk of the year.

During the past 20 years, the importance of erosion control has gained the increased attention of the public. Erosion clearly affects the environment, but it also is problematic for homes and businesses that are constructed on or near beaches. Severe erosion can cause extreme property loss or damages. Many beaches rely on sandbags to be placed in front of homes and dunes to protect them from falling into the ocean.

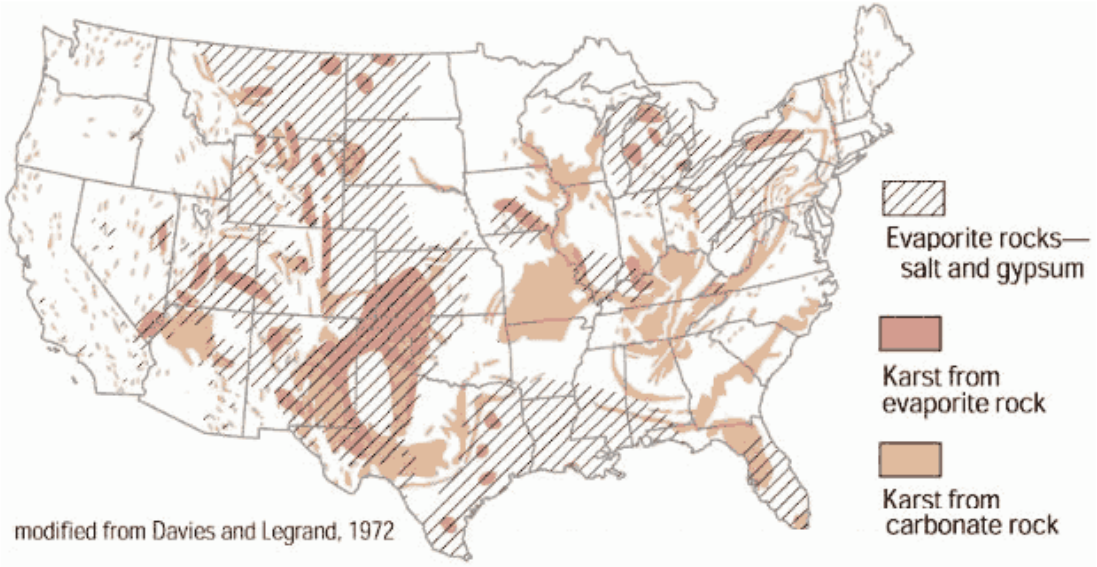
5.9.2 Location and Spatial Extent

Sinkholes

Figure 5.13 below shows areas of the United States where certain rock types that are susceptible to dissolution in water occur. In these areas, the formation of underground cavities can form, and catastrophic sinkholes can happen. These rock types are evaporites (salt, gypsum, and anhydrite) and carbonates (limestone and dolomite). Evaporite rocks underlie about 35 to 40 percent of the United States, though in many areas they are buried at great depths. In some cases, sinkholes in North Carolina have been measured at up to 20 to 25 feet in depth, with similar widths.

At the time of this update, GIS data for sinkholes was not readily available. Therefore, mapping sinkhole areas at the county and/or municipal levels was not feasible. Future updates of this plan will attempt to provide better mapping for the sinkhole hazard.

FIGURE 5.13: UNITED STATES GEOLOGICAL SURVEY OF KARST MODIFIED FROM DAVIES AND LEGRAND, 1972



Coastal Erosion

In North Carolina, the NC Division of Coastal Management and the NC Geological Survey study calculated shoreline change rates. These can vary throughout the state in different locations, but it is notable that, on average, the state is experiencing 1.6 feet per year of erosion based on a study at multiple locations by the NC Department of Environmental Quality. Figures 5.14 through 5.17 show areas where coastline is eroding and accreting according to state data.

5.9.3 Historical Occurrences

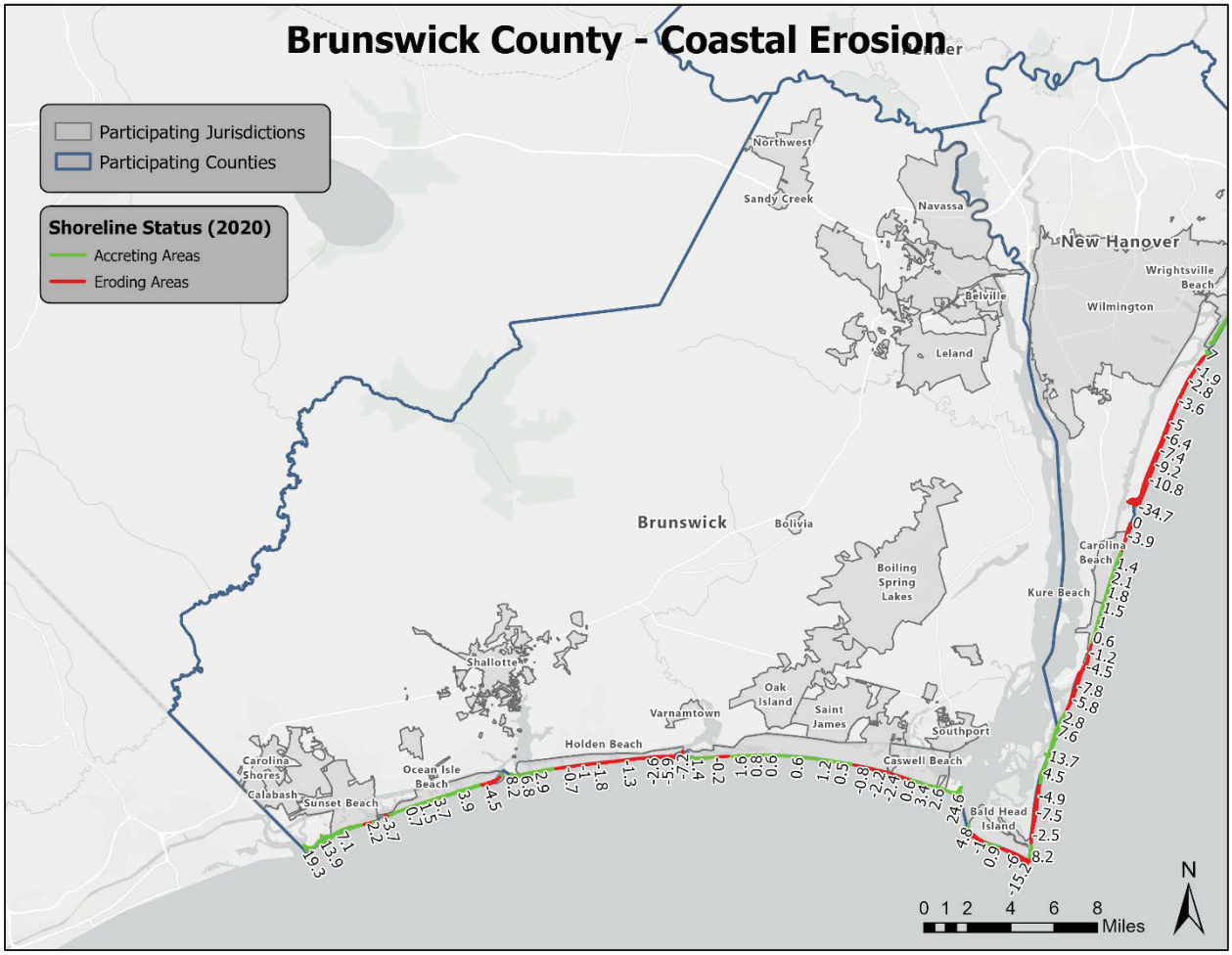
Sinkholes

According to the North Carolina Division of Environmental Quality, sinkholes have occurred across the entire Southeastern NC Region. Notable examples occurred near Snow's Cut and Carolina Beach State Park (New Hanover County), along Interstate 40 (Pender County), Sunny Point Military Ocean Terminal, and Boiling Spring Lakes (Brunswick County) where sinkholes caused the lakes to drain in the mid-90's.

Coastal Erosion

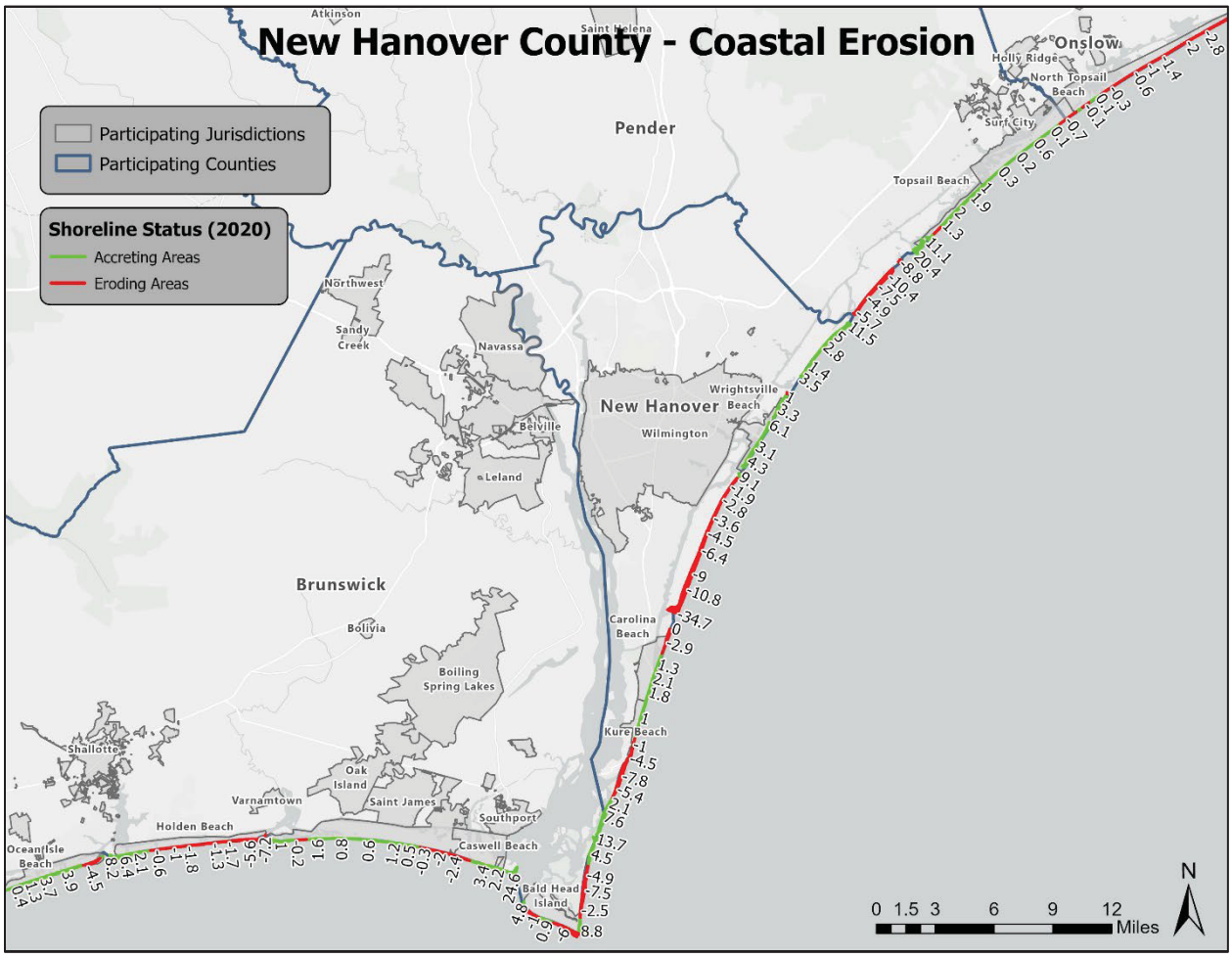
Erosion in the Southeastern NC Region has occurred primarily along the beaches directly adjacent to the Atlantic Ocean. **Figures 5.14 through 5.17** illustrate historic shoreline data for areas that have experienced accreting or eroding shorelines as of 2020. These are point values which are monitored by the North Carolina Department of Environmental Quality (NCDEQ).

FIGURE 5.14: COASTAL EROSION RATES IN BRUNSWICK COUNTY



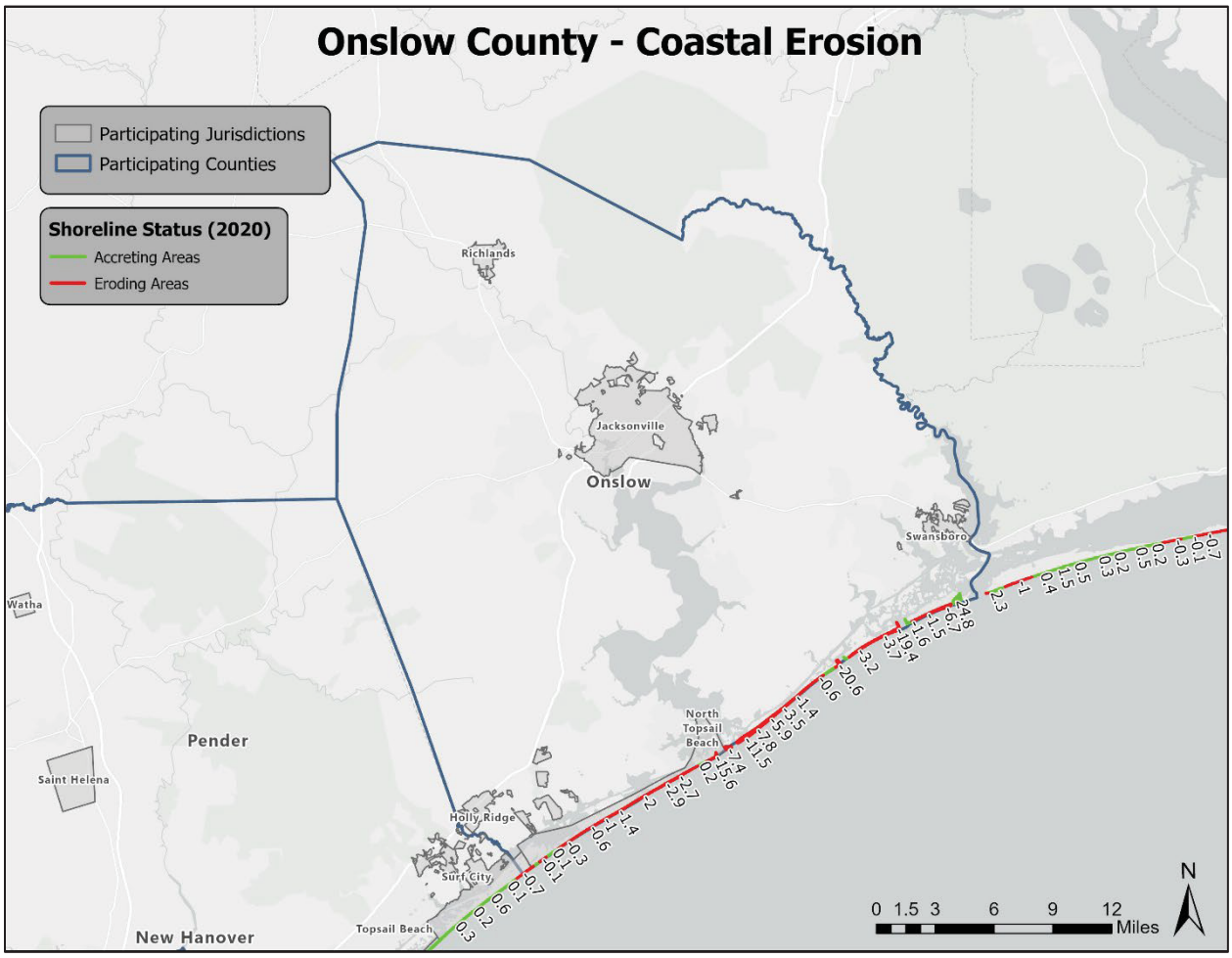
Source: NCDEQ

FIGURE 5.15: COASTAL EROSION RATES IN NEW HANOVER COUNTY



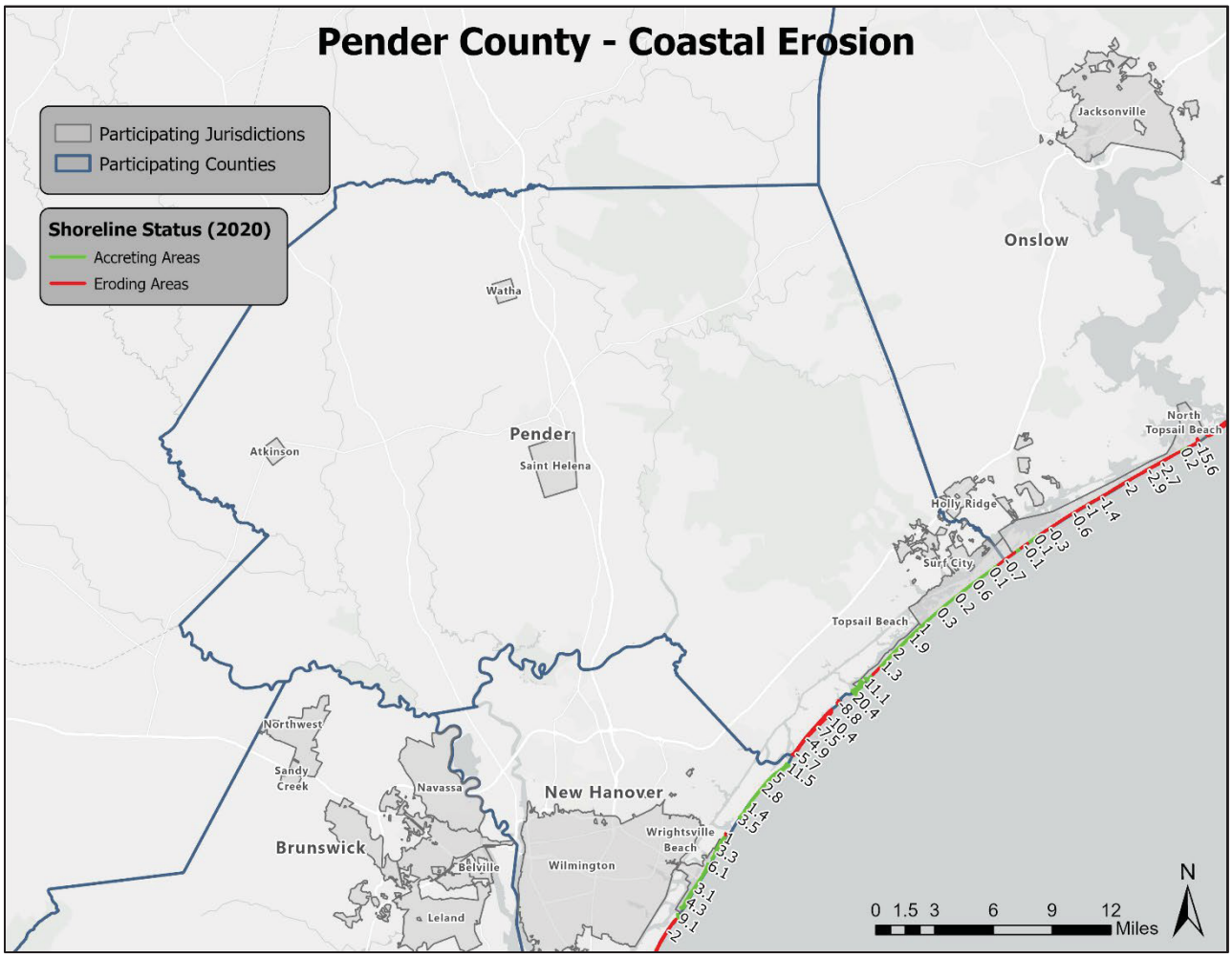
Source: NCDEQ

FIGURE 5.16: COASTAL EROSION RATES IN ONSLOW COUNTY



Source: NCDEQ

FIGURE 5.17: COASTAL EROSION RATES IN PENDER COUNTY



Source: NCDEQ

5.9.4 Changing Future Conditions

According to the North Carolina Climate Risk Assessment and Resilience Plan as of 2020, the number of landslides statewide is increasing due to more extreme rainfall events. As the global climate continues to change, both storm intensity and rainfall rates affecting North Carolina are projected to increase in tandem[30]. According to the USGS, pumping water and its associated drawdown of the water table is a primary risk factor associated with sinkholes. The potential impacts of climate change could accelerate this dynamic as well. For example, altered rainfall patterns and increasing rates of evaporation due to higher temperatures can lead to a decrease in subsurface groundwater flow, resulting in changing sinkhole formations. Decreased groundwater flow could lead to additional water pumping and related drawdowns near urban and industrial areas capable of reducing water tables and contributing to the formation of new sinkholes[31].

[30] 2020 NC Climate Risk Assessment and Resilience Plan (https://www.deq.nc.gov/energy-climate/climate-change/nc-climate-change-interagency-council/climate-change-clean-energy-plans-and-progress/nc-climate-risk-assessment-and-resilience-plan)
[31] USGS Sinkholes (https://www.usgs.gov/special-topics/water-science-school/science/sinkholes)

5.9.5 Probability of Future Occurrences

Sinkhole

Based on historical information and the NCDEQ, the probability of future sinkhole events is likely (between 10 and 100 percent annual probability). The coastal population is growing, as is the region's need for water. As more water gets pumped out of the ground for public and private use, the water level in the limestone cavities will drop. When the water is no longer in the cavity to help support the ceiling, the cavity will be more likely to collapse, forming a sinkhole.

Coastal Erosion

Coastal erosion remains a natural, dynamic and continuous process for the coastal areas in the Southeastern NC Region, and its probability of future occurrence is highly likely (100 percent annual probability). The damaging impacts of coastal erosion are lessened through continuous (and costly) beach nourishment and structural shoreline protection measures; however, it is likely that the impacts of coastal erosion will increase in severity due to future episodic storms. As of 2025, the FEMA National Risk Index rates the landslide hazard as "relatively low" in Brunswick County and Onslow County compared to "very low" in New Hanover County and no rating in Pender County.

5.10 DAM FAILURE

5.10.1 Background and Description

Worldwide interest in dam safety has risen significantly in recent years. Aging infrastructure, new hydrologic information, and population growth in floodplain areas downstream from dams and nearby levees have resulted in an increased emphasis on safety, operation, and maintenance.

There are approximately 91,000+ dams in the United States today, the majority of which are privately owned. Other owners include state and local authorities, public utilities, and federal agencies. The benefits of dams are numerous: they provide water for drinking, navigation, and agricultural irrigation. Dams also provide hydroelectric power, create lakes for fishing and recreation, and save lives by preventing or reducing floods.

Though dams have many benefits, they also can pose a risk to communities if not designed, operated, and maintained properly. In the event of a dam failure, the energy of the water stored behind even a small dam can cause loss of life and great property damage if development exists downstream. If a levee breaks, scores of properties may become submerged in floodwater and residents may become trapped by rapidly rising water. The failure of dams has the potential to place large numbers of people and great amounts of property in harm's way.

5.10.2 Location and Spatial Extent

The North Carolina Division of Energy, Mineral, and Land Resources provides information on dams including a hazard potential classification. There are three hazard classifications- high, intermediate, and low- that correspond to qualitative descriptions and quantitative guidelines. **Table 5.25** explains these classifications.

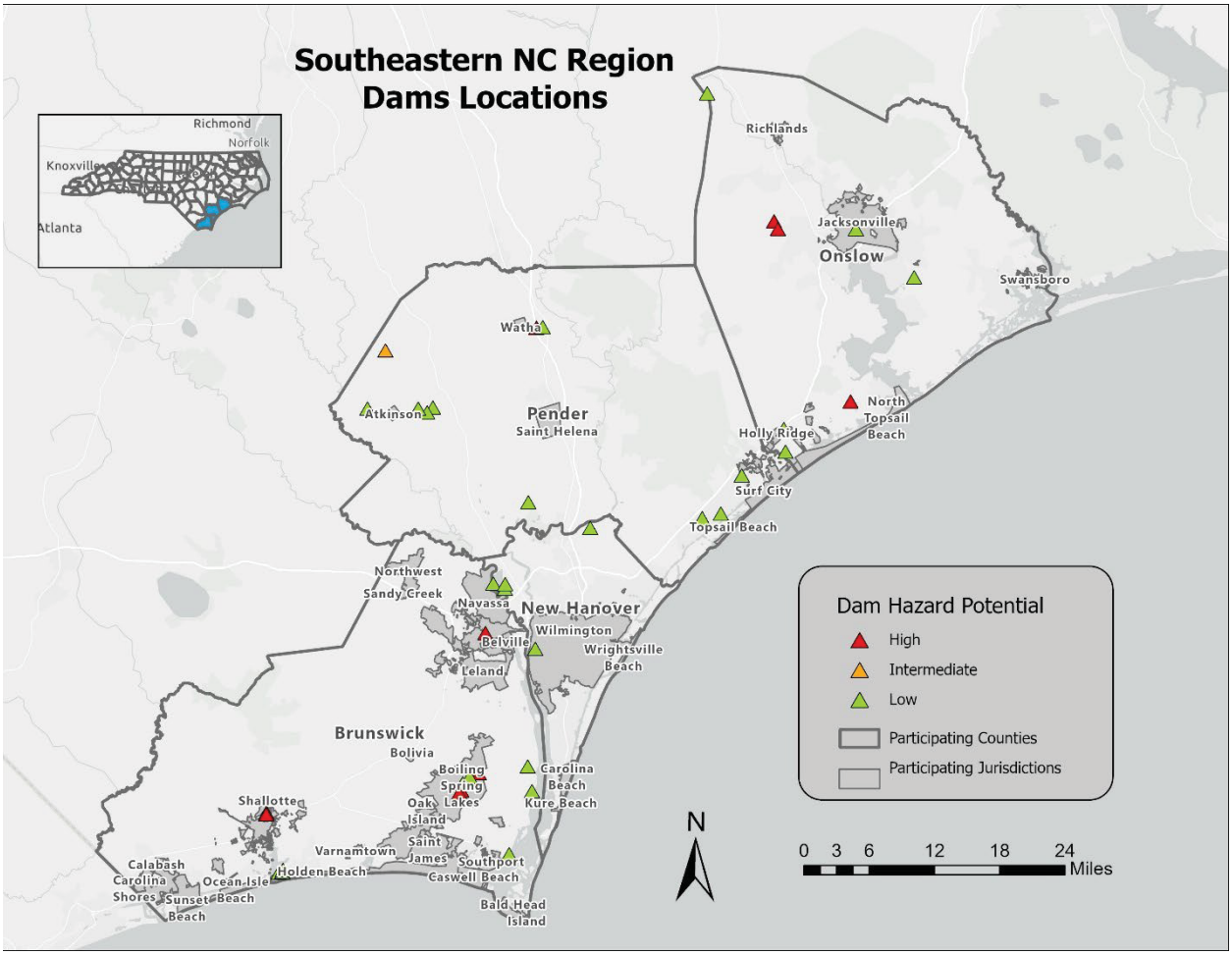
TABLE 5.25: NORTH CAROLINA DAM HAZARD CLASSIFICATIONS

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
Intermediate	Damage to highways, Interruption of service	25 to less than 250 vehicles per day
	Economic damage	$30,000 to less than $200,000
High	Loss of human life*	Probable loss of 1 or more human lives
	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

Source: North Carolina Division of Energy, Mineral, and Land Resources

According to the North Carolina Division of Energy, Mineral, and Land Resources, there are 38 dams in the Southeastern NC Region[32]. **Figure 5.18** shows the dam location and the corresponding hazard ranking for each. Of these dams, 10 are classified as high hazard potential. These high hazard dams are listed in **Table 5.25**.

FIGURE 5.18: SOUTHEASTERN NC DAM LOCATIONS AND HAZARD POTENTIAL



Source: North Carolina Division of Energy, Mineral, and Land Resources

TABLE 5.25: SOUTHEASTERN NC REGION HIGH HAZARD DAMS

Dam Name	Hazard Potential	Surface Area (Acres)	Max Capacity (Ac-ft)	State Regulated?
Brunswick County				
Boiling Springs Lake Dam	High	200	3600	Yes
Shallotte Wastewater Lagoon No.1	High	5	100	Yes
Shallotte Wastewater Lagoon No.2	High	12	240	Yes
Boiling Springs Lake Upper Dam	High	80	300	Yes
Upper (Allen Creek) Dam	High	-	0	No
Waterford Village Pond Dam	High	-	0	Yes

[32] The updated July 2024 dam inventory list was obtained from the NC Division of Energy, Mineral, and Land Resources Dam Safety Program (https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/dam-safety-program-overview)

Dam Name	Hazard Potential	Surface Area (Acres)	Max Capacity (Ac-ft)	State Regulated?
Onslow County				
Jacksonville Wastewater Lagoon	High	500	15	Yes
North Topsail Water & Sewer Lagoon	High	10	180	Yes
Jacksonville LTS-South Storage Lagoon	High	-	0	Yes
Pender County				
Mills Lake Dam	High	-	182	No

Source: North Carolina Division of Energy, Mineral, and Land Resources

It should be noted that the dam regulations used for classifying dams have changed in recent years. As a result, generally more dams are classified as high hazard.

5.10.3 Historical Occurrences

The information below identified additional historical information reported in the previous hazard mitigation plans.

Brunswick County
While the City of Boiling Spring Lakes was in the process of submitting plans to create an emergency spillway for the Sanford Dam in Boiling Spring Lakes, Hurricane Florence impacted the region and the Sanford Dam, and three other dams (Upper Lake, Pine Lake and North Lake) were breached.

New Hanover County
The National Centers for Environmental Information reported the one dam failure at the Duke Power plant at Sutton Lake (New Hanover County) on September 21, 2018. An earthen dam at Sutton Lake breached, with water from the Cape Fear River tipping into an on-site basin used to store coal ash. The flooding was not severe and did not cause any damage to roads or buildings.

Onslow County
No information on past dam failure events was provided.

Pender County
No information on past dam failure events was provided.

5.10.4 Changing Future Conditions

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

5.10.5 Probability of Future Occurrences

Given that most high hazard dams are routinely inspected and monitored, a dam breach is unlikely (less than 1 percent annual probability) in the future. However, as has been demonstrated in the past, regular monitoring is necessary to prevent these events.

5.11 FLOODING

5.11.1 Background

Flooding is the most frequent and costly natural hazard in the United States; a hazard that has caused more than 10,000 deaths since 1900. Nearly 90 percent of presidential disaster declarations result from natural events where flooding was a major component.

Floods generally result from excessive precipitation and can be classified under two categories: general floods, precipitation over a given river basin for a long period of time along with storm-induced wave action; and flash floods, the product of heavy localized precipitation in a short period over a given location. The severity of flooding events is typically determined by a combination of several major factors, including stream and river basin topography and physiography; precipitation and weather patterns; recent soil moisture conditions; and the degree of vegetative clearing and impervious surface.

General floods are usually long-term events that may last for several days. The primary types of general flooding include riverine, coastal and urban flooding. Riverine flooding is a function of excessive precipitation levels and water runoff volumes within the watershed of a stream or river. Coastal flooding, which is a concern for the Southeastern NC Region, is typically a result of storm surge, wind-driven waves and heavy rainfall produced by hurricanes, tropical storms and other large coastal storms. Urban flooding occurs where manmade development has obstructed the natural flow of water and decreased the ability of natural groundcover to absorb and retain surface water runoff. Urban flooding and the stormwater management it requires poses significant challenges for critical facilities, emergency response, transportation access, and utility services as developed areas continue to grow. In the event of road inundation, structural breaches, or mechanical failures due to floodwaters, the response times to many compounding hazard events may take much longer than anticipated. Increasing needs for (1) robust flood mitigation measures and (2) reliable funding opportunities are ongoing across every municipality included in this regional plan (especially in highly urbanized or rapidly developing areas).

Most flash flooding is caused by slow-moving thunderstorms in a local area or by heavy rains associated with hurricanes and tropical storms. However, flash flooding events may also occur from a dam or levee failure within minutes or hours of heavy amounts of rainfall, or from a sudden release of water held by a retention basin or other stormwater control facility. Although flash flooding occurs most often along mountain streams, it is also common in urbanized areas where much of the ground is impervious.

The periodic flooding of lands adjacent to rivers, streams and shorelines (land known as floodplain) is a natural and inevitable occurrence that can be expected to take place based upon established recurrence intervals. The recurrence interval of a flood is defined as the average time interval, in years, expected between a flood event of a particular magnitude and an equal or larger flood. Flood magnitude increases with increasing recurrence intervals.

Floodplain boundaries are designated and routinely updated through Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) reports and these revisions are then shown on Flood Insurance Rate Maps (FIRMs), according to various flood hazard zones. Flood hazard zone designations will depend upon local conditions and the date when the map was issued, but all will show the 100-year or base floodplain (1-percent annual chance), as well as areas of the 500-year floodplain (0.2-percent annual chance).

5.11.2 Location and Spatial Extent

There are areas in the Southeastern NC Region that are susceptible to flooding. Special flood hazard areas (SFHAs) in the Southeastern NC Region were mapped using Geographic Information System (GIS) and FEMA Digital Flood Insurance Rate Maps (DFIRM) data[33]. This includes Zone A (1 percent annual chance floodplain), Zone AE (1-percent annual chance floodplain with elevation), Zone X500 (0.2-percent annual chance floodplain).

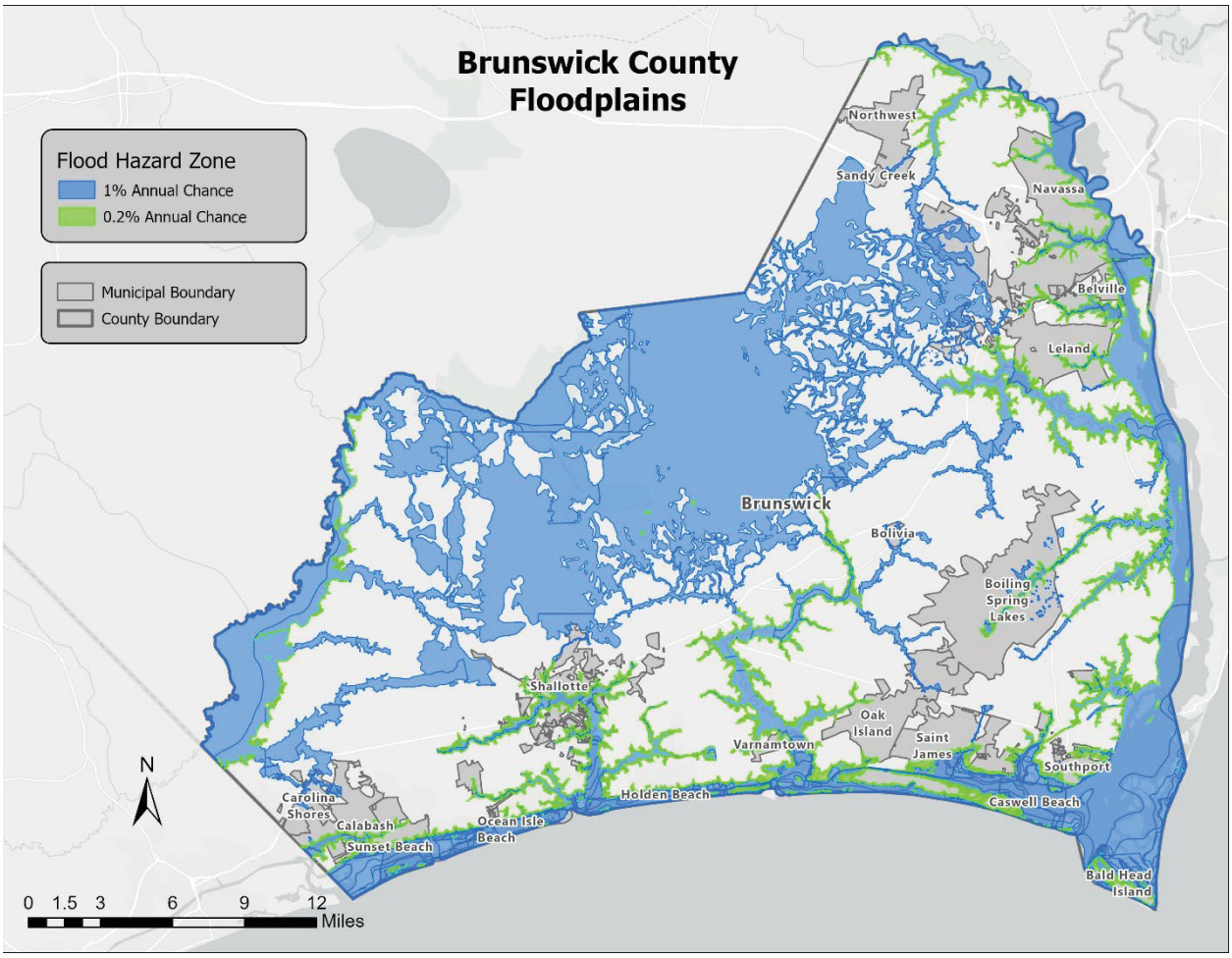
According to GIS analysis, of the 3,217 square miles that make up the Southeastern NC Region (including the area of Brunswick County, New Hanover County, Onslow County, and Pender County), there are 0.325 square miles of land in zone A (1-percent annual chance floodplain), 37.815 square miles of land in zone AE (1-percent annual chance with elevation), and 2.506 square miles of land in zone X (0.2-percent annual chance/500-year floodplain). These flood zone values account for 0.03 percent of the total land area in the Southeastern NC Region. It is important to note that while FEMA DFIRM floodplain data is recognized as best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Flooding and flood-related losses often do occur outside of delineated special flood hazard areas.

Figure 5.19-5.22 illustrates the location and extent of currently mapped floodplains for each county of the Southeastern NC Region based on best available FEMA Digital Flood Insurance Rate (DFRIM) data.

Additionally, the plan appendices include county and municipal-level flood hazard maps for the region.

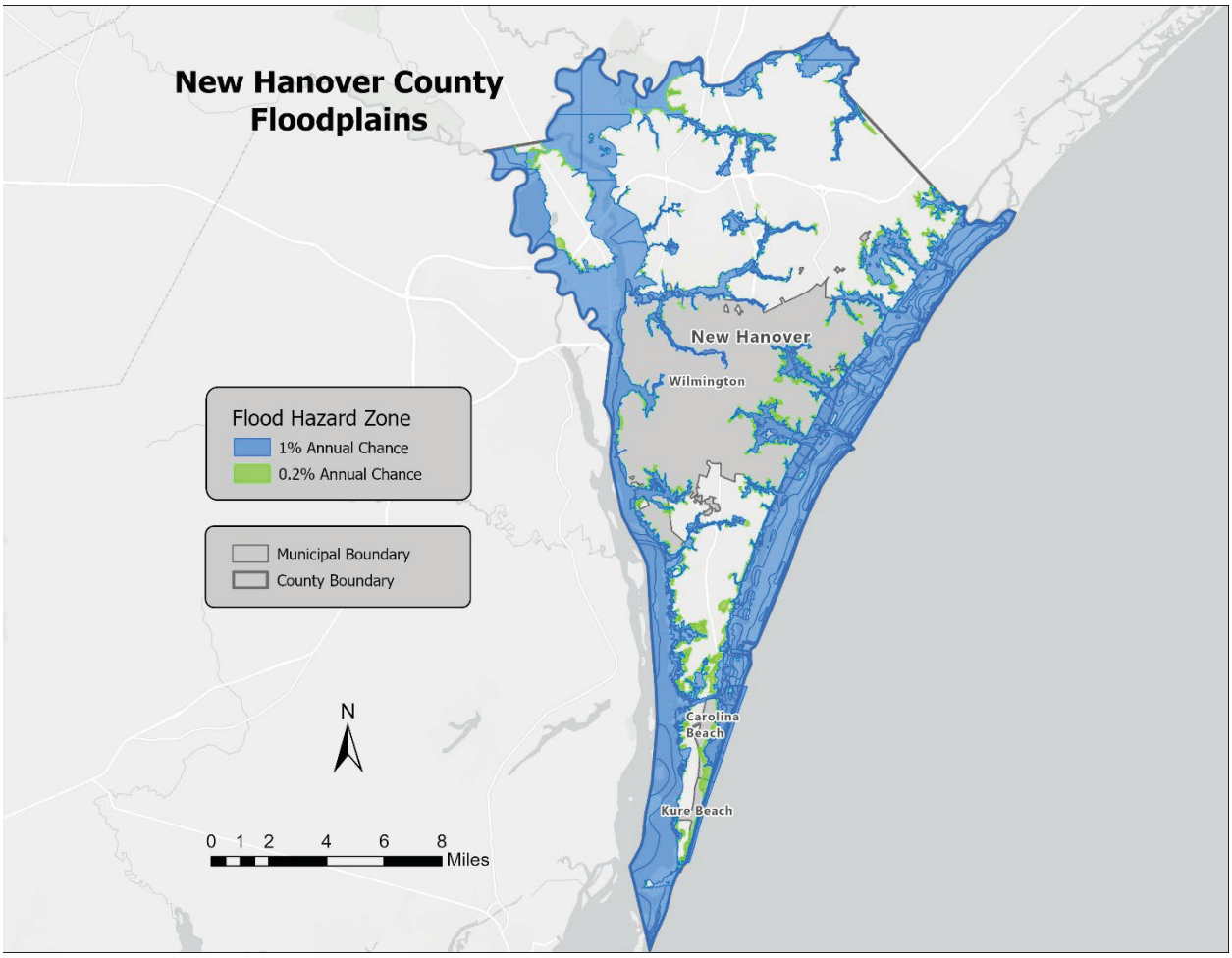
[33] The county-level DFIRM data was last updated for Brunswick County in 2019, New Hanover County in 2025, Onslow County in 2025, and Pender County in 2025 according to effective study dates.

FIGURE 5.19: SPECIAL FLOOD HAZARD AREAS IN BRUNSWICK COUNTY



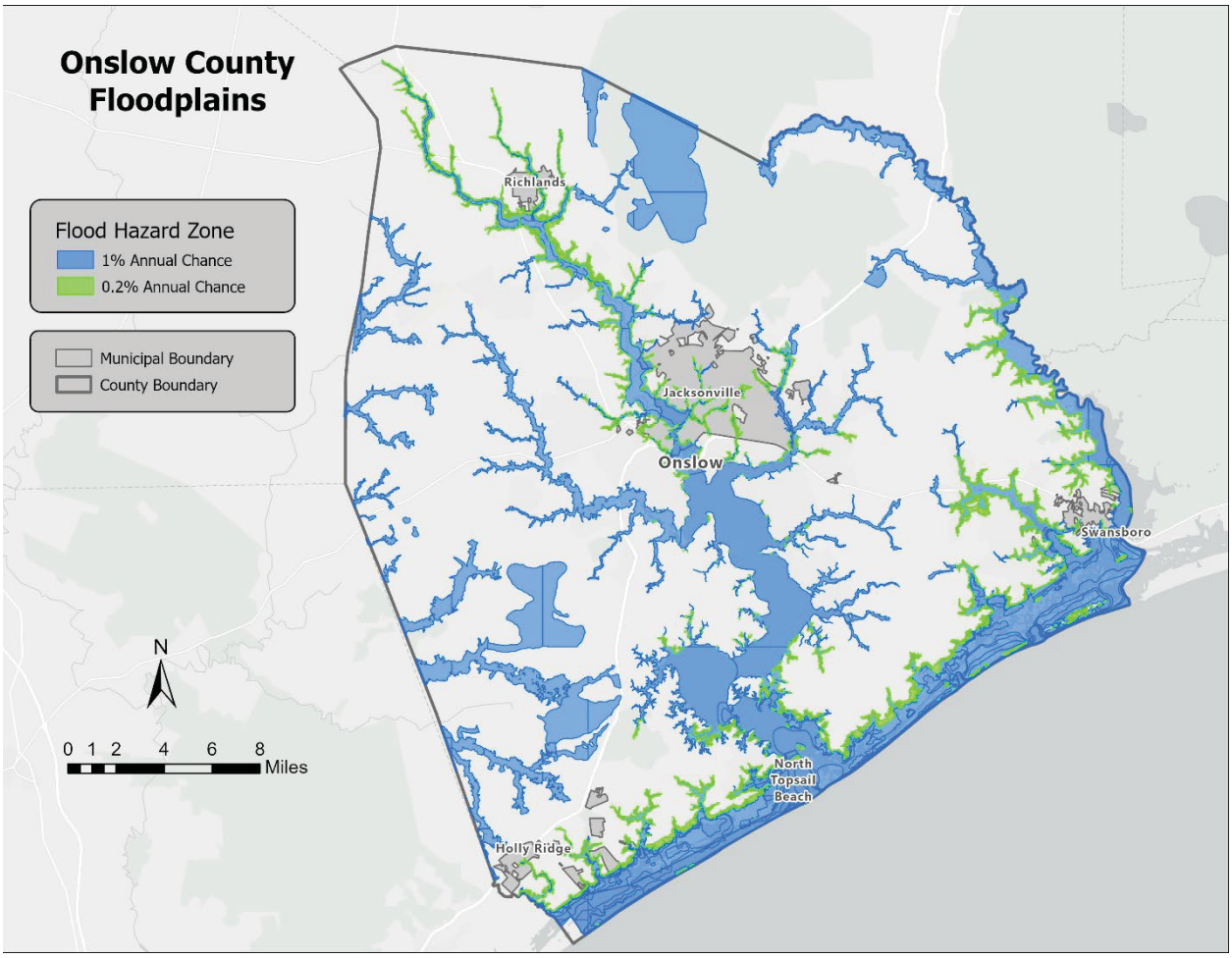
Source: Federal Emergency Management Agency

FIGURE 5.20: SPECIAL FLOOD HAZARD AREAS IN NEW HANOVER COUNTY



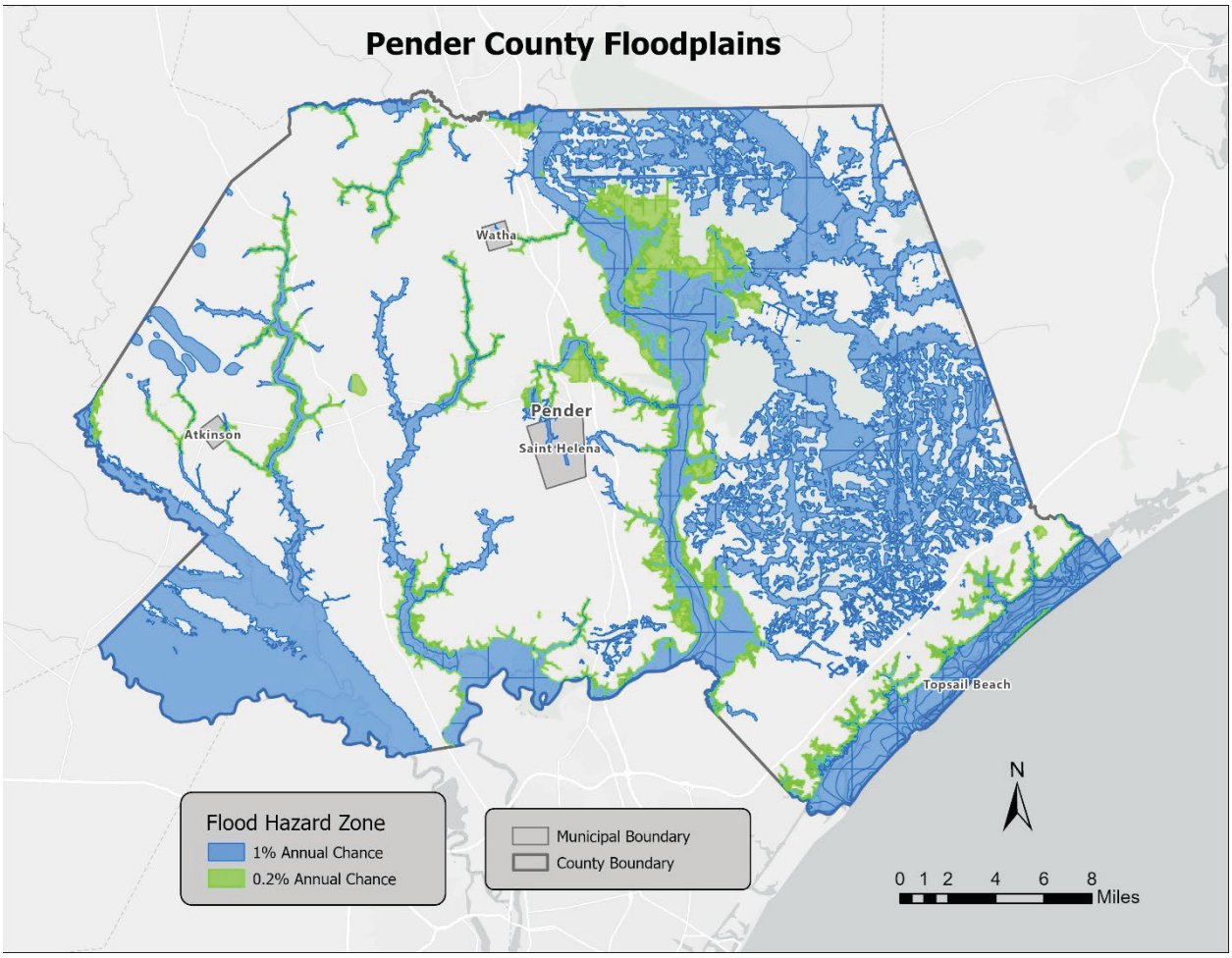
Source: Federal Emergency Management Agency

FIGURE 5.21: SPECIAL FLOOD HAZARD AREAS IN ONSLOW COUNTY



Source: Federal Emergency Management Agency

FIGURE 5.22: SPECIAL FLOOD HAZARD AREAS IN PENDER COUNTY



Source: Federal Emergency Management Agency

5.11.3 Historical Occurrences

Information from the National Center for Environmental Information was used to ascertain historical flood events. The National Centers for Environmental Information reported a total of 423 events throughout the Southeastern NC Region between June 1950 and April 2025.[34] A list of these events is presented in **Table 5.27**. These events accounted for over $21.6 million in unadjusted property damage due to flood events throughout the region in addition to at least 1 death and 2 injuries. Specific information on flood events for each county including date, type of flooding, and deaths and injuries, can be found in **Appendix H**.

TABLE 5.27: SUMMARY OF FLOOD EVENTS IN THE SOUTHEASTERN NC REGION

Area	Number of Occurrences	Deaths	Injuries	Property Damage
Brunswick County	**122**	**0**	**0**	**$5,512,000**
Bald Head Island	0	0	0	$0
Belville	0	0	0	$0
Boiling Spring Lakes	0	0	0	$0
Bolivia	4	0	0	$5,000
Calabash	7	0	0	$300,000
Carolina Shores	0	0	0	$0
Holden Beach	1	0	0	$0
Leland	10	0	0	$190,000
Navassa	0	0	0	$0
Northwest	0	0	0	$0
Oak Island	0	0	0	$0
Ocean Isle Beach	0	0	0	$0
Sandy Creek	0	0	0	$0
Shallotte	7	0	0	$10,000
Southport	9	0	0	$520,000
St. James	0	0	0	$0
Sunset Beach	0	0	0	$0
Varnamtown	0	0	0	$0
Unincorporated Area	92	0	0	$4,487,000
New Hanover County	**161**	**0**	**2**	**$7,514,000**
Carolina Beach	16	0	0	$338,000
Kure Beach	0	0	0	$0
Wilmington	41	0	1	$751,000
Wrightsville Beach	1	0	0	$0
Unincorporated Area	119	0	1	$6,425,000
Onslow County	**54**	**0**	**0**	**$2,230,000.00**
Holly Ridge	1	0	0	$0
Jacksonville	6	0	0	$80,000
North Topsail Beach	1	0	0	$0
Richlands	4	0	0	$0
Swansboro	1	0	0	$0
Unincorporated Area	41	0	0	$2,150,000
Pender County	**86**	**1**	**0**	**$6,430,000**

[34] These events are only inclusive of those reported by NCEI. It is likely that additional occurrences have occurred and have gone unreported.

Area	Number of Occurrences	Deaths	Injuries	Property Damage
Atkinson	0	0	0	$0
Burgaw	16	0	0	$17,000
St. Helena	0	0	0	$0
Surf City	3	0	0	$50,000
Topsail Beach	8	0	0	$30,000
Watha	1	0	0	$0
Unincorporated Area	58	1	0	$6,333,000
Southeastern NC Regional Total	**423**	**1**	**2**	**$21,686,000**

Source: National Centers for Environmental Information

5.11.4 Historical Summary of Insured Flood Losses

According to FEMA flood insurance policy records as of August 2025, there have been more than 31,366 flood loss claims reported in the Southeastern NC Region through the National Flood Insurance Program (NFIP) since 1970, totaling over $472.4 million in claims payments. A summary of these figures for each county of the region is provided in **Table 5.28**. It should be emphasized that these numbers include only those losses to structures that were insured through the NFIP policies, and for losses in which claims were sought and received. It is likely that many additional instances of flood losses in the Southeastern NC Region were either uninsured, denied claims payment, or not reported.

TABLE 5.28: SUMMARY OF INSURED FLOOD LOSSES

Location	Claims	Claims Payments[35]
Brunswick County	**9,874**	**$98,717,522**
Bald Head Island	714	$5,829,771
Belville	9	$19,619
Boiling Spring Lakes	104	$2,334,625
Bolivia	4	$78,888
Calabash	6	$70,048
Carolina Shores	34	$941,278
Caswell Beach	206	$1,341,144
Holden Beach	2,291	$12,642,024
Leland	75	$4,539,603
Navassa	4	$141,562
Northwest	1	$4,179
Oak Island	1,513	$13,350,649
Ocean Isle Beach	2,081	$9,050,887
Sandy Creek	0	$0
Shallotte	35	$939,821
Southport	196	$4,416,960
St. James	122	$915,606
Sunset Beach	270	$650,692
Varnamtown	5	$28,312
Unincorporated Area	2,204	$41,421,855
New Hanover County	**11,174**	**$185,818,217**
Carolina Beach	3,029	$35,744,013
Kure Beach	777	$24,458,971
Wilmington	656	$9,688,480
Wrightsville Beach	3,546	$42,698,355
Unincorporated Area	3,166	$73,228,398

[35] Totals calculated using (1) *amount paid on building claim* plus (2) *amount paid on contents claim* for each record.

Location	Claims	Claims Payments[35]
Onslow County	**4,431**	**$70,504,219**
Holly Ridge	5	$41,219
Jacksonville	302	$5,107,596
North Topsail Beach	1,501	$19,303,811
Richlands	12	$486,217
Swansboro	134	$2,098,724
Unincorporated Area	2,477	$43,466,652
Pender County	**5,887**	**$117,445,200**
Atkinson	0	$0
Burgaw	45	$1,403,527
St. Helena	0	$0
Surf City	1,906	$14,571,871
Topsail Beach	2,282	$20,564,287
Watha	0	$0
Unincorporated Area	1,654	$80,905,514
Southeastern NC Regional Total	**31,366**	**$472,485,158**

Source: National Flood Insurance Program, August 2025

5.11.5 Repetitive Loss Properties

FEMA defines a "repetitive loss property" as any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period, since 1978. A repetitive loss property may or may not be currently insured by the NFIP. There are over 122,000 repetitive loss properties nationwide based on recent estimates.

Table 5.29 provides summary information about the repetitive loss properties in the Southeastern NC region. As of December 2024 NFIP records, there are roughly 3,750 repetitive loss properties in the Southeastern NC Region, 485 of which are reported as mitigated and 1,941 of which are reported as insured. Most of these properties are single family residential and the remaining are commercial or government-owned buildings. Without mitigation, these properties will likely continue to experience significant flood losses in the future.

TABLE 5.29: SUMMARY OF REPETITIVE LOSS PROPERTIES

Location	Number of Properties	Residential Properties	Non-Residential Properties
Brunswick County	**914**	**884**	**30**
Bald Head Island	41	36	5
Belville	0	0	0
Boiling Spring Lakes	8	8	0
Bolivia	0	0	0
Calabash	2	1	1
Carolina Shores	4	4	0
Caswell Beach	12	10	2
Holden Beach	253	250	3
Leland	8	8	0
Navassa	0	0	0
Northwest	0	0	0
Oak Island	307	299	8
Ocean Isle Beach	169	169	0
Sandy Creek	0	0	0
Shallotte	5	4	1
Southport	20	15	5

Location	Number of Properties	Residential Properties	Non-Residential Properties
St. James	9	9	0
Sunset Beach	5	5	0
Varnamtown	0	0	0
Unincorporated Area	71	66	5
New Hanover County	**1,543**	**1,452**	**91**
Carolina Beach	394	354	40
Kure Beach	83	74	9
Wilmington	63	57	6
Wrightsville Beach	625	602	23
Unincorporated Area	378	365	13
Onslow County	**542**	**519**	**23**
Holly Ridge	20	20	0
Jacksonville	30	28	2
North Topsail Beach	207	203	4
Richlands	0	0	0
Swansboro	18	9	9
Unincorporated Area	267	259	8
Pender County	**751**	**727**	**24**
Atkinson	0	0	0
Burgaw	7	6	1
St. Helena	0	0	0
Surf City	214	208	6
Topsail Beach	360	346	14
Watha	0	0	0
Unincorporated Area	170	167	3
Southeastern NC Regional Total	**3,750**	**3,582**	**168**

Source: National Flood Insurance Program

5.11.6 Changing Future Conditions

A changing climatic environment translates to new weather patterns, stronger storms, and significant shifts 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 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 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. Additionally, greater intensity and frequency of flooding could also present a variety of extreme public health and emergency management challenges.

5.11.7 Probability of Future Occurrences

Flood events in the form of riverine, rainfall, and coastal sources will remain a pressing threat throughout the Southeastern NC Region, and the probability of future occurrences is highly likely (100 percent annual probability). The probability of future flood events based on magnitude and according to best available data is illustrated in **Figures 5.19-5.22** above**,** which indicate those areas susceptible to the 1-percent annual chance flood (100-year floodplain) and the 0.2-percent annual chance flood (500-year floodplain). As of 2025, the FEMA National Risk Index (NRI) rates the riverine flooding hazard as "relatively moderate" in Brunswick County and Onslow County compared to "relatively low" in New Hanover County and Pender County. The NRI also rates the coastal flooding hazard as "relatively moderate" in Brunswick County and New Hanover County compared to "very low" in Onslow County and Pender County.

5.12 TSUNAMIS

5.12.1 Background

The word tsunami is Japanese and means "harbor wave." A tsunami is a wave or series of waves most commonly caused by an earthquake or by a large undersea landslide, volcanic eruption, or other undersea disturbances. From the area of disturbance, tsunami waves will travel outward in all directions and can originate hundreds or even thousands of miles away from affected coastal areas.

In the open ocean, tsunami waves travel at speeds of up to 600 miles per hour but are too small to be observed, and the time between wave crests may be 5 to 90 minutes. As the waves approach shallow coastal waters, they slow down and may rise to several feet or, in rare cases, up to 100 feet. Although the waves slow down as they reach shallow water, the energy remains constant. The first wave is almost never the largest; successive waves may be spaced ten or more minutes apart and continue arriving for many hours. The coastal areas at greatest risk are less than 50 feet above sea level and within one mile of the shoreline. Tsunamis can cause great loss of life and property damage where they come ashore, and most tsunami deaths are the result of drowning. Associated risks include water pollution, damaged gas lines, and flooding.

5.12.2 Location and Spatial Extent

Tsunami activity is possible along the East Coast of the United States but is a greater risk along the Pacific Rim states (Washington, Oregon, California, Alaska, and Hawaii). As many as 40 tsunami or tsunami-like events have been reported along the East Coast since the early 1600s. Although an East Coast tsunami would be rare, two off-shore areas are currently under investigation according to a 2002 National Geophysical Data Center report. One area of interest consists of large cracks northeast of Cape Hatteras, North Carolina, that could foretell of the early stages of an underwater landslide resulting in a tsunami. The other area of interest consists of submarine canyons approximately 150 kilometers from Atlantic City, New Jersey. Significant factors for consideration with regard to these areas are recent discoveries along the East Coast that demonstrate the existence of pressurized hydrates and pressurized water layers in the continental shelf. This has produced speculation among the scientific community on possible triggers that could cause sudden and perhaps violent releases of compressed material that could factor into landslide events and the resulting tsunami waves.

The potential location and extent of the tsunami hazard for the Southeastern NC Region is similar and slightly more extensive than the established flood hazard area.

5.12.3 Historical Occurrences

Historical records do not indicate any past significant tsunami occurrences for the Southeastern NC Region.

5.12.4 Changing Future Conditions

According to the U.S. Geological Survey (USGS), the East Coast of the United States is not as vulnerable to frequent tsunamis as the West Coast due to a lack of major subduction zones capable of generating such hazards[36]. However, submarine earthquakes and landslides will remain possible trigger events that could ultimately lead to a nearby Atlantic basin tsunami at some point in the future. Emphasis may be

[36] USGS Pacific Coastal and Marine Science Center (https://www.usgs.gov/centers/pcmsc/could-it-happen-here)

placed on consistent monitoring, awareness, and preparedness efforts among coastal communities of the region and beyond to help ensure minimal disruption by this potential hazard.

5.12.4 Probability of Future Occurrences

The probability of a future tsunami event affecting the Southeastern NC Region is considered to be very low. Therefore, they are rated as unlikely (less than 1 percent annual probability) in terms of future occurrences. However, the potential for tsunami impacts along the entire U.S. East Coast does exist as evidenced by other recorded tsunami occurrences in the area. Even upon impact, the consequences of a tsunami strike are thought to be low for the region given off-shore terrain. Therefore, there is no indication that this hazard is a significant enough threat to the state or the region to warrant further analysis or a detailed vulnerability assessment. As of 2025, the FEMA National Risk Index does not have sufficient data to effectively rate the tsunami hazard for all counties in the region.

5.13 WILDFIRES

5.13.1 Background

A wildfire is any outdoor fire (i.e. grassland, forest, brushland) that is not under control, supervised, or prescribed[37]. Wildfires are part of the natural management of forest ecosystems but may also be caused by human factors.

Nationally, over 80 percent of wildfires are started by negligent human behavior such as smoking in wooded areas or improperly extinguishing campfires. The second most common cause of wildfire is lightning. In North Carolina, 98 percent of wildfires are human-caused. The number one cause is woods arson, followed by debris burning.

There are three classes of wildland fires: surface fire, ground fire, and crown fire. A surface fire is the most common of these three classes and burns along the floor of a forest, moving slowly and killing or damaging trees. A ground fire (muck fire) is usually started by lightning or human carelessness and burns on or below the forest floor. Crown fires spread by wind and move quickly by jumping along the tops of trees. Wildfires are usually signaled by dense smoke that fills the area for miles around.

Wildfire probability depends on local weather conditions, outdoor activities such as camping debris burning, construction, and other natural hazards (such as tornadoes, hurricanes, etc.) increase the probability of wildfires by producing fuel in both urban and rural settings. The North Carolina wildfire season runs from late winter to early spring with the month of March being the most severe.

Many individual homes and cabins, subdivisions, resorts, recreational areas, organizational camps, businesses, and industries are located within high wildfire hazard areas. Further, the increasing demand for outdoor recreation places more people in wildlands 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 conditions losses as well. Businesses that depend on timber, such as paper miles 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 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.

State and local governments can impose fire safety regulations on home sites and developments to help curb wildfire. Land treatment measures such as fire access roads, water storage, helipads, safety zones, buffers, firebreaks, fuel breaks, and fuel management can be designed as part of an overall fire defense system to aid in fire control. Fuel loading management, prescribed burning, and cooperative land management planning can also be encouraged to reduce fire hazards.

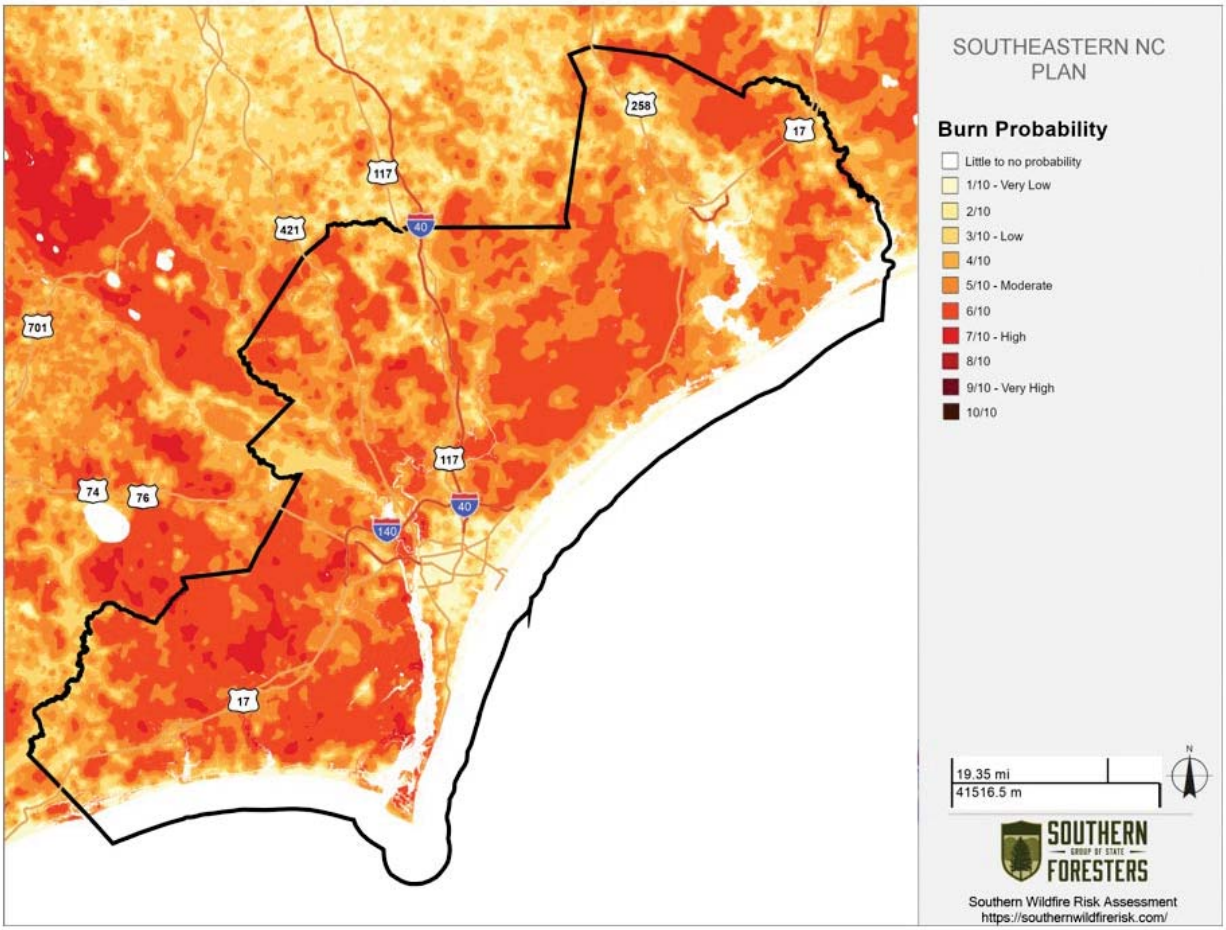
[37] Prescription burning, or “controlled burn,” undertaken by land management agencies is the process of igniting fires under selected conditions, in accordance with strict parameters.

5.13.2 Location and Spatial Extent

The entire region is at risk of a wildfire occurrence. However, drought conditions may make fires more likely in those locations. Further, areas in the urban-wildland interface are particularly susceptible to fire hazards as populations abut formerly undeveloped areas.

Figure 5.23 shows the burn probability for each county in the Southeastern Region based on data from the Southern Wildfire Risk Assessment (SWRA). This data represents the likelihood of an area burning based on landscape conditions, percentile weather, historical ignition patterns, and historical fire suppression efforts.

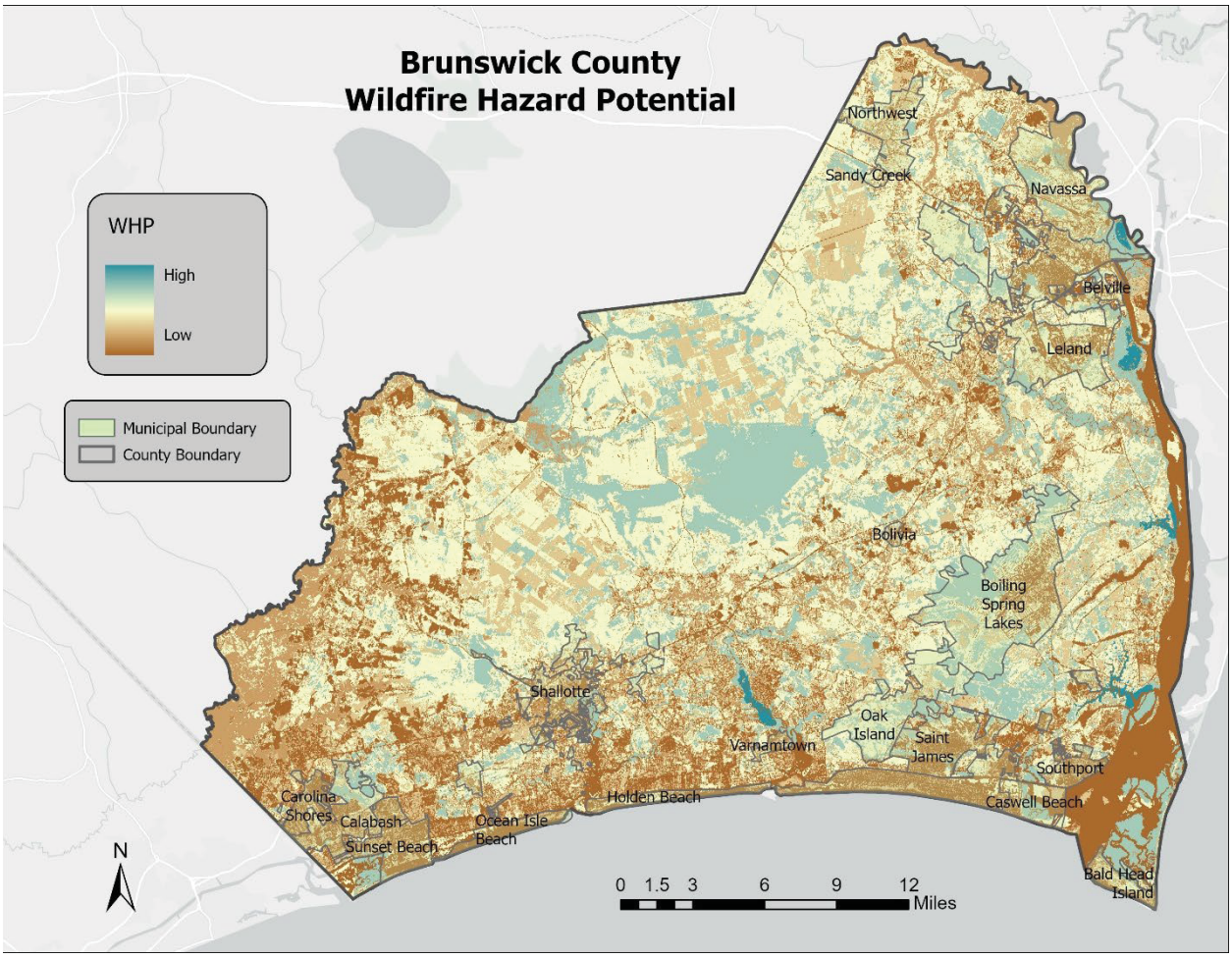
FIGURE 5.23: SOUTHEASTERN NC REGION BURN PROBABILITY



Source: Southern Wildfire Risk Assessment

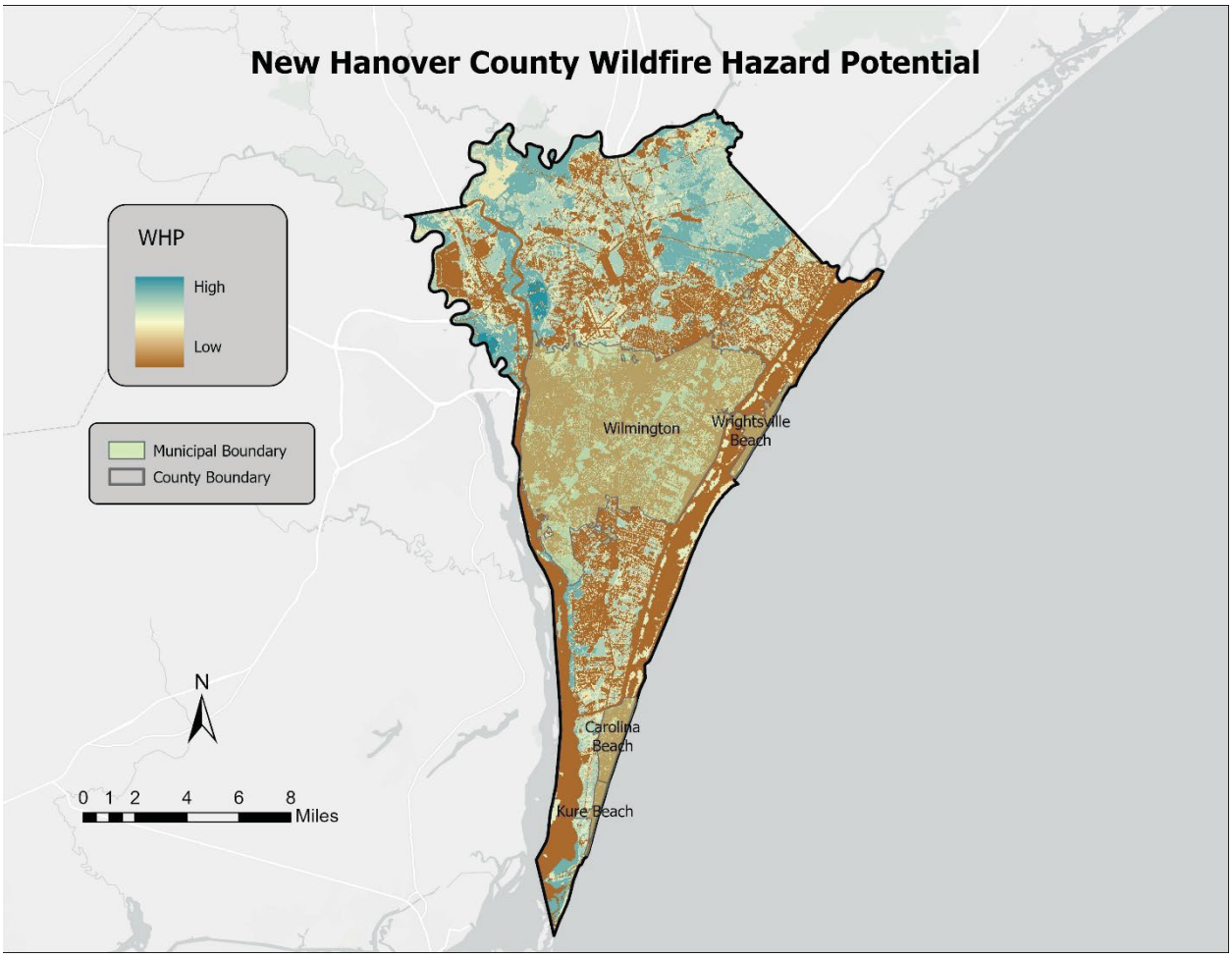
Figures 5.24-27 show the wildfire hazard potential (WHP) for each county in the Southeastern NC Region based on data from the Southern Wildfire Risk Assessment (SWRA). This data helps to inform evaluations of wildfire hazard or prioritization of fuels management needs across very large landscapes. Jurisdiction-specific maps related to this data are included in the plan appendices.

FIGURE 5.24: WILDFIRE HAZARD POTENTIAL IN BRUNSWICK COUNTY



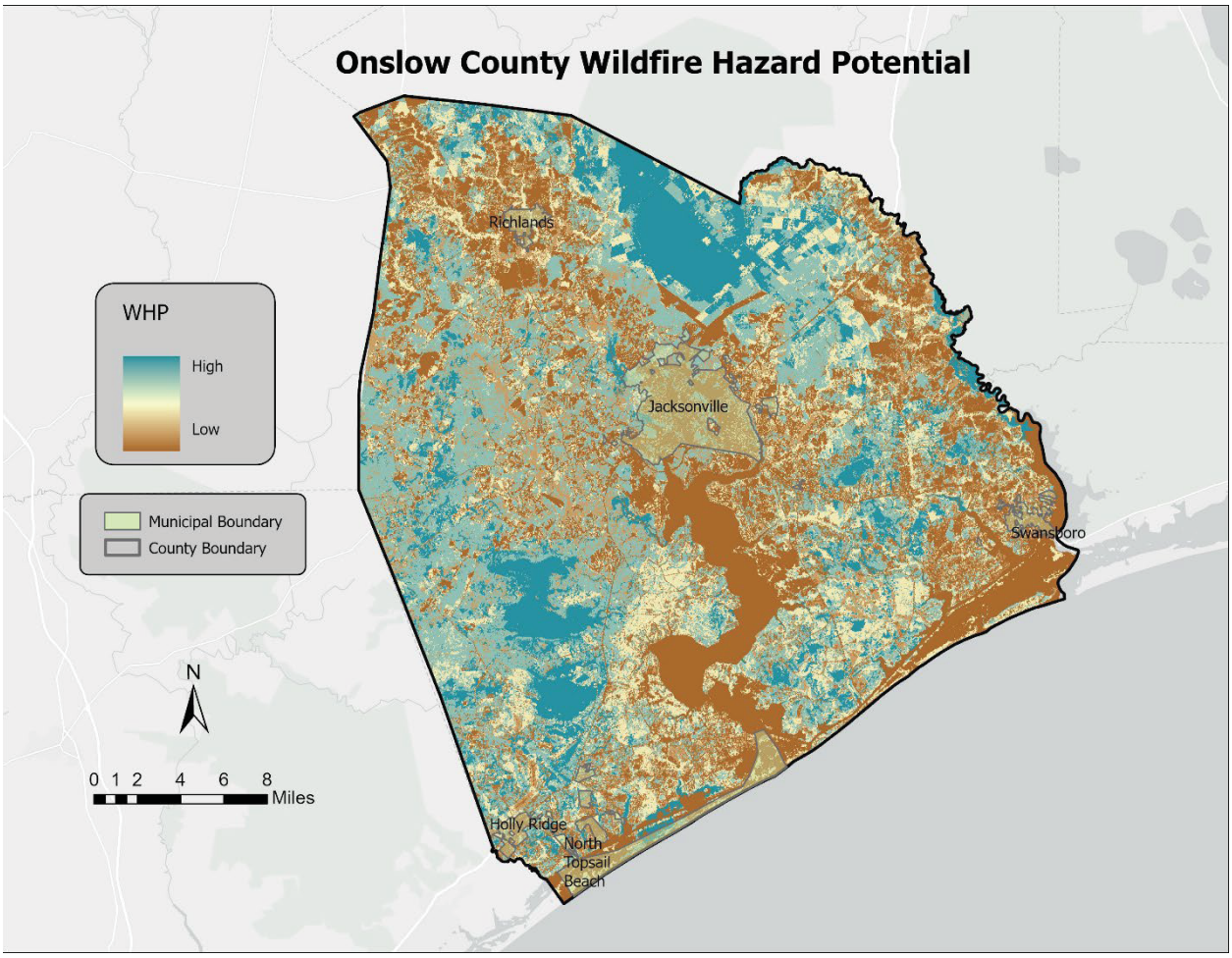
Source: Southern Wildfire Risk Assessment

FIGURE 5.25: WILDFIRE HAZARD POTENTIAL IN NEW HANOVER COUNTY



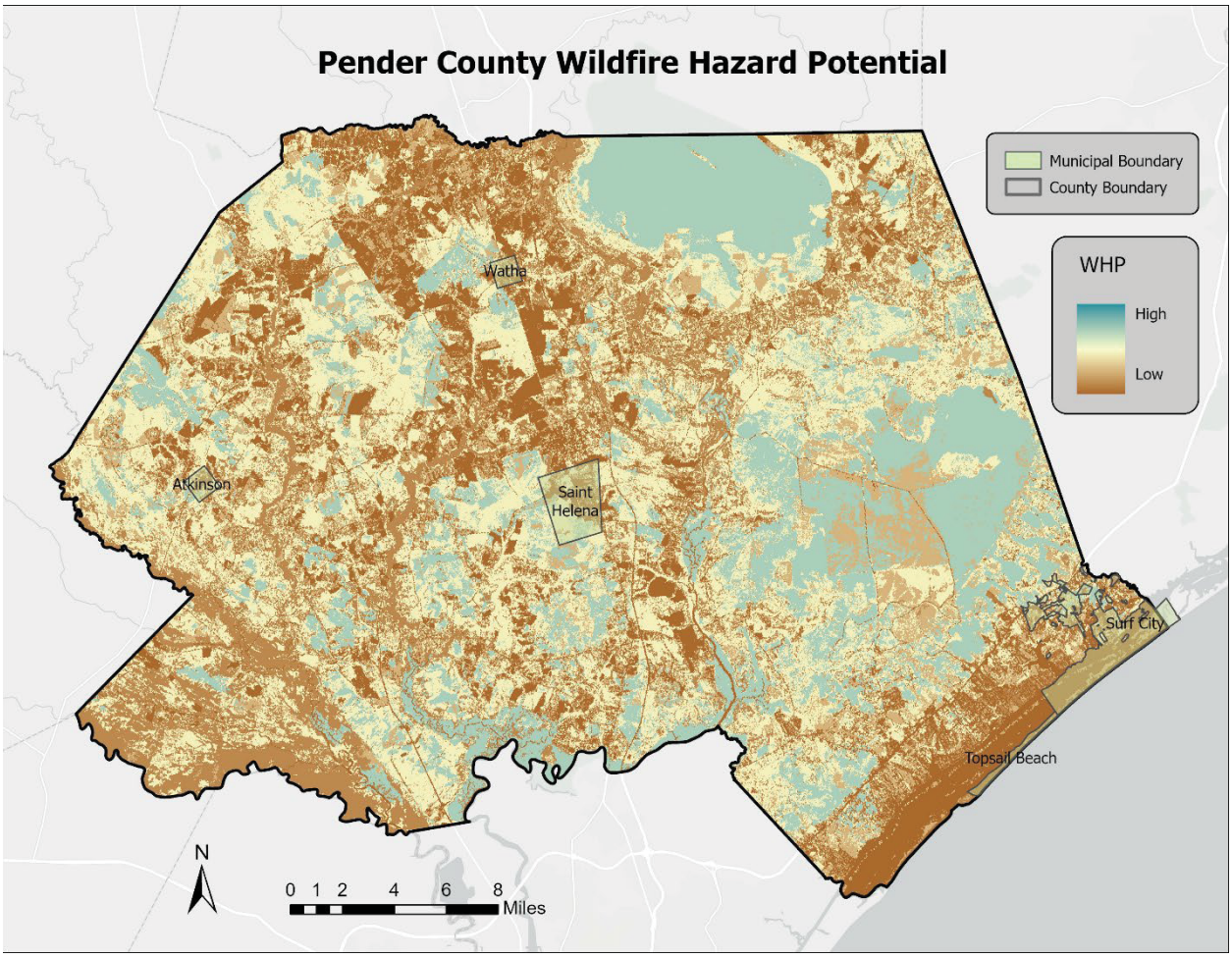
Source: Southern Wildfire Risk Assessment

FIGURE 5.26: WILDFIRE HAZARD POTENTIAL IN ONSLOW COUNTY



Source: Southern Wildfire Risk Assessment

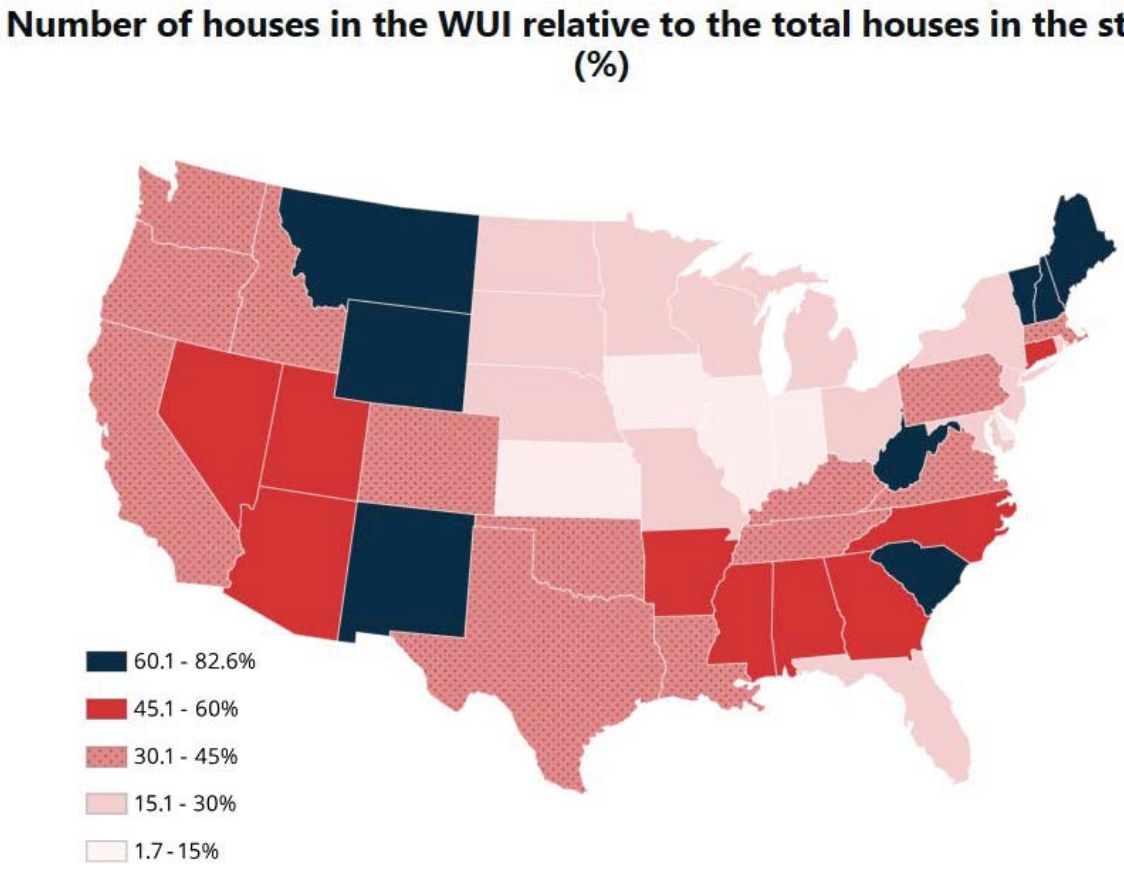
FIGURE 5.27: WILDFIRE HAZARD POTENTIAL IN PENDER COUNTY



Source: Southern Wildfire Risk Assessment

Every state also has a Wildland Urban Interface (WUI), which is the rating of potential impact of wildfires on people and their homes. The WUI is not a fixed geographical location, but rather a combination of human development and vegetation where wildfires have the greatest potential to result in negative impacts. Nationally, one-third of all homes lie in the WUI, which is a growing danger. Below, **Figure 5.28** shows a map of each state's WUI. Based on the data from the US Forest Service, approximately 45.1-60% of homes in North Carolina lie within the WUI.

FIGURE 5.28: PERCENT OF TOTAL HOMES IN THE WILDLAND URBAN INTERFACE

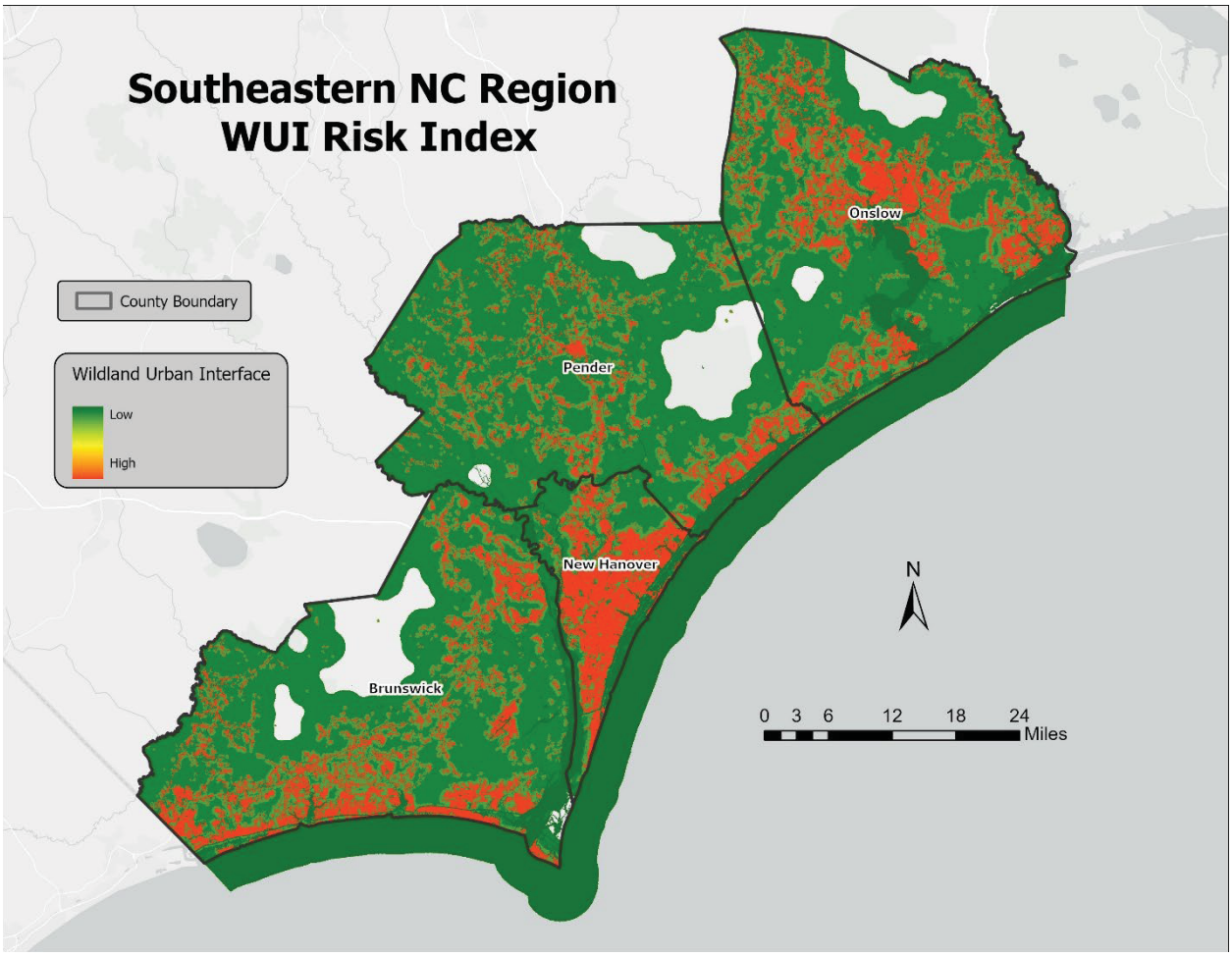


*For states in the conterminous United States.

Source: U.S. Forest Service

Below, **Figure 5.29** displays the WUI Risk Index for the counties in the Southeastern NC Region. Jurisdiction-specific maps related to this data are included in the plan appendices.

FIGURE 5.29: SOUTHEASTERN NC WILDLAND URBAN INTERFACE (WUI) RISK INDEX



Source: Southern Wildfire Risk Assessment

5.13.3 Historical Occurrences

Information from the National Association of State Foresters (NASF) was used to ascertain historical wildfire events. The National Association of State Foresters reported that a total of 1,704 events that impacted an area greater than 1 acre have occurred throughout the Southeastern NC Region since 2001[38]. A majority of the wildfires within the SENC community occurred at or near natural wildlife sanctuaries. As the population continues to grow within the region, more houses and communities will be at risk from wildfires in wildfire prone areas.

A summary of these events is presented in **Table 5.30**. The largest of these events was the Juniper Road fire which occurred in Pender County and burned 31,140 acres.

[38] There events are only inclusive of those reported by NASFI. It is likely that additional occurrences have occurred and have gone unreported.

TABLE 5.30: SUMMARY TABLE OF WILDFIRE INCIDENTS (2001 -2018)

Location	Number of Wildfires	Total Acres Burned
Brunswick County	**599**	**13,640.64**
Bald Head Island	0	0
Belville	0	0
Boiling Spring Lakes	0	0
Bolivia	0	0
Calabash	0	0
Carolina Shores	0	0
Holden Beach	0	0
Leland	11	50.5
Navassa	0	0
Northwest	9	46.5
Oak Island	1	1
Ocean Isle Beach	1	1
Sandy Creek	1	2
Shallotte	15	58.3
Southport	3	9.5
St. James	0	0
Sunset Beach	2	14
Varnamtown	0	0
Unincorporated Area	556	13,457.84
New Hanover County	**118**	**1,954.64**
Carolina Beach	1	2
Kure Beach	0	0
Wilmington	22	151.64
Wrightsville Beach	0	0
Unincorporated Area	50	1,803
Onslow County	**544**	**5,877.96**
Holly Ridge	6	15.98
Jacksonville	6	21.5
North Topsail Beach	1	1.5
Richlands	0	0
Swansboro	0	0
Unincorporated Area	531	5,838.98
Pender County	**443**	**38,509.68**
Atkinson	0	0
Burgaw	4	31
St. Helena	1	10.5
Surf City	3	7.1
Topsail Beach	0	0
Watha	3	5.56
Unincorporated Area	432	38,455.52
Southeastern NC REGION TOTAL	**1,704**	**59,982.92**

Source: National Centers for Environmental Information

Brunswick County

While there have been no major wildfire events in Brunswick County, there have been several hundred acres burned by wildfires within the county. Small wildfires have occurred east of I-140 in Leland, NC along Highway 87. A 1,400-acre wildfire burned near Wilmington in 2016, which coincided with wildfires which were raging across the Southeast. Another wildfire burned 10 acres near the Windsor Park housing complex and the Mount Misery fire burned about 500 acres in April 2015 and threatened about

89 homes. A majority of the fires coincide with years in the Southeastern NC region where drought conditions were at their peak. For example, during the 2007 Wildfire Season when drought conditions in the SENC region were listed as "Extreme" to "Exceptional"; in **Table 5.5**, a total of 69 fires broke out within the county, the highest number recorded in the last 17 years.

New Hanover County
One of the largest fires in New Hanover County occurred near the Castle Hayne area on Edna Buck Road. The wildfire burned over 1,500 acres of woodlands between Edna Buck Road and Holly Shelter Road. The fire lasted for 7-10 days because the fire was fueled by organic soil and peat moss which, according to North Carolina Department of Environmental Quality "could take months to burn out without substantial rain".

Onslow County
A number of smaller fires have broken out within Onslow County. The highest number of wildfires occurred in years with the highest drought index occurrences. Wildlife sanctuaries and other natural areas are at the highest risk for wildfire occurrences. A number of acres on the west side of Wilmington Highway 17 along Mill Run Creek have had wildfire occurrences over the last 17 years. Because of increasing occurrences of years with major droughts across the state, and the abundance of natural fuel sources for these wildfires to feed off of, these relatively isolated areas make tracking these wildfires difficult.

Pender County
Although there were a number of smaller contained fires within Pender County, the Juniper Road fire was the largest wildfire reported in the last 17 years and burned 31,140 acres. The fire was started in the Holly Shelter Game Land from a lightning strike in May 2011. The fire cost the county a total of over $3.5 million dollars to contain and put more than 2,000 homes along Highway 17 at risk. The homes, which are located west of the Holly Shelter Game Lands along Highway 17, were under significant threat from the Juniper Road fire due to their close proximity downwind from the blaze.

5.13.4 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[39].

Although wildfires occur naturally and play a long-term role in the health of ecosystems, changing wildfire and climate 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 soils and 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.

[39] North Carolina Forest Action Plan (https://www.stateforesters.org/districts/north-carolina/)

5.13.5 Probability of Future Occurrences

Wildfire events will continue to occur in the Southeastern NC Region. The likelihood of wildfire increases during drought cycles and abnormally dry conditions. Fires are likely to stay small in size but could increase due to the local climate and ground conditions. Dry, windy conditions with an accumulation of forest floor fuel (potentially due to ice storms or lack of fire) could create conditions for a large fire that spreads quickly. It should also be noted that some areas do vary somewhat in risk. For example, highly developed areas are less susceptible unless they are located near the wildland urban index boundary. The risk will also vary due to assets. Areas in the wildland urban interface (WUI) will have much more property at risk, resulting in increased vulnerability and need to mitigate compared to rural, mainly forested areas. The probability assigned to the Southeastern NC Region for future wildfire events is likely (10 to 100 percent annual probability). As of 2025, the FEMA National Risk Index rates the wildfire hazard as “relatively moderate” for all counties in the region.

5.14 INFECTIOUS DISEASE

5.14.1 Background and Description

For the purpose of this plan, this section will assess infectious diseases and vector-borne diseases within the Southeastern NC 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 Southeastern NC 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 not 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 a biological weapon, such as anthrax, pneumonic plague, and smallpox, are safely housed and controlled in laboratory settings such as 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 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 have virtually disappeared, West Nile virus occurs with low frequency and causes serious disease in only a very small percentage of cases, Ebola have been more or less 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 influenza, particularly in a pandemic form, as well as norovirus, and multiple antibiotic-resistant tuberculosis. 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, and elderly and immune-compromised persons, But there is always the potential risk of the emergence of influenza on one of the pandemic H1N1 from, such as the “Spanish” outbreak of 1918-1919, 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 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 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 778 million reported cases and over 7 million deaths worldwide as of 2025 according to the World Health Organization (WHO). 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 Disease

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 Southeastern NC Region 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 U.S. in 1999, with North Carolina reporting 63 cases from that time through 2016.

Foreign Animal Diseases

As defined in the 2023 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 general public health if it manages to spread over a large area. The North Carolina Department of Agriculture and Consumer Services (NCDA&CS) 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 in order to facilitate safe, effective, and collaborative efforts toward outbreaks.

5.14.2 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, depending on the type of disease, could number in the tens of thousands within the state.

5.14.3 Historical Occurrences

Infectious Disease

Information from the North Carolina Department of Health and Human Services (NCDHHS) was used to monitor and track cases of the infectious disease COVID-19. A Presidential disaster declaration for COVID-19 was declared for North Carolina on March 24, 2020. **Table 5.31** provides a summary of confirmed cases of COVID-19 in the Southeastern NC Region as of May 10, 2023. The COVID-19 pandemic is technically still ongoing in certain regions of the world as of the time of the final version of this plan update. These statistics will be revisited during the next plan update.

TABLE 5.31: CONFIRMED COVID-19 CASES IN THE SOUTHEASTERN NC REGION

Location	Number of Cases	Number of Deaths*
Brunswick County	41,603	389
New Hanover County	65,068	476
Onslow County	65,719	437
Pender County	18,833	156
Southeastern NC Regional Total	191,223	1,458

Source: North Carolina Department of Health and Human Services (NCDHHS)
** Deaths reflect deaths in persons with laboratory-confirmed COVID-19 reported by local health departments to NCDHHS*

As of May 10, 2023, NCDHHS reported a statewide total of 3,501,404 cases of COVID-19 and 29,059 COVID-related deaths in North Carolina[40]. These cases reflect cases that were tested and returned positive, including the NC State Laboratory of Public Health and reporting hospital and commercial labs.

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. $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[41]. 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[42].

[40] NCDHHS Covid-19 Cases (https://www.ncdhhs.gov/covid-19-case-count-nc#by-counties)
[41] NCDHHS Press Releases – Zika Virus (https://www.ncdhhs.gov/news/press-releases/nc-prepared-zika-virus-risk-local-virus-carrying-mosquitoes-low)
[42] 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)

Foreign Animal Diseases
No significant cases have been reported in the region.

5.14.4 Changing Future Conditions

According to the Centers for Disease Control and Prevention (CDC), ongoing climate change trends of milder winters, warmer summers, and fewer days of frost make it easier for infectious diseases and vector diseases to expand to new geographic areas and infect more 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[43].

5.14.5 Probability of Future Occurrence

It is difficult to predict the future probability of infectious diseases due to the difficulty with obtaining information on this type of hazard. The most common and probable disease in the state has shown to be influenza; however, based on historical data, it is possible (between 1 and 10 percent annual probability) that the Southeastern NC region will experience an outbreak of infectious diseases in the future.

[43] CDC National Center for Emerging and Zoonotic Infectious Disease (NCEZID) (https://www.cdc.gov/ncezid/priorities/climate-infectious-disease.html)

TECHNOLOGICAL HAZARDS

5.15 HAZARDOUS SUBSTANCES

5.15.1 Background and Description

Hazardous materials can be found in many forms and quantities that can potentially cause death, serious injury, long-lasting health effects and damage to buildings, homes and other property in varying degrees. Such materials are routinely used and stored in many homes and businesses and are also shipped daily on the nation's highways, railroads, waterways, and pipelines. This subsection on the hazardous material hazard is intended to provide a general overview of the hazard, and the threshold for identifying fixed and mobile sources of hazardous materials is limited to general information on rail, highway, and FEMA-identified fixed HAZMAT sites determined to be of greatest significance as appropriate for the purposes of this plan.

Hazardous materials (HAZMAT) incidents can apply to fixed facilities as well as mobile, transportation-related accidents in the air, by rail, on the nation's highways, and on the water. Approximately 6,774 HAZMAT events occur each year, 5,517 of which are highway incidents, 991 are railroad incidents and 266 are due to other causes.[44] In essence, HAZMAT incidents consist of solid, liquid, and/or gaseous contaminants that are released from fixed or mobile containers, whether by accident or by design as with an intentional attack. HAZMAT incidents can last hours to days, while some chemicals can be corrosive or otherwise damaging over longer periods of time. In addition to the primary release, explosions and/or fires can result from release, and contaminants can be extended beyond the initial area by persons, vehicles, water, wind and possibly wildlife as well.

HAZMAT incidents can also occur as a result of or in tandem with natural hazard events, such as floods, hurricanes, tornadoes, and earthquakes, which in addition to causing incidents can also hinder response efforts. In the case of Hurricane Floyd in September 1999, communities along the Eastern United States were faced with flooded junkyards, disturbed cemeteries, deceased livestock, floating propane tanks, uncontrolled fertilizer spills, and a variety of other environmental pollutants that caused widespread toxicological concern.

Hazardous material incidents can include the spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of a hazardous material, but exclude: (1) any release which results in exposure to poisons solely within the workplace with respect to claims which such persons may assert against the employer of such persons; (2) emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel or pipeline pumping station engine; (3) release of source, byproduct, special nuclear material from a nuclear accident; and (4) the normal application of fertilizer.

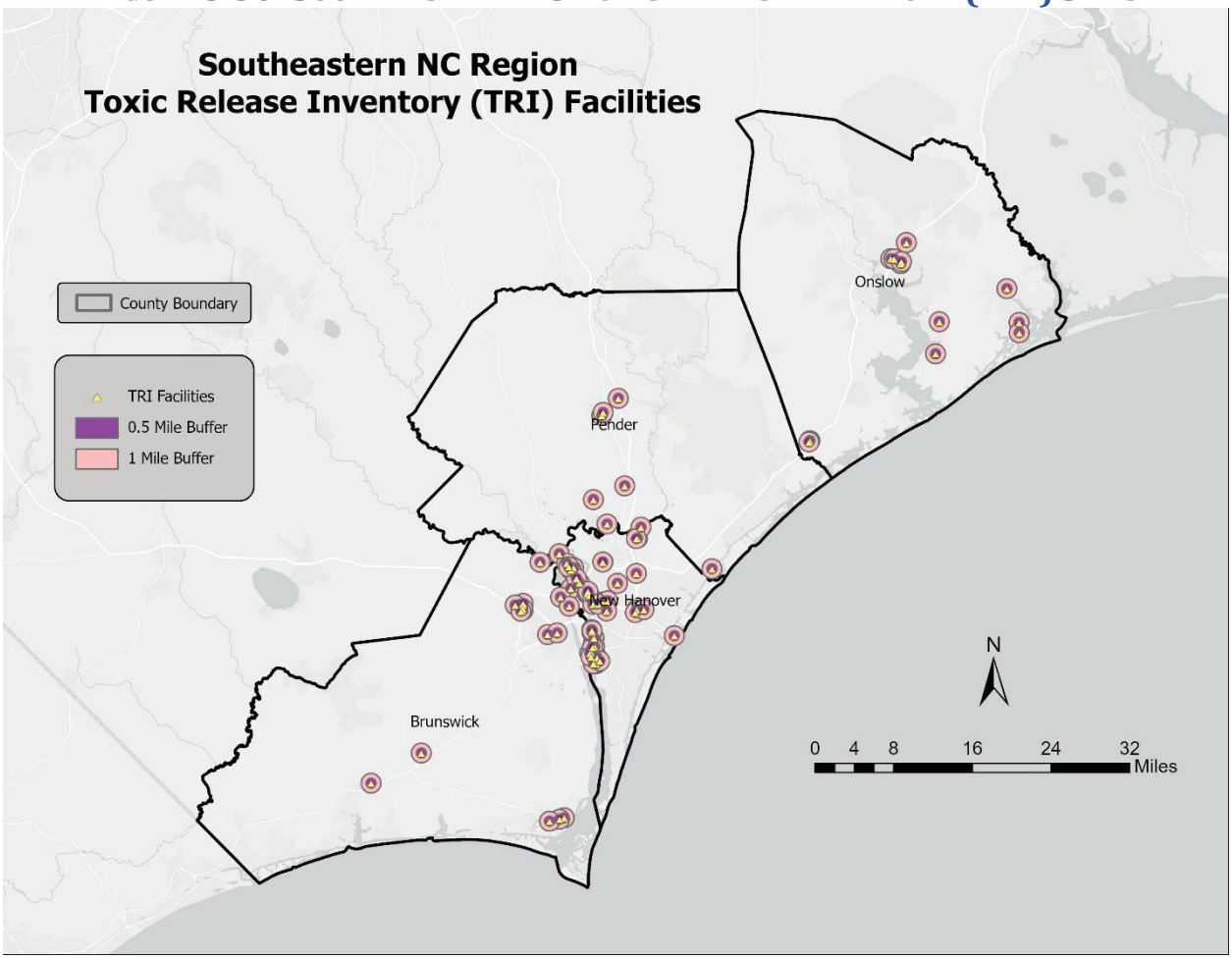
5.15.2 Location and Spatial Extent

As a result of the 1986 Emergency Planning and Community Right to Know Act (EPCRA), the Environmental Protection Agency provides public information on hazardous materials. One facet of this program is to collect information from the industrial facilities on the releases and transfers of certain

[44] FEMA, 1997.

toxic agents. This information is then reported in the Toxic Release Inventory (TRI). TRI sites indicate where such activity occurs. The Southeastern NC Region has approximately 17 TRI sites. These sites are shown in **Figure 5.30**.

FIGURE 5.30: SOUTHEASTERN NC TOXIC RELEASE INVENTORY (TRI) SITES



Source: EPA

In addition to "fixed" hazardous materials locations, hazardous materials may also impact the region via roadways and rail. Many roads in the region are narrow and winding, making hazardous material transport in the area especially treacherous. All roads that permit hazardous material transport are considered potentially at risk to an incident.

5.15.3 Historical Occurrences

The U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) is an agency of the United States Department of Transportation that was established in 2004. The PHMSA maintains a database of hazardous materials incidents for communities across the United States. A "serious incident" is a hazardous materials incident that involves:

- a fatality or major injury caused by the release of hazardous material,
- the evacuation of 25 or more persons as a result of release of hazardous material or exposure to fire,

- a release or exposure to fire which results in the closure of a major transportation artery, the alteration of an aircraft flight plan or operation,
- the release of radioactive materials from Type B packaging,
- the release of over 11.9 galls or 88.2 pounds of a severe marine pollutant, or
- the release of a bulk quantity (over 199 gallons or 882 pounds) of a hazardous material.

However, prior to 2002, a hazardous material "serious incident" was defined as follows:

- a fatality or major injury due to hazardous material,
- closure of a major transportation artery or facility or evacuation of six or more persons due to the presence of hazardous material, or
- a vehicle accident or derailment resulting in the release of hazardous material.

The Pipeline and Hazardous Materials Safety Administration (PHMSA) is an agency of the United States Department of Transportation that was established in 2004. The PHMSA maintains a database of hazardous materials incidents for communities across the United States. Summary results of their data for events that have occurred in the Southeastern NC region can be found in **Table 5.32.**

TABLE 5.32: SUMMARY OF HAZMAT INCIDENTS IN THE SOUTHEASTERN NC REGION

Location	Incidents Reported	Injuries	Fatalities	Costs/Damages
Brunswick County	**39**	**0**	**0**	**$87,585**
Bald Head Island	0	0	0	$0
Belville	1	0	0	$3,200
Boiling Spring Lakes	0	0	0	$0
Bolivia	0	0	0	$0
Calabash	0	0	0	$0
Carolina Shores	0	0	0	$0
Holden Beach	0	0	0	$0
Leland	27	0	0	$21,740
Navassa	0	0	0	$0
Northwest	0	0	0	$0
Oak Island	0	0	0	$0
Ocean Isle Beach	1	0	0	$70
Sandy Creek	0	0	0	$0
Shallotte	1	0	0	$5
Southport	6	0	0	$355
St. James	0	0	0	$0
Sunset Beach	0	0	0	$0
Varnamtown	0	0	0	$0
Unincorporated Area	3	0	0	$62,215
New Hanover County	**349**	**0**	**0**	**$585,586**
Carolina Beach	3	0	0	$5,235
Kure Beach	0	0	0	$0
Wilmington	306	0	0	$569,203
Wrightsville Beach	0	0	0	$0

Location	Incidents Reported	Injuries	Fatalities	Costs/Damages
Unincorporated Area	40	0	0	$11,148
Onslow County	**18**	**0**	**0**	**$8,448**
Holly Ridge	0	0	0	$0
Jacksonville	16	0	0	$8,303
North Topsail Beach	0	0	0	$0
Richlands	0	0	0	$0
Swansboro	0	0	0	$0
Unincorporated Area	2	0	0	$145
Pender County	**3**	**0**	**0**	**$7,552**
Atkinson	0	0	0	$0
Burgaw	1	0	0	$5
St. Helena	0	0	0	$0
Surf City	0	0	0	$0
Topsail Beach	0	0	0	$0
Watha	0	0	0	$0
Unincorporated Area	2	0	0	$7,547
Southeastern NC Regional Total	**409**	**0**	**0**	**$689,171**

Source: US Department of Transportation Pipeline and Hazardous Materials Safety Administration

5.15.4 Changing Future Conditions

As the population of the Southeastern NC Region continues to grow, more people could become increasingly vulnerable to incidents involving hazardous substances. Therefore, it is important to monitor all transportation routes and continue to attempt to prevent future incidents from occurring through ongoing preparedness, monitoring, and training. Unlike other hazards discussed in this plan, climate change is unlikely to affect the occurrence or frequency of future hazardous substance events.

5.15.5 Probability of Future Occurrence

Given the location of multiple toxic release inventory sites in the Southeastern NC Region, it is possible that a hazardous substances incident may occur (between 1 and 10 percent annual probability). County and municipal officials are mindful of this possibility and take precautions to prevent such an event from occurring. Furthermore, there are detailed plans in place to respond to an occurrence.

5.16 RADIOLOGICAL EMERGENCY – FIXED NUCLEAR FACILITIES

5.16.1 Background and Description

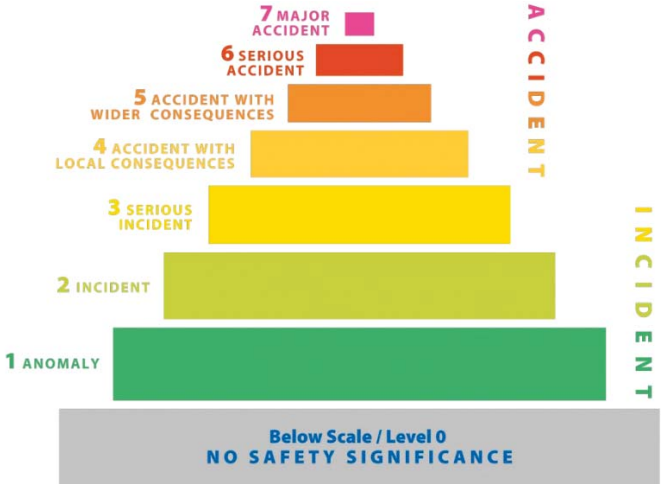
A nuclear and radiation accident is defined by the International Atomic Energy Agency as "an event that has led to significant consequences for people, the environment, or the facility". Often, this type of incident results from damage to the reactor core of a nuclear power plant which can release radioactivity into the environment. The degree of exposure from nuclear accidents has varied from serious to catastrophic. While radiological emergencies generally are a rare occurrence, many incidents are extremely well known due to their large-scale impact and serious effects on people and the environment.

The Brunswick Nuclear Plant is located just north of Southport, North Carolina on the Cape Fear River. The plant is a two-unit boiling water reactor location, and the units commenced operation in 1975 and 1977. This was the first nuclear power plant built in North Carolina, and it has a capacity of 1,870 megawatts (MW).

5.16.2 Location and Spatial Extent

The entire region is at risk of a nuclear incident. Covering 1,200 acres, the plant is less than thirty miles outside of downtown Wilmington and is just outside of the city limits of Southport. The International Atomic Energy Association (IAEA) has developed a scale called the International Nuclear and Radiological Event Scale (INES) which provides a quantitative means of assessing the extent of a nuclear event. This scale, like the MMI scale used for earthquakes, is logarithmic which means that each increasing level on the scale represents an event 10 times more severe than the previous level (**Figure 5.31**).

FIGURE 5.31: INTERNATIONAL NUCLEAR EVENT SCALE



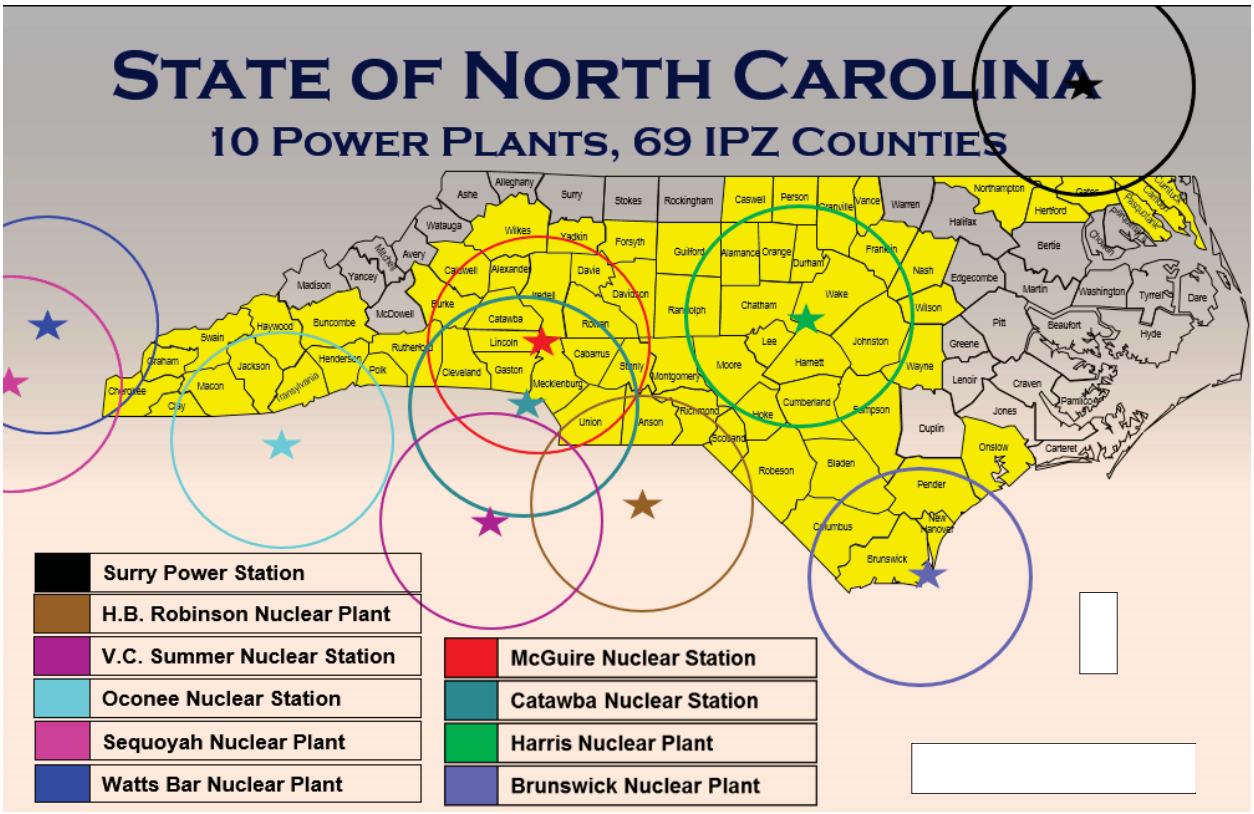
Source: International Atomic Energy Agency

The Nuclear Regulatory Commission (NRC) defines two emergency planning zones (EPZ) around nuclear plants. Areas located within 10 miles of the station are considered to be within the zone of highest risk to a nuclear incident and this radius is the designated evacuation radius recommended by the Nuclear Regulatory Commission. Within the 10-mile zone, the primary concern is exposure to and inhalation of radioactive contamination. The most concerning effects in the secondary 50-mile zone are related to

ingestion of food and liquids that may have been contaminated. All areas of the counties that are not located within the 10-mile radius are located within this 50-mile radius that is still considered to be at risk from a nuclear incident

The Brunswick Nuclear Plant is located within the Southeastern NC Region, therefore, the 50-mile buffer zone covers all four of the participating counties, as seen in **Figure 5.32** below.

FIGURE 5.32: NORTH CAROLINA NUCLEAR POWER STATION INCIDENT HAZARD ZONE



Source: NCEM

5.16.3 Historical Occurrences

Although there has been no major nuclear event at the Brunswick Nuclear Power Plant there is some possibility that one could occur as there have been incidents in the past in the United States at other facilities and at facilities around the world.

5.16.4 Changing Future Conditions

Unlike other hazards discussed in this plan, climate change is unlikely to affect the occurrence or frequency of future radiological emergency events. However, severe weather could still potentially affect nuclear facilities in the form of physical damage which necessitates close monitoring.

5.16.5 Probability of Future Occurrences

A nuclear event is a very rare occurrence in the United States due to the intense regulations of the industry. There have been incidents in the past, but it is considered unlikely (less than 1 percent annual probability).

5.17 TERRORISM

5.17.1 Background and Description

For the purpose of this report, terrorism encompasses explosive, chemical, radiological, biological, nuclear, and other threats.

Terrorism is defined in the United States by the Code of Federal Regulations is "the unlawful use of force or violence against persons or property to intimidate or coerce a government, civilian population, or any segment thereof, in furtherance of political or social objectives." Terrorist acts may include assassinations, kidnappings, hijackings, bombings, small arms attacks, vehicle ramming attacks, edged weapon attacks, incendiary attacks, and the use of chemical, biological, nuclear and radiological weapons. For the purposes of this plan, cyberattacks are included as a separate hazard.

Historically the main categories of weapons of mass destruction (WMDs) used in terror attacks are Chemical, Biological, Radiological, Nuclear, and Explosive (collectively referred to as CBRNE).

Chemical
Chemical attacks can pose immediate danger to life and health depending upon the materials used. Chemicals are easy to access, low cost, and easy to deploy. Chemical terrorism can have high and persistent impacts on people and places. These types of attacks are probable and have historically led to significant impacts.

Biological
Biological attacks can pose significant threats to life and health. They are typically deployed as diseases and bio-toxins. They require some degree of technical expertise in order to be deployed successfully. While biological incidents have occurred, they occur less frequently than explosive and chemical attacks.

Radiological
Radiological attacks can pose significant threats to life and health depending upon the specific materials used. Radiological materials, while restricted and regulated, are accessible to people with some knowledge in this discipline. While radiological incidents have occurred, they occur less frequently than explosive and chemical attacks.

Nuclear
While yielding a very high impact, the nuclear attack is extremely rare due to the fact that it is very cost prohibitive and technically difficult. This type of attack could be state-sponsored, which makes it viable.

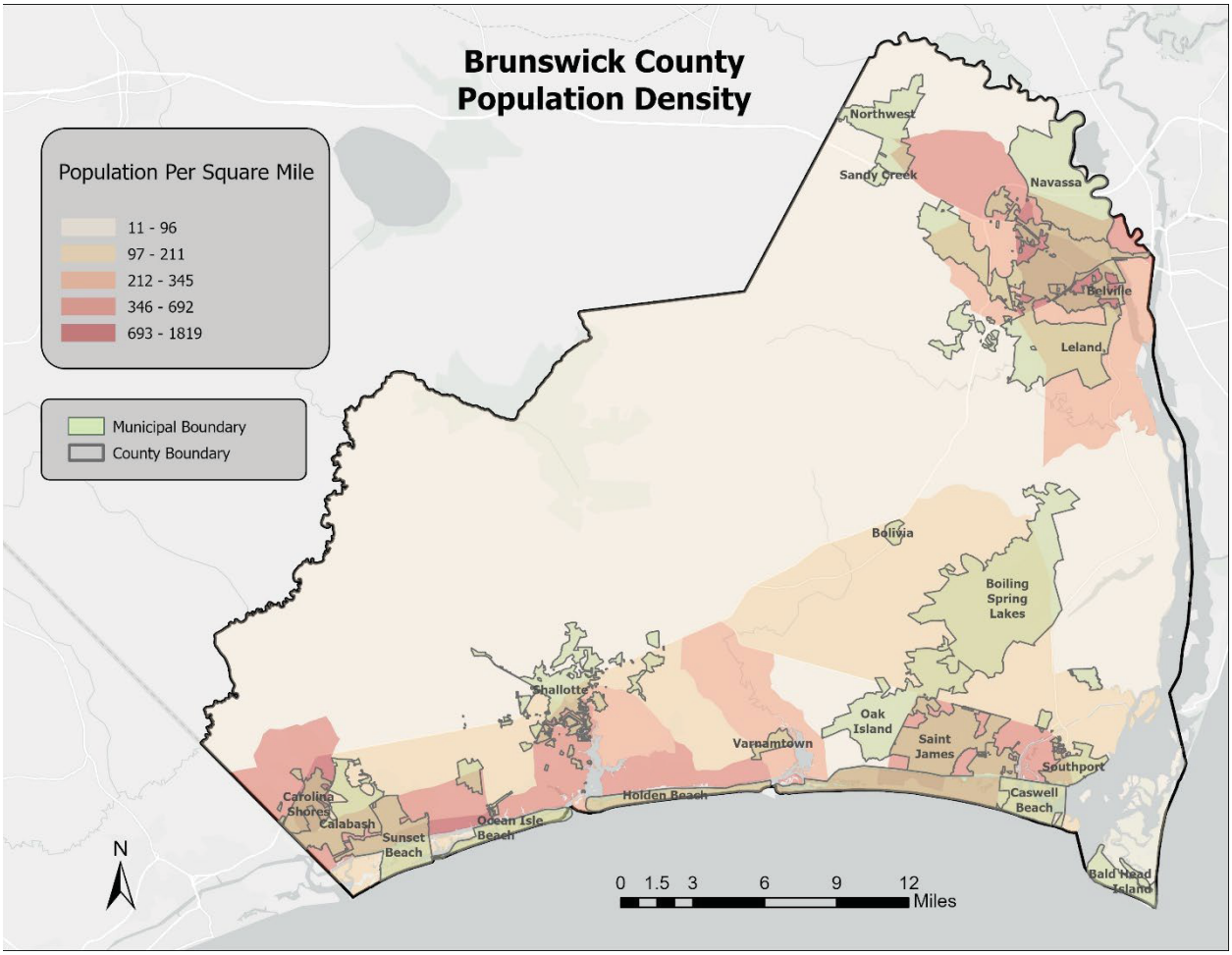
Explosive
Explosive attacks lead all others due to their immediate danger to life and health, immediate and measurable impact, high probability, low cost/easy degree of technical feasibility, and a long history of high-impact attacks.

OTHER
Terrorism hazard assessment must also account for modern trends and changes. An additional "OTHER" category should be considered that includes active shooter/small arms attacks, vehicle ramming attacks, edged weapon attacks, and incendiary attacks.

5.17.2 Location and Spatial Extent

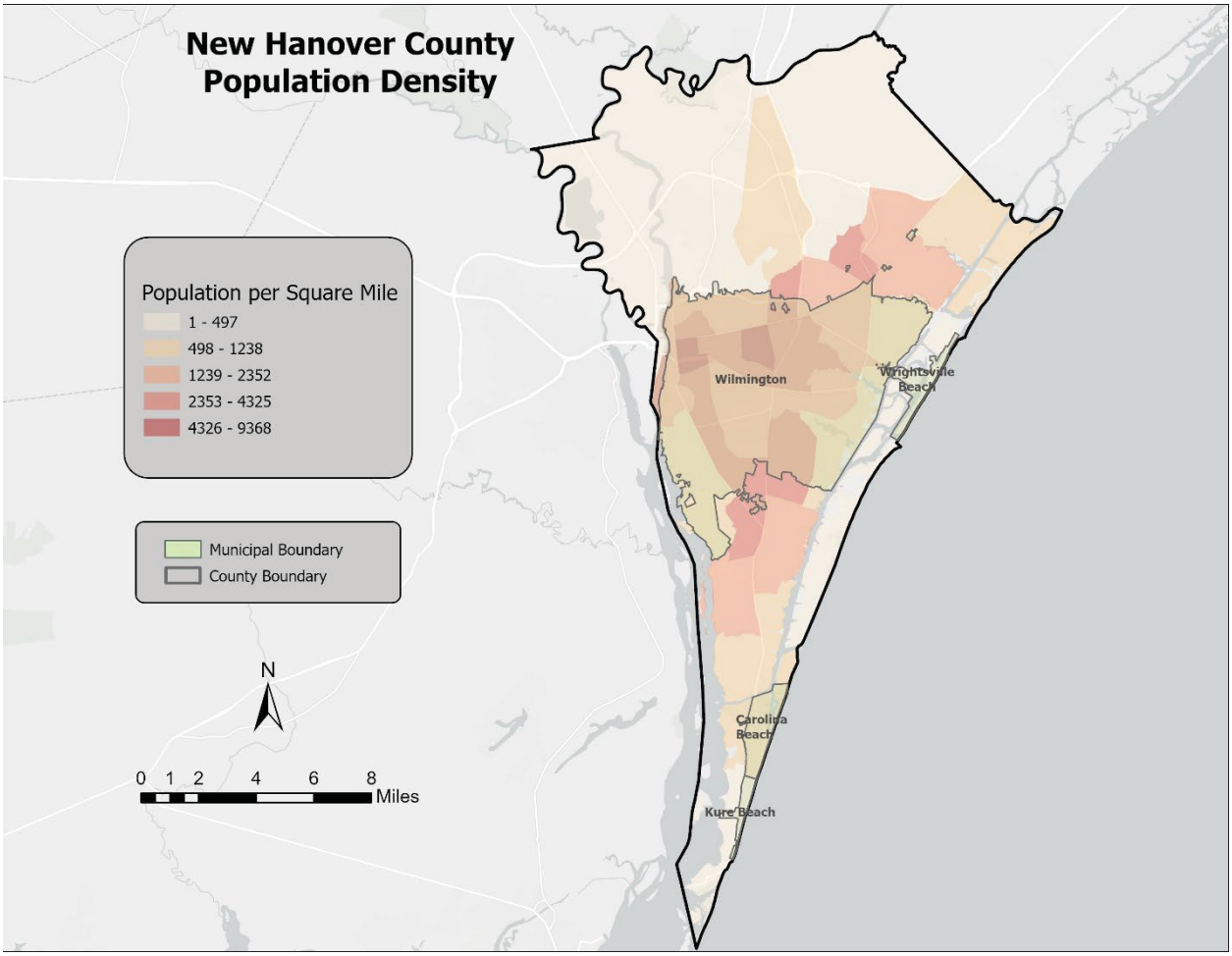
All parts of North Carolina are vulnerable to a terror event; however, terrorism tends to target more densely populated areas. The maps in **Figure 5.33 through 5.36** display the population density in each county in the Southeastern NC region using census tract levels.

FIGURE 5.33: POPULATION DENSITY IN BRUNSWICK COUNTY



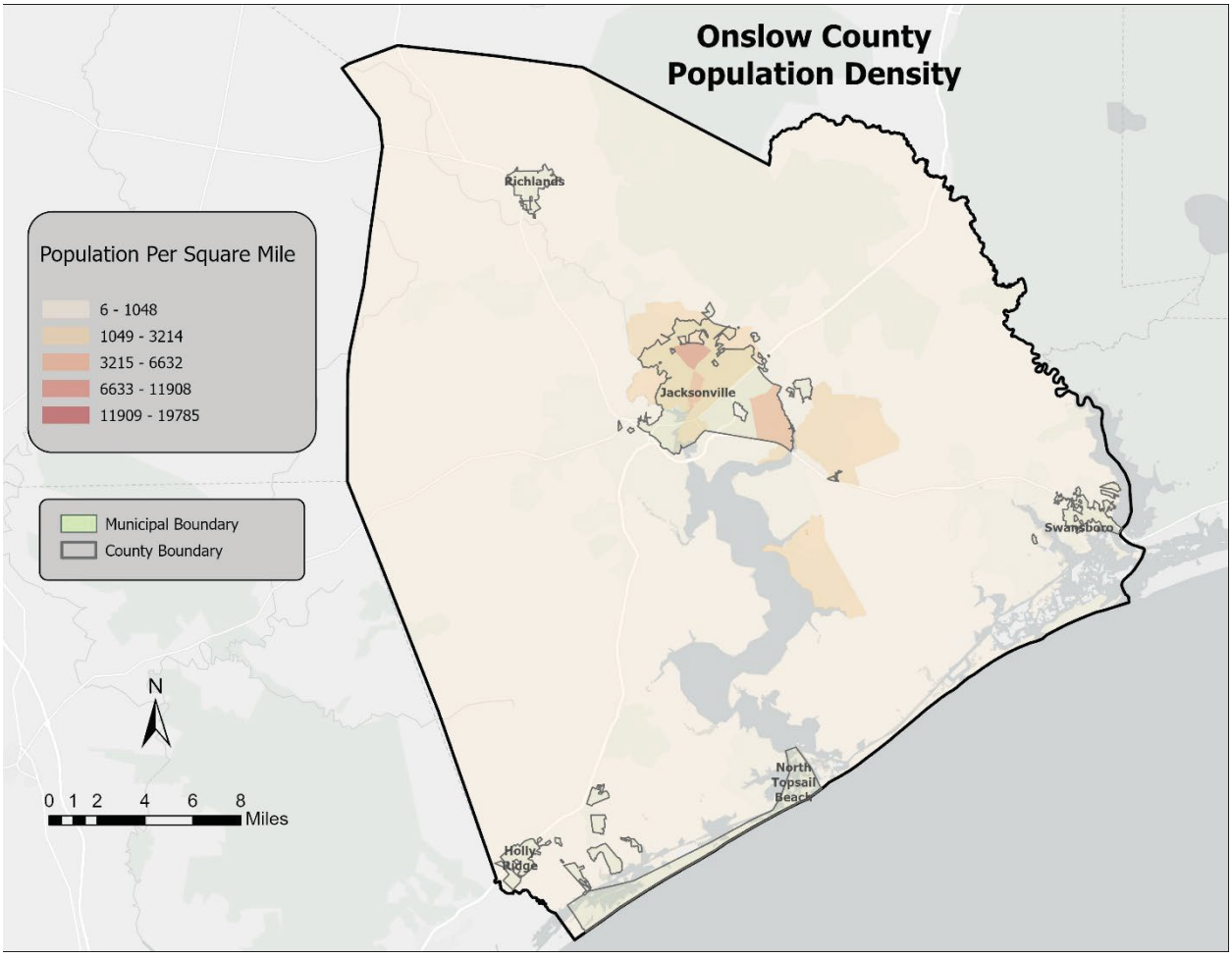
Source: US Census Bureau

FIGURE 5.34: POPULATION DENSITY IN NEW HANOVER COUNTY



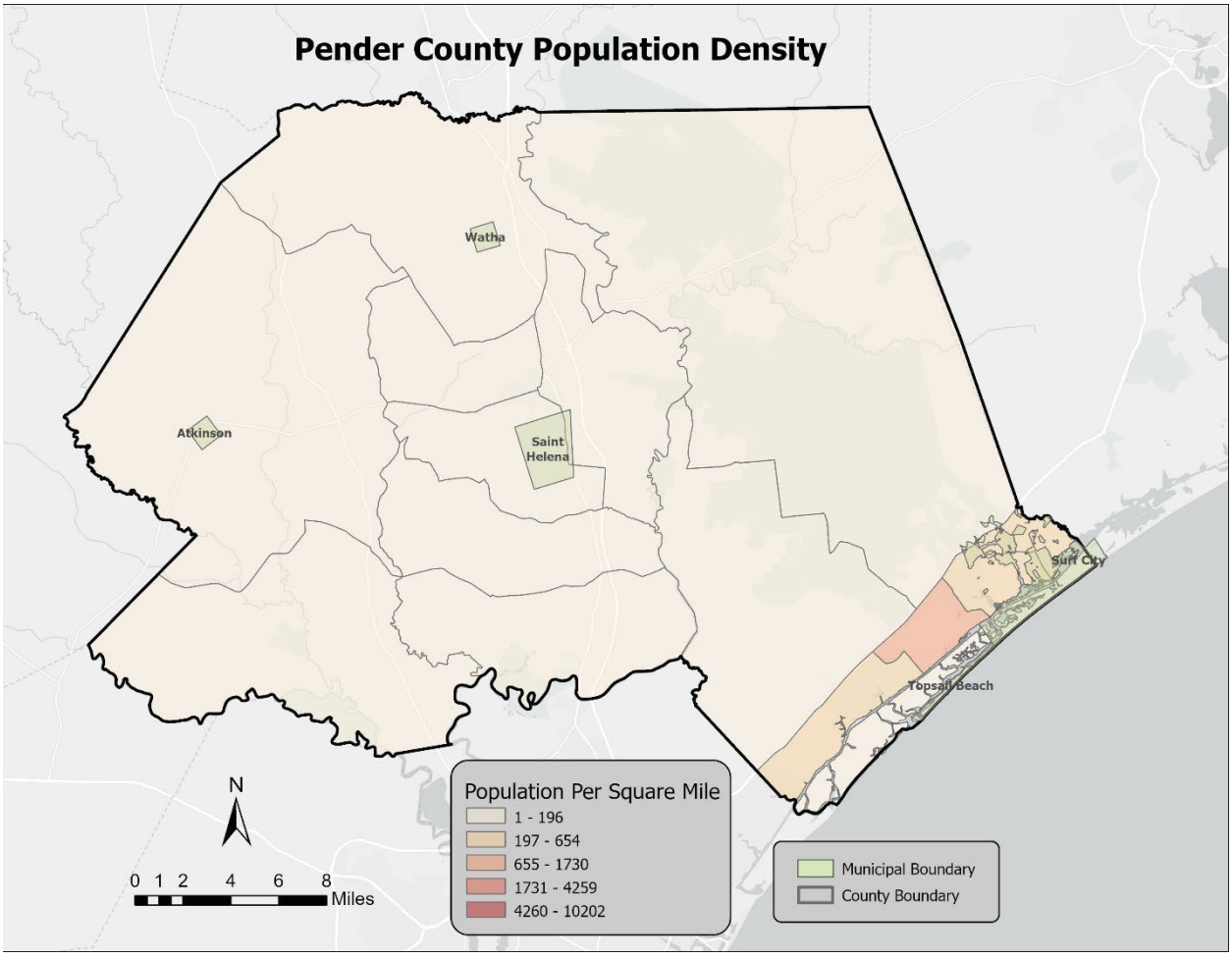
Source: US Census Bureau

FIGURE 5.35: POPULATION DENSITY IN ONSLOW COUNTY



Source: US Census Bureau

FIGURE 5.36: POPULATION DENSITY IN PENDER COUNTY



Source: US Census Bureau

The most recent population estimates as of 2024 for each participating county and jurisdiction can be seen in **Table 5.33** below.

TABLE 5.33: SOUTHEASTERN NC REGION POPULATION ESTIMATES

Location	Population Estimate	Population Density (sq. mi.)
Brunswick County	**174,076**	**205**
Bald Head Island	292	75
Belville	2,400	1,429
Boiling Spring Lakes	7,113	295
Bolivia	276	434
Calabash	2,699	596
Carolina Shores	5,765	2,007
Holden Beach	950	313
Leland	34,994	1,567
Navassa	1,963	147
Northwest	1,203	168
Oak Island	10,143	526
Ocean Isle Beach	1,052	281
Sandy Creek	330	231
Shallotte	5,815	629

Location	Population Estimate	Population Density (sq. mi.)
Southport	4,599	1,149
St. James	7,992	877
Sunset Beach	4,764	684
Varnamtown	541	613
Unincorporated Area	81,185	--
New Hanover County	**244,988**	**1,276**
Carolina Beach	7,004	2,856
Kure Beach	2,138	2,430
Wilmington	127,316	2,476
Wrightsville Beach	2,388	1,712
Unincorporated Area	106,142	--
Onslow County	**222,966**	**293**
Holly Ridge	5,787	1,369
Jacksonville	71,517	1,465
North Topsail Beach	1,109	178
Richlands	2,495	1,511
Swansboro	4,391	1,965
Unincorporated Area	137,667	--
Pender County	**74,167**	**85**
Atkinson	358	362
Burgaw	3,625	765
St. Helena	439	78
Surf City	5,373	699
Topsail Beach	517	118
Watha	231	170
Unincorporated Area	63,624	--
Southeastern NC Regional Total	**716,197**	**--**

Source: US Census Bureau, World Population Review

5.17.3 Historical Occurrences

No extreme cases of terror attacks have previously affected the Southeastern NC Region. However, as the population in the area continues to increase, so does the chance of an attack.

5.17.4 Changing Future Conditions

The concept of "climate security," or the impacts of climate change on general peace and security of nations, has received increasing global attention in recent years and will likely continue to do so. According to the U.S. Government Accountability Office as of 2023, the overall threat of terrorism is also reportedly rising as incidents of domestic terrorism increased by 357% nationally between 2013 and 2021. The U.S. Department of Homeland Security notes in the 2024 Homeland Threat Assessment that national terrorism threats remain high as extremists react to future sociopolitical events.

With North Carolina ranked as the ninth most populous state in the U.S. (222.8 people/mi^2) as of 2024, its population growth may inherently raise the odds of terrorism incidents within the state.

5.17.5 Probability of Future Occurrence

The probability of a future terrorist attack in the Southeastern NC Region is unlikely (less than 1 percent annual probability). However, a single event could have devastating effects on human lives, the economy, and future way of life.

5.18 CYBER SECURITY

5.18.1 Background and 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 Southeastern NC Region becomes 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 agency for investigating cyberattacks, 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 2025 Data Breach Investigations Report by Verizon, 89% of all data breaches had a financial motive and 17% of breaches had an espionage motive, with espionage cases almost tripling since the last report.

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
- **Miscellaneous Errors**: Incidents in which unintentional actions directly compromise an attribute of a security asset
- **Physical Threat and Loss**: Incidents where an information asset went missing
- **Crimeware**: Instances involving malware that do not fit into 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**: Any attack intended to compromise the availability of networks and systems that are designed to overwhelm systems, resulting in performance degradation or interruption of services

Figure 5.37 below displays nationwide cyberattack incident patterns from the 2025 Verizon Data Breach Investigations Report.

FIGURE 5.37: PERCENTAGES AND PATTERNS OF INCIDENTS OVER TIME

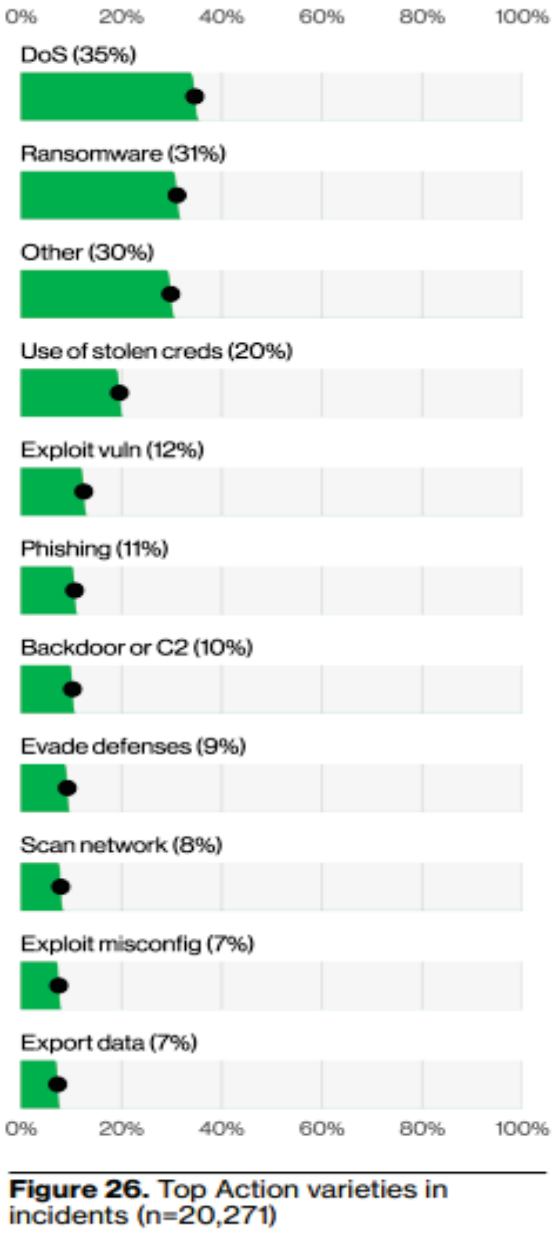


Figure 26. Top Action varieties in incidents (n=20,271)

Source: 2025 Verizon Data Breach Investigations Report

5.18.2 Location and Spatial Extent

Cyberattacks happen all over the world and are not restricted to a certain locational boundary. They tend to affect public industries rather than private industries.

5.18.3 Historical Occurrences

In North Carolina and the Southeastern NC 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 to improve local cybersecurity.

Table 5.34 displays the North Carolina Cybercrimes and Victim Counts in 2024.

TABLE 5.34: NORTH CAROLINA CYBERCRIMES AND VICTIM COUNTS (2024)

Crime Type by Victim Count			
Crime Type	*Victim Count*	*Crime Type*	*Victim Count*
Advanced Fee	176	Lottery/Sweepstakes/Inheritance	130
BEC	569	Malware	8
Botnet	9	No Lead Value	1,159
Confidence/Romance	519	Non-payment/Non-Delivery	1,360
Credit Card/Check Fraud	343	Other	316
Crimes Against Children	83	Overpayment	88
Data Breach	68	Personal Data Breach	1,872
Employment	557	Phishing/Spoofing	7,848
Extortion	2,683	Ransomware	72
Government Impersonation	683	Real Estate	252
Harassment/Stalking	320	SIM Swap	26
Identity Theft	636	Tech Support	1,078
Investment	1,100	Threats of Violence	26
IPR/Copyright and Counterfeit	39		
Descriptors*			
Cryptocurrency	2,494	Cryptocurrency Wallet	1,193

*These descriptors relate to the medium or tool used to facilitate the crime, and are used by the IC3 for tracking purposes only. They are available only after another crime type has been selected.

Source: FBI Internet Crime Compliant Center (IC3), 2024

Although the Southeastern NC Region does not have any major cyberattacks reported, the potential to experience one is unpredictable and can happen at any time.

5.18.4 Changing Future Conditions

Unlike other hazards discussed in this plan, evolving climate conditions are unlikely to affect the occurrence or frequency of future cyberattack incidents. However, recent advances in both artificial intelligence (AI) and quantum computing fields suggest that threats to many types of online systems could quickly grow in terms of their severity, scale, and complexity, especially if persistent vulnerabilities in existing systems are not effectively addressed. Ongoing cybersecurity preparation and training efforts will remain especially important as global data usage trends and cyberattack threats continue to evolve in the future.

5.18.4 Probability of Future Occurrences

As the world's dependency on technology grows, the possibility of experiencing cyberattacks as well. Although there have not been severe past occurrences in the region, it is considered an increasingly likely hazard (between 10 and 100 percent annual probability) in the near future.

5.19 ELECTROMAGNETIC PULSE

5.19.1 Background and Description

The United States Department of Energy defines electromagnetic pulses (EMPs) as "intense pulses of electromagnetic energy resulting from solar-caused effects on man-made nuclear and pulse power devices." EMPs can be naturally occurring or human-caused hazards. Examples of natural EMP events include:

- Lightning electromagnetic pulse
- Electrostatic discharge
- Meteoric electromagnetic pulse, and
- Coronal mass ejection, also known as a solar electromagnetic pulse

A human-caused EMP (such as a nuclear EMP) is a technological hazard that can cause severe damage to electrical components attached to power lines or communication systems. One of the most complex aspects of EMPs is the fact they are invisible, unpredictable, and rapid. They can also overload electronic devices that people heavily rely on every day. EMPs are harmless to people biologically; however, an EMP attack could damage electronic systems such as planes or cars. This could cause destruction of property and life and potentially generate disease or societal collapse.

In 2015, Congress amended the Homeland Security Act of 2002 by passing the Critical Infrastructure Protection Act (CIPA), which protects Americans from an EMP. It is also required reporting of EMP threats, research and development, and a campaign to educate planners and emergency responders about EMP events.

5.19.2 Location and Spatial Extent

An EMP can happen in any location, and they are relatively unpredictable. Due to advancing technologies, densely populated may be more prone to damage from an EMP. Therefore, bigger cities in the Southeastern NC Region may be more susceptible.

5.19.3 Historical Occurrences

There have been no reports of EMP occurrences in the Southeastern NC Region.

5.19.4 Changing Future Conditions

Unlike other hazards discussed in this plan, climate change is unlikely to affect the occurrence or frequency of potential EMP incidents. One of the most problematic threats of EMPs is a widespread lack of general understanding regarding potential consequences among local, state, and federal entities. As technological innovation grows, updated information on this unique hazard can then be distributed.

5.19.5 Probability of Future Occurrences

The probability of an EMP is unlikely (less than 1 percent annual probability), but an occurrence could have catastrophic impacts.

5.20 CIVIL DISTURBANCE

5.20.1 Background and Description

Civil disturbances often refer to incidents in which multiple people knowingly act against established laws or regulations, with a common goal of bringing attention to a specific cause or larger sociopolitical movement. Modern laws have evolved in response to the changing understanding and real-world applications by which to peacefully resolve civil conflict. In the United States, "freedom of assembly" is a constitutional protection for peaceful and lawful purposes among the public. However, assemblies that are not peaceful or lawful (e.g., angry mobs) do not receive these same legal protections. The laws covering disruptive and disorderly conduct are generally grouped into various offenses that disturb the public peace ranging from general misdemeanors up to severe felonies.

When a riot or similar public disturbance occurs, local law enforcement agencies are initially mobilized and responsible for addressing the event. If local law enforcement agencies lack sufficient capacity or become overwhelmed by the response effort, state law enforcement agencies may be deployed. According to the North Carolina Emergency Operations Plan (NCEOP), the State Emergency Response Team (SERT) Emergency Services Branch will coordinate state law enforcement activities during public disturbances, riots and/or emergency situations. In extreme cases, the Governor of North Carolina has the authority to mobilize the National Guard to protect persons and property and restore order.

The extent of any civil disturbance incident will often depend on the scale and crowd size of that event in conjunction with its location. The more widespread a civil incident is, the greater the likelihood of significant injuries, loss of life, and extensive property damage. Rapid containment of the event by law enforcement is especially critical in minimizing the number of injuries and damages.

A book published by the University of Minnesota, *Sociology: Understanding and Changing the Social World*, discusses the typology of crowds based on the differences observed between the gathering purpose and existing dynamics between the participants. A crowd is generally recognized to be a temporary gathering of people without any real social relationships present between them. Building off the work of sociologist Herbert Blumer, the book explicitly distinguishes five crowd categories:

- **Casual Crowd –** A random collection of people gathered somewhere at the same time. The crowd has no shared identity or purpose. This type of crowd can include shoppers and tourists among many others. The likelihood of any violence is basically nonexistent.
- **Conventional Crowd –** A collection of people who gather for a shared purpose or activity, like a big dance, a sporting event, or a festival/concert. Crowd behavior is relatively structured and would require substantial provocation to arouse any kind of violence.
- **Expressive Crowd –** A collection of people who gather for some kind of excitement and to express at least one emotion. Examples of this crowd can include a political rally or loosely structured protests.
- **Protest Crowd –** A collection of people who gather to directly protest a targeted political, social, cultural, or economic issue. People in these types of crowds may engage in various activities together through sit-ins, demonstrations, or marches/rallies.
- **Acting Crowd –** A collection of people specifically assembled for a guiding purpose. Acting crowds tend to be more impulsive, more emotional, and require only minimal stimulation to be spurred into violence. Acting crowds can quickly spiral into large and uncontrollable riots depending on the circumstances.

5.20.2 Location and Spatial Extent

Civil disturbances can materialize from a variety of different circumstances and societal factors. The driving forces may be spontaneous or a direct result of escalating tensions. The most likely locations for this specific hazard are areas with large numbers of people clustered together. Sites preparing for political or other interest-based events/rallies should often be assessed as hotspot potential locations for a civil disturbance incident. Arenas and stadiums capable of hosting thousands of people at a time are other areas of concern as well. A civil disturbance incident may also spill over into surrounding areas beyond where an initial "trigger event" occurred.

5.20.3 Historical Occurrences

There is at least one major example of a community-wide civil disturbance in the Southeastern Region. Several incidents have occurred, involving days of intense protests and demonstrations by various community groups, resulting in multiple arrests and requiring intervention from law enforcement.

5.20.4 Changing Future Conditions

While climate change would not necessarily have a direct impact on civil disturbances, the ongoing climate crisis could present a cause for civil disorder in Southeastern Region related to "climate security" risks. Climate change projections, previously discussed across the natural hazards included in this plan, could eventually lead to extreme weather events that exacerbate issues of drought, flooding, severe storms, and other pressing hazards with the potential to damage socio-ecological systems and greatly reduce access to critical resources (e.g., water, food, energy) thereby upsetting general order in society.

5.20.5 Probability of Future Occurrences

Civil disturbances are bound to be recurrent on a local, regional, and national scale as they are unpredictable features of social life. The Southeastern NC Region will continue to experience protests, demonstrations, and other energized gatherings across its various cities and communities that could ultimately lead to some form of disruptive behavior. Based on the unpredictable nature and few past occurrences of civil disturbance in the Southeastern NC Region, the future probability of civil disturbance incidents is possible (between 1 to 10 percent annual probability).

5.21 FOOD EMERGENCY

5.21.1 Background and Description

According to the 2019 National Food and Agriculture Incident Annex (FAIA) to Federal Interagency Operational Plans (FIOPs) published by FEMA, a food emergency refers to the "adulteration and/or contamination, threatened or actual, of food that impacts or may impact human health or the safety or availability of the state's food supply". As noted in the 2023 State of North Carolina Hazard Mitigation Plan, food emergencies may stem from multiple distinct causes including inclement weather events (e.g., hurricanes, floods, droughts) or technological failures like power outages and storage system leaks that ultimately result in losses of edible foods. A food emergency may also alternatively stem from human activities, including either unintentional or intentional contamination leading to public health impacts. Food emergencies often have many compounding effects with infectious disease hazards.

Additionally, the 2023 Food Emergency Response Plan in Annex B of the North Carolina Emergency Operations Plan (NCEOP) indicates that North Carolina's impact related to the food and agricultural production, processing, and retail systems industry is:

- Valued at over **$68 billion**
- Employs approximately **20%** of the total workforce
- Makes it the **third most agriculturally diverse state** in the U.S.

A food emergency incident could have severe consequences across the larger industry including anywhere affected by regional food markets and may ultimately jeopardize the public health of any locally affected populations. It is important to note that food systems are inherently complex and refer to many different interrelated activities and groups that all affect how food is produced and eventually consumed by individuals. Generally speaking, a food system can be simplified into key broader components of (1) production, (2) processing, (3) distribution, and (4) consumption.

5.21.2 Location and Spatial Extent

No rating system exists for a relative assessment of food emergency scale and overall extent since many factors depend on a case-by-case basis. However, unsafe and/or unavailable food supplies have the potential to affect isolated communities and may affect the entire planning area in extreme instances.

5.21.3 Historical Occurrences

Most foodborne outbreaks that spread across multiple states are caused by Campylobacter, E. coli, Listeria, and Salmonella. In 2024, a Salmonella outbreak linked to cucumbers had sickened over 400 people across 31 states, including 22 cases in North Carolina. The CDC also issued a food safety alert.

5.21.4 Changing Future Conditions

As weather patterns and the global climate continue to change in the future, the overall risk of food emergencies could begin to increase as well. According to the North Carolina Climate Science Report, it is likely that major droughts will increase in frequency and intensity due to higher temperatures and evaporation rates which may in turn create many new agricultural challenges. It should be noted that these factors can also affect the ability of pathogens to spread among both crops and livestock. Heavy precipitation from hurricanes and thunderstorms is also very likely to increase and create greater flooding risks throughout North Carolina. This may lead to emerging threats of a food emergency based

on historical trends observed regarding crop losses and subsequent contamination of edible crops from intense storm flooding.

5.21.5 Probability of Future Occurrences

Several past occurrences of this hazard in the form of foodborne illness or contamination have been documented in the Southeastern NC Region. Historical data is noticeably limited for food emergencies resulting from any deliberate contamination of food, but the possibility of this risk still exists. Based on the unpredictable nature and occurrences of food emergencies in the Southeastern NC Region, the future probability of food emergency incidents is possible (1 to 10 percent annual probability).

5.22 CONCLUSIONS ON HAZARD RISK

The hazard profiles presented in this section were developed using best available data and result in what may be considered principally a qualitative assessment as recommended by FEMA in its "How-to" guidance document titled *Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA Publications 386-2). It relies heavily on historical and anecdotal data, stakeholder input, and professional and experienced judgement regarding observed and/or anticipated hazard impacts. It also carefully considers the findings in other relevant plans, studies and technical reports.

5.22.1 Hazard Extent

Table 5.35 describes the extent of each natural hazard identified for the Southeastern NC Region. The extent of a hazard is defined as its severity or magnitude, as it relates to the planning area.

TABLE 5.35 EXTENT OF SOUTHEASTERN NC REGION HAZARDS

Natural Hazards	
Drought	Drought extent is defined by the North Carolina and United States Drought Monitor Classifications method which include Abnormally Dry, Moderate Drought, Severe Drought, Extreme Drought, and Exceptional Drought. According to the North Carolina Drought Monitor Classifications, the most severe drought experienced in the region has been Exceptional Drought. Additionally, in each of the previous 24 years (2001-2025) there has been a period of some level of drought (at least Abnormally Dry).
Excessive Heat	The extent of excessive heat can be defined by the maximum temperature reached. The highest temperature recorded in the Southeastern NC Region is 105 degrees Fahrenheit. • Brunswick County: 103°F • New Hanover County: 104°F • Onslow County: 104°F • Pender County: 105°F
Hurricane and Coastal Hazards	Hurricane extent is defined by the Saffir-Simpson Scale which classifies hurricanes into Category 1 through Category 5. An estimated total of 127 hurricanes, tropical storms, and tropical depressions have tracked within 75 miles of the region since 1850. The greatest classification of hurricanes to traverse directly through the Southeastern NC Region was Hurricane Hazel that was a Category 4 at landfall near Calabash with winds speeds of 130 mph.
Tornadoes/ Thunderstorms	Tornadoes: Tornado hazard extent is measured by tornado occurrences in the US provided by FEMA as well as the Fujita/Enhanced Fujita Scale. The greatest magnitude reported in the region was EF3 in Onslow County (last reported on April 16, 2011). • Brunswick County: F2 • New Hanover County: F1 • Onslow County: EF3 • Pender County: F2 Thunderstorms: Thunderstorm extent is defined by the number of thunder events and wind speeds reported. According to the National Centers for Environmental Information (NCEI), the strongest recorded wind event in the Southeastern NC Region was reported on June 12, 1995, at 98 knots (approximately 112 mph). It should be noted that future events may exceed these historical occurrences. • Brunswick County: 98 knots • New Hanover County: 87 knots • Onslow County: 78 knots • Pender County: 83 knots

	Lightning: According to the 2024 Vaisala flash density map, the majority of the Southeastern NC Region is located in an area that experiences anywhere from 12 to 24 lightning flashes per square kilometer per year. It should be noted that future lightning occurrences may exceed these figures. Hailstorms: Hail extent can be defined by the size of the hail stone. The largest hail stone reported in the Southeastern NC region was 2.75 inches (reported April 21, 1997). It should be noted that future events may exceed this. • Brunswick County: 2 in • New Hanover County: 2.5 in • Onslow County: 2.75 in • Pender County: 1.75 in
Severe Winter Weather	The extent of winter storms can be measured by the amount of snowfall received (in inches). The greatest 24-hour snowfall reported in the region was 20 inches as of March 3, 1980, in Onslow County. Extent totals will vary for each participating jurisdiction and reliable data on snowfall totals is not available. • Brunswick County: 15 in • New Hanover County: 17.5 in • Onslow County: 20 in • Pender County: 12 in
Earthquakes	Earthquake extent can be measured by the Richter Scale and the Modified Mercalli Intensity (MMI) scale and the distance of the epicenter from the Southeastern NC Region. According to data provided by the National Centers for Environmental Information (NCEI) and the United States Geological Survey (USGS), the greatest MMI to impact the region was reported on September 1, 1886, with a MMI of V (moderate) with a correlating Richter Scale measurement of approximately 4.8. • Brunswick County: IV • New Hanover County: V • Onslow County: V • Pender County: IV
Geological	Sinkhole: Sinkhole extent can be measured by the width and depth of the sinkhole. According to the NC State Enhanced Hazard Mitigation Plan, the greatest extent for a sinkhole in the region is approximately 25 feet. Coastal Erosion: The extent of erosion can be defined by the measurable rate of erosion that occurs. According to the NC State Enhanced Hazard Mitigation Plan, the average extent for coastal erosion is approximately 1.6 ft per year.
Dam Failure	Extent of dam failure is defined using the North Carolina Division of Energy, Mineral, and Land Resources criteria. Of the 38 dams in Southeastern NC Region, 10 are classified as "high hazard": • Brunswick County: 6 • New Hanover County: 0 • Onslow County: 3 • Pender County: 1
Flooding	According to GIS analysis, of the roughly 3,217 square miles that make up the Southeastern NC Region (including the area of Brunswick County, New Hanover County, Onslow County, and Pender County), there are 0.325 square miles of land in zone A (1-percent annual chance floodplain), 37.815 square miles of land in zone AE (1-percent annual chance with elevation), and 2.506 square miles of land in zone X500 (0.2-percent annual chance floodplain/500-year floodplain). These flood zone values account for 0.03 percent of the total land area in the Southeastern NC Region. Flood extent can also be measured by flood depth and velocity.

Flood depth and velocity are recorded via United States Geological Survey (USGS) stream gages throughout the region. While a gage does not exist for each participating jurisdiction, there is one at or near many areas. The greatest peak discharge recorded for the region was reported on September 19, 2018. Water reached a streamflow discharge of approximately 53,600 cubic feet per second, but stream gauge height data was not available. Additional peak discharge readings and gauge heights are in the table below.

Location/ Jurisdiction	Date	Peak Discharge (cfs)	Gage Height (ft)
Brunswick County			
Waccamaw River at Freeland	9/19/2018	53,600	22.61
New Hanover County			
N/A	--	--	--
Onslow County			
New River Near Gum Branch	9/15/2018	35,000	25.74
Pender County			
Northeast Cape Fear Rd near Burgaw	10/13/2005	6,830	--

Depth of flooding inside structures across the region during a maximum flood event can range up to 6-8 feet and varies based on the structure's location in the floodplain and the elevation of the structure.

Wildfires

Wildfire data was provided by the North Carolina Division of Forest Resources and is reported annually by county. Analyzing the data by county indicates the following wildfire hazard extent for each county.

Brunswick County
- The greatest number of fires occurring in any year was 69 in 2007.
- The greatest number of acres burned in a single year occurred in 2016 when 1,577.65 acres were burned.

New Hanover County
- The greatest number of fires occurring in any year was 79 in 2007.
- The greatest number of acres burned in a single year occurred in 2005 when 1,154 acres were burned.

Onslow County
- The greatest number of fires occurring in any year was 63 in 2011.
- The greatest number of acres burned in a single year occurred in 2011 when 944 acres were burned.

Pender County
- The greatest number of fires occurring in any year was 59 in 2004.
- The greatest number of acres to burn in a single year occurred in 2011 when 31,140 acres were burned.

Although this data lists the extent that has occurred, larger and more frequent wildfires are possible throughout the region.

Infectious Disease	Infectious disease extent can be measured by how many hospitalizations or deaths result from the event and how many economic dollar losses are attributed to the disease. The COVID-19 pandemic continues to unfold through new and evolving variants and has had significant impacts across the Southeastern NC Region since 2020. Per finalized 2023 reports from NCDHHS, there have been at least 191,223 cases and 1,458 deaths in the region attributed to COVID-19. Additionally, the entire region remains susceptible to a range of potentially infectious diseases such as the flu, which kills hundreds of people annually.
Technological Hazards	
Hazardous Substances	According to USDOT PHMSA, the largest hazardous materials incident reported in the region was 40,000 SLB of Ammonium Nitrate released from a train car on November 1, 1984. It should be noted that larger events are possible. • Brunswick County: 1,175 LGA • New Hanover County: 54,969 LGA • Onslow County: 3,250 LGA • Pender County: 0 LGA
Radiological Emergency – Fixed Nuclear Facilities	Although there is no history of a nuclear accident at the Brunswick Nuclear Power Plant, other events across the globe and in the United States indicate that an event is possible. Since several national and international events were Level 7 events on the INES, the potential for a Level 7 event at Brunswick is possible.
Terrorism	Although no severe terrorism attacks have been reported in the Southeastern NC Region, the entire area is still at risk to a future event. Densely populated areas, such as cities, are considered more susceptible. Terror events have the potential to affect the human population, buildings and infrastructure, and the regional economy.
Cyber Security	No cyberattacks have been historically reported in the Southeastern NC Region. Technology usage, however, is increasing. A cyberattack could potentially devastate the region's economy and lead to lasting negative impacts.
Electromagnetic Pulse	Electromagnetic pulse (EMP) occurrences have not taken place in the Southeastern NC region, but the risk still exists. If an EMP were to occur, the effects would negatively impact first responders and communication efforts and may cause panic within the area.
Civil Disturbance	Few major instances of civil disturbances have been identified in the Southeastern NC Region. However, established social systems of the area are still changing every year in response to new social, political, and/or cultural events.
Food Emergency	Some instances of food emergencies, especially in the form of mass foodborne illness (e.g., *E. coli* and *Salmonella*) or contamination, have been historically reported in the Southeastern NC Region. Additionally, established food systems of the area are still changing every year in response to new hazard events, changing climatic conditions, and evolving contamination threats.

5.22.2 Priority Risk Index (PRI)

In order to draw some meaningful planning conclusions on hazard risk for the Southeastern NC Region, the results of the hazard profiling process were used to generate countywide hazard classifications according to a "Priority Risk Index" (PRI). The purpose of the PRI is to categorize and prioritize all potential hazards for the Southeastern NC Region as high, moderate, or low risk. Combined with the asset inventory and quantitative vulnerability assessment provided in the next section, the summary hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for the Southeastern NC Region to consider as part of their proposed mitigation strategy.

The prioritization and categorization of identified hazards for the Southeastern NC Region is based principally on the PRI, a tool used to measure the degree of risk for identified hazards in a particular planning area. The PRI is used to assist the Southeastern NC Regional Hazard Mitigation Planning Committee (TRRHMPC) in gaining consensus on the determination of those hazards that pose the most significant to the Southeastern NC counties based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective planning tool for classifying and prioritizing hazard risks in the Southeastern NC Region based on standardized criteria.

The application of the PRI results in numerical values that allow identified hazards to be ranked against one another (the higher 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 an agreed upon weighting factor[45], as summarized in **Table 5.36**. To calculate the PRI value for a given hazard, the assigned risk value for each category is multiplied by the weighting factor. The sum of all five categories equals the final PRI value, as demonstrated in the example equation below:

PRI VALUE = [(PROBABILITY x .30) + (IMPACT x .30) (SPATIAL EXTENT x .20) + (WARNING TIME x .10) + (DURATION x .10)]

According to the weighting scheme and point system applied, the highest possible value for any hazard is 4.0. When the scheme is applied for the Southeastern NC Region, the highest PRI value is 3.5 (flooding hazard). Prior to being finalized, PRI values for each identified hazard were reviewed and accepted by the members of the Southeastern NC Regional Planning Committee.

[45] The Regional Hazard Mitigation Planning Committee: based on upon any unique concerns or factors for the planning area, may adjust the PRI weighting scheme during future plan updates

TABLE 5.36: PRIORITY RISK INDEX SCORING

PRI Category	Degree of Risk			Assigned Weighting Factor
	Level	Criteria	Index Value	
Probability	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	
Impact	Minor	Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of critical facilities.	1	**30%**
	Limited	Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one day.	2	
	Critical	Multiple deaths/injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one week.	3	
	Catastrophic	High number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.	4	
Spatial Extent	Negligible	Less than 1% of area affected	1	**20%**
	Small	Between 1 and 10% of area affected	2	
	Moderate	Between 10 and 50% of area affected	3	
	Large	Between 50 and 100% of area affected	4	
Warning Time	More than 24 hours	Self-explanatory	1	**10%**
	12 to 24 hours	Self-explanatory	2	
	6 to 12 hours	Self-explanatory	3	
	Less than 6 hours	Self-explanatory	4	
Duration	Less than 6 hours	Self-explanatory	1	**10%**
	Less than 24 hours	Self-explanatory	2	
	Less than one week	Self-explanatory	3	
	More than one week	Self-explanatory	4	

5.22.3 Priority Risk Index Results

Table 5.37 summarizes the degree of risk assigned to each category for all initially identified hazards based on the application of the PRI. Assigned risk levels were based on the detailed hazard profiles developed for this section, as well as input from the Planning Committee. The results were then used in calculating PRI values and making final determinations for the risk assessment.

TABLE 5. 37: SUMMARY OF PRI RESULTS FOR THE SOUTHEASTERN NC REGION

Hazard	Subhazard(s) Assessed	Category/Degree of Risk					
		Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Natural Hazards							
Drought	Agricultural, Hydrological	Likely	Minor	Small	More than 24 hours	More than 1 week	**2.1**
Excessive Heat		Likely	Critical	Large	More than 24 hours	More than 1 week	**3.1**
Hurricane and Coastal Hazards	Rip Currents, Storm Surge, Severe Weather	Likely	Critical	Large	More than 24 hours	Less than 1 week	**3.0**
Tornadoes/ Thunderstorms	High/Strong Wind, Hail, Lightning	Highly Likely	Critical	Moderate	6 to 12 hours	Less than 6 hours	**3.1**
Severe Winter Weather	Snow, Blizzards, Wind Chill, Extreme Cold, Ice Storms, Freezing Rain	Possible	Limited	Large	More than 24 hours	Less than 1 week	**2.4**
Earthquakes		Possible	Minor	Moderate	Less than 6 hours	Less than 6 hours	**2.0**
Geological Hazards	Sinkholes, Coastal Erosion	Likely	Limited	Small	Less than 6 hours	Less than 6 hours	**2.4**
Dam Failure		Unlikely	Critical	Small	Less than 6 hours	Less than 24 hours	**2.2**
Flooding		Highly Likely	Critical	Moderate	6 to 12 hours	Less than 1 week	**3.3**
Tsunamis		Unlikely	Limited	Small	Less than 6 hours	Less than 24 hours	**2.1**
Wildfires		Likely	Critical	Moderate	12 to 24 hours	More than 1 week	**3.0**
Infectious Disease	Foreign Animal Disease	Possible	Critical	Moderate	Less than 6 hours	More than 1 week	**2.9**
Technological Hazards							
Hazardous Substances	Hazardous Materials, Hazardous Chemicals, Oil Spill, Road/Rail Incidents	Possible	Limited	Small	Less than 6 hours	Less than 24 hours	**2.2**
Radiological Emergency	Fixed Nuclear Facilities	Unlikely	Critical	Large	6 to 12 hours	Less than 1 week	**2.6**
Terrorism	Chemical, Biological, Radiological,	Unlikely	Critical	Small	Less than 6 hours	Less than 24 hours	**2.2**

Hazard	Subhazard(s) Assessed	Category/Degree of Risk					
		Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
	Nuclear, Explosive						
Cyber Security	Mass power/utility disruption	Likely	Critical	Large	Less than 6 hours	Less than 1 week	**3.3**
Electromagnetic Pulse		Unlikely	Critical	Large	12 to 24 hours	Less than 24 hours	**2.4**
Civil Disturbance		Possible	Limited	Small	Less than 6 hours	Less than 24 hours	**2.2**
Food Emergency		Possible	Limited	Moderate	More than 24 hours	More than 1 week	**2.3**

5.23 FINAL DETERMINATIONS

The conclusions drawn from the hazard profiling process for the Southeastern NC Region, including PRI results and input from the Regional Hazard Mitigation Planning Committee, resulted in the classification of risk for each identified hazard according to three categories: High Risk, Moderate Risk, and Low Risk (**Table 5.38**). For purposes of these classifications, risk is expressed in relative terms according to the estimated impact that a hazard will have on human life and property throughout the Southeastern NC Region. It should be noted that although some hazards are classified below as posing low risk, their occurrence of varying or unprecedented magnitudes is still possible in some cases, and their assigned classification will continue to be evaluated during future updates.

A more quantitative analysis to estimate potential dollar losses for each hazard has been performed separately and is described in Section 6: *Vulnerability Assessment*.

Table 5.38 ranks the hazards that were assessed in the update that were renamed to be consistent with the State of North Carolina Hazard Mitigation Plan. These conclusions were based on the PRI calculations and input from the Southeastern NC Regional Planning Committee.

TABLE 5.38: 2025 CONCLUSIONS ON SOUTHEASTERN NC REGIONAL HAZARD RISK

HIGH RISK	Flooding Cyber Security Excessive Heat Tornadoes/Thunderstorms Hurricane and Coastal Hazards Wildfire Infectious Disease
MODERATE RISK	Radiological Emergency Geological Hazards Severe Winter Weather Food Emergency Dam Failure Hazardous Substances Terrorism Civil Disturbance Drought
LOW RISK	Electromagnetic Pulse Tsunamis Earthquakes

SECTION 6
VULNERABILITY ASSESSMENT

This section identifies and quantifies the vulnerability of the jurisdictions within the Southeastern NC Region to the significant hazards identified in the previous sections (*Hazard Identification and Profiles*). It consists of the following subsections:

- 6.1 Overview
- 6.2 Methodology
- 6.3 Explanation of Data Sources
- 6.4 Asset Inventory
- 6.5 Vulnerability Assessment Results
- 6.6 Conclusions on Hazard Vulnerability

44 CFR Requirement

44 CFR Part 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. The description shall include an overall summary of each hazard and its impact on the community. 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 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; (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.

6.1 OVERVIEW

This section builds upon the information provided in Section 4: *Hazard Identification* and Section 5: *Hazard Profiles* by identifying and characterizing an inventory of assets in the Southeastern NC Region. Additionally, an assessment is conducted for each identified hazard, where feasible, including the potential impact and expected amount of damage it may cause. The primary objective of the vulnerability assessment is to quantify exposure and the potential loss estimates for each hazard. In doing so, each county and its participating jurisdictions may better understand their unique risks to identified hazards and be better prepared to evaluate and prioritize specific hazard mitigation actions.

This section begins with an explanation of the methodology applied to complete the vulnerability assessment, followed by a summary description of the asset inventory as compiled for jurisdictions in the Southeastern NC Region. The remainder of this section focuses on the results of the assessment conducted.

6.2 METHODOLOGY

This vulnerability assessment was conducted using three distinct methodologies: (1) A stochastic risk assessment; (2) a geographic information system (GIS)-based analysis; and (3) a risk modeling software analysis. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation, including historical occurrence information provided in the *Hazard Identification* and *Hazard Profiles* sections. A brief description of the three different approaches is provided on the following pages.

6.2.1 Stochastic Risk Assessment

The stochastic risk assessment methodology was applied to analyze hazards of concern that were outside the scope of the GIS-based risk assessment and the NCEM Risk Management Tool (RMT). This involves the consideration of annualized loss estimates (e.g., a hazard is estimated to cause $50,000 in losses per year) 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.

A stochastic risk methodology was used for hazards such as:

- Hurricanes and Coastal Hazards
- Tornadoes/Thunderstorms
- Earthquakes
- Severe Winter Weather

The hazards listed above are considered natural and have the potential to affect all current and future buildings and all populations. **Table 6.1** provides estimates of improved parcels and properties in the Southeastern NC Region that are vulnerable to these hazards. For all hazards, annualized loss estimates were determined using the best available data on historical losses from sources including NOAA's National Centers for Environmental Information (NCEI) records, the previous Southeastern NC Regional Hazard Mitigation Plan, and local knowledge. Annualized loss estimates were primarily obtained through the FEMA National Risk Index (NRI) based on a published methodology for a predefined set of natural hazards. Given the standard weighting analysis, losses can be readily compared across hazards, providing an objective approach for evaluating mitigation alternatives.

For the drought, excessive heat, dam failure[1], infectious disease, radiological emergency, terrorism, cyber, electromagnetic pulse, civil disturbance, and food emergency hazards; no data on historical property damages was available. Therefore, a detailed vulnerability assessment could not be completed for these hazards at this time.

6.2.2 GIS-Based Analysis

Hazards that have specified geographic boundaries permit vulnerability analysis to be conducted using geographic information systems (GIS) such as ArcGIS.

This includes hazards such as:

[1] As noted in ***Section 5: Hazard Profiles***, dam failure could be catastrophic to structures and populations in the inundation area. However, due to a lack of data, no additional analysis was performed. Further, USACE and NCDEQ also complete separate dam failure plans to identify risk and response measures.

- Geological (Sinkholes and Coastal Erosion)
- Flooding
- Wildfires
- Hazardous Substances

The objective of the GIS-based analysis is to determine the estimated vulnerability of buildings, critical facilities, and populations for the identified hazards in the Southeastern NC Region using the best available geospatial data. Digital data was collected from local, regional, state, and national sources for hazards and buildings. This included local property data for individual parcels and buildings, along with georeferenced point locations for identified assets (e.g., critical facilities and infrastructure, special populations, etc.) when available.

ESRI® ArcGIS Pro™ was used to assess hazard vulnerability utilizing digital hazard data, as well as local building data. Using these data layers, hazard vulnerability can be quantified by estimating the assessed building value for parcels and/or buildings determined to be in identified hazard areas. To estimate vulnerable populations in hazard areas, digital 2020 Census data by census tract was obtained and supplemented with current population estimates from the US Census Bureau. The results of the analysis provided an estimate of regional population and critical facilities, as well as the assessed value of parcels and improvements, determined to be potentially at risk to those hazards with delineable geographic hazard boundaries.

6.2.3 Risk Management Tool

The Risk Management Tool (RMT) was developed by North Carolina Emergency Management (NCEM)-Risk Management (RM) as a tool to simplify hazard mitigation plan development into a single, automated, tool-based format to include geospatial risk assessment data, also developed by NCEM-RM. The RMT is a twofold system used to create and/or update a local and state hazard mitigation plan. The two parts of the RMT are step-by-step systems that will prompt a user to input information and narrative as well as upload pictures, documents, and other information as needed. The second part of the system is the Risk Tool. The Risk Tool will run a risk assessment at the building level for certain hazards selected based on predetermined calculations for each hazard. Some hazards will have a single return period and others have multi-return periods. The availability of multi-returns periods is based on the availability of datasets for each hazard and the degree of detail in each dataset.

The risk assessment produced by the tool will also identify high-risk structures in the planning area and estimate costs by types of mitigation projects (wind retrofits, elevation, acquisition, mitigation reconstruction) and benefit-cost estimates by type of mitigation. The mitigation tool is only meant to begin the process of thinking about problem areas where mitigation may be of interest to the jurisdiction and property owners. It is also designed to drive mitigation actions that are specific, measurable, attainable, realistic, and timely.

Finally, the RMT also identifies vulnerable populations, such as children and elderly groups. Data used to assess these populations is sourced from the latest U.S. Decennial Census. According to the U.S. Census Bureau, those defined as “elderly” are 65 years old or older, while those defined as “children” are 5 years old or younger.

Once all the information is added to the system, a hazard mitigation plan can then be exported into multiple document formats. The system will also store the plan so that when it is time to update it, the necessary information is already available.

The RMT was originally developed as part of the Integrated Hazard Risk Management (IHRM) pilot project, which included Durham, Edgecombe, Macon, and New Hanover counties. The pilot was successful, and interest developed in a system designed for statewide use and potentially nationwide in the future. The RMT used in this update was the second version created by NCEM.

The RMT assesses a variety of hazards, such as:

- Hurricane and Coastal Hazards
- Tornadoes/Thunderstorms
- Earthquakes
- Flooding
- Wildfires

All conclusions are presented in "**Conclusions on Hazard Vulnerability**" at the end of this section.

Hazard Prioritization

When evaluating hazards and determining which ones a jurisdiction should spend the most time and effort to address, multiple factors affect prioritization. As discussed in *Section 5: Hazard Profiles,* the **risk** (magnitude, probability, location) of a hazard is one of the primary driving forces used to determine the relative importance of addressing potential hazard impacts. However, assessment of a hazard's risk generally focuses on the hazard itself and how severe or likely it could be within the geographic scope of the study area. This assessment does not necessarily analyze the potential effects of that hazard on humans and the built environment. This is a critical component of hazard mitigation planning since a hazard that does not significantly impact human life, safety, or welfare is typically not considered for mitigation planning actions. The analysis that follows attempts to bring this consideration into the regional hazard mitigation planning process by estimating the impacts on humans and the built environment to prioritize significant hazards accordingly.

6.3 EXPLANATION OF DATA SOURCES

Hurricanes

The RMT assessed vulnerable areas to hurricanes and coastal hazards. For this assessment, vulnerable buildings and populations were analyzed against damage caused by hurricane winds.

Tornadoes/Thunderstorms

The RMT analyzed the vulnerable buildings and populations to the tornadoes/thunderstorms hazard. Subhazards assessed under the thunderstorm hazard include hail and lightning; however, for this assessment, based on data availability, thunderstorm winds were the only risk analyzed.

Earthquakes

The RMT assessed vulnerable areas to the earthquake hazard. This assessment included susceptible buildings by the type of structure and the potential dollar losses associated with the buildings. It also analyzed susceptible populations, such as children and the elderly.

Geological (Sinkholes and Coastal Erosion)

Vulnerability assessment results for sinkholes and coastal erosion were sourced from the NC State Enhanced Hazard Mitigation Plan.

Flooding

FEMA Digital Flood Insurance Rate Maps (DFIRMs) were used to determine flood vulnerability. DFRIM data can be used in ArcGIS for mapping purposes, and they identify several features, including floodplain boundaries and base flood elevations. Identified areas on the DFRIM represent some features of a Flood Insurance Rate Maps including the 100-year flood areas (1.0-percent annual chance flood), and the 500-year flood areas (0.2-percent annual chance flood). To determine vulnerability, local parcel data and critical facilities were overlaid on the 100-year floodplain areas and 500-year floodplain areas. This data was also supplemented with the NCEM RMT data, which assessed structure type and vulnerable populations within the floodplain areas. It should be noted that such an analysis does account for building elevation.

Wildfires

The data used to determine vulnerability to wildfires in the Southeastern NC Region is based on a GIS application known as the Southern Wildfire Risk Assessment (SWRA). Specific layers referred to as the Wildland Urban Interface (WUI), Burn Probability, and Wildfire Hazard Potential (WHP) were used to determine vulnerability of people and property. These layers use key inputs such as housing density to define potential wildfire impacts to people and homes. The WUI Risk Index, similar to other layers, is typically derived from a scale of -1 to -9, with the least negative impact being -1. The primary purpose of this data is to highlight areas of concern that may be conducive to mitigation actions. Many assumptions are made, making them not a true representation of wildfire probability; however, it does provide a comparison of risk throughout the region. Data was also supplemented using the RMT, which assessed vulnerable buildings, potential dollar losses of those buildings, and susceptible populations.

Hazardous Substances

Hazardous substance incidents can occur in both fixed facilities and through mobile transportation. For each fixed incident analysis, Toxic Release Inventory (TRI) data was used. The TRI is a publicly available database from the federal Environmental Protection Agency (EPA) that contains information on toxic chemicals, releases, and other waste management activities reported annually by certain covered

industry groups, as well as federal facilities. This inventory was established under the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA) and was further expanded by the Pollution Prevention Act of 1990. Facilities that meet certain activity thresholds must annually report their releases and other waste management activities for listed toxic chemicals to the EPA and to their state or tribal entity. A facility must report if it meets the following criteria:

- The facility falls within one of the following industrial categories: manufacturing; metal mining; coal mining; electric generating facilities that combust coal and/or oil; chemical wholesale distributors; petroleum terminals and bulk storage facilities; RCRA Subtitle C treatment, storage, and disposal (TSD) facilities; and solvent recovery services;
- Has 10 or more full-time employee equivalents; and
- Manufactures or processes more than 25,000 pounds or otherwise uses more than 10,000 pounds of any listed chemical during the calendar year. Persistent, bioaccumulative, and toxic (PBT) chemicals are subject to different thresholds of 10 pounds, 100 pounds, or 0.1 grams depending on the chemical.

For the mobile hazardous materials incident analysis, transportation data, including major highways and railroads, were obtained from the North Carolina Department of Transportation (NCDOT). This data is ArcGIS-compatible, lending itself to buffer analysis to determine risk.

6.4 ASSET INVENTORY

An inventory of geo-referenced assets within Brunswick, New Hanover, Pender, and Onslow counties and jurisdictions was compiled to identify and characterize those properties potentially at risk to the identified hazards[2]. By understanding the type and number of assets that exist and where they are in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. Under this assessment, two categories of physical assets were created and then further assessed through GIS analysis. Additionally, social assets are addressed to determine the population at risk to the identified hazards (see below).

6.4.1 Physical and Improved Assets

The two categories of physical assets consist of:

- **Improved Property:** Includes all improved properties in the Southeastern NC Region according to local parcel data provided by the counties. The information has been expressed in terms of the number of parcels and the total assessed value of improvements (buildings) that may be exposed to the identified hazards.
- **Critical Facilities:** Critical facilities vary by jurisdiction. Identified critical facilities are emergency operations centers (EOC), fire stations, police stations, schools, and medical care facilities, along with other key buildings such as government facilities. It should be noted that this listing is not all-inclusive for assets located in the region, but it is anticipated that it will be expanded during future plan updates as more geo-referenced data becomes available for use in GIS analysis.

The following table provides a detailed listing of the geo-referenced assets that have been identified for inclusion in the vulnerability assessment for the Southeastern NC Region.

Table 6.1 lists the estimated number of parcels, total value of parcels, estimated number of buildings, and the total assessed value of building improvements for participating areas of the Southeastern NC Region (study area of vulnerability assessment)[3]. For reference, the total area of the Southeastern NC Region is approximately 1,712,000 acres, or 2,675 square miles. The U.S. Census Bureau also notes the following information for each county through its QuickFacts application as of vintage year 2024:

- **Brunswick County**
  - Land area in square miles (2020): 850.08
  - Population per square mile (2020): 160.8
  - Building permits (2024): 6,093
  - Total employer establishments (2022): 3,093

- **New Hanover County**
  - Land area in square miles (2020): 192.26
  - Population per square mile (2020): 1,174
  - Building permits (2024): 2,581
  - Total employer establishments (2022): 8,710

[2] While potentially not all-inclusive for the jurisdictions in the Southeastern NC Region, "georeferenced" assets include those assets for which specific location data is readily available for connecting the asset to a specific geographic location for purposes of GIS analysis.

[3] Total assessed value for improvements is based on local property data. It should also be noted that, due to record keeping, some duplication is possible thus potentially resulting in an inflated value exposure for an area.

- **Onslow County**
  - Land area in square miles (2020): 762.08
  - Population per square mile (2020): 268.4
  - Building permits (2024): 1,246
  - Total employer establishments (2022): 3,080

- **Pender County**
  - Land area in square miles (2020): 871.30
  - Population per square mile (2020): 69.1
  - Building permits (2024): 944
  - Total employer establishments (2022): 1,499

TABLE 6.1: IMPROVED PROPERTY IN THE SOUTHEASTERN NC REGION

Location	Estimated Number of Parcels	Total Assessed Value of Parcels	Estimated Number of Buildings	Total Assessed Value of Building Improvements
Brunswick County	**151,754**	**$48,159,523,694**	**93,060**	**$32,286,814,003**
Bald Head Island	2,278	$1,695,114,170	1,194	$1,075,863,410
Belville	871	$333,986,520	759	$254,098,420
Boiling Spring Lakes	8,704	$973,595,359	3,037	$811,385,319
Bolivia	138	$31,050,610	81	$26,484,250
Calabash	2,254	$520,166,782	1,466	$382,704,902
Carolina Shores	3,561	$988,301,000	3,215	$844,287,070
Caswell Beach	474	$464,108,590	362	$170,850,630
Holden Beach	2,692	$1,731,480,890	2,013	$989,748,280
Leland	16,842	$6,398,103,233	13,808	$4,964,393,133
Navassa	1,366	$211,514,675	770	$149,493,735
Northwest	912	$123,341,510	434	$93,034,650
Oak Island	11,754	$5,831,197,426	9,663	$3,349,133,226
Ocean Isle Beach	3,581	$2,884,784,498	2,632	$1,440,345,538
Sandy Creek	124	$18,515,230	87	$14,524,760
Shallotte	3,084	$939,565,216	1,875	$705,707,236
Southport	3,041	$1,373,692,040	2,355	$879,915,170
St. James	4,615	$2,843,476,419	3,945	$1,977,797,549
Sunset Beach	4,653	$2,179,407,536	3,646	$1,419,089,776
Varnamtown	453	$71,129,140	267	$51,147,840
Unincorporated Area	80,357	$18,546,992,850	41,451	$12,686,809,109
New Hanover County	**114,384**	**$84,549,509,700**	**101,187**	**$55,734,058,700**
Carolina Beach	7,959	$5,392,470,700	6,745	$3,333,418,400
Kure Beach	2,263	$1,973,798,400	1,933	$1,017,208,900
Wilmington	49,043	$37,519,187,900	44,239	$27,023,477,900
Wrightsville Beach	3,228	$6,740,332,000	2,896	$3,503,517,100
Unincorporated Area	51,891	$32,923,720,700	45,374	$20,856,436,400
Onslow County	**94,444**	**$148,487,052,036**	**74,127**	**$15,039,799,544**
Holly Ridge	3,224	$788,253,854	2,428	$631,569,944
Jacksonville	15,745	$4,584,162,405	14,221	$3,337,285,409
North Topsail Beach	3,750	$1,520,737,447	2,867	$1,012,976,027
Richlands	1,211	$240,196,563	994	$183,481,766
Swansboro	2,200	$669,978,894	1,998	$461,631,568
Unincorporated Area	68,314	$140,683,722,873	51,619	$9,412,854,830
Pender County	**54,352**	**$9,717,831,399**	**34,411**	**$5,627,371,265**
Atkinson	334	$17,185,683	177	$12,547,422
Burgaw	2,084	$345,216,660	1,451	$247,984,852

Location	Estimated Number of Parcels	Total Assessed Value of Parcels	Estimated Number of Buildings	Total Assessed Value of Building Improvements
St. Helena	360	$37,725,691	192	$21,789,095
Surf City	6,229	$1,948,948,933	5,178	$1,016,844,458
Topsail Beach	1,890	$748,548,659	1,594	$287,990,454
Watha	164	$9,763,104	85	$6,504,216
Unincorporated Area	43,291	$6,610,442,669	25,734	$4,033,710,768
Southeastern NC Regional Total	**414,934**	**$290,913,916,829**	**302,785**	**$108,689,078,741**

Source: NC OneMap, Local Governments

The following **Table 6.2** lists the emergency operations centers (EOCs), fire stations, police stations, medical care facilities, schools, and other critical facilities in the Southeastern NC Region. The FEMA Community Lifelines these facilities represent include Communications, Safety and Security, Health and Medical, and Food, Hydration, and Shelter, with roads/railroads representative of Transportation as well[4]. In addition, **Figure 6.1** shows the locations of essential facilities in the Southeastern NC Region.

TABLE 6.2: CRITICAL FACILITY INVENTORY IN THE SOUTHEASTERN NC REGION

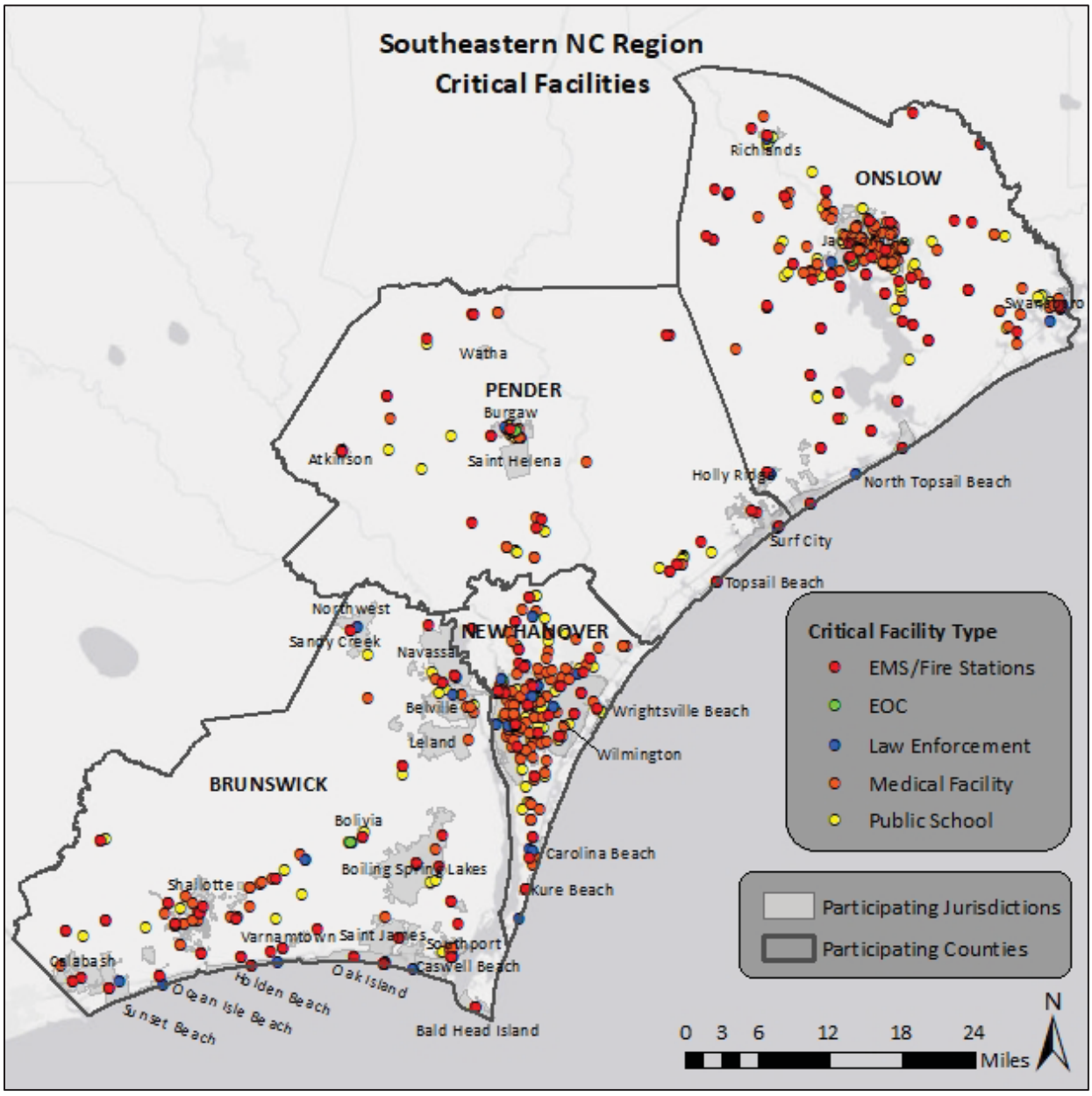
Location	EOCs	Fire Stations	Police Stations	Medical Care Facilities	Public Schools
Brunswick County	**1**	**39**	**14**	**37**	**28**
Bald Head Island	0	1	1	0	1
Belville	0	0	0	2	1
Boiling Spring Lakes	0	3	1	1	2
Bolivia	0	1	0	0	1
Calabash	0	1	0	0	0
Carolina Shores	0	0	0	0	0
Caswell Beach	0	0	0	0	0
Holden Beach	0	1	1	0	0
Leland	0	2	1	2	3
Navassa	0	2	1	0	0
Northwest	0	1	1	0	0
Oak Island	0	3	1	0	0
Ocean Isle Beach	0	1	1	0	0
Sandy Creek	0	0	0	0	0
Shallotte	0	3	1	4	3
Southport	0	1	1	2	2
St. James	0	1	0	0	0
Sunset Beach	0	1	1	0	0
Varnamtown	0	0	0	0	0
Unincorporated Area	1	19	3	26	15
New Hanover County	**1**	**20**	**19**	**136**	**72**
Carolina Beach	0	1	1	2	1
Kure Beach	0	1	1	0	0
Wilmington	1	9	12	103	47
Wrightsville Beach	0	1	1	0	1
Unincorporated Area	0	8	4	31	23

[4] FEMA Community Lifelines are defined as "the most fundamental services in the community that, when stabilized, enable all other aspects of society of function." More information: https://www.fema.gov/emergency-managers/practitioners/lifelines

Location	EOCs	Fire Stations	Police Stations	Medical Care Facilities	Public Schools
Onslow County	**1**	**24**	**9**	**72**	**64**
Holly Ridge	0	1	1	1	0
Jacksonville	1	4	3	43	24
North Topsail Beach	0	2	1	0	1
Richlands	0	1	1	1	4
Swansboro	0	1	1	5	1
Unincorporated Area	0	17	2	23	34
Pender County	**2**	**16**	**5**	**29**	**18**
Atkinson	0	1	0	2	0
Burgaw	2	0	3	16	3
St. Helena	0	0	0	0	0
Surf City	0	1	1	0	0
Topsail Beach	0	1	1	0	0
Watha	0	1	0	0	0
Unincorporated Area	0	12	0	11	15
Southeastern NC Regional Total	**5**	**99**	**47**	**274**	**182**

Source: NC OneMap

FIGURE 6.1: CRITICAL FACILITIES IN THE SOUTHEASTERN NC REGION



Source: NC OneMap

6.4.2 Social Vulnerability

Social vulnerability is defined by FEMA through the National Risk Index (NRI) methodology as "the susceptibility of social groups to the adverse impacts of hazards, including disproportionate death, injury, loss, or disruption of livelihood". In addition to identifying those assets potentially at risk to identified hazards, it is important to identify and assess those particular segments of the resident population in the Southeastern NC Region that are potentially at risk to these hazards.

Additionally, the FEMA National Risk Index (NRI)[5] provides base ratings of risk index, social vulnerability, and community resilience by county using established and vetted assessment methodologies. Community resilience is defined by FEMA through the NRI methodology as "the ability of a community to prepare for anticipated hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions." This information is updated as of 2025, and associated tables and reports can be viewed using the NRI tool.

For Brunswick County, the overall hazard risk rating is relatively high (97.04 out of 100 points), and social vulnerability is rated as relatively moderate (40.8 out of 100 points) compared to relatively high community resilience (64.9 out of 100 points). For New Hanover County, the risk rating is relatively high (98.5), and social vulnerability is rated as relatively moderate (46.2) compared to very high community resilience (82.3). For Onslow County, the risk rating is relatively high (97.93), and social vulnerability is rated as relatively high (77.2) alongside a relatively high community resilience score (63.2). For Pender County, the risk rating is relatively moderate (94.02), and social vulnerability is rated as relatively high (61.1) compared to relatively moderate community resilience (56.9).

Table 6.3 lists the population by county according to U.S. Census Bureau population estimates. The population estimates are updated using the most recent vintage tables as per 2019-2023 American Community Survey (ACS) 5-Year Estimates findings. The total population in the Southeastern NC Region, according to U.S. Census data, is approximately 649,115. Key factors that may provide additional insights regarding socially vulnerable populations of the region include spoken language, disability status, and poverty status, as listed in the table below.

TABLE 6.3: TOTAL POPULATION IN THE SOUTHEASTERN NC REGION

Location	2023 Population Estimates	% population speaking a language other than English	% population with a disability	% population below the poverty level
Brunswick County	145,889	4.7%	15.3%	9.4%
New Hanover County	231,214	8.6%	11.8%	12.4%
Onslow County	208,537	10.3%	16.6%	11.7%
Pender County	63,475	7.5%	15.3%	10.7%
Southeastern NC Regional Total	**649,115**	--	--	--

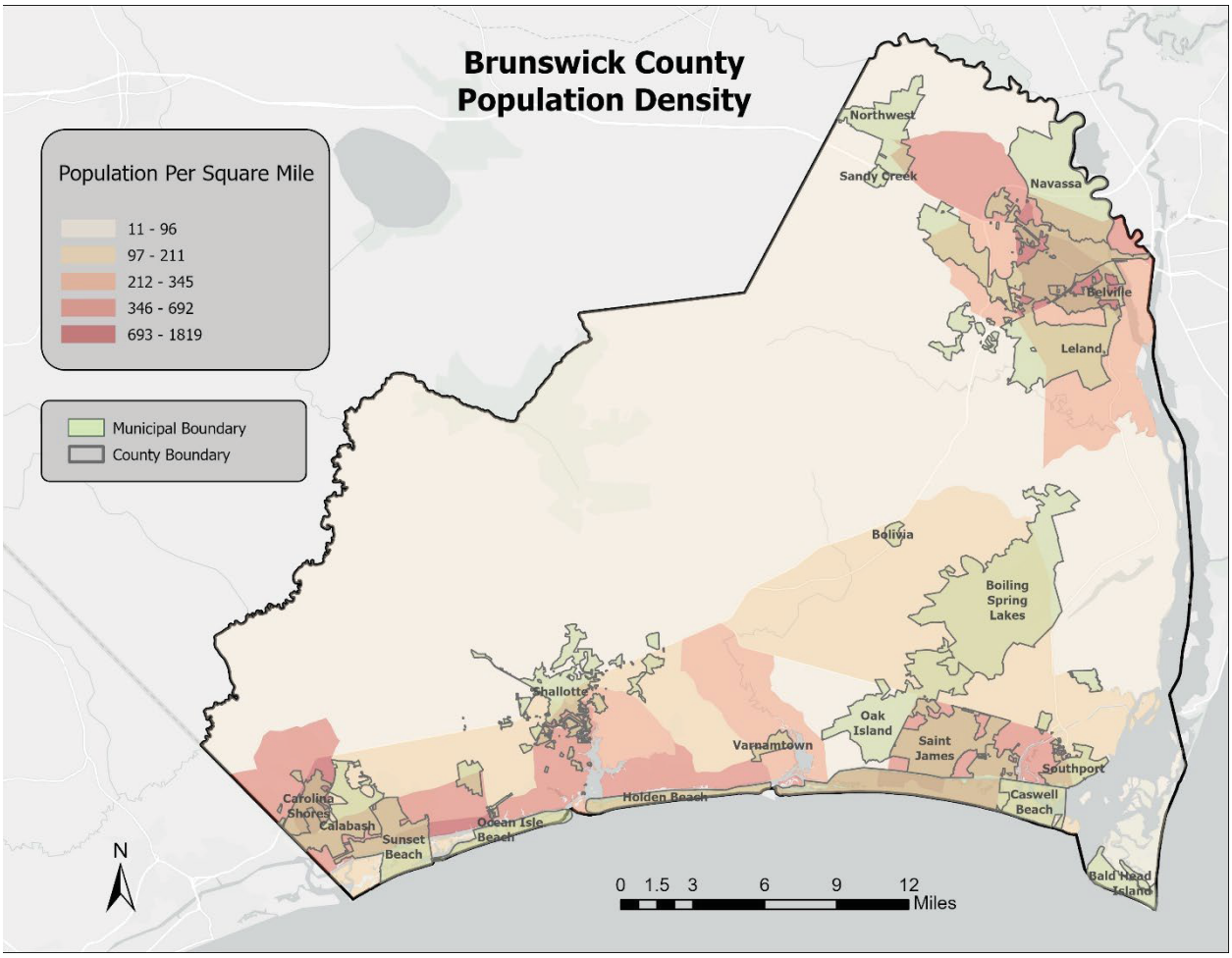
Source: US Census Bureau, 2023 ACS 5-Year Estimates

Additional population estimates are presented in Section 3: *Community Profile*.

In addition, **Figures 6.2-6.5** illustrate the population density by census tract for each county, as it was reported by the U.S. Census Bureau in the 2020 Decennial Census.

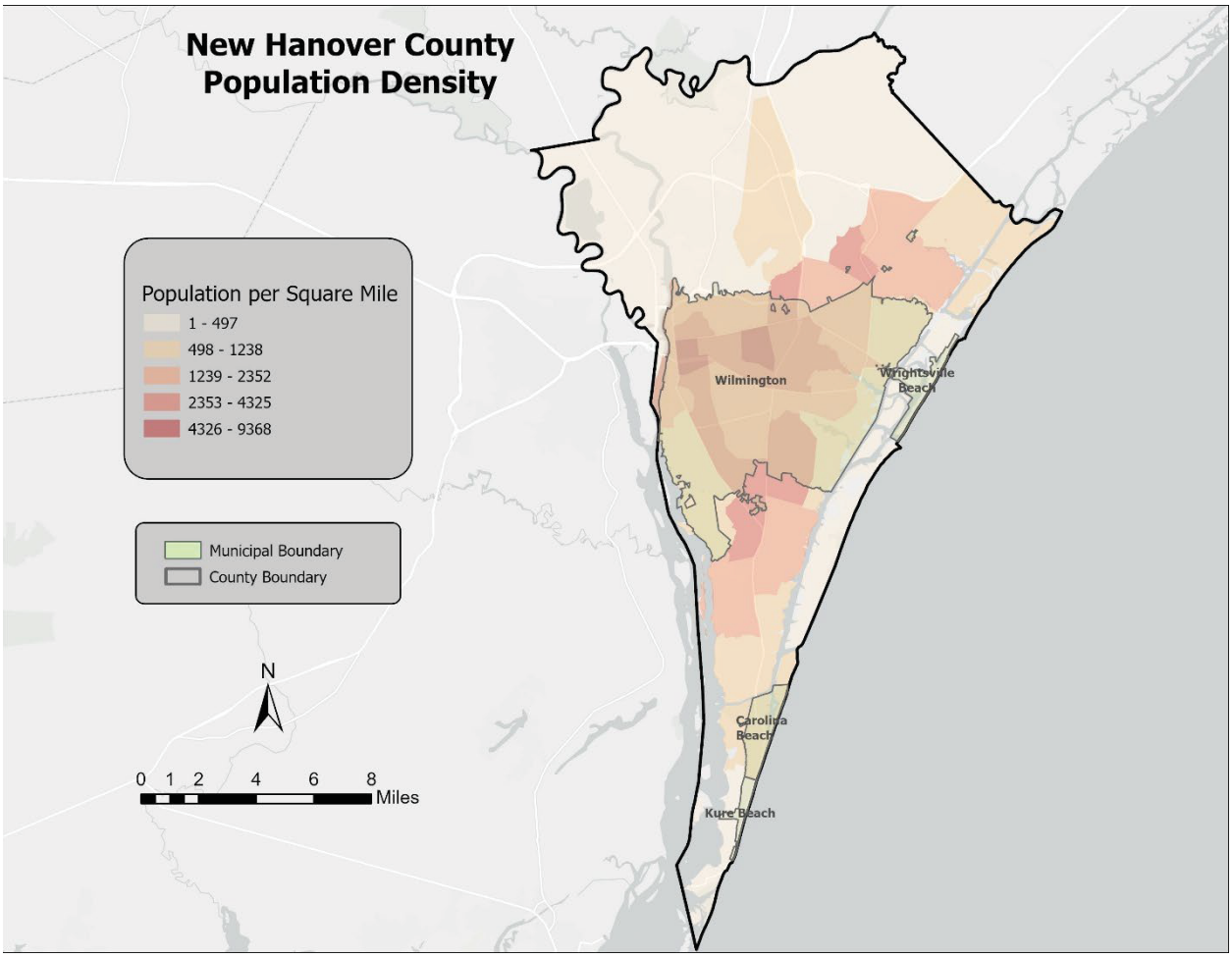
[5] FEMA National Risk Index: https://hazards.fema.gov/nri/. **As of December 2025, the NRI is now hosted directly within the FEMA Resilience Analysis and Planning Tool (RAPT) at https://www.fema.gov/emergency-managers/practitioners/resilience-analysis-and-planning-tool.**

FIGURE 6.2: POPULATION DENSITY IN BRUNSWICK COUNTY



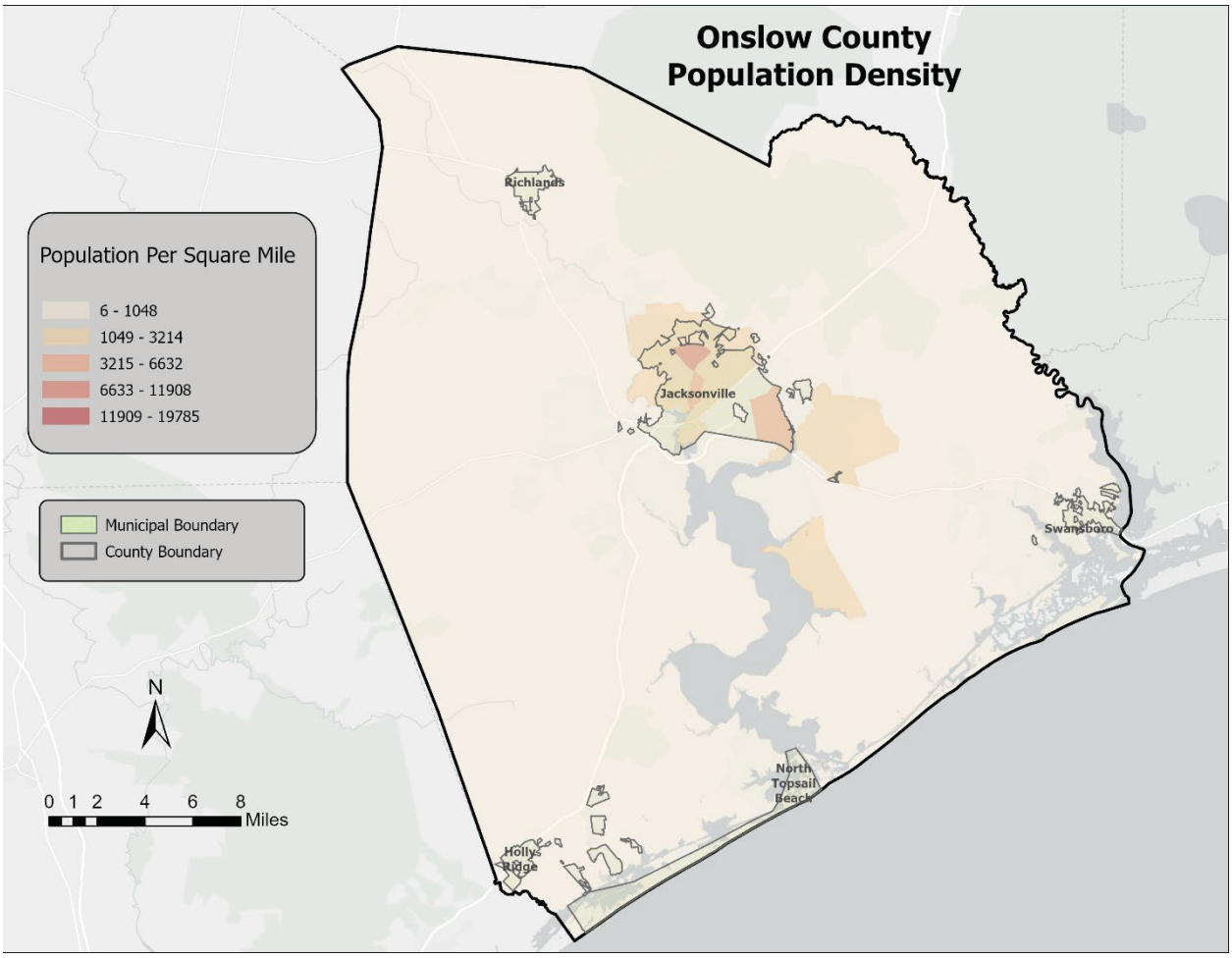
Source: US Census Bureau

FIGURE 6.3: POPULATION DENSITY IN NEW HANOVER COUNTY



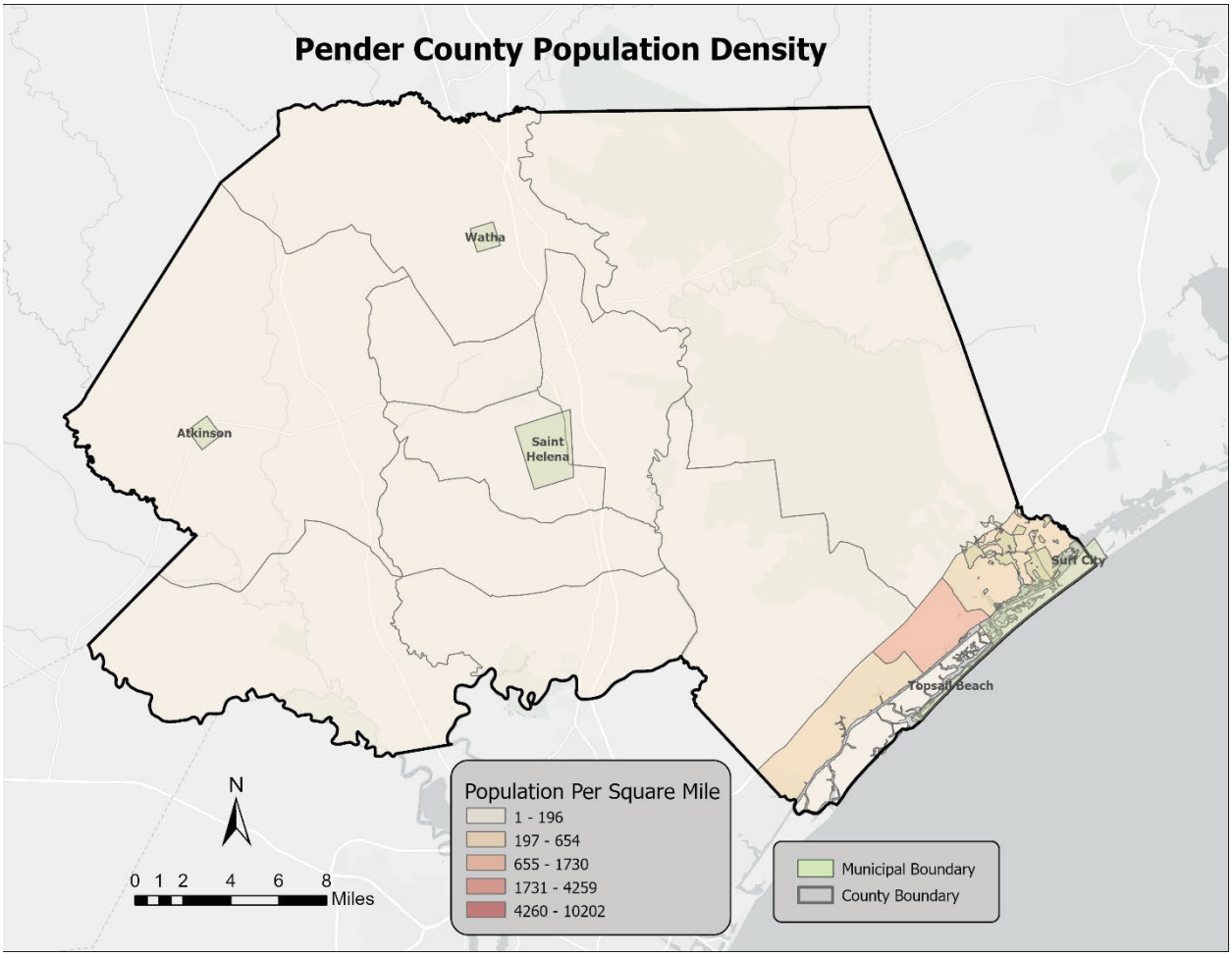
Source: US Census Bureau

FIGURE 6.4: POPULATION DENSITY IN ONSLOW COUNTY



Source: US Census Bureau

FIGURE 6.5: POPULATION DENSITY IN PENDER COUNTY



Source: US Census Bureau

6.4.3. Development Trends and Changes in Vulnerability

Since the previous regional hazard mitigation plan was approved, the Southeastern NC Region has experienced strong growth and development. **Table 6.4** shows the estimated total number of housing units/buildings as of 2023 and the percent share built in more recent years according to the US Census American Community Survey (ACS) 5-year estimates.

TABLE 6.4: HOUSING UNIT COUNTS FOR THE SOUTHEASTERN NC REGION

Location	Estimated Total Housing Units (2023)	Units Built 2010 or Later	% Building Stock Built Post-2010
Brunswick County	**93,977**	**39,715**	**42.26%**
Bald Head Island	1,110	92	8.29%
Belville	1,248	424	33.97%
Boiling Spring Lakes	3,454	496	14.36%
Bolivia	89	3	3.37%
Calabash	1,617	264	16.33%
Carolina Shores	2,848	842	29.56%
Caswell Beach	650	22	3.38%
Holden Beach	2,461	269	10.93%

Location	Estimated Total Housing Units (2023)	Units Built 2010 or Later	% Building Stock Built Post-2010
Leland	11,995	4,911	40.94%
Navassa	820	154	18.78%
Northwest	376	67	17.82%
Oak Island	10,431	2,183	20.93%
Ocean Isle Beach	3,290	334	10.15%
Sandy Creek	107	28	26.17%
Shallotte	2,065	616	29.83%
Southport	2,440	779	31.93%
St. James	3,881	1,764	45.45%
Sunset Beach	5,220	648	12.41%
Varnamtown	375	2	0.53%
Unincorporated Area	39,500	25,817	65.36%
New Hanover County	**117,236**	**19,074**	**16.27%**
Carolina Beach	6,006	805	13.40%
Kure Beach	2,204	115	5.22%
Wilmington	67,186	14,030	20.88%
Wrightsville Beach	2,926	116	3.96%
Unincorporated Area	38,914	15,066	38.72%
Onslow County	**85,917**	**21,737**	**25.30%**
Holly Ridge	2,375	1,597	67.24%
Jacksonville	25,768	2,444	9.48%
North Topsail Beach	2,791	287	10.28%
Richlands	862	258	29.93%
Swansboro	1,783	602	33.76%
Unincorporated Area	52,338	5,188	9.91%
Pender County	**31,007**	**6,365**	**20.53%**
Atkinson	186	11	5.91%
Burgaw	1,317	169	12.83%
St. Helena	223	23	10.31%
Surf City	4,447	1,080	24.29%
Topsail Beach	1,295	94	7.26%
Watha	93	0	0.00%
Unincorporated Area	23,446	1,377	5.87%
Southeastern NC Regional Total	**328,137**	**86,891**	**26.48%**

Source: US Census Bureau

Table 6.5 shows population growth estimates for the region from 2010 to 2024 based on the US Census Annual Estimates of Resident Population and American Community Survey (ACS) 5-year population estimates.

TABLE 6.5: POPULATION GROWTH FOR THE SOUTHEASTERN NC REGION

Location	2010	2014	2018	2024	% Change (2010-2024)
Brunswick County	**108,065**	**118,308**	**136,744**	**169,448**	**56.80%**
Bald Head Island	158	165	179	318	101.27%
Belville	1,940	2,019	2,073	3,105	60.05%
Boiling Spring Lakes	5,439	5,655	6,137	6,984	28.41%
Bolivia	143	149	152	204	42.66%
Calabash	1,789	2,071	2,205	2,639	47.51%

Location	2010	2014	2018	2024	% Change (2010-2024)
Carolina Shores	3,386	3,571	4,378	5,805	71.44%
Caswell Beach	398	450	430	486	22.11%
Holden Beach	576	605	647	1,094	89.93%
Leland	14,030	17,016	22,070	33,065	135.67%
Navassa	1,484	1,631	2,119	1,693	14.08%
Northwest	729	756	776	952	30.59%
Oak Island	6,818	7,221	8,072	9,976	46.32%
Ocean Isle Beach	536	564	631	1,052	96.27%
Sandy Creek	259	434	421	289	11.58%
Shallotte	3,511	3,703	4,287	5,174	47.37%
Southport	2,914	3,280	3,828	4,739	62.63%
St. James	3,194	4,321	5,837	8,249	158.27%
Sunset Beach	3,571	3,697	3,952	4,768	33.52%
Varnamtown	549	568	585	586	6.74%
Unincorporated Area	56,641	60,432	67,965	78,270	38.19%
New Hanover County	**203,286**	**215,996**	**232,274**	**244,809**	**20.43%**
Carolina Beach	5,724	6,024	6,354	6,921	20.91%
Kure Beach	2,015	2,073	2,102	2,261	12.21%
Wilmington	106,454	113,309	122,607	126,256	18.60%
Wrightsville Beach	2,476	2,532	2,542	2,512	1.45%
Unincorporated Area	86,617	92,058	98,669	106,859	23.37%
Onslow County	**186,889**	**191,820**	**197,683**	**215,481**	**15.30%**
Holly Ridge	1,317	1,940	2,598	5,045	283.07%
Jacksonville	77,929	74,034	72,896	73,494	-5.69%
North Topsail Beach	745	724	739	1,086	45.77%
Richlands	1,508	1,627	1,676	2,478	64.32%
Swansboro	2,692	3,037	3,273	4,179	55.24%
Unincorporated Area	102,698	110,458	116,501	129,199	25.80%
Pender County	**52,416**	**55,908**	**62,162**	**68,737**	**31.14%**
Atkinson	300	318	351	332	10.67%
Burgaw	3,862	3,987	4,140	3,752	-2.85%
St. Helena	399	412	425	449	12.53%
Surf City	1,921	2,123	2,417	4,608	139.88%
Topsail Beach	369	389	427	515	39.57%
Watha	194	224	241	200	3.09%
Unincorporated Area	45,371	48,455	54,161	58,881	29.78%
Southeastern NC Regional Total	**550,656**	**582,032**	**628,863**	**698,475**	**26.84%**

Source: US Census Bureau

6.5 VULNERABILITY ASSESSMENT RESULTS

As noted earlier, only hazards with a specific geographic boundary, modeling tool, or sufficient historical data allow for further analysis. Those results are presented here. All other hazards are assumed to impact the entire planning region (e.g., drought, excessive heat, hailstorm, lightning, and severe winter weather) or, due to lack of data, analysis would not lead to credible results (e.g., dam failure, infectious disease, terrorism, cyber, electromagnetic pulse, civil disturbance, and food emergency).

The annualized loss estimates for all hazards (where available) are presented at the end of this section in **Table 6.26**. For additional information related to vulnerability and expected annual losses for a wide range of hazards, the FEMA NRI[6] is a publicly available online tool that allows users to create reports and download data for both county and census tract geographies.

Hazards presented in this subsection include: Hurricane and Coastal Hazards, Tornadoes/ Thunderstorms, Earthquakes, Geological (Sinkholes and Coastal Erosion), Flooding, Wildfires, Hazardous Substances, and Dam Failure.

6.5.1. Hurricane and Coastal Hazards

Historical evidence indicates that the Southeastern NC Region has a significant risk of hurricanes and coastal hazards, mostly due to its proximity to the Atlantic Ocean. In recent years, there have been approximately 20 major disaster declarations from hurricanes in the region (e.g., Hurricane Hugo, Hurricane Fran, Hurricane Floyd, Hurricane Matthew, Hurricane Florence). Many more storm tracks have come near or traversed through the region, as shown and discussed in Section 5: *Hazard Profiles*.

Numerous secondary hazards, such as erosion, flooding, tornadoes, and high winds, tend to be a result of hurricanes or tropical storms. These cumulative effects often make potential loss estimates difficult to calculate and track.

NCEM's Risk Management Tool (RMT) analyzes hurricane winds and no other hazards often associated with hurricanes; therefore, only hurricane winds are analyzed in this section. Building and population vulnerabilities to hurricane winds modeled using a 100-year probabilistic frequency (return period) are reported in the following **Table 6.6** and **Table 6.7**.

It is assumed that all existing and future buildings and populations are at risk of hurricanes and coastal hazards.

[6] FEMA National Risk Index: https://hazards.fema.gov/nri/

TABLE 6.6: BUILDING VULNERABILITIES TO HURRICANE WINDS IN THE SOUTHEASTERN NC REGION

Location	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
Brunswick County	**22,440**	**64,133**	**$345,823,807**	**3,260**	**$43,980,106**	**723**	**$14,531,288**	**68,116**	**$404,335,201**
Bald Head Island	153	989	$19,879,072	40	$1,225,924	10	$30,184	1,039	$21,135,181
Belville	194	753	$2,397,347	26	$204,062	5	$15,278	784	$2,616,688
Boiling Spring Lakes	738	1,874	$5,592,493	36	$110,965	31	$233,374	1,941	$5,936,832
Bolivia	260	227	$522,188	21	$123,598	16	$122,525	264	$768,310
Calabash	660	1,246	$3,711,616	107	$950,014	8	$71,564	1,361	$4,733,194
Carolina Shores	493	1,515	$4,764,040	42	$536,522	3	$63,116	1,560	$5,363,678
Caswell Beach	151	341	$14,732,791	14	$1,046,867	3	$235,077	358	$16,014,735
Holden Beach	272	1,953	$46,228,364	8	$67,393	3	$62,249	1,964	$46,358,007
Leland	1,252	2,718	$6,860,651	146	$1,069,349	45	$858,574	2,909	$8,788,574
Navassa	433	619	$829,492	50	$1,132,824	19	$73,226	688	$2,035,542
Northwest	207	424	$739,354	19	$72,174	11	$82,046	454	$893,574
Oak Island	1,458	6,646	$75,061,287	220	$4,791,682	38	$1,021,205	6,904	$80,874,174
Ocean Isle Beach	1,212	6,647	$30,454,235	214	$1,380,180	40	$441,707	6,901	$32,276,122
Sandy Creek	146	137	$142,497	10	$43,517	2	$2,197	149	$188,211
Shallotte	828	1,488	$6,060,815	336	$3,227,048	78	$1,066,547	1,902	$10,354,410
Southport	899	1,554	$10,942,586	204	$3,472,615	50	$3,380,229	1,808	$17,795,430
St. James	0	1,363	$15,583,023	13	$188,507	5	$23,093	1,381	$15,794,623
Sunset Beach	143	3,348	$24,099,792	91	$2,030,668	7	$52,188	3,446	$26,182,647
Varnamtown	186	338	$1,004,558	16	$120,454	6	$38,438	360	$1,163,449
Unincorporated Area	12,755	29,953	$76,217,606	1,647	$22,185,743	343	$6,658,471	31,943	$105,061,820
New Hanover County	**37,644**	**80,709**	**$1,033,359,608**	**5,091**	**$163,591,649**	**1,017**	**$36,900,105**	**86,817**	**$1,233,851,361**
Carolina Beach	1,571	3,413	$65,552,203	207	$5,952,958	28	$565,416	3,648	$72,070,577
Kure Beach	631	1,653	$36,857,463	27	$1,235,531	12	$293,421	1,692	$38,386,414
Wilmington	23,304	37,391	$340,892,952	2,666	$110,084,248	672	$24,860,878	40,729	$475,838,078
Wrightsville Beach	668	1,630	$212,195,557	62	$3,711,726	17	$206,091	1,709	$216,113,374
Unincorporated Area	11,470	36,622	$377,861,433	2,129	$42,607,186	288	$10,974,299	39,039	$431,442,918
Onslow County	**40,438**	**65,283**	**$245,599,104**	**3,567**	**$141,233,189**	**1,978**	**$155,896,011**	**70,828**	**$542,728,303**
Holly Ridge	787	744	$1,582,277	79	$2,090,548	18	$1,473,999	841	$5,146,824
Jacksonville	15,724	22,123	$101,448,454	1,405	$83,923,001	1,280	$98,881,574	24,808	$284,253,029
North Topsail Beach	604	1,491	$24,342,801	7	$80,677	4	$24,053	1,502	$24,447,530
Richlands	731	976	$1,832,503	86	$1,478,412	51	$1,960,244	1,113	$5,271,159
Swansboro	809	1,737	$9,134,232	161	$7,374,766	48	$9,581,621	1,946	$26,090,619
Unincorporated Area	21,783	38,212	$107,258,837	1,829	$46,285,785	577	$43,974,520	40,618	$197,519,142
Pender County	**9,919**	**29,300**	**$108,814,742**	**3,590**	**$17,545,832**	**421**	**$5,974,364**	**33,311**	**$132,334,940**
Atkinson	206	164	$452,606	36	$106,156	14	$87,781	214	$646,543
Burgaw	1,340	1,412	$4,629,290	340	$3,494,113	87	$1,169,217	1,839	$9,292,620
St. Helena	124	209	$822,439	54	$160,002	7	$39,568	270	$1,022,009
Surf City	505	2,977	$25,970,451	150	$1,609,035	14	$132,385	3,141	$27,711,872
Topsail Beach	294	1,110	$12,286,651	21	$244,845	5	$53,318	1,136	$12,584,814
Watha	123	232	$767,321	32	$84,944	10	$107,484	274	$959,750
Unincorporated Area	7,327	23,196	$63,885,984	2,957	$11,846,737	284	$4,384,611	26,437	$80,117,332
Southeastern NC Regional Total	**110,290**	**239,084**	**$1,718,864,470**	**15,494**	**$365,303,909**	**4,136**	**$213,066,691**	**258,714**	**$2,297,235,070**

Source: NCEM Risk Management Tool

TABLE 6.7: POPULATION VULNERABILITIES TO HURRICANE WINDS IN THE SOUTHEASTERN NC REGION

Location	Elderly at Risk	Children at Risk	Total at Risk
Brunswick County	**44,581**	**5,241**	**139,302**
Bald Head Island	84	0	110
Belville	377	90	1,893
Boiling Spring Lakes	604	111	2,458
Bolivia	100	20	441
Calabash	1,152	66	3,012
Carolina Shores	2,110	110	4,572
Caswell Beach	283	4	583
Holden Beach	327	5	842
Leland	2,924	585	11,284
Navassa	535	118	2,789
Northwest	143	37	737
Oak Island	3,420	225	9,244
Ocean Isle Beach	1,007	61	2,472
Sandy Creek	8	3	42
Shallotte	876	114	3,111
Southport	1,175	109	3,017
St. James	2,695	82	5,483
Sunset Beach	1,815	89	4,297
Varnamtown	72	11	250
Unincorporated Area	24,874	3,401	82,665
New Hanover County	**44,770**	**11,703**	**247,367**
Carolina Beach	715	143	3,802
Kure Beach	93	4	365
Wilmington	20,673	5,724	116,024
Wrightsville Beach	104	6	496
Unincorporated Area	23,185	5,826	126,680
Onslow County	**17,785**	**12,600**	**154,132**
Holly Ridge	67	67	633
Jacksonville	5,737	3,909	50,812
North Topsail Beach	586	30	1,729
Richlands	111	62	696
Swansboro	433	82	2,217
Unincorporated Area	10,851	8,450	98,045
Pender County	**10,572**	**3,198**	**58,978**
Atkinson	7	2	29
Burgaw	216	54	1,151
St. Helena	65	31	430
Surf City	495	58	2,370
Topsail Beach	31	1	108
Watha	59	21	359
Unincorporated Area	9,699	3,031	54,531
Southeastern NC Regional Total	**117,425**	**32,738**	**599,196**

Source: NCEM Risk Management Tool

SOCIAL VULNERABILITY

It is assumed that all existing regional populations and future populations are at risk of hurricanes and coastal hazards. Timely sheltering/evacuations of elderly and young individuals, disabled individuals, and individuals requiring specialized care or equipment are of critical importance to reducing risk during a severe event.

CRITICAL FACILITIES

Given equal vulnerability across the Southeastern NC Region, all critical facilities are considered to be at risk. Although some buildings may perform better than others in the face of such an event 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 the hurricane wind hazard. A list of specific critical facilities and their associated risk can be found in **Table 6.28** at the end of this section.

In conclusion, a hurricane event has the potential to impact many existing and future buildings, critical facilities, and populations in the Southeastern NC Region. Hurricane events can cause substantial damage in their wake including numerous fatalities, road closures, water contamination, gas leaks, extensive debris clean-up, and extended power outages.

6.5.2 Tornadoes/Thunderstorms

Tornadoes

A probabilistic model scenario was created to estimate building and population vulnerabilities in the Southeastern NC Region to tornadoes. For this scenario, a tornado ranked EF2 on the Enhanced Fujita (EF) scale was analyzed. RMT findings are reported in **Table 6.8** and **Table 6.9**.

TABLE 6.8: BUILDING VULNERABILITY TO THE TORNADOES HAZARD

Location	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
Brunswick County	**21,786**	**61,803**	**$6,530,400,345**	**3,160**	**$1,190,148,265**	**695**	**$370,355,209**	**65,658**	**$8,090,903,814**
Bald Head Island	166	1,044	$450,311,833	40	$22,341,143	10	$1,830,919	1,094	$474,483,896
Belville	194	753	$86,326,638	26	$9,970,659	5	$692,033	784	$96,989,330
Boiling Spring Lakes	738	1,874	$171,767,999	36	$6,642,409	31	$17,094,868	1,941	$195,505,276
Bolivia	260	227	$17,900,528	21	$4,279,705	16	$6,175,920	264	$28,356,153
Calabash	660	1,246	$100,708,976	108	$27,549,019	8	$2,930,195	1,362	$131,188,191
Carolina Shores	521	1,559	$169,181,078	44	$16,711,996	3	$2,476,443	1,606	$188,369,517
Caswell Beach	193	417	$81,652,429	14	$9,642,213	3	$3,905,304	434	$95,199,945
Holden Beach	335	2,171	$334,747,314	23	$5,621,408	4	$1,513,262	2,198	$341,881,983
Leland	1,252	2,718	$261,870,247	146	$51,416,147	45	$24,215,571	2,909	$337,501,965
Navassa	433	619	$35,019,441	50	$25,284,112	19	$3,136,242	688	$63,439,794
Northwest	207	424	$27,647,321	19	$3,474,157	11	$2,051,824	454	$33,173,301
Oak Island	1,507	7,461	$748,844,398	217	$51,322,355	40	$14,024,192	7,718	$814,190,944
Ocean Isle Beach	345	3,088	$502,857,302	91	$23,984,274	9	$4,330,726	3,188	$531,172,301
Sandy Creek	146	137	$7,260,367	10	$1,119,284	2	$124,793	149	$8,504,443
Shallotte	828	1,488	$172,802,237	336	$147,664,160	78	$40,022,187	1,902	$360,488,584
Southport	906	1,563	$226,639,234	205	$94,889,679	50	$30,746,854	1,818	$352,275,767
St. James	0	1,363	$381,923,436	13	$7,217,382	5	$1,401,081	1,381	$390,541,899
Sunset Beach	143	3,348	$457,346,243	91	$77,123,415	7	$3,323,685	3,446	$537,793,343
Varnamtown	186	338	$28,645,605	16	$3,373,073	6	$1,758,625	360	$33,777,303
Unincorporated Area	12,766	29,965	$2,266,947,719	1,654	$600,521,675	343	$208,600,485	31,962	$3,076,069,879
New Hanover County	**37,724**	**80,959**	**$22,486,537,508**	**5,092**	**$7,288,765,628**	**1,018**	**$1,844,492,873**	**87,069**	**$31,619,796,007**
Carolina Beach	1,623	3,496	$1,213,514,296	207	$145,569,008	28	$34,085,021	3,731	$1,393,168,326
Kure Beach	640	1,705	$817,974,020	27	$29,311,830	12	$16,401,250	1,744	$863,687,099
Wilmington	23,305	37,391	$9,314,969,255	2,666	$4,542,101,588	673	$1,207,306,049	40,730	$15,064,376,892
Wrightsville Beach	676	1,674	$2,011,994,124	62	$114,716,113	17	$4,001,076	1,753	$2,130,711,312
Unincorporated Area	11,480	36,693	$9,128,085,813	2,130	$2,457,067,089	288	$582,699,477	39,111	$12,167,852,378
Onslow County	**40,640**	**65,671**	**$5,812,679,101**	**3,583**	**$2,176,825,008**	**1,997**	**$2,301,454,909**	**71,251**	**$10,290,959,018**
Holly Ridge	787	744	$48,055,277	79	$34,346,050	18	$10,837,900	841	$93,239,227
Jacksonville	15,741	22,128	$2,356,023,715	1,405	$1,416,181,651	1,296	$1,673,329,589	24,829	$5,445,534,956
North Topsail Beach	657	1,639	$223,558,695	8	$1,065,512	4	$964,469	1,651	$225,588,676
Richlands	731	976	$94,419,872	86	$40,886,984	51	$41,896,579	1,113	$177,203,434
Swansboro	839	1,831	$179,969,592	162	$85,555,200	48	$72,971,813	2,041	$338,496,605
Unincorporated Area	21,885	38,353	$2,910,651,950	1,843	$598,789,611	580	$501,454,559	40,776	$4,010,896,120
Pender County	**10,015**	**29,574**	**$2,624,266,742**	**3,596**	**$773,512,504**	**421**	**$203,996,410**	**33,591**	**$3,601,775,656**
Atkinson	206	164	$13,829,966	36	$4,427,644	14	$3,233,274	214	$21,490,884
Burgaw	1,340	1,412	$132,628,146	340	$139,152,796	87	$34,832,288	1,839	$306,613,230
St. Helena	124	209	$19,202,936	54	$4,536,430	7	$1,428,949	270	$25,168,314
Surf City	542	3,087	$301,964,018	150	$42,665,174	14	$3,409,750	3,251	$348,038,941
Topsail Beach	353	1,274	$125,579,700	27	$3,825,173	5	$886,820	1,306	$130,291,694
Watha	123	232	$17,410,473	32	$3,292,338	10	$2,201,752	274	$22,904,563
Unincorporated Area	7,327	23,196	$2,013,651,503	2,957	$575,612,949	284	$158,003,577	26,437	$2,747,268,030
Southeastern NC Regional Total	**109,972**	**237,590**	**$37,372,231,267**	**15,417**	**$11,419,609,192**	**4,128**	**$4,716,394,097**	**257,135**	**$53,508,234,550**

Source: NCEM Risk Management Tool

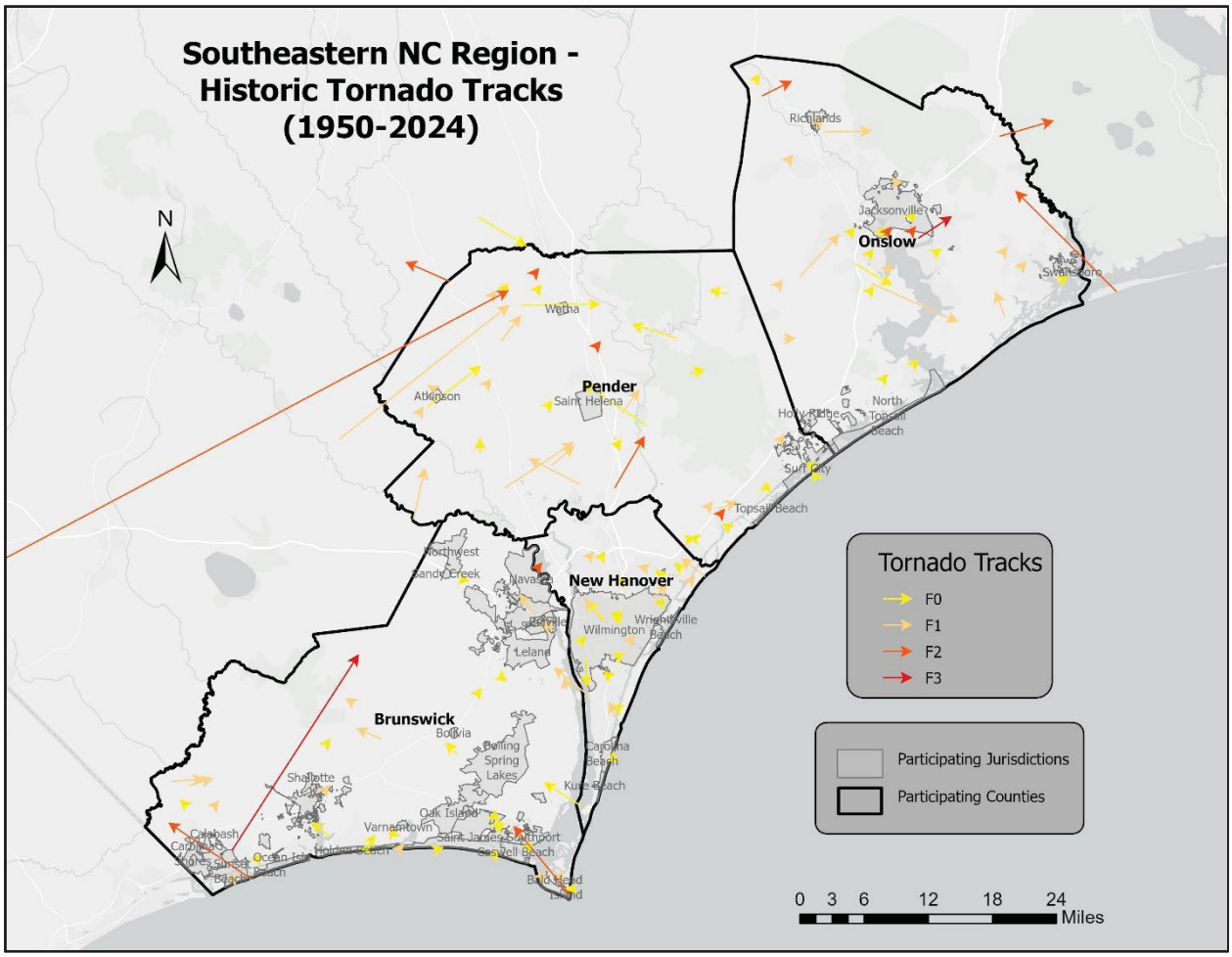
TABLE 6.9: POPULATION VULNERABILITY TO THE TORNADOES HAZARD

Location	Elderly at Risk	Children at Risk	Total at Risk
Brunswick County	**45,262**	**5,281**	**141,046**
Bald Head Island	89	0	116
Belville	377	90	1,893
Boiling Spring Lakes	604	111	2,458
Bolivia	100	20	441
Calabash	1,152	66	3,012
Carolina Shores	2,171	113	4,705
Caswell Beach	345	5	711
Holden Beach	364	6	936
Leland	2,924	585	11,284
Navassa	535	118	2,789
Northwest	143	37	737
Oak Island	3,838	253	10,376
Ocean Isle Beach	1,088	66	2,671
Sandy Creek	8	3	42
Shallotte	876	114	3,111
Southport	1,182	109	3,035
St. James	2,695	82	5,483
Sunset Beach	1,815	89	4,297
Varnamtown	72	11	250
Unincorporated Area	24,884	3,403	82,699
New Hanover County	**44,837**	**11,718**	**247,725**
Carolina Beach	732	146	3,893
Kure Beach	96	4	377
Wilmington	20,673	5,724	116,024
Wrightsville Beach	107	6	509
Unincorporated Area	23,229	5,838	126,922
Onslow County	**17,911**	**12,641**	**154,830**
Holly Ridge	67	67	633
Jacksonville	5,742	3,912	50,856
North Topsail Beach	644	33	1,900
Richlands	111	62	696
Swansboro	456	86	2,337
Unincorporated Area	10,891	8,481	98,408
Pender County	**10,596**	**3,200**	**59,081**
Atkinson	7	2	29
Burgaw	216	54	1,151
St. Helena	65	31	430
Surf City	514	60	2,458
Topsail Beach	36	1	123
Watha	59	21	359
Unincorporated Area	9,699	3,031	54,531
Southeastern NC Regional Total	**118,606**	**32,840**	**602,682**

Source: NCEM Risk Management Tool

A map of historical tornado points of origin and paths can be seen below in **Figure 6.6.**

FIGURE 6.6: HISTORICAL TORNADO TRACKS



Source: NOAA Storm Prediction Center (SPC)

Thunderstorms

A probabilistic scenario was created to estimate building and population vulnerabilities in the Southeastern NC Region for the thunderstorm hazard. For this scenario, damages due to thunderstorm winds on a 50-year frequency event (return period) were analyzed. It is important to note that this data does not include damage caused by other subhazards associated with thunderstorms, such as lightning or hail. Risk Management Tool (RMT) findings are reported below in **Table 6.10** and **Table 6.11**.

TABLE 6.10: BUILDING VULNERABILITY TO THUNDERSTORM WINDS

Location	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
Brunswick County	**21,278**	**60,344**	**$28,954,368**	**3,130**	**$4,025,073**	**695**	**$1,345,732**	**64,169**	**$34,325,173**
Bald Head Island	153	989	$1,251,058	40	$201,694	10	$1,734	1,039	$1,454,486
Belville	194	753	$341,774	26	$7,613	5	$615	784	$350,003
Boiling Spring Lakes	738	1,874	$805,539	36	$3,435	31	$9,478	1,941	$818,452
Bolivia	260	227	$85,604	21	$18,712	16	$3,571	264	$107,887
Calabash	660	1,246	$570,383	107	$81,084	8	$1,940	1,361	$653,407
Carolina Shores	493	1,515	$944,004	42	$66,379	3	$4,945	1,560	$1,015,328

Location	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
Caswell Beach	151	341	$376,986	14	$26,477	3	$13,271	358	$416,733
Holden Beach	272	1,953	$2,328,629	8	$3,929	3	$1,108	1,964	$2,333,665
Leland	1,252	2,718	$1,160,435	146	$56,172	45	$97,080	2,909	$1,313,687
Navassa	433	619	$160,380	50	$101,673	19	$3,623	688	$265,676
Northwest	207	424	$97,974	19	$3,120	11	$2,361	454	$103,455
Oak Island	1,212	6,647	$2,637,518	214	$84,435	40	$28,102	6,901	$2,750,056
Ocean Isle Beach	294	2,858	$2,126,337	90	$66,064	9	$9,226	2,957	$2,201,627
Sandy Creek	146	137	$24,273	10	$2,572	2	$65	149	$26,909
Shallotte	828	1,488	$823,301	336	$142,886	78	$41,254	1,902	$1,007,441
Southport	899	1,554	$983,295	204	$509,471	50	$645,517	1,808	$2,138,283
St. James	0	1,363	$1,716,352	13	$26,498	5	$1,040	1,381	$1,743,891
Sunset Beach	145	3,347	$2,081,797	91	$260,490	8	$2,211	3,446	$2,344,498
Varnamtown	186	338	$130,261	16	$8,510	6	$1,052	360	$139,823
Unincorporated Area	12,755	29,953	$10,308,468	1,647	$2,353,859	343	$477,539	31,943	$13,139,866
New Hanover County	**37,644**	**80,709**	**$89,324,519**	**5,091**	**$16,842,166**	**1,017**	**$3,863,617**	**86,817**	**$110,030,299**
Carolina Beach	1,571	3,413	$5,392,400	207	$509,795	28	$24,224	3,648	$5,926,419
Kure Beach	631	1,653	$3,121,993	27	$107,829	12	$26,076	1,692	$3,255,897
Wilmington	23,304	37,391	$34,795,433	2,666	$11,804,136	672	$2,573,339	40,729	$49,172,908
Wrightsville Beach	668	1,630	$10,688,407	62	$211,641	17	$6,509	1,709	$10,906,556
Unincorporated Area	11,470	36,622	$35,326,286	2,129	$4,208,765	288	$1,233,469	39,039	$40,768,519
Onslow County	**40,438**	**65,283**	**$28,653,662**	**3,567**	**$18,918,197**	**1,978**	**$25,899,046**	**70,828**	**$73,470,902**
Holly Ridge	787	744	$228,651	79	$365,423	18	$297,347	841	$891,420
Jacksonville	15,724	22,123	$11,366,700	1,405	$9,578,991	1,280	$18,322,922	24,808	$39,268,613
North Topsail Beach	604	1,491	$1,366,230	7	$3,942	4	$993	1,502	$1,371,165
Richlands	731	976	$546,045	86	$289,008	51	$313,590	1,113	$1,148,643
Swansboro	809	1,737	$935,694	161	$1,128,836	48	$922,041	1,946	$2,986,570
Unincorporated Area	21,783	38,212	$14,210,342	1,829	$7,551,997	577	$6,042,153	40,618	$27,804,491
Pender County	**9,919**	**29,300**	**$12,037,178**	**3,590**	**$1,642,144**	**421**	**$397,465**	**33,311**	**$14,076,786**
Atkinson	206	164	$57,442	36	$6,503	14	$3,281	214	$67,226
Burgaw	1,340	1,412	$595,533	340	$155,143	87	$67,993	1,839	$818,669
St. Helena	124	209	$111,505	54	$10,299	7	$1,207	270	$123,011
Surf City	505	2,977	$1,656,934	150	$124,532	14	$4,987	3,141	$1,786,453
Topsail Beach	294	1,110	$685,826	21	$25,517	5	$1,768	1,136	$713,111
Watha	123	232	$97,600	32	$2,949	10	$2,513	274	$103,061
Unincorporated Area	7,327	23,196	$8,832,338	2,957	$1,317,201	284	$315,716	26,437	$10,465,255
Southeastern NC Regional Total	**109,279**	**235,636**	**$158,969,727**	**15,378**	**$41,427,580**	**4,111**	**$31,505,860**	**255,125**	**$231,903,160**

Source: NCEM Risk Management Tool

TABLE 6.11: POPULATION VULNERABILITY TO THUNDERSTORM WINDS

Location	Elderly at Risk	Children at Risk	Total at Risk
Brunswick County	**44,581**	**5,241**	**139,302**
Bald Head Island	84	0	110
Belville	377	90	1,893
Boiling Spring Lakes	604	111	2,458
Bolivia	100	20	441
Calabash	1,152	66	3,012
Carolina Shores	2,110	110	4,572
Caswell Beach	283	4	583

Location	Elderly at Risk	Children at Risk	Total at Risk
Holden Beach	327	5	842
Leland	2,924	585	11,284
Navassa	535	118	2,789
Northwest	143	37	737
Oak Island	3,420	225	9,244
Ocean Isle Beach	1,007	61	2,472
Sandy Creek	8	3	42
Shallotte	876	114	3,111
Southport	1,175	109	3,017
St. James	2,695	82	5,483
Sunset Beach	1,815	89	4,297
Varnamtown	72	11	250
Unincorporated Area	24,874	3,401	82,665
New Hanover County	**44,770**	**11,703**	**247,367**
Carolina Beach	715	143	3,802
Kure Beach	93	4	365
Wilmington	20,673	5,724	116,024
Wrightsville Beach	104	6	496
Unincorporated Area	23,185	5,826	126,680
Onslow County	**17,785**	**12,600**	**154,132**
Holly Ridge	67	67	633
Jacksonville	5,737	3,909	50,812
North Topsail Beach	586	30	1729
Richlands	111	62	696
Swansboro	433	82	2,217
Unincorporated Area	10,851	8,450	98,045
Pender County	**10,572**	**3,198**	**58,978**
Atkinson	7	2	29
Burgaw	216	54	1,151
St. Helena	65	31	430
Surf City	495	58	2,370
Topsail Beach	31	1	108
Watha	59	21	359
Unincorporated Area	9,699	3,031	54,531
Southeastern NC Regional Total	**117,708**	**32,742**	**599,779**

Source: NCEM Risk Management Tool

SOCIAL VULNERABILITY

It is assumed that all existing regional populations and future populations are at risk of the tornadoes/thunderstorms hazards. Timely sheltering/evacuations of elderly and young individuals, disabled individuals, and individuals requiring specialized care or equipment are of critical importance to reducing risk during a severe event.

CRITICAL FACILITIES

All critical facilities should still be considered at risk of damage should an event occur. A list of all individual critical facilities in the region can be found in **Table 6.28**.

6.5.3. Earthquakes

A probabilistic scenario was created to estimate building and population vulnerabilities in the Southeastern NC Region for the earthquake hazard using a 500-year frequency (return period). RMT findings are reported below in **Table 6.12** and **Table 6.13**.

TABLE 6.12: BUILDING VULNERABILITY TO THE EARTHQUAKE HAZARD

Location	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
Brunswick County	**21,786**	**61,803**	**$6,838,220**	**3,160**	**$2,710,018**	**695**	**$897,327**	**65,658**	**$10,445,565**
Bald Head Island	166	1,044	$220,470	40	$35,091	10	$3,368	1,094	$258,929
Belville	194	753	$49,828	26	$24,164	5	$1,470	784	$75,462
Boiling Spring Lakes	738	1,874	$133,869	36	$15,827	31	$35,183	1,941	$184,879
Bolivia	260	227	$19,570	21	$8,732	16	$15,056	264	$43,359
Calabash	660	1,246	$171,061	108	$93,897	8	$13,143	1,362	$278,101
Carolina Shores	521	1,559	$314,366	44	$55,207	3	$8,741	1,606	$378,314
Caswell Beach	193	417	$53,576	14	$20,582	3	$8,975	434	$83,133
Holden Beach	335	2,171	$249,300	23	$12,697	4	$4,821	2,198	$266,818
Leland	1,252	2,718	$213,669	146	$83,212	45	$34,157	2,909	$331,038
Navassa	433	619	$34,544	50	$59,578	19	$6,085	688	$100,207
Northwest	207	424	$32,749	19	$7,059	11	$4,712	454	$44,519
Oak Island	1,507	7,461	$529,735	217	$117,698	40	$32,974	7,718	$680,407
Ocean Isle Beach	345	3,088	$506,146	91	$70,177	9	$11,010	3,188	$587,333
Sandy Creek	146	137	$8,534	10	$2,007	2	$273	149	$10,814
Shallotte	828	1,488	$223,067	336	$395,621	78	$123,627	1,902	$742,315
Southport	906	1,563	$159,265	205	$214,691	50	$64,812	1,818	$438,767
St. James	0	1,363	$324,366	13	$15,212	5	$4,435	1,381	$344,013
Sunset Beach	143	3,348	$575,533	91	$169,978	7	$12,508	3,446	$758,019
Varnamtown	186	338	$31,328	16	$5,120	6	$5,723	360	$42,171
Unincorporated Area	12,766	29,965	$2,987,244	1,654	$1,303,468	343	$506,254	31,962	$4,796,967
New Hanover County	**37,724**	**80,959**	**$8,539,933**	**5,092**	**$8,909,408**	**1,018**	**$1,879,064**	**87,069**	**$19,328,406**
Carolina Beach	1,623	3,496	$578,920	207	$156,211	28	$42,509	3,731	$777,641
Kure Beach	640	1,705	$345,861	27	$31,320	12	$17,572	1,744	$394,754
Wilmington	23,305	37,391	$4,062,803	2,666	$5,668,152	673	$1,182,898	40,730	$10,913,852
Wrightsville Beach	676	1,674	$558,431	62	$108,064	17	$5,061	1,753	$671,557
Unincorporated Area	11,480	36,693	$2,993,918	2,130	$2,945,661	288	$631,024	39,111	$6,570,602
Onslow County	**40,640**	**65,671**	**$1,423,583**	**3,583**	**$1,388,048**	**1,997**	**$1,755,052**	**71,251**	**$4,566,686**
Holly Ridge	787	744	$17,272	79	$24,971	18	$7,321	841	$49,564
Jacksonville	15,741	22,128	$611,892	1,405	$980,683	1,296	$1,401,091	24,829	$2,993,667
North Topsail Beach	657	1,639	$40,623	8	$582	4	$959	1,651	$42,165
Richlands	731	976	$23,408	86	$28,975	51	$21,566	1,113	$73,950
Swansboro	839	1,831	$28,299	162	$38,097	48	$29,725	2,041	$96,121
Unincorporated Area	21,885	38,353	$702,089	1,843	$314,740	580	$294,390	40,776	$1,311,219
Pender County	**10,015**	**29,574**	**$983,036**	**3,596**	**$891,829**	**421**	**$332,416**	**33,591**	**$2,207,280**
Atkinson	206	164	$8,605	36	$7,621	14	$7,892	214	$24,118
Burgaw	1,340	1,412	$63,409	340	$213,228	87	$63,012	1,839	$339,648
St. Helena	124	209	$8,720	54	$5,675	7	$2,693	270	$17,088
Surf City	542	3,087	$64,651	150	$35,849	14	$3,620	3,251	$104,119
Topsail Beach	353	1,274	$27,429	27	$3,626	5	$1,176	1,306	$32,231
Watha	123	232	$7,479	32	$3,141	10	$4,150	274	$14,770
Unincorporated Area	7,327	23,196	$802,743	2,957	$622,689	284	$249,873	26,437	$1,675,306

Location	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
Southeastern NC Regional Total	**109,972**	**237,590**	**$17,731,196**	**15,417**	**$13,878,721**	**4,128**	**$4,854,884**	**257,135**	**$36,464,804**

Source: NCEM Risk Management Tool

TABLE 6.13: POPULATION VULNERABILITY TO THE EARTHQUAKE HAZARD

Location	Elderly at Risk	Children at Risk	Total at Risk
Brunswick County	**45,262**	**5,281**	**141,046**
Bald Head Island	89	0	116
Belville	377	90	1,893
Boiling Spring Lakes	604	111	2,458
Bolivia	100	20	441
Calabash	1,152	66	3,012
Carolina Shores	2,171	113	4,705
Caswell Beach	345	5	711
Holden Beach	364	6	936
Leland	2,924	585	11,284
Navassa	535	118	2,789
Northwest	143	37	737
Oak Island	3,838	253	10,376
Ocean Isle Beach	1,088	66	2,671
Sandy Creek	8	3	42
Shallotte	876	114	3,111
Southport	1,182	109	3,035
St. James	2,695	82	5,483
Sunset Beach	1,815	89	4,297
Varnamtown	72	11	250
Unincorporated Area	24,884	3,403	82,699
New Hanover County	**44,837**	**11,718**	**247,725**
Carolina Beach	732	146	3,893
Kure Beach	96	4	377
Wilmington	20,673	5,724	116,024
Wrightsville Beach	107	6	509
Unincorporated Area	23,229	5,838	126,922
Onslow County	**17,911**	**12,641**	**154,830**
Holly Ridge	67	67	633
Jacksonville	5,742	3,912	50,856
North Topsail Beach	644	33	1900
Richlands	111	62	696
Swansboro	456	86	2,337
Unincorporated Area	10,891	8,481	98,408
Pender County	**10,596**	**3,200**	**59,081**
Atkinson	7	2	29
Burgaw	216	54	1,151
St. Helena	65	31	430
Surf City	514	60	2,458
Topsail Beach	36	1	123
Watha	59	21	359
Unincorporated Area	9,699	3,031	54,531
Southeastern NC Regional Total	**118,606**	**32,840**	**602,682**

Source: NCEM Risk Management Tool

SOCIAL VULNERABILITY

It is assumed that all existing regional populations and future populations are at risk of earthquake hazards. Timely sheltering/evacuations of elderly and young individuals, disabled individuals, and individuals requiring specialized care or equipment are of critical importance to reducing risk during a severe event.

CRITICAL FACILITIES

All critical facilities should still be considered at risk to minor damage should an event occur. A list of all individual critical facilities in the region can be found in **Table 6.28**.

In conclusion, an earthquake could potentially impact all existing and future buildings, facilities, and populations in the Southeastern NC Region. Though minor earthquakes are often recorded but not felt, they may rattle breakables and cause minimal damage. Furthermore, major earthquakes have the potential to damage structures. Severe impacts of earthquakes may result in debris clean-up, service disruption, building collapse, and fatalities. Specific vulnerabilities for assets will be greatly dependent on their individual design and the mitigation measures in place, where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates if data becomes available. Furthermore, mitigation actions to address earthquake vulnerability will be considered.

6.5.4. Geological (Sinkholes and Coastal Erosion)

Sinkholes

The vulnerability information for sinkholes in **Table 6.14** was taken from the NC State Enhanced Hazard Mitigation Plan to determine the vulnerability of structures in the Southeastern NC Region to sinkholes as of 2021 data. For that plan, a GIS analysis was conducted to identify the number and value of buildings located within 50 yards of an existing sinkhole based on data received from the NC Geological Survey.

TABLE 6.14: SINKHOLE VULNERABILITY SUMMARY RESULTS (2021)

Location	Number of Buildings Within 50 Yards of Existing Sinkholes	Value of Buildings Within 50 Yards of Existing Sinkholes
Brunswick County	1,693	$274,060,857
New Hanover County	1,223	$617,106,193
Onslow County	1,311	$50,397,642
Pender County	97	$4,325,222
Southeastern NC Regional Total	**4,324**	**$945,889,914**

Source: North Carolina Geological Survey, State of North Carolina Hazard Mitigation Plan

Coastal Erosion

The vulnerability information for coastal erosion in **Table 6.15** was taken from the NC State Enhanced Hazard Mitigation Plan to determine vulnerability of structures in the Southeastern NC Region to coastal erosion. For that plan, a GIS analysis was conducted to identify the number and value of buildings located within 50 yards of eroding shorelines as identified by the NC Division of Coastal Management.

TABLE 6.15: COASTAL EROSION VULNERABILITY SUMMARY RESULTS (2021)

Location	Number of Buildings within 50 Yards of Eroding Shoreline	Value of Buildings within 50 Yards of Eroding Shoreline
Brunswick County	1,674	$937,251,050
New Hanover County	2,414	$2,590,689,900
Onslow County	812	$346,637,048
Pender County	959	$163,403,141
Southeastern NC Regional Total	**5,859**	**$4,037,981,139**

Source: North Carolina Division of Coastal Management, State of North Carolina Hazard Mitigation Plan

SOCIAL VULNERABILITY

Given the small physical area impacted by coastal erosion (primarily located directly along beaches), it is assumed that a low percentage of the population is at risk. There may be some populations/property owners that could be particularly vulnerable (potentially elderly populations), but further analysis would be needed to properly document that assumption.

CRITICAL FACILITIES

All the critical facilities in the Southeastern NC Region are in areas of low susceptibility and/or incidence.

In conclusion, sinkholes and coastal erosion have the potential to impact existing and future buildings, facilities, and populations in the Southeastern NC Region, though some areas are at a higher risk than others due to a variety of factors. For example, proximity to existing sinkholes may increase vulnerability, and proximity to eroding shorelines could increase vulnerability to coastal erosion. Specific

vulnerabilities for Southeastern NC assets will be greatly dependent on their individual design and the mitigation measures in place, where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment, but will be considered during future updates if data becomes available.

6.5.5 Flooding

Historical evidence indicates that the Southeastern NC Region is susceptible to flood events. A total of at least 423 flood events have been reported by the National Centers for Environmental Information between June 1950 and April 2025, resulting in over $21.6 million of unadjusted property damage, along with at least 1 death and 2 injuries.

In order to assess flood risk, a GIS-based analysis was used to estimate exposure to flood events using Digital Flood Insurance Rate Map (DFIRM) data in combination with local property data records for each of the Southeastern NC Region counties. The determination of assessed value at-risk (exposure) was calculated using GIS analysis by summing the total assessed building values for only those improved properties that were confirmed to be located within an identified floodplain. **Table 6.16** presents the potential at-risk property. Both the number of parcels and the approximate value are presented.

TABLE 6.16: ESTIMATED EXPOSURE OF PARCELS TO THE FLOODING HAZARD

	100 Year (1% Annual Chance) Flood Zone			500 Year (0.2% Annual Chance) Flood Zone		
Location	Approx. Number of Parcels	Approx. Number of Improved Buildings	Approx. Improved Value of Buildings	Approx. Number of Parcels	Approx. Number of Improved Buildings	Approx. Improved Value of Buildings
Brunswick County	**32,661**	**20,017**	**$9,415,547,571**	**19,984**	**11,485**	**$4,950,527,681**
Bald Head Island	1,593	822	$774,376,093	886	414	$398,870,850
Belville	114	72	$96,995,680	116	77	$96,682,070
Boiling Spring Lakes	1,031	554	$165,743,200	450	265	$87,976,380
Bolivia	59	27	$17,670,380	--	--	$--
Calabash	170	79	$50,687,690	237	123	$31,441,710
Carolina Shores	560	483	$133,810,250	--	--	$--
Caswell Beach	438	332	$156,581,670	196	142	$78,817,120
Holden Beach	3,116	2,361	$1,167,479,770	497	358	$190,452,090
Leland	1,546	960	$521,378,862	1,116	709	$495,564,657
Navassa	205	58	$25,684,770	244	75	$29,371,440
Northwest	25	6	$1,311,390	10	--	$--
Oak Island	4,739	3,750	$1,642,269,088	3,907	3,079	$1,039,983,418
Ocean Isle Beach	3,224	2,474	$1,345,901,368	352	247	$153,540,000
Sandy Creek	3	--	$--	--	--	$--
Shallotte	564	217	$213,837,690	669	279	$274,074,920
Southport	523	316	$165,511,260	601	410	$190,041,630
St. James	851	684	$358,447,416	672	563	$264,866,636
Sunset Beach	1,879	1,515	$715,376,654	800	612	$249,687,670
Varnamtown	143	80	$16,750,160	144	84	$17,707,810
Unincorporated Area	11,878	5,227	$1,845,734,180	9,087	4,048	$1,351,449,280
New Hanover County	**22,735**	**19,115**	**$16,465,163,790**	**17,134**	**14,620**	**$10,983,032,800**
Carolina Beach	5,064	4,365	$2,276,354,400	2,363	1,957	$1,058,348,300
Kure Beach	453	401	$296,016,000	1,251	1,074	$610,603,300
Wilmington	5,419	4,552	$5,321,052,600	5,453	4,666	$4,983,750,600
Wrightsville Beach	3,303	2,956	$3,581,104,600	278	269	$394,547,900
Unincorporated Area	8,496	6,841	$4,990,636,190	7,789	6,654	$3,935,782,700

Onslow County	**16,483**	**11,218**	**$3,026,385,598**	**7,940**	**5,766**	**$1,435,294,098**
Holly Ridge	365	115	$40,912,248	265	131	$44,149,100
Jacksonville	1,572	1,244	$375,970,652	1,252	974	$324,098,590
North Topsail Beach	4,074	3,030	$1,141,370,859	165	100	$57,574,571
Richlands	45	24	$14,783,920	54	31	$16,192,668
Swansboro	379	302	$77,558,586	228	194	$48,238,161
Unincorporated Area	10,048	6,503	$1,375,789,333	5,976	4,336	$945,041,008
Pender County	**17,882**	**11,302**	**$2,109,718,167**	**7,380**	**4,729**	**$986,174,783**
Atkinson	32	16	$1,146,425	27	16	$968,685
Burgaw	--	--	$--	--	--	$--
St. Helena	67	28	$2,649,241	2	--	$--
Surf City	4,908	4,007	$766,772,731	703	525	$126,347,159
Topsail Beach	1,941	1,635	$297,914,068	35	27	$6,504,548
Watha	19	12	$796,807	18	9	$608,982
Unincorporated Area	10,915	5,604	$1,040,438,895	6,595	4,152	$851,745,409
Southeastern NC Regional Total	**89,761**	**61,652**	**$31,016,815,126**	**52,438**	**36,600**	**$18,355,029,362**

Source: FEMA DFIRM

To assess flood risk, the NCEM Risk Management Tool (RMT) analyzed buildings located in the 1-percent annual chance or 100-year floodplains. The buildings are assessed by the type of use class (commercial, residential, or public) and by pre-FIRM buildings, or structures built before flood ordinance regulations and FIRM panels were effectively adopted. This data is broken down by jurisdiction in **Table 6.17**.

TABLE 6.17: BUILDING VULNERABILITY FOR THE 100-YEAR FLOODPLAINS

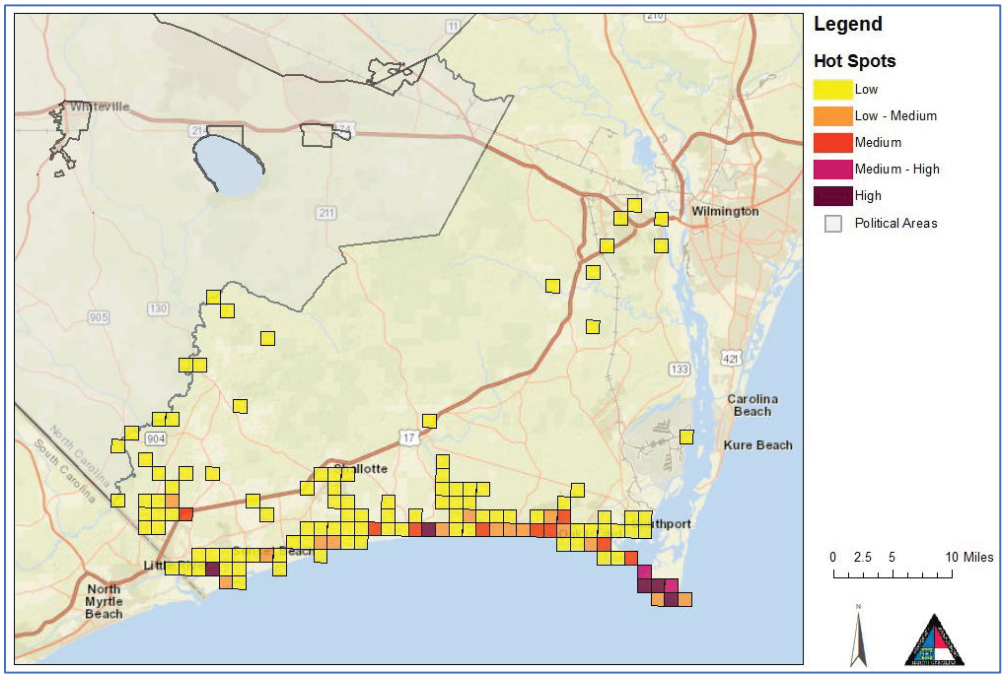
Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
Brunswick County	**870**	**2,662**	**$24,149,066**	**72**	**$4,454,235**	**7**	**$692,155**	**2,741**	**$29,295,456**
Bald Head Island	0	21	$66,433	2	$3,065	0	$0	23	$69,498
Belville	3	12	$164,268	2	$260,541	0	$0	14	$424,809
Boiling Spring Lakes	5	19	$82,625	0	$0	0	$0	19	$82,625
Bolivia	11	11	$15,637	0	$0	0	$0	11	$15,637
Calabash	20	28	$276,312	3	$181,315	0	$0	31	$457,627
Carolina Shores	18	82	$434,755	0	$0	0	$0	82	$434,755
Caswell Beach	29	46	$324,916	0	$0	0	$0	46	$324,916
Holden Beach	1	9	$62,781	1	$1,686	0	$0	10	$64,467
Leland	23	98	$929,812	2	$7,043	1	$59,420	101	$996,275
Navassa	11	13	$40,201	0	$0	0	$0	13	$40,201
Northwest	0	0	$0	0	$0	0	$0	0	$0
Oak Island	99	265	$870,019	2	$68,923	0	$0	267	$938,942
Ocean Isle Beach	3	26	$144,322	1	$33,559	0	$0	27	$177,881
Sandy Creek	0	0	$0	0	$0	0	$0	0	$0
Shallotte	87	102	$2,982,306	35	$3,578,074	4	$215,371	141	$6,775,751
Southport	26	88	$1,364,200	2	$2,764	0	$0	90	$1,366,964
St. James	0	28	$223,270	0	$0	0	$0	28	$223,270
Sunset Beach	16	66	$345,408	2	$7,165	0	$0	68	$352,574
Varnamtown	19	29	$145,964	1	$19,259	0	$0	30	$165,223
Unincorporated Area	499	1,719	$15,675,837	19	$290,841	2	$417,364	1,740	$16,384,041
New Hanover County	**1,458**	**3,692**	**$48,302,514**	**167**	**$12,051,430**	**17**	**$3,161,686**	**3,876**	**$63,515,631**
Carolina Beach	70	174	$1,291,362	0	$0	0	$0	174	$1,291,362
Kure Beach	7	27	$552,816	0	$0	0	$0	27	$552,816
Wilmington	607	1,398	$18,938,200	82	$8,904,781	10	$542,045	1,490	$28,385,027

Location	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
Wrightsville Beach	1	2	$260,993	0	$0	0	$0	2	$260,993
Unincorporated Area	773	2,091	$27,259,143	85	$3,146,649	7	$2,619,641	2,183	$33,025,433
Onslow County	**883**	**1,738**	**$19,952,249**	**28**	**$994,483**	**10**	**$1,883,767**	**1,776**	**$22,830,499**
Holly Ridge	25	34	$196,647	0	$0	0	$0	34	$196,647
Jacksonville	218	332	$5,112,029	12	$643,493	5	$1,487,444	349	$7,242,966
North Topsail Beach	0	12	$493,983	0	$0	0	$0	12	$493,983
Richlands	8	8	$21,590	0	$0	0	$0	8	$21,590
Swansboro	36	58	$782,948	2	$64,397	0	$0	60	$847,345
Unincorporated Area	596	1,294	$13,345,052	14	$286,593	5	$396,323	1,313	$14,027,968
Pender County	**1,179**	**3,815**	**$95,188,801**	**188**	**$12,839,480**	**13**	**$1,402,716**	**4,016**	**$109,430,997**
Atkinson	0	0	$0	0	$0	0	$0	0	$0
Burgaw	215	273	$822,824	3	$19,837	0	$0	276	$842,661
St. Helena	4	6	$23,669	8	$16,302	0	$0	14	$39,971
Surf City	193	898	$31,680,412	79	$5,922,457	4	$876,785	981	$38,479,654
Topsail Beach	210	774	$23,742,947	23	$3,835,725	5	$423,804	802	$28,002,476
Watha	0	0	$0	0	$0	0	$0	0	$0
Unincorporated Area	557	1,864	$38,918,949	75	$3,045,159	4	$102,127	1,943	$42,066,235
Southeastern NC Regional Total	**4,361**	**11,861**	**$187,267,714**	**455**	**$30,339,628**	**47**	**$7,140,324**	**12,363**	**$224,747,667**

Source: NCEM Risk Management Tool

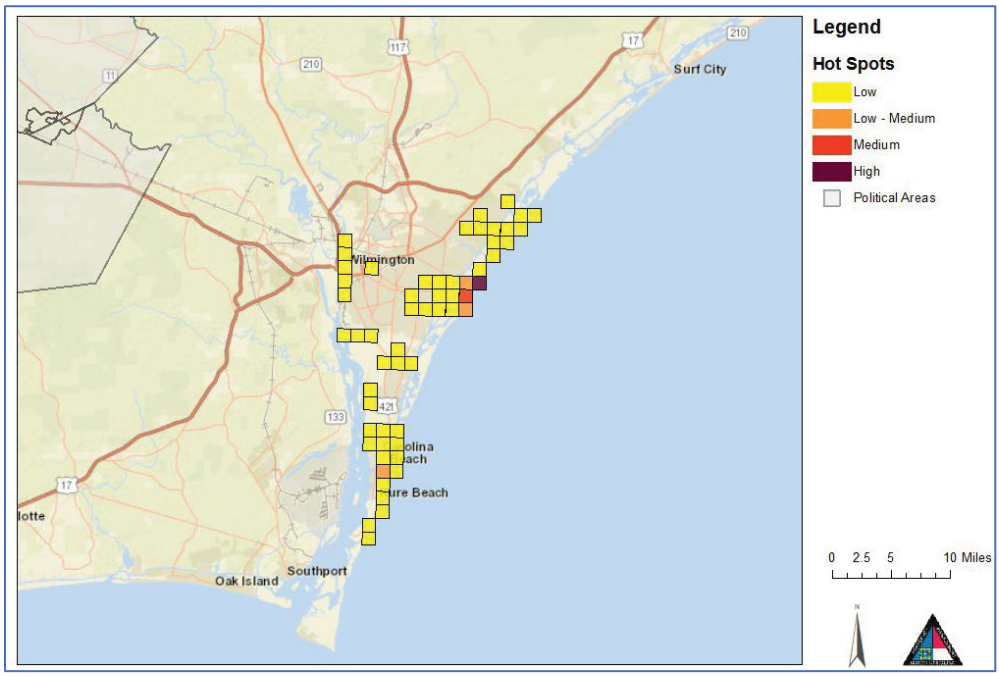
Figures 6.7 to 6.10 below display visual hotspots of potential dollar losses for the flood hazard in Brunswick, New Hanover, Onslow, and Pender Counties.

FIGURE 6.7: POTENTIAL LOSSES FROM FLOODING IN BRUNSWICK COUNTY



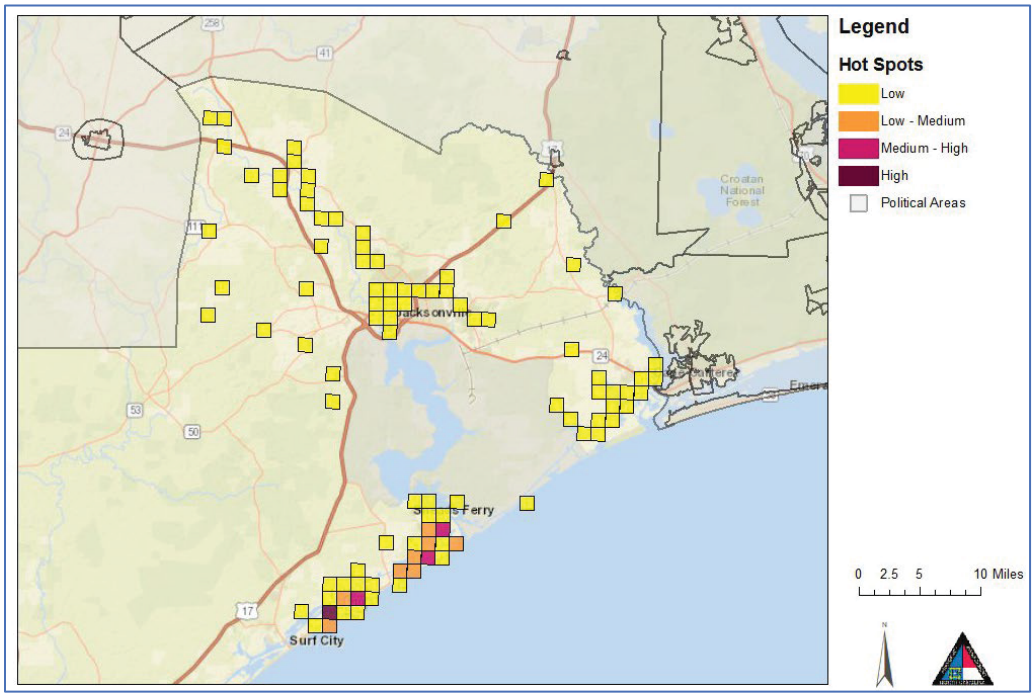
Source: NCEM Risk Management Tool

FIGURE 6.8: POTENTIAL LOSSES FROM FLOODING IN NEW HANOVER COUNTY



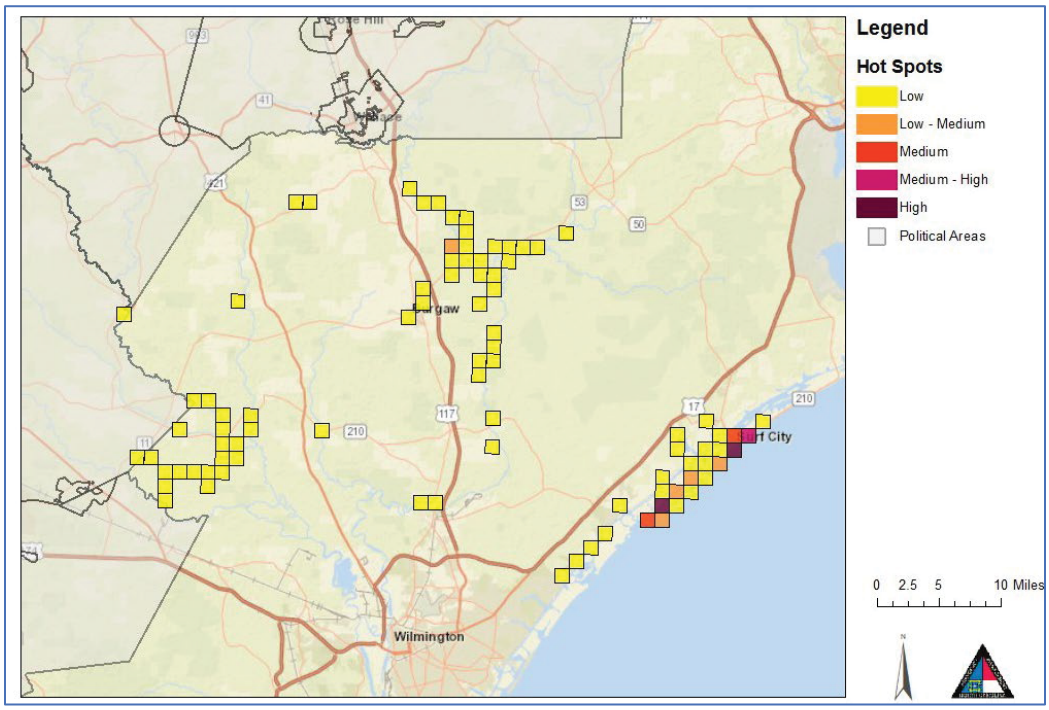
Source: NCEM Risk Management Tool

FIGURE 6.9: POTENTIAL LOSSES FOR FLOODING IN ONSLOW COUNTY



Source: NCEM Risk Management Tool

FIGURE 6.10: POTENTIAL LOSSES FOR FLOODING IN PENDER COUNTY



Source: NCEM Risk Management Tool

Table 6.18 assesses the vulnerability of the region's population. This data is also from the RMT and analyzes the populations of elderly and children at risk within the 100-year (1-percent annual chance) floodplain.

TABLE 6.18: POPULATION VULNERABILITY FOR 100-YEAR FLOODPLAINS

Location	Elderly at Risk	Children at Risk	Total at Risk
Brunswick County	**983**	**77**	**2,661**
Bald Head Island	10	0	13
Belville	0	0	0
Boiling Spring Lakes	0	0	0
Bolivia	0	0	0
Calabash	0	0	0
Carolina Shores	0	0	0
Caswell Beach	32	0	66
Holden Beach	42	1	107
Leland	0	0	0
Navassa	0	0	0
Northwest	0	0	0
Oak Island	182	12	492
Ocean Isle Beach	65	4	159
Sandy Creek	0	0	0
Shallotte	2	0	8
Southport	32	3	83
St. James	212	6	430
Sunset Beach	49	2	116
Varnamtown	0	0	1
Unincorporated Area	357	49	1,186

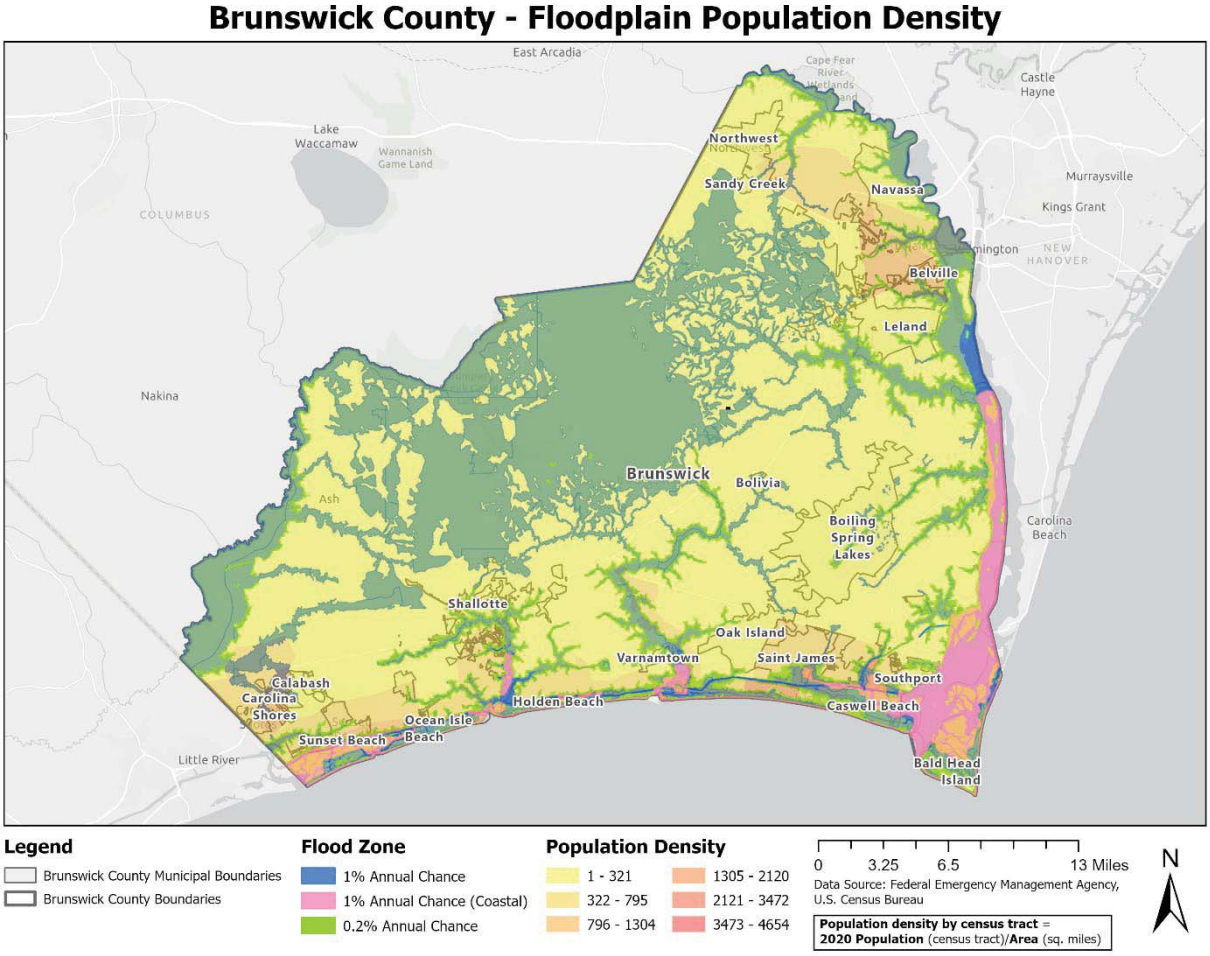
Location	Elderly at Risk	Children at Risk	Total at Risk
New Hanover County	**961**	**217**	**5,174**
Carolina Beach	268	54	1,427
Kure Beach	5	0	22
Wilmington	125	34	699
Wrightsville Beach	67	4	317
Unincorporated Area	496	125	2,709
Onslow County	**594**	**183**	**3,051**
Holly Ridge	0	0	1
Jacksonville	0	0	0
North Topsail Beach	372	19	1,099
Richlands	0	0	0
Swansboro	13	2	66
Unincorporated Area	209	162	1,885
Pender County	**313**	**67**	**1,624**
Atkinson	0	0	0
Burgaw	0	0	0
St. Helena	0	0	0
Surf City	152	18	729
Topsail Beach	6	0	21
Watha	0	0	0
Unincorporated Area	155	49	874
Southeastern NC Regional Total	**2,851**	**544**	**12,510**

Source: NCEM Risk Management Tool

SOCIAL VULNERABILITY

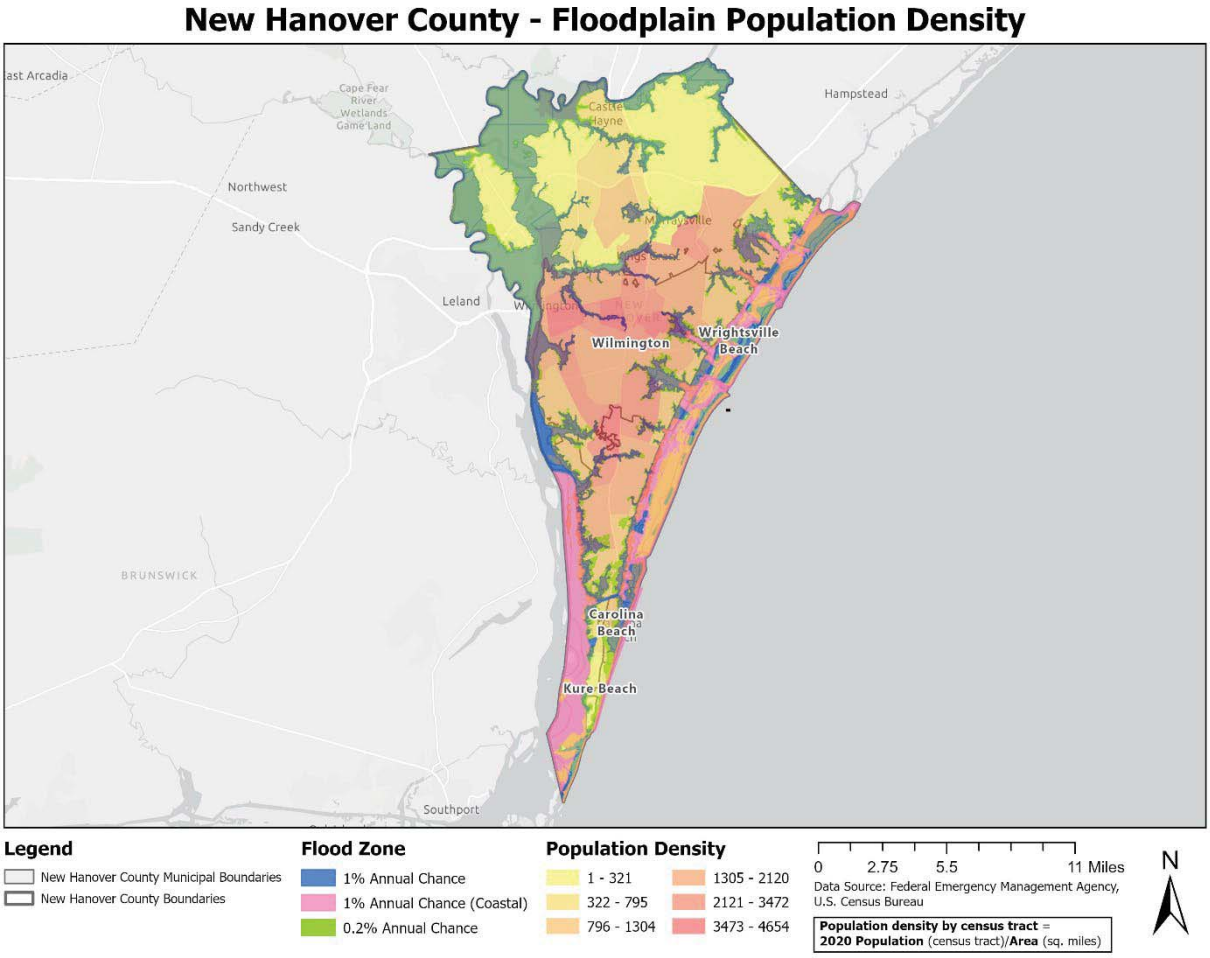
A national Census was last conducted in 2020 and may offer more accurate insights compared to the current availability of population estimates at the census tract level. This decennial data was analyzed to present at-risk populations to flooding based on population density in the Southeastern NC Region and can be seen below in **Figures 6.11-6.14**. Timely sheltering/evacuations of elderly and young individuals, disabled individuals, and individuals requiring specialized care or equipment are of critical importance to reducing risk during a severe flooding event.

FIGURE 6.11: BRUNSWICK COUNTY FLOODPLAIN POPULATION DENSITY



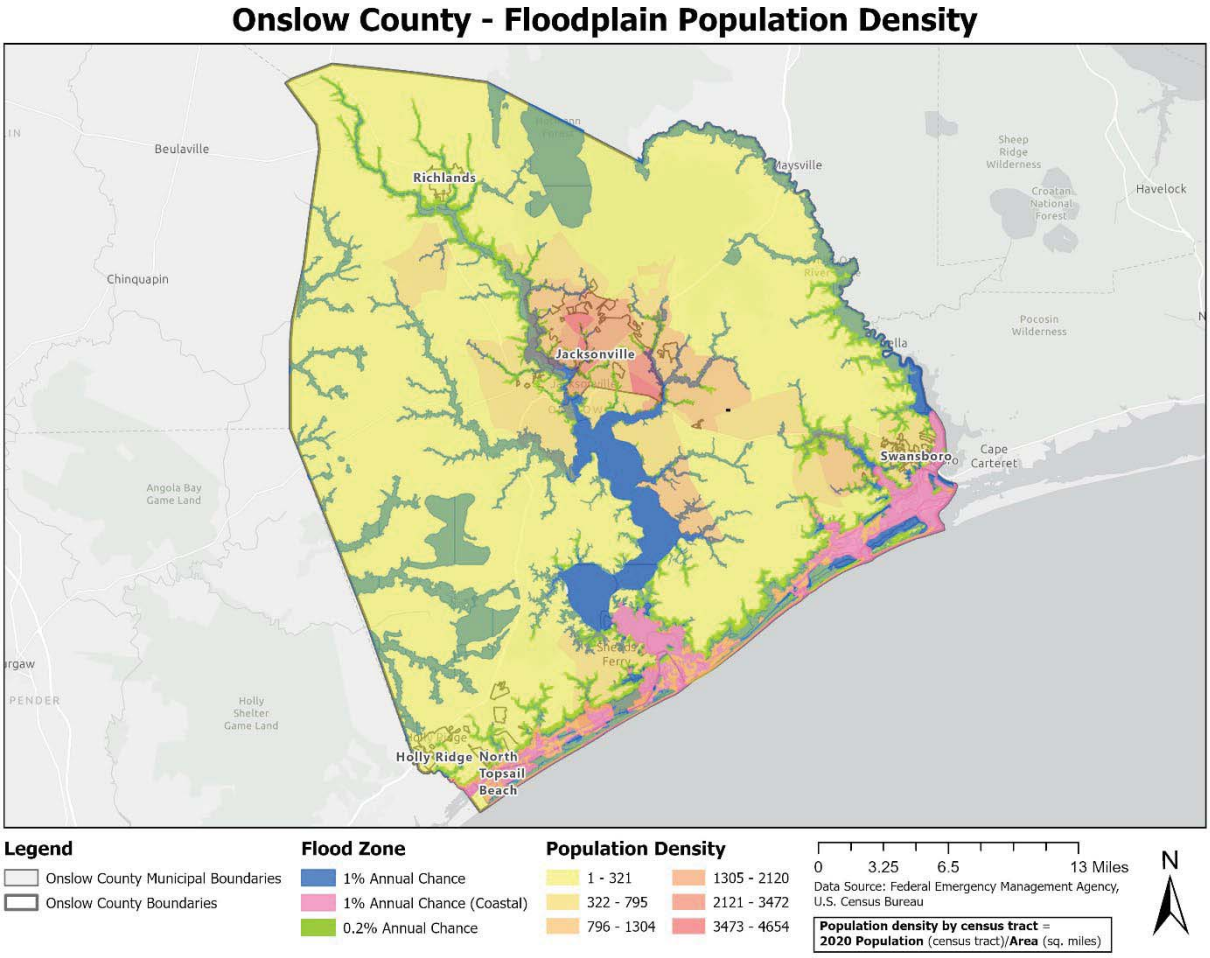
Source: FEMA, US Census Bureau

FIGURE 6.12: NEW HANOVER COUNTY FLOODPLAIN POPULATION DENSITY



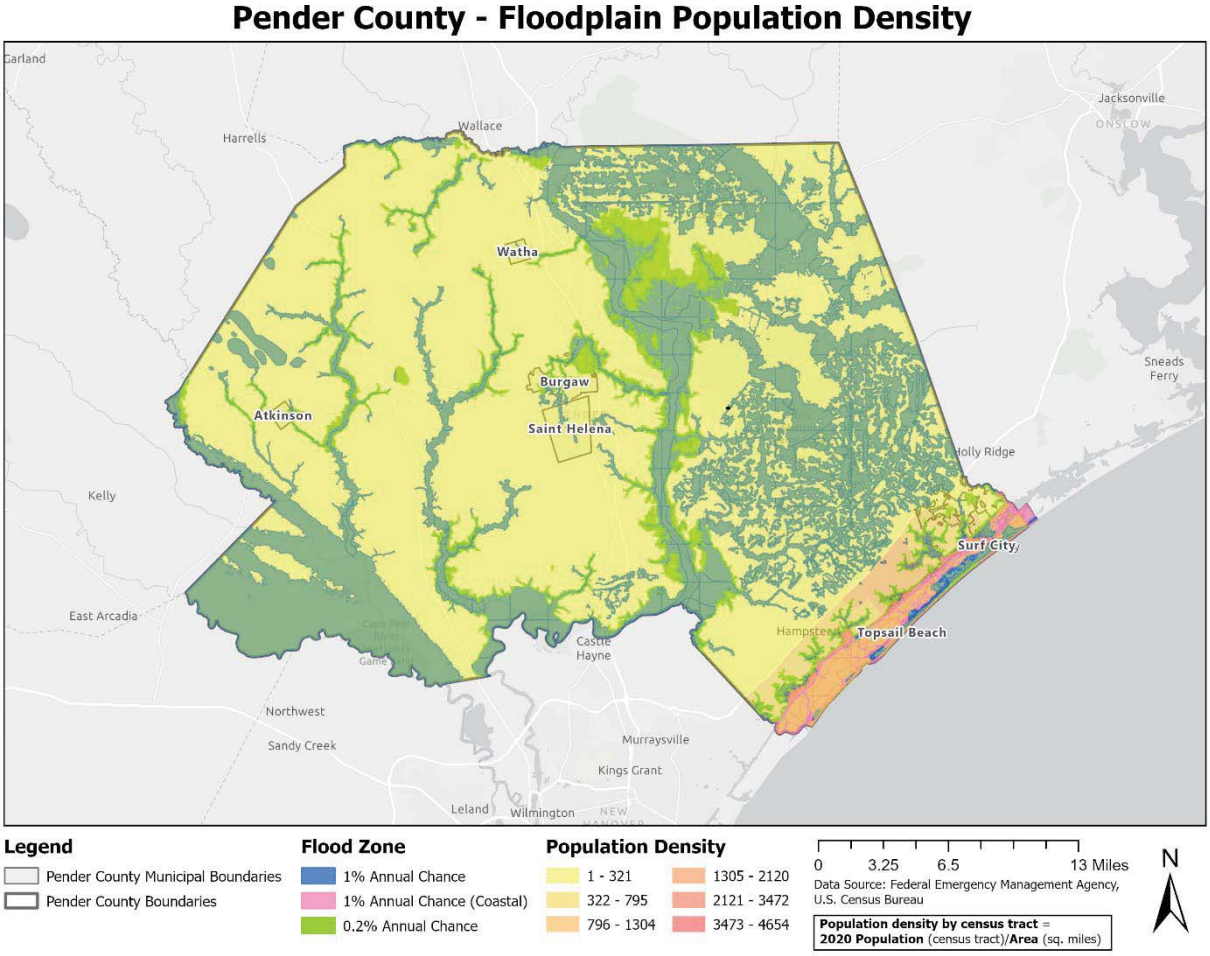
Source: FEMA, US Census Bureau

FIGURE 6.13: ONSLOW COUNTY FLOODPLAIN POPULATION DENSITY



Source: FEMA, US Census Bureau

FIGURE 6.14: PENDER COUNTY FLOODPLAIN POPULATION DENSITY



Source: FEMA, US Census Bureau

CRITICAL FACILITIES

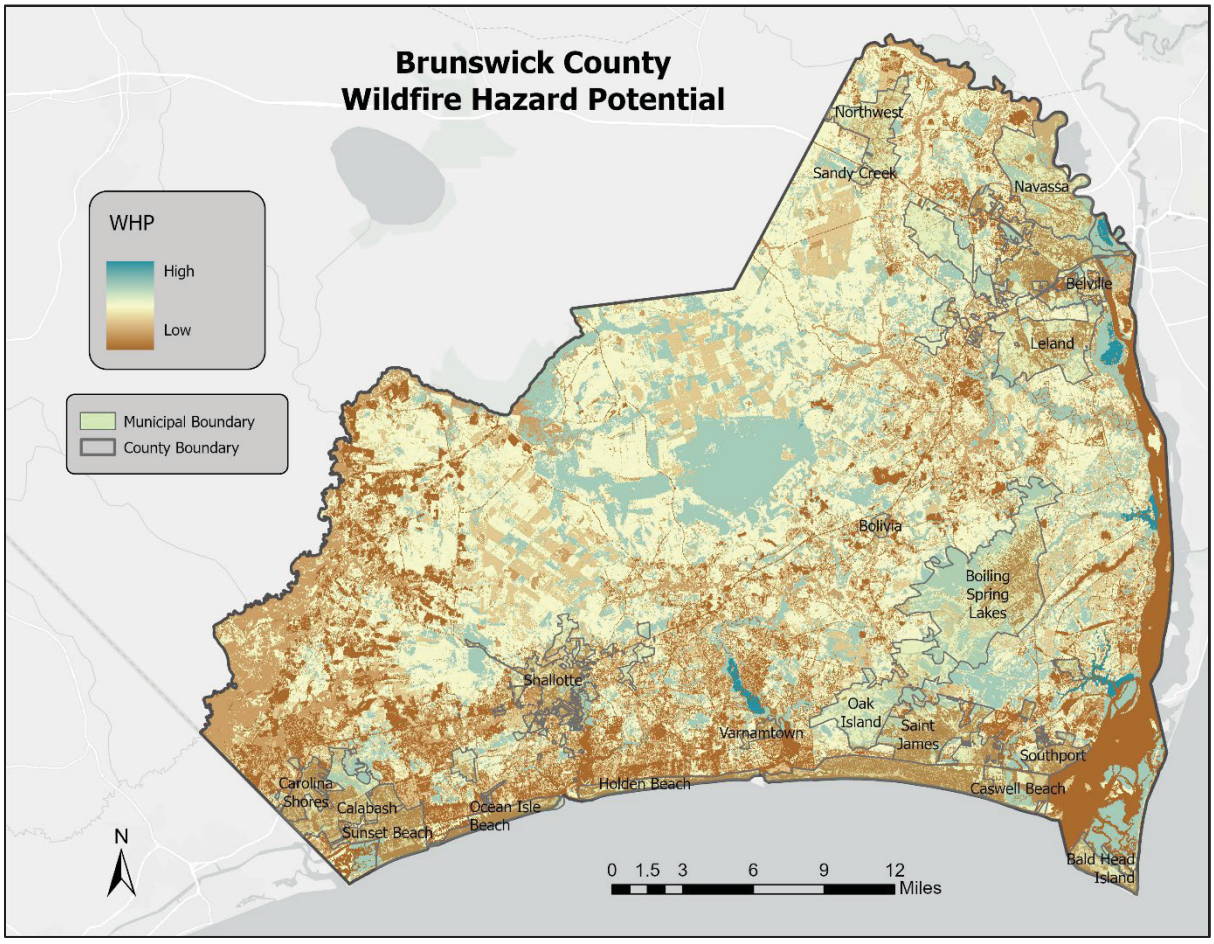
The critical facility analysis revealed that there are at least 53 critical facilities located in the Southeastern NC Region's 1 percent annual chance (100-year) floodplain and 0.2 percent annual chance (500-year) floodplain based on FEMA DFIRM boundaries and GIS analysis. As previously noted, this analysis does not consider building elevation, which may negate risk. A list of specific critical facilities and their associated risk can be found in **Table 6.28** at the end of this section.

In conclusion, flooding has the potential to impact many existing and future buildings, facilities, and populations in the Southeastern NC 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 carry a reduced risk. 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. Such site-specific vulnerability determinations should be considered during future plan updates. Furthermore, areas subject to repetitive flooding should be analyzed for potential mitigation actions.

6.5.6 Wildfire

To estimate exposure to wildfire, layers such as wildfire hazard potential (WHP), wildfire ignition density, burn probability, and functional wildland urban interface (WUI) risk for the region were obtained through the Southern Wildfire Risk Assessment (SWRA) data viewer[7]. Wildfire hazard potential in particular represents the potential difficulty of controlling a wildfire event based on measures of burn probability, small-fire ignition density, fire intensity, and fuel type, with "high" risk determined by areas that could experience more extreme fire behavior. **Figures 6.15-6.18** show the wildfire hazard potential mapped for each county of the region below.

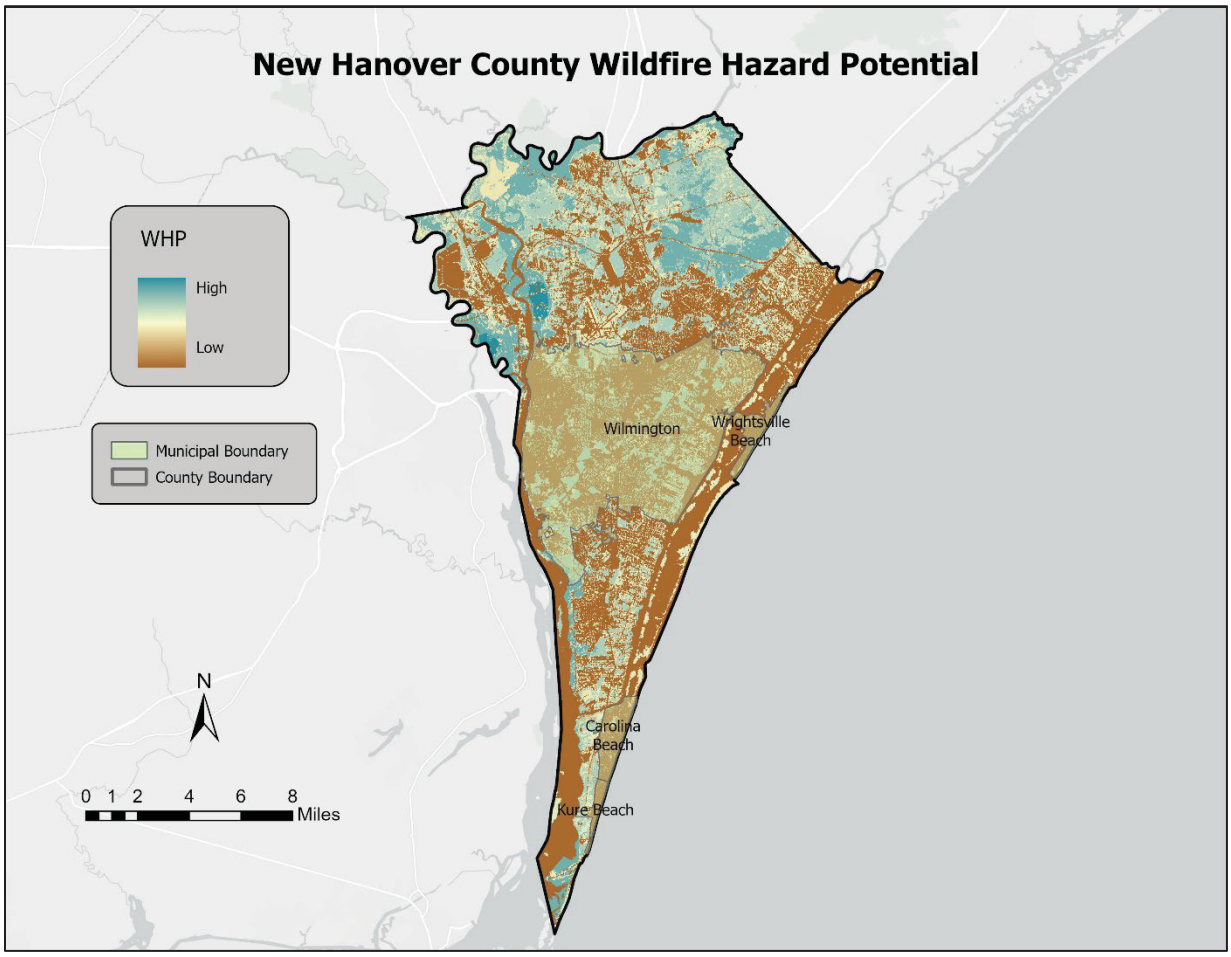
FIGURE 6.15: WILDFIRE HAZARD POTENTIAL IN BRUNSWICK COUNTY



Source: Southern Wildfire Risk Assessment

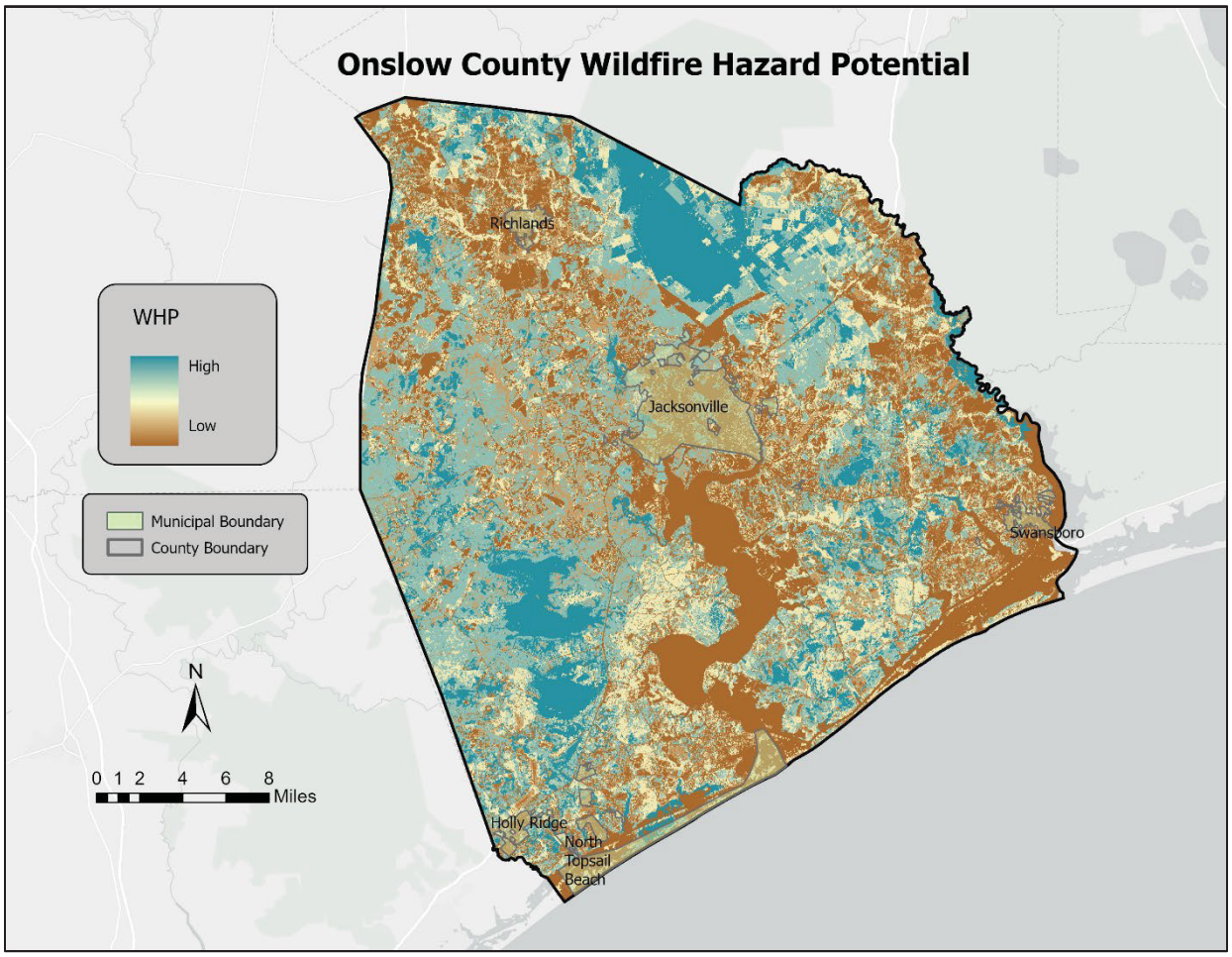
[7] Southern Wildfire Risk Assessment (https://southernwildfirerisk.com/). Most users can access the "Basic Viewer" tool to obtain a significant amount of data related to local wildfire risks.

FIGURE 6.16: WILDFIRE HAZARD POTENTIAL IN NEW HANOVER COUNTY



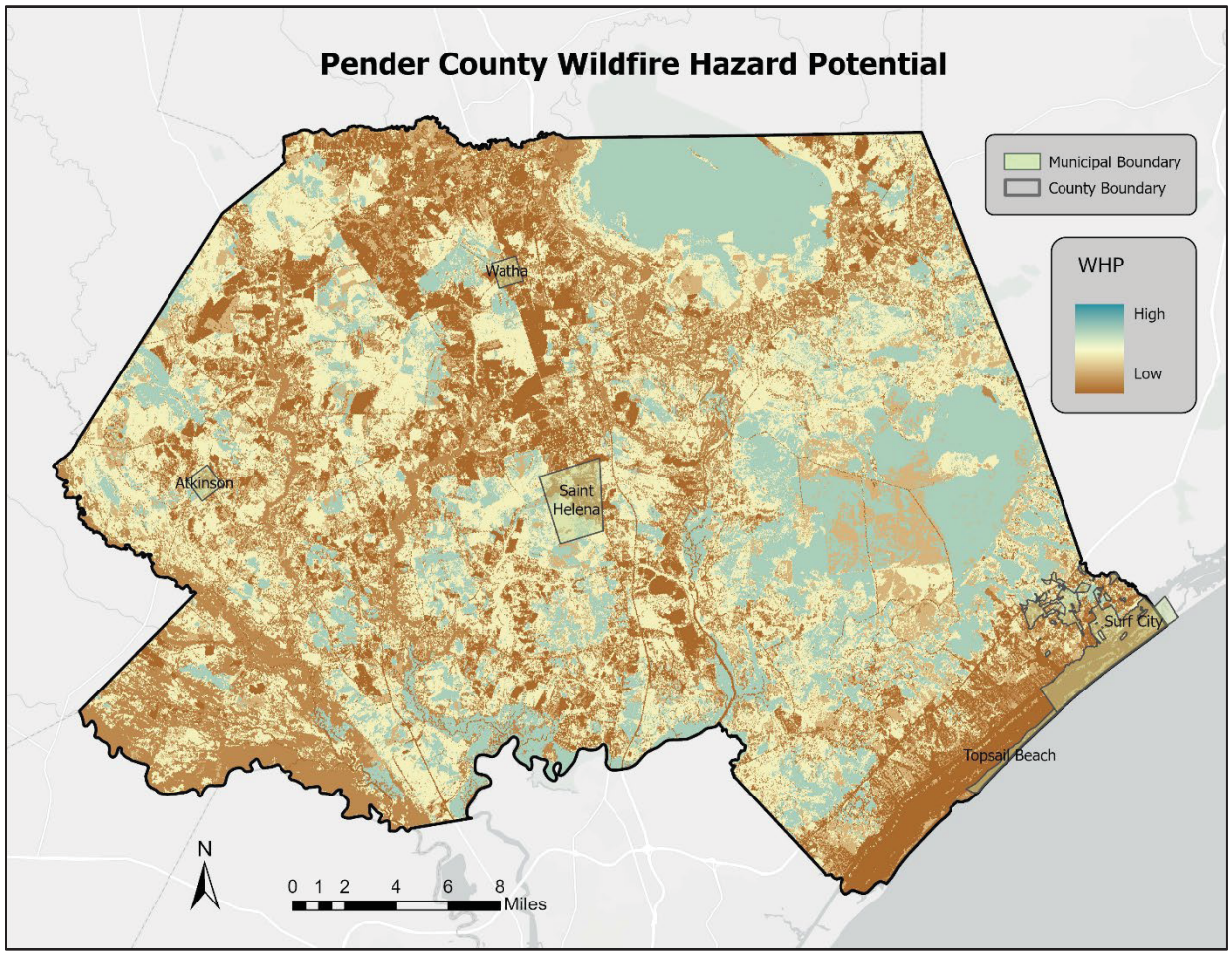
Source: Southern Wildfire Risk Assessment

FIGURE 6.17: WILDFIRE HAZARD POTENTIAL IN ONSLOW COUNTY



Source: Southern Wildfire Risk Assessment

FIGURE 6.18: WILDFIRE HAZARD POTENTIAL IN PENDER COUNTY



Source: Southern Wildfire Risk Assessment

All counties of the Southeastern NC Region contain some areas where the value falls into the high-risk category, though the region has somewhat less land labeled as high-risk when compared to other regions of North Carolina.

SOCIAL VULNERABILITY

Even though not all areas have equal vulnerability, there is some susceptibility across the entire Southeastern NC Region. It is assumed that the total population is 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/evacuations of elderly and young individuals, disabled individuals, and individuals requiring specialized care or equipment are of critical importance to reducing risk during a severe wildfire event.

CRITICAL FACILITIES

All of the counties in the Southeastern NC Region have critical facilities in an area of significantly high risk for wildfire burn probability (defined by SWRA as a value of 7 or higher on a scale of 1 to 9). **Table 6.19** shows the results of the GIS analysis.

TABLE 6.19: CRITICAL FACILITIES IN THE AT-RISK WUI RISK INDEX AREA

Location	Number of At-Risk Critical Facilities
Brunswick County	13
New Hanover County	1
Onslow County	2
Pender County	2
Southeastern NC Regional Total	**18**

Source: Southern Wildfire Risk Assessment, NC OneMap

Additional information was provided through the NCEM Risk Management Tool (RMT). This data can be seen below in **Table 6.20** and **Table 6.21**.

TABLE 6.20: BUILDING VULNERABILITY TO WILDFIRE HAZARDS IN THE SOUTHEASTERN NC REGION

Location	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
Brunswick County	**17,121**	**44,214**	**$4,779,674,159**	**2,261**	**$1,115,951,874**	**588**	**$529,070,283**	**47,063**	**$6,424,696,317**
Bald Head Island	0	15	$8,626,244	2	$151,151	0	$0	17	$8,777,395
Belville	177	744	$99,956,161	15	$10,530,196	3	$909,136	762	$111,395,494
Boiling Spring Lakes	703	1,824	$194,148,625	33	$8,172,694	31	$29,784,134	1,888	$232,105,454
Bolivia	227	203	$18,487,612	14	$3,030,027	14	$10,240,887	231	$31,758,525
Calabash	63	217	$23,374,621	9	$4,421,898	2	$2,247,858	228	$30,044,377
Carolina Shores	401	1,274	$156,031,414	36	$16,076,581	3	$3,094,941	1,313	$175,202,937
Caswell Beach	65	196	$50,813,293	10	$9,646,774	3	$6,434,735	209	$66,894,802
Holden Beach	139	1,056	$194,120,414	7	$3,930,592	4	$2,426,064	1,067	$200,477,069
Leland	1,059	2,369	$267,333,320	114	$47,777,405	44	$41,667,901	2,527	$356,778,627
Navassa	405	590	$38,356,498	42	$11,694,008	18	$4,755,933	650	$54,806,439
Northwest	207	423	$32,411,538	19	$4,026,982	11	$3,380,772	453	$39,819,292
Oak Island	621	2,693	$296,698,778	119	$43,551,690	27	$11,746,372	2,839	$351,996,840
Ocean Isle Beach	84	771	$128,826,607	35	$13,211,542	3	$1,479,535	809	$143,517,685
Sandy Creek	139	130	$7,620,531	10	$1,589,721	2	$205,620	142	$9,415,872
Shallotte	770	1,443	$198,309,308	301	$191,834,561	74	$66,777,884	1,818	$456,921,752
Southport	475	1,163	$190,975,809	115	$103,197,553	11	$28,366,747	1,289	$322,540,109
St. James	0	941	$332,560,933	12	$7,778,464	3	$960,190	956	$341,299,587
Sunset Beach	11	1,063	$209,682,848	44	$61,884,877	3	$388,974	1,110	$271,956,699
Varnamtown	168	314	$31,019,143	12	$4,249,907	6	$2,897,670	332	$38,166,719
Unincorporated Area	11,407	26,785	$2,300,320,462	1,312	$569,195,251	326	$311,304,930	28,423	$3,180,820,643
New Hanover County	**16,318**	**50,184**	**$13,324,277,593**	**2,180**	**$3,496,243,101**	**420**	**$1,063,792,784**	**52,784**	**$17,884,313,479**
Carolina Beach	798	2,329	$784,329,045	71	$73,162,890	18	$25,905,522	2,418	$883,397,458
Kure Beach	114	726	$356,233,342	9	$8,338,300	2	$5,019,887	737	$369,591,529
Wilmington	7,259	17,328	$5,304,835,989	753	$1,672,968,553	230	$539,314,131	18,311	$7,517,118,673
Wrightsville Beach	0	0	$0	0	$0	0	$0	0	$0
Unincorporated Area	8,147	29,801	$6,878,879,217	1,347	$1,741,773,358	170	$493,553,244	31,318	$9,114,205,819
Onslow County	**28,308**	**50,539**	**$5,210,194,107**	**2,186**	**$1,784,990,545**	**777**	**$1,528,730,281**	**53,502**	**$8,523,914,932**
Holly Ridge	756	717	$57,333,072	75	$42,473,504	16	$16,470,598	808	$116,277,174
Jacksonville	7,310	12,484	$1,735,582,114	522	$1,014,292,582	356	$790,478,653	13,362	$3,540,353,349
North Topsail Beach	255	756	$151,687,226	3	$948,608	2	$1,265,420	761	$153,901,255
Richlands	529	710	$88,566,515	58	$44,523,605	26	$45,543,103	794	$178,633,223
Swansboro	355	1,098	$125,464,734	110	$92,031,405	34	$118,028,945	1,242	$335,525,083
Unincorporated Area	19,103	34,774	$3,051,560,446	1,418	$590,720,841	343	$556,943,562	36,535	$4,199,224,848
Pender County	**7,222**	**22,468**	**$2,283,444,813**	**2,693**	**$702,026,213**	**297**	**$274,277,880**	**25,458**	**$3,259,748,906**

Location	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
Atkinson	94	80	$7,262,907	14	$2,084,462	6	$2,648,726	100	$11,996,094
Burgaw	579	757	$98,553,462	110	$101,862,803	19	$17,111,547	886	$217,527,812
St. Helena	97	172	$19,186,324	43	$4,039,880	7	$2,354,466	222	$25,580,671
Surf City	84	621	$61,303,232	57	$36,763,610	8	$2,365,403	686	$100,432,245
Topsail Beach	0	0	$0	0	$0	0	$0	0	$0
Watha	96	164	$14,273,499	17	$2,816,343	10	$3,627,807	191	$20,717,649
Unincorporated Area	6,272	20,674	$2,082,865,389	2,452	$554,459,115	247	$246,169,931	23,373	$2,883,494,435
Southeastern NC Regional Total	**68,904**	**167,209**	**$25,546,777,379**	**9,310**	**$7,089,564,959**	**2,079**	**$3,389,436,493**	**178,598**	**$36,025,778,832**

Source: NCEM Risk Management Tool

TABLE 6.21: POPULATION VULNERABILITY TO WILDFIRE HAZARD FOR THE SOUTHEASTERN NC REGION

Location	Elderly at Risk	Children at Risk	Total at Risk
Brunswick County	**34,707**	**4,421**	**112,079**
Bald Head Island	3	1	14
Belville	373	89	1,871
Boiling Spring Lakes	588	108	2,392
Bolivia	89	18	395
Calabash	201	11	524
Carolina Shores	1775	92	3,845
Caswell Beach	162	2	333
Holden Beach	177	3	455
Leland	2,549	510	9,835
Navassa	510	113	2,658
Northwest	142	37	735
Oak Island	1386	91	3,747
Ocean Isle Beach	271	16	664
Sandy Creek	7	3	40
Shallotte	850	110	3,018
Southport	878	81	2,254
St. James	1861	57	3,785
Sunset Beach	576	28	1,364
Varnamtown	67	10	232
Unincorporated Area	22,242	3,041	73,918
New Hanover County	**28,892**	**7,473**	**159,151**
Carolina Beach	481	96	2,557
Kure Beach	41	2	160
Wilmington	9,581	2,653	53,772
Wrightsville Beach	0	0	0
Unincorporated Area	18,789	4,722	102,662
Onslow County	**14,421**	**12,796**	**144,147**
Holly Ridge	64	65	610
Jacksonville	3,870	4,959	51,876
North Topsail Beach	297	15	877
Richlands	81	45	506
Swansboro	273	52	1,402
Unincorporated Area	9,836	7,660	88,876
Pender County	**8,962**	**2,785**	**50,337**
Atkinson	3	1	14
Burgaw	115	29	616
St. Helena	54	26	354

Location	Elderly at Risk	Children at Risk	Total at Risk
Surf City	103	12	494
Topsail Beach	0	0	0
Watha	42	15	254
Unincorporated Area	8,645	2,702	48,605
Southeastern NC Regional Total	**86,982**	**27,475**	**465,714**

Source: NCEM Risk Management Tool

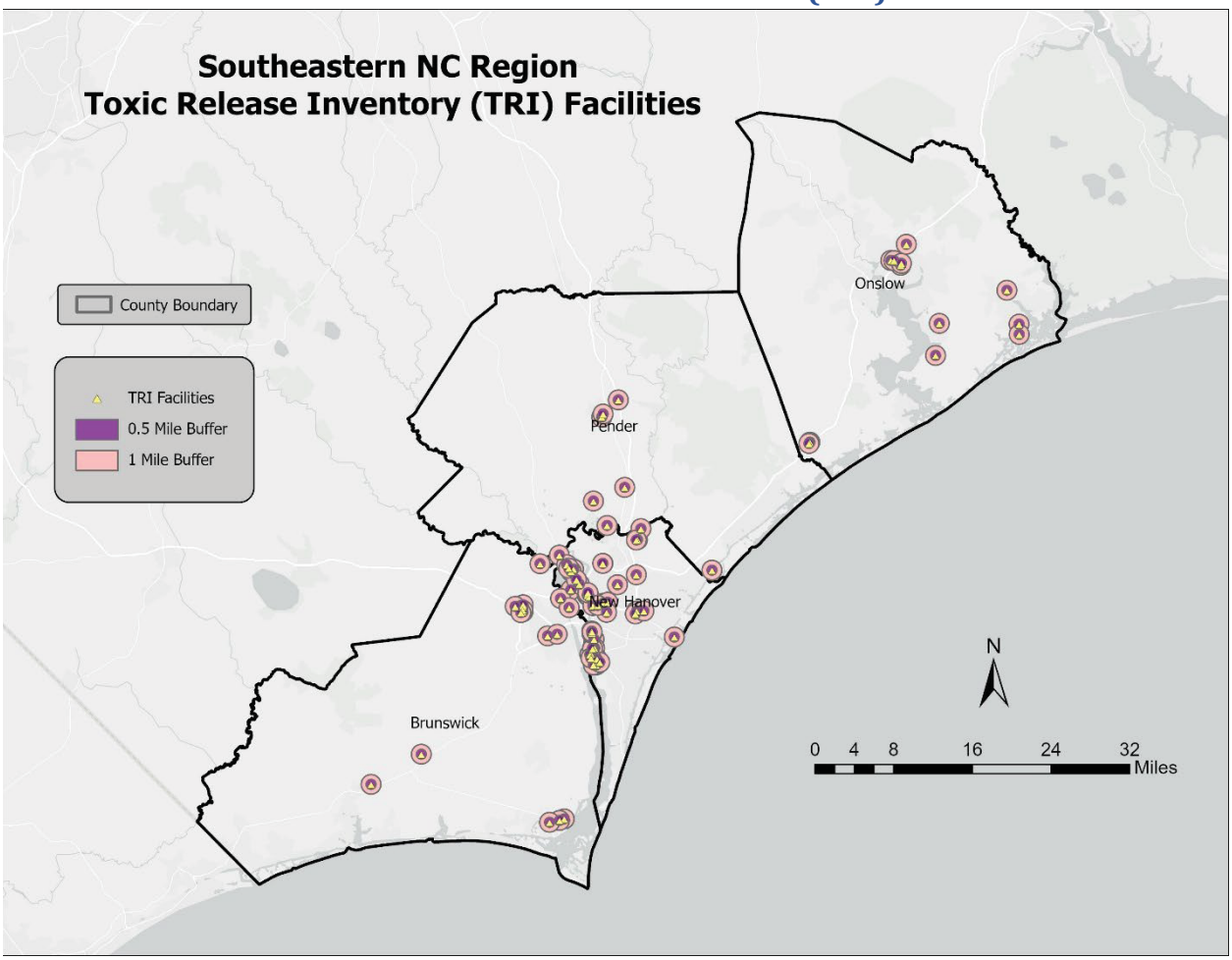
6.5.7 Hazardous Substances

Most hazardous substance incidents that occur are contained and suppressed before destroying any property or threatening lives. However, they can have a significant negative impact. Such events can cause multiple deaths, completely shut down facilities for 30 days or more, and cause more than 50 percent of affected properties to be destroyed or suffer major damage. In a hazardous substance incident, solid, liquid, and/or gaseous contaminants may be released from fixed or mobile containers. Weather conditions will directly affect how the hazard develops. Certain chemicals may travel through the air or water, affecting a much larger area than the point of the incident itself. Non-compliance with fire and building codes, as well as failure to maintain existing fire and containment features, can substantially increase the damage from hazardous materials release. The duration of a hazardous materials incident can range from hours to days. Warning time is minimal to none.

To conduct the vulnerability assessment for this hazard, GIS intersection analysis was used for fixed and mobile areas and parcels[8]. In both scenarios, two sizes of buffers, 0.5-mile and 1-mile, were used. These areas are assumed to respect the different levels of effect: immediate (primary) and secondary. Primary and secondary impact sites were selected based on guidance from FEMA 426, Reference Manual to Mitigate Potential Terrorist Attacks against Buildings, and engineering judgment. For the fixed site analysis, geo-referenced TRI-listed toxic sites in the Southeastern NC Region, along with buffers, were used for analysis as shown in **Figure 6.19.** For the mobile analysis, the major roads (Interstate highway, U.S. highway, and State highway) and railroads, where hazardous materials are primarily transported, that could adversely impact people and buildings, were used for the GIS buffer analysis. **Figure 6.20** shows the areas used for mobile toxic release buffer analysis. The results indicate the approximate number of parcels, improved value, as shown in **Table 6.22** (fixed sites), **Table 6.23** (mobile road sites), and **Table 6.24** (mobile railroad sites)[9].

[8] This type of analysis will likely yield inflated results (generally higher than what is actually reported after an actual event).
[9] Note that parcels included in the 1-mile analysis are also included in the 0.5-mile analysis.

FIGURE 6.19: TOXIC RELEASE INVENTORY (TRI) FACILITIES



Source: Environmental Protection Agency

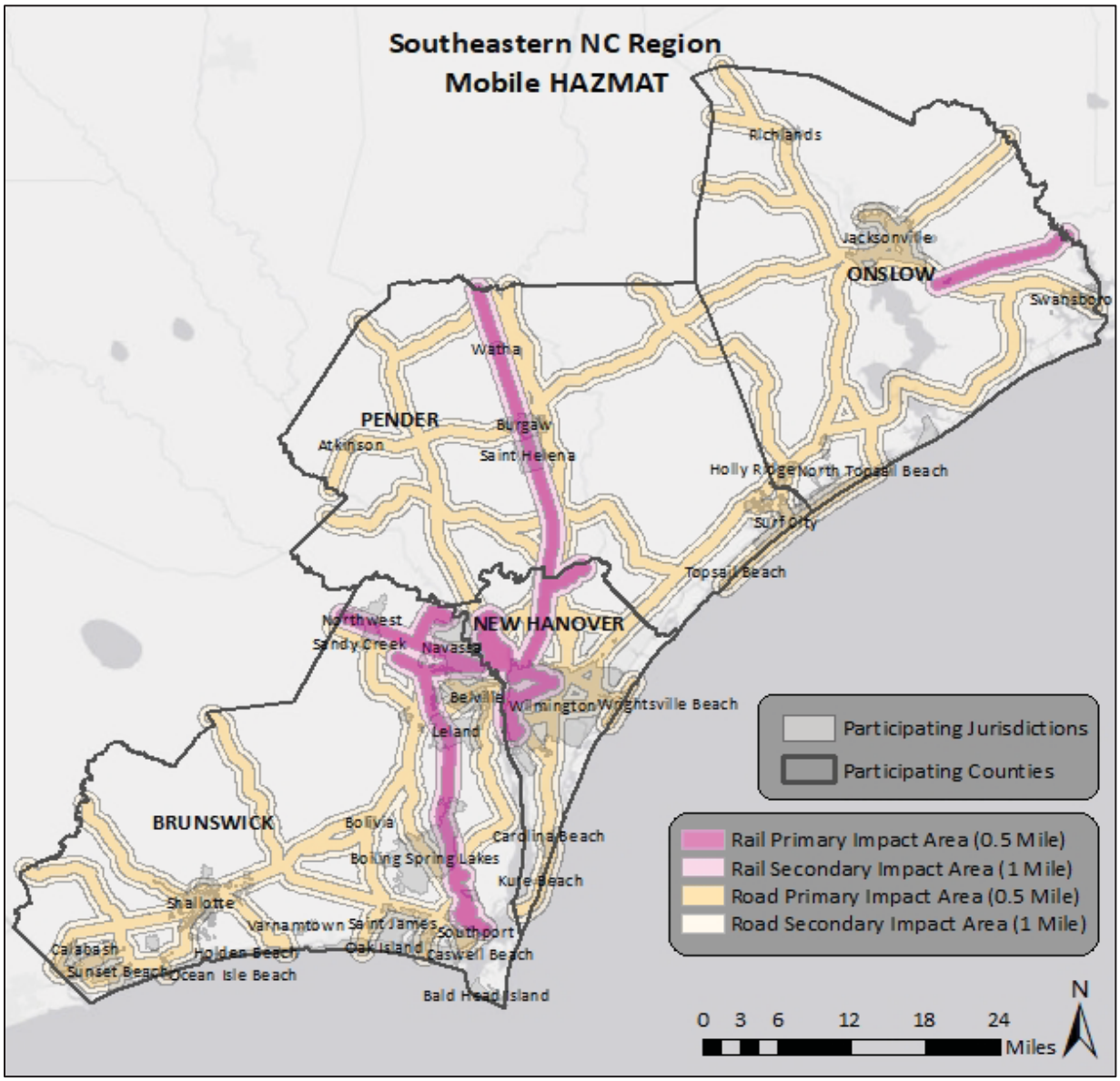
TABLE 6.22: EXPOSURE OF IMPROVED PROPERTY TO HAZARDOUS SUBSTANCES (FIXED SITES) IN THE SOUTHEASTERN NC REGION

Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
Brunswick County	**2,198**	**1,845**	**$846,346,121**	**6,334**	**5,137**	**$2,075,824,241**
Bald Head Island	-	-	-	-	-	-
Belville	55	36	$26,795,451	411	368	$92,399,161
Boiling Spring Lakes	-	-	-	-	-	-
Bolivia	-	-	-	-	-	-
Calabash	-	-	-	-	-	-
Carolina Shores	-	-	-	-	-	-
Caswell Beach	-	-	-	-	-	-
Holden Beach	-	-	-	-	-	-
Leland	1,558	1,403	$629,458,460	3,935	3,450	$1,500,599,500
Navassa	57	21	$23,634,130	338	155	$37,458,620
Northwest	-	-	-	-	-	-
Oak Island	1	-	-	1	-	-

Ocean Isle Beach	-	-	-	-	-	-
Sandy Creek	-	-	-	-	-	-
Shallotte	18	9	$5,041,590	92	23	$8,641,100
Southport	509	376	$161,416,490	1,557	1,141	$436,725,860
St. James	-	-	-	-	-	-
Sunset Beach	-	-	-	-	-	-
Varnamtown	-	-	-	-	-	-
Unincorporated Area			-	-	-	-
New Hanover County	**5,628**	**4,956**	**$3,660,491,900**	**16,747**	**14,849**	**$10,187,527,200**
Carolina Beach	-	-	-	-	-	-
Kure Beach	-	-	-	-	-	-
Wilmington	4,604	4,022	$2,624,599,700	14,639	12,983	$7,997,496,000
Wrightsville Beach	1,024	934	$1,035,892,200	2,108	1,866	$2,190,031,200
Unincorporated Area		-	-	-	-	-
Onslow County	**1,851**	**1,497**	**$403,619,940**	**5,529**	**4,876**	**$1,223,421,859**
Holly Ridge	437	220	$43,391,072	1,176	774	$142,307,632
Jacksonville	1,850	1,496	$403,437,040	5,477	4,830	$1,212,449,418
North Topsail Beach	-	-	-	1	-	-
Richlands	-	-	-	-	-	-
Swansboro	1	1	$182,900	51	46	$10,972,441
Unincorporated Area	-	-	-	-	-	-
Pender County	**4,514**	**3,171**	**$1,613,015,743**	**15,311**	**11,534**	**$3,998,554,090**
Atkinson	-	-	-	-	-	-
Burgaw	-	-	-	-	-	-
St. Helena	**21**	**4**	**$382,405**	**99**	**42**	**$5,047,805**
Surf City	-	-	-	-	-	-
Topsail Beach	-	-	-	-	-	-
Watha	-	-	-	-	-	-
Unincorporated Area	4,493	3,167	$1,612,633,338	15,212	11,492	$3,993,506,285
Southeastern NC Regional Total	**14,191**	**11,469**	**$6,523,473,704**	**43,921**	**36,396**	**$17,485,327,390**

Source: EPA, Local governments

FIGURE 6.20: MOBILE HAZMAT BUFFERS IN THE SOUTHEASTERN NC REGION



Source: NC Department of Transportation

TABLE 6.23: EXPOSURE OF IMPROVED PROPERTY TO HAZARDOUS SUBSTANCES (MOBILE ANALYSIS – ROAD)

Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
Brunswick County	**56,442**	**38,817**	**$13,170,753,555**	**92,981**	**64,515**	**$10,748,761,779**
Bald Head Island	-	-	$-	-	-	$-
Belville	519	389	$187,044,991	888	741	$-
Boiling Spring Lakes	1,924	586	$218,283,810	4,614	1,378	$-
Bolivia	178	97	$29,585,070	178	97	$29,585,070

Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
Calabash	2,238	1,408	$436,502,012	2,508	1,598	$-
Carolina Shores	2,171	1,933	$541,028,790	3,573	3,209	$-
Caswell Beach	67	47	$20,303,550	287	212	$87,617,600
Holden Beach	511	386	$202,739,610	1,373	987	$-
Leland	6,382	5,241	$-	12,357	9,970	$-
Navassa	161	48	$8,801,790	598	341	$70,997,130
Northwest	296	190	$50,556,381	398	231	$59,742,111
Oak Island	1,474	1,099	$457,406,788	2,408	1,734	$646,846,758
Ocean Isle Beach	1,044	776	$361,744,600	1,979	1,628	$803,851,410
Sandy Creek	383	293	$140,179,010	1,036	825	$432,274,660
Shallotte	125	81	$13,728,750	163	106	$17,258,910
Southport	2,481	1,524	$754,628,906	3,446	2,070	$918,648,606
St. James	3,013	2,301	$867,076,860	3,232	2,443	$912,037,300
Sunset Beach	1,360	967	$346,562,112	2,451	1,749	$604,957,782
Varnamtown	-	-	$-	-	-	$-
Unincorporated Area	32,115	21,451	$6,412,639,785	51,492	35,196	$10,064,595,605-
New Hanover County	**69,706**	**56,562**	**$30,910,408,139**	**96,007**	**77,890**	**$40,357,665,348**
Carolina Beach	6,417	5,359	$2,644,655,200	8,005	6,777	$3,350,435,000
Kure Beach	2,664	2,297	$1,220,052,900	2,665	2,297	$1,220,052,900
Wilmington	33,839	30,438	$19,396,719,300	43,994	39,946	$-
Wrightsville Beach	2,700	2,380	$2,839,500,900	2,977	2,646	$3,253,140,500
Unincorporated Area	24,086	16,088	$4,809,479,839	38,366	26,224	$7,499,025,748
Onslow County	**28,452**	**20,784**	**$5,777,537,931**	**42,808**	**31,961**	**$8,583,305,205**
Holly Ridge	2,140	1,667	$337,872,750	2,292	1,803	$375,172,855
Jacksonville	6,238	5,169	$1,248,667,144	9,784	8,512	$1,955,544,684
North Topsail Beach	1,859	1,342	$557,070,181	1,944	1,403	$607,088,792
Richlands	734	572	$124,437,718	953	767	$158,674,459
Swansboro	1,720	1,507	$362,380,286	2,227	1,972	$481,371,294
Unincorporated Area	15,761	10,527	$3,147,109,852	25,608	17,504	$5,005,453,121
Pender County	**7,750**	**11,755**	**$3,447,087,859**	**35,046**	**24,983**	**$6,421,419,270**
Atkinson	380	187	$13,176,929	382	187	$13,176,929
Burgaw	-	-	$-	-	-	$-
St. Helena	267	144	$18,752,735	340	167	$21,273,144
Surf City	-	-	$-	6,894	5,578	$1,114,625,804
Topsail Beach	-	-	$-	1,948	1,642	$298,782,599
Watha	-	-	**$ -**	45	22	$1,637,812
Unincorporated Area	7,103	11,424	$3,415,158,195	25,437	17,387	$4,971,922,982
Southeastern NC Regional Total	**162,350**	**127,918**	**$53,305,787,484**	**266,842**	**199,349**	**$66,111,151,602**

Source: NC Department of Transportation, US Census Bureau

TABLE 6.24: EXPOSURE OF IMPROVED PROPERTY TO HAZARDOUS SUBSTANCES (MOBILE ANALYSIS – RAILROAD)

Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
Brunswick County	**12,314**	**7,963**	**$2,728,569,573**	**23,591**	**15,754**	**$5,137,177,255**
Bald Head Island	-	-	$-	-	-	$-

Belville	-	-	$-	-	-	$-
Boiling Spring Lakes	2,868	1,513	$356,901,090	4,746	2,222	$599,222,529
Bolivia	-	-	$-	-	-	$-
Calabash	-	-	$-	-	-	$-
Carolina Shores	-	-	$-	-	-	$-
Caswell Beach	-	-	$-	-	-	$-
Holden Beach	-	-	$-	-	-	$-
Leland	4,349	3,284	$1,343,120,633	8,063	6,422	$2,374,880,864
Navassa	878	512	$117,121,605	1,101	620	$138,632,565
Northwest	337	140	$25,620,190	716	332	$71,534,530
Oak Island	1	-	$-	1	-	$-
Ocean Isle Beach	-	-	$-	-	-	$-
Sandy Creek	-	-	$-	-	-	$-
Shallotte	-	-	$-	-	-	$-
Southport	69	42	$20,860,450	826	624	$247,131,340
St. James	-	-	$-	-	-	$-
Sunset Beach	-	-	$-	-	-	$-
Varnamtown	-	-	$-	-	-	$-
Unincorporated Area	3,812	2,472	$864,945,605	8,138	5,534	$1,705,775,427
New Hanover County	**14,974**	**12,241**	**$7,221,063,495**	**25,559**	**21,413**	**$13,261,950,673**
Carolina Beach	-	-	$-	-	-	$-
Kure Beach	-	-	$-	-	-	$-
Wilmington	12,134	10,399	$6,576,601,500	20,024	17,649	$12,101,644,100
Wrightsville Beach	-	-	$-	-	-	$-
Unincorporated Area	2,840	1,842	$644,461,995	5,535	3,764	$1,160,306,573
Onslow County	**1,941**	**1,256**	**$448,794,786**	**2,916**	**1,979**	**$620,491,248**
Holly Ridge	-	-	$-	-	-	$-
Jacksonville	45	27	$18,629,000	45	27	$18,629,000
North Topsail Beach	-	-	$-	-	-	$-
Richlands	-	-	$-	-	-	$-
Swansboro	-	-	$-	-	-	$-
Unincorporated Area	1,896	1,229	$430,165,786	2,871	1,952	$601,862,248
Pender County	**2,308**	**1,422**	**$447,207,951**	**4,787**	**4,284**	**$1,108,738,695**
Atkinson	-	-	$-	-	-	$-
Burgaw	-	-	-	-	1,143	$203,780,414
St. Helena	215	99	$12,195,699	413	207	$24,380,277
Surf City	-	-	$-	-	-	$-
Topsail Beach	-	-	$-	-	-	$-
Watha	210	102	$7,728,027	210	102	$7,728,027
Unincorporated Area	1,883	1,221	$427,284,225	4,164	2,832	$872,849,977
Southeastern NC Regional Total	**31,537**	**22,882**	**$10,845,635,805**	**56,853**	**43,430**	**$20,128,357,871**

Source: NC Department of Transportation, Local Governments

SOCIAL VULNERABILITY

Given high susceptibility across the entire Southeastern NC Region, it is assumed that the total population is at risk to hazardous materials incidents. It should be noted that areas of population concentration may be at an elevated risk due to a greater burden to evacuate the population quickly.

CRITICAL FACILITIES

Fixed Site Analysis:

The critical facility analysis for fixed TRI sites revealed that there are approximately 70 facilities located in a HAZMAT risk zone. The primary impact zone (0.5-mile buffer) includes 19 facilities throughout the region. Onslow County has the most facilities in the primary impact zone, with 10 facilities; New Hanover has 9, while Brunswick and Pender County have none. A list of specific critical facilities and their associated risk can be found in **Table 6.28** at the end of this section.

Mobile Analysis:

The critical facility analysis for road and railroad transportation corridors revealed that there are 504 critical facilities located in the primary (0.5-mile) mobile HAZMAT buffer areas for roads and railroads throughout the region. Although this is a worst-case scenario model, it indicates that most of the critical facilities in the Southeastern NC region are vulnerable to a potential mobile HAZMAT incident. Additionally, there are 601 critical facilities located in the secondary (1-mile) buffer area of both roads and railroads, accounting for over 85 percent of the total number of critical facilities in the region. This may be the result of many critical facilities being located near major roadways for ease of access, but it is nonetheless important to recognize that a large percentage of critical facilities in the region are located in the smaller buffer area. A list of specific critical facilities and their associated risk can be found in **Table 6.28** at the end of this section.

In conclusion, a hazardous material incident has the potential to impact many existing and future buildings, critical facilities, and populations in the Southeastern NC Region. Those areas in a primary buffer are at the highest risk, though all areas carry some vulnerability due to variations in conditions that could alter the impact area, such as the direction and speed of wind, volume of release, etc.

6.5.8 Dam Failure

Vulnerability to dam failures in the region is essentially defined by the people, property, infrastructure, critical facilities, and the environment of areas immediately downstream of dams, especially high hazard dams. At the time of the 2026 update of this plan, there is limited modeling data available (or available data is protected) to conduct a detailed vulnerability assessment for the entire region. However, NCEM has made improvements to available dam failure inundation data and dam failure impact data for many high hazard dams in North Carolina including many in the Southeastern NC Region. This update attempts to integrate some of those vulnerability results where available. This information will be expanded in future updates of this plan as additional dam vulnerability data becomes available.

Additionally, the North Carolina Department of Environmental Quality (NCDEQ) oversees the statewide Dam Safety Program to reduce the overall risk of this hazard and implement Emergency Action Plans (EAP) for future reference. The U.S. Army Corps of Engineers also maintains the National Inventory of Dams (NID) at the federal level. Additional information related to high hazard dams of the region can be found in **Table 6.25**.

TABLE 6.25: SUMMARY OF HIGH-HAZARD DAM VULNERABILITY

Dam Name	NID ID	EAP	Condition (as of July 2024)	Owner Type	Max Capacity (acre-feet)	Max Discharge (ft^3/s)	River/Stream
BRUNSWICK COUNTY							
Boiling Springs Lake Dam	NC01110	Y	Not Rated	Local Gov	3600	132	Allen Creek
Shallotte Wastewater Lagoon No. 1	NC05247	Y	Satisfactory	Local Gov	100	N/A	Shallotte River
Shallotte Wastewater Lagoon No. 2	NC05248	Y	Satisfactory	Local Gov	240	N/A	Shallotte River
Boiling Springs Lake Upper Dam	NC05978	N	Not Rated	Local Gov	300	0	Allen Creek
Upper (Allen Creek) Dam	NC06405	Y	Not Rated	Private	N/A	N/A	Allen Creek
Waterford Village Pond Dam	NC07281	N	Not Rated	State	N/A	N/A	N/A
NEW HANOVER COUNTY							
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ONSLOW COUNTY							
Jacksonville East-West Storage Lagoon Dam	NC05365	Y	Satisfactory	Local Gov	15	N/A	Southwest Creek
North Topsail Water & Sewer Lagoon Dam	NC05478	Y	Satisfactory	Private	180	N/A	Mill Creek
Jacksonville South Storage Lagoon Dam	NC06070	Y	Satisfactory	Local Gov	N/A	N/A	N/A
PENDER COUNTY							
Mills Lake Dam	NC03677	N	Not Rated	Private	182	100	Lewis Creek Pit Pot Branch

Source: NCDEQ Dam Safety Program

6.6 CONCLUSIONS ON HAZARD VULNERABILITY

The results of this vulnerability assessment are useful in at least three ways:

- Improving our understanding of the risk associated with the natural hazards in the Southeastern NC region through better understanding of the complexities and dynamics of risk, how levels of risk can be measured and compared, and the myriad of factors that influence risk. An understanding of these relationships is critical in making balanced and informed decisions on managing the risk.
- Providing a baseline for policy development and comparison of mitigation alternatives. The data used for this analysis presents a current picture of risk in the Southeastern NC Region. Updating this risk "snapshot" with future data will enable comparison of the changes in risk with time. Baselines of this type can support the objective analysis of policy and program options for risk reduction in the region.
- Comparing the risk among the natural hazards addressed. The ability to quantify the risk to all these hazards relative to one another helps in a balanced, multi-hazard approach to risk management at each level of governing authority. This ranking provides a systematic framework to compare and prioritize the very disparate natural hazards that are present in the Southeastern NC Region. This final step in the risk assessment provides the necessary information for local officials to craft a mitigation strategy to focus resources on only those hazards that pose the most threat to the Southeastern NC counties.

Exposure to hazards can be an indicator of vulnerability. Economic exposure can be identified through locally assessed values for improvements (buildings), and social exposure can be identified by estimating the population exposed to each hazard. This information is especially important for decision-makers to use in planning for evacuation or other public safety related needs.

The types of assets included in these analyses include all building types in the participating jurisdictions. Specific information about the types of assets that are vulnerable to the identified hazards is included in each hazard subsection (for example, all building types are considered at risk to the winter storm hazard and commercial, residential, and government owned facilities are at risk to repetitive flooding, etc.).

Table 6.26 presents a summary of potential annualized loss estimates for each hazard in the Southeastern NC Region. Due to the reporting of hazard damages primarily at the county level, it was difficult to determine an accurate annualized loss estimate for each municipality. Therefore, an annualized loss was determined through the damage reported through historical occurrences at the county level. If no historical occurrences were reported, an accurate annualized loss estimate could not be obtained. These values should be used as an additional planning tool or measure risk for determining hazard mitigation strategies throughout the region.

TABLE 6.26: ESTIMATED ANNUAL LOSSES FOR THE SOUTHEASTERN NC REGION

Hazard	Brunswick County	New Hanover County	Onslow County	Pender County	Total
Drought	$61,419	$15,300	$91,598	$179,391	**$347,708**
Excessive Heat	$1,107,239	$1,955,002	$2,034,405	$535,739	**$5,632,385**
Hurricane and Coastal Hazards	$147,090,442	$247,493,094	$190,687,441	$56,686,864	**$641,957,841**
Tornadoes/Thunderstorms[10]	$4,792,122	$10,468,204	$7,230,836	$2,936,067	**$25,427,229**
Severe Winter Weather	$934,601	$2,984,657	$1,214,656	$399,189	**$5,533,103**
Earthquakes	$988,299	$1,177,677	$389,509	$203,334	**$2,758,819**
Geological	Negligible	Negligible	Negligible	Negligible	**Negligible**
Dam Failure	Negligible	Negligible	Negligible	Negligible	**Negligible**
Flooding[11]	$3,954,587	$913,131	$1,949,877	$1,369,578	**$8,187,173**
Wildfires	$3,482,486	$1,738,350	$2,545,029	$2,712,706	**$10,478,571**
Infectious Disease	Negligible	Negligible	Negligible	Negligible	**Negligible**
Hazardous Substances	Negligible	Negligible	Negligible	Negligible	**Negligible**
Radiological Emergency	Negligible	Negligible	Negligible	Negligible	**Negligible**
Terrorism	Negligible	Negligible	Negligible	Negligible	**Negligible**
Cyber	Negligible	Negligible	Negligible	Negligible	**Negligible**
Electromagnetic Pulse	Negligible	Negligible	Negligible	Negligible	**Negligible**
Civil Disturbance	Negligible	Negligible	Negligible	Negligible	**Negligible**
Food Emergency	Negligible	Negligible	Negligible	Negligible	**Negligible**

Source: FEMA NRI

**In this table, the term "Negligible" is used to indicate that no records of dollar losses for the particular hazard were recorded. This could be the case either because there were no events that caused dollar damage or because documentation of that particular type of event is not well kept.*

As noted previously, all existing and future buildings and populations (including critical facilities) are vulnerable to natural hazards including drought, hurricane and coastal hazards, tornadoes/ thunderstorms, and severe winter weather. Some buildings may be more vulnerable to these hazards based on locations, construction, and building type. **Table 6.27** shows an expanded number of regional critical facilities retrieved from NCEM RMT data grouped by updated FEMA community lifelines. These critical facility counts are planning estimates subject to future changes. Additionally, **Table 6.28** shows the critical facilities vulnerable to additional hazards analyzed in this section. The table lists those assets that are determined to be exposed to each of the identified hazards (marked with an "**X**").

[10] Calculated using an average of hail, lightning, and tornado hazards

[11] Calculated using an average of coastal and riverine flooding hazards

TABLE 6.27: SOUTHEASTERN NC REGIONAL CRITICAL FACILITIES BY FEMA LIFELINE

FEMA Lifeline	Food	Comms	Hazmat	Shelter	Comms	Supply	Safety	Safety	Medical	Comms	Safety	Hazmat	Safety	Transport	Energy	Safety	Water	N/A
Location	Food & Farm	Banking & Finance	Chemical	Commercial	Comms	Manufacturing	Defense	Government	Healthcare	IT	National Monument	Nuclear	Postal & Shipping	Transport	Energy	Emergency Services	Water	Total
Brunswick County	**236**	**48**	**0**	**2,172**	**0**	**759**	**0**	**385**	**136**	**0**	**0**	**0**	**0**	**221**	**98**	**32**	**1**	**4,088**
Bald Head Island	0	1	0	33	0	4	0	9	0	0	0	0	0	5	0	1	0	53
Belville	0	0	0	16	0	14	0	1	0	0	0	0	0	2	0	0	0	33
Boiling Spring Lakes	0	1	0	19	0	9	0	27	3	0	0	0	0	5	0	4	0	68
Bolivia	1	1	0	22	0	4	0	7	1	0	0	0	0	1	0	1	0	38
Calabash	0	3	0	90	0	5	0	4	3	0	0	0	0	12	0	1	0	118
Carolina Shores	6	2	0	28	0	9	0	3	0	0	0	0	0	0	0	0	0	48
Caswell Beach	0	0	0	14	0	0	0	1	0	0	0	0	0	2	0	0	0	17
Holden Beach	0	0	0	18	0	1	0	2	0	0	0	0	0	4	0	2	0	27
Leland	2	2	0	126	0	22	0	31	12	0	0	0	0	6	1	2	0	204
Navassa	1	0	0	35	0	26	0	9	0	0	0	0	0	1	0	1	0	73
Northwest	0	0	0	25	0	1	0	2	2	0	0	0	0	0	0	1	0	31
Oak Island	1	5	0	170	0	24	0	27	11	0	0	0	0	20	2	3	0	263
Ocean Isle Beach	0	0	0	75	0	15	0	5	0	0	0	0	0	8	5	2	0	110
Sandy Creek	1	0	0	8	0	1	0	2	0	0	0	0	0	0	0	0	0	12
Shallotte	14	11	0	254	0	56	0	51	16	0	0	0	0	30	0	0	0	432
Southport	2	7	0	156	0	19	0	31	33	0	0	0	0	12	23	1	1	285
St. James	0	0	0	10	0	5	0	3	0	0	0	0	0	0	0	1	0	19
Sunset Beach	0	6	0	77	0	3	0	2	3	0	0	0	0	7	0	1	0	99
Varnamtown	2	0	0	15	0	4	0	1	2	0	0	0	0	1	0	0	0	25
Unincorporated Area	206	9	0	981	0	537	0	167	50	0	0	0	0	105	67	11	0	2,133
New Hanover County	**266**	**91**	**0**	**3,175**	**5**	**938**	**0**	**614**	**325**	**0**	**0**	**3**	**195**	**637**	**65**	**25**	**7**	**6,346**
Carolina Beach	0	2	0	181	0	18	0	13	2	0	0	0	0	17	0	2	0	235
Kure Beach	0	0	0	28	0	3	0	1	0	0	0	0	0	5	0	2	0	39
Wilmington	3	75	0	1,702	4	491	0	407	259	0	0	0	153	365	24	12	7	3,502
Wrightsville Beach	0	0	0	52	0	6	0	13	0	0	0	0	0	6	0	2	0	79

FEMA Lifeline	Food	Comms	Hazmat	Shelter	Comms	Supply	Safety	Safety	Medical	Comms	Safety	Hazmat	Safety	Transport	Energy	Safety	Water	N/A
Location	Food & Farm	Banking & Finance	Chemical	Commercial	Comms	Manufacturing	Defense	Government	Healthcare	IT	National Monument	Nuclear	Postal & Shipping	Transport	Energy	Emergency Services	Water	Total
Unincorporated Area	263	14	0	1,212	1	420	0	180	64	0	0	3	42	244	41	7	0	2,491
Onslow County	**1,034**	**111**	**4**	**2,551**	**14**	**485**	**1**	**4,216**	**215**	**0**	**0**	**4**	**6**	**261**	**13**	**30**	**61**	**9,006**
Holly Ridge	6	1	0	138	0	22	0	5	7	0	0	0	1	10	0	0	5	195
Jacksonville	15	81	2	1,152	10	176	0	3,602	160	0	0	3	1	104	10	7	16	5,339
North Topsail Beach	0	1	0	14	0	0	0	1	0	0	0	0	0	2	0	3	0	21
Richlands	8	6	0	83	0	8	0	41	9	0	0	0	1	5	1	2	7	171
Swansboro	1	5	0	164	1	22	0	45	6	0	0	0	1	15	0	2	7	269
Unincorporated Area	1,004	17	2	1,000	3	257	1	522	33	0	0	1	2	125	2	16	26	3,011
Pender County	**1,926**	**27**	**0**	**1,260**	**4**	**296**	**1**	**224**	**97**	**0**	**0**	**0**	**1**	**297**	**11**	**16**	**6**	**4,166**
Atkinson	8	1	0	31	0	1	0	6	1	0	0	0	0	2	0	1	0	51
Burgaw	25	8	0	226	2	37	0	75	41	0	0	0	0	54	4	2	2	476
St. Helena	32	0	0	10	0	2	0	1	0	0	0	0	0	17	0	0	0	62
Surf City	6	5	0	127	0	3	0	8	1	0	0	0	0	32	1	2	0	185
Topsail Beach	0	0	0	20	0	1	0	2	0	0	0	0	0	7	0	2	0	32
Watha	20	0	0	17	0	1	0	1	0	0	0	0	0	2	0	1	0	42
Unincorporated Area	1,835	13	0	829	2	251	1	131	54	0	0	0	1	183	6	8	4	3,318
Southeastern NC Regional Total	**3,462**	**277**	**4**	**9,158**	**23**	**2,478**	**2**	**5,439**	**773**	**0**	**0**	**7**	**202**	**1,416**	**187**	**103**	**75**	**23,606**

Source: NCEM RMT

TABLE 6.28: SOUTHEASTERN NC REGIONAL CRITICAL FACILITIES LIST

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Brunswick County																		
Brunswick County Emergency Management	EOC/Response	X	X	X	X	X	X								X	X		
Bald Head Island Fire Department	Fire/EMS	X	X	X	X	X	X											
Boiling Spring Lakes Fire Rescue	Fire/EMS	X	X	X	X	X	X								X	X		
Boiling Spring Lakes Fire Rescue 2	Fire/EMS	X	X	X	X	X	X											X
Boiling Spring Lakes Fire Rescue 3	Fire/EMS	X	X	X	X	X	X									X	X	X
Bolivia Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Calabash Fire Department, Inc.	Fire/EMS	X	X	X	X	X	X								X	X		
Calabash Fire Department, Inc. 2	Fire/EMS	X	X	X	X	X	X											
Civietown Volunteer Fire Department, In	Fire/EMS	X	X	X	X	X	X								X	X		
Grissettown-Longwood Fire & Rescue, Inc	Fire/EMS	X	X	X	X	X	X								X	X		
Northwest Volunteer Fire/Rescue Department	Fire/EMS	X	X	X	X	X	X								X	X		
Northwest Volunteer Fire/Rescue Department 2	Fire/EMS	X	X	X	X	X	X										X	X
Navassa Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X							X			X	X
Navassa Volunteer Fire Department 2	Fire/EMS	X	X	X	X	X	X											
Oak Island Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Oak Island Fire Department 2	Fire/EMS	X	X	X	X	X	X								X	X		
Oak Island Fire Department 3	Fire/EMS	X	X	X	X	X	X								X	X		
Ocean Isle Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Shallotte Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Shallotte Fire Department 2	Fire/EMS	X	X	X	X	X	X					X			X	X		
Shallotte Fire Department 3	Fire/EMS	X	X	X	X	X	X								X	X		
Shallotte Point Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X											
Southport Fire Department	Fire/EMS	X	X	X	X	X	X							X	X	X		
Southport Fire Department 2	Fire/EMS	X	X	X	X	X	X								X	X		
Southport Fire Department 3	Fire/EMS	X	X	X	X	X	X								X	X		
St. James Fire Department, Inc.	Fire/EMS	X	X	X	X	X	X											

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
St. James Fire Department, Inc. 2	Fire/EMS	X	X	X	X	X	X									X		
Sunset Beach Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Sunset Beach Fire Department 2	Fire/EMS	X	X	X	X	X	X								X	X		
Sunset Harbor and Zion Hill Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X					X						
Supply Fire & Rescue, Inc.	Fire/EMS	X	X	X	X	X	X								X	X		
Town of Leland Fire/Rescue Department	Fire/EMS	X	X	X	X	X	X						X	X	X	X	X	X
Town of Leland Fire/Rescue Department 2	Fire/EMS	X	X	X	X	X	X								X	X		
Town of Leland Fire/Rescue Department 3	Fire/EMS	X	X	X	X	X	X								X	X	X	X
Tri-Beach Volunteer Fire Department, Inc.	Fire/EMS	X	X	X	X	X	X									X		
Tri-Beach Volunteer Fire Department, Inc. 2	Fire/EMS	X	X	X	X	X	X	X	X									
Tri-Beach Volunteer Fire Department, Inc. 3	Fire/EMS	X	X	X	X	X	X											
Waccamaw Volunteer Fire Dept. and Rescue	Fire/EMS	X	X	X	X	X	X								X	X		
Winnabow Volunteer Fire Department, Inc.	Fire/EMS	X	X	X	X	X	X								X	X		
Winnabow Volunteer Fire Department, Inc. 2	Fire/EMS	X	X	X	X	X	X					X			X	X		
BRUNSWICK COUNTY REGIONAL EMERGENCY SERVICES TRAINING AND OPERATIONS FACILITIES HQ	Fire/EMS	X	X	X	X	X	X								X	X		
COASTLINE RESCUE SQUAD	Fire/EMS	X	X	X	X	X	X								X	X		
OAK ISLAND WATER RESCUE TEAM INCORPORATED	Fire/EMS	X	X	X	X	X	X	X	X									
SHALLOTTE RESCUE SQUAD	Fire/EMS	X	X	X	X	X	X								X	X		
LELAND FIRE AND RESCUE	Fire/EMS	X	X	X	X	X	X									X		X
BRUNSWICK COUNTY EMERGENCY MEDICAL SERVICES	Fire/EMS	X	X	X	X	X	X								X	X		
CALABASH VOLUNTEER EMERGENCY MEDICAL SERVICES	Fire/EMS	X	X	X	X	X	X								X	X		
SOUTHPORT RESCUE SQUAD	Fire/EMS	X	X	X	X	X	X								X	X		
DAK AMERICAS EMERGENCY RESPONSE TEAM	Fire/EMS	X	X	X	X	X	X										X	X
BOILING SPRING LAKES POLICE DEPARTMENT	Police	X	X	X	X	X	X								X	X		
BRUNSWICK COMMUNITY COLLEGE CAMPUS POLICE	Police	X	X	X	X	X	X								X	X		
OCEAN ISLE BEACH POLICE DEPARTMENT	Police	X	X	X	X	X	X	X	X						X	X		
HOLDEN BEACH POLICE DEPARTMENT	Police	X	X	X	X	X	X	X	X						X	X		

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
BRUNSWICK COUNTY SHERIFFS DEPARTMENT / BRUNSWICK COUNTY JAIL	Police	X	X	X	X	X	X								X	X		
CASWELL BEACH POLICE DEPARTMENT	Police	X	X	X	X	X	X								X	X		
SHALLOTTE POLICE DEPARTMENT	Police	X	X	X	X	X	X								X	X		
CITY OF BALD HEAD ISLAND POLICE DEPARTMENT	Police	X	X	X	X	X	X											
CITY OF LELAND POLICE DEPARTMENT	Police	X	X	X	X	X	X								X	X		
NAVASSA POLICE DEPARTMENT	Police	X	X	X	X	X	X							X			X	X
CITY OF NORTHWEST POLICE DEPARTMENT	Police	X	X	X	X	X	X										X	X
TOWN OF SUNSET BEACH POLICE DEPARTMENT	Police	X	X	X	X	X	X								X	X		
CITY OF SOUTHPORT POLICE DEPARTMENT	Police	X	X	X	X	X	X								X	X		
CITY OF OAK ISLAND POLICE DEPARTMENT	Police	X	X	X	X	X	X											
Bolivia Elementary	School	X	X	X	X	X	X								X	X		
North Brunswick High	School	X	X	X	X	X	X								X	X		
Leland Middle	School	X	X	X	X	X	X								X	X		
Lincoln Elementary	School	X	X	X	X	X	X									X	X	X
Southport Elementary	School	X	X	X	X	X	X									X		
South Brunswick Middle	School	X	X	X	X	X	X					X			X	X		
South Brunswick High	School	X	X	X	X	X	X									X		X
Supply Elementary	School	X	X	X	X	X	X								X	X		
Belville Elementary	School	X	X	X	X	X	X								X	X		
Brunswick County Academy	School	X	X	X	X	X	X								X	X		
Union Elementary	School	X	X	X	X	X	X								X	X		
Waccamaw	School	X	X	X	X	X	X								X	X		
West Brunswick High	School	X	X	X	X	X	X								X	X		
Virginia Williamson Elem	School	X	X	X	X	X	X								X	X		
Shallotte Middle	School	X	X	X	X	X	X								X	X		
Jessie Mae Monroe Elementary	School	X	X	X	X	X	X									X		
Charter Day School	School	X	X	X	X	X	X								X	X		

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Brunswick County Early College	School	X	X	X	X	X	X								X	X		
Cedar Grove Middle	School	X	X	X	X	X	X											
Town Creek Elementary	School	X	X	X	X	X	X								X	X		
Academy of Coastal Carolina	School	X	X	X	X	X	X									X		
BHI Academy LLC	School	X	X	X	X	X	X											
Holden Beach Christian Acad.	School	X	X	X	X	X	X											
Southeastern Christian Academy	School	X	X	X	X	X	X								X	X		
Southport Christian School	School	X	X	X	X	X	X								X	X		
West Christian Academy	School	X	X	X	X	X	X								X	X		
Wild Forest Academy	School	X	X	X	X	X	X									X		X
BRUNSWICK COMMUNITY COLLEGE	School	X	X	X	X	X	X								X	X		
Novant Health-Brunswick Medical Center	Medical	X	X	X	X	X	X								X	X		
Dosher Memorial Hospital	Medical	X	X	X	X	X	X							X	X	X		
Strategic Behavioral Center-Leland	Medical	X	X	X	X	X	X						X	X	X	X		X
Eldo Family Care Home #1	Medical	X	X	X	X	X	X					X			X	X		
AssistedCare Home Health	Medical	X	X	X	X	X	X								X	X		
AssistedCare, Inc.	Medical	X	X	X	X	X	X								X	X		
Brunswick County DSS	Medical	X	X	X	X	X	X								X	X		
Interim Health Care	Medical	X	X	X	X	X	X	X	X						X	X		
Liberty Home Care	Medical	X	X	X	X	X	X					X			X	X		
Palliative Care Center of Lower Cape Fear	Medical	X	X	X	X	X	X								X	X		
Well Care Health Services, Inc.	Medical	X	X	X	X	X	X								X	X		
Shallotte Assisted Living, Inc.	Medical	X	X	X	X	X	X									X		
Carolina Hospice and Palliative Care, L	Medical	X	X	X	X	X	X					X			X	X		
Lower Cape Fear Hospice, Inc.	Medical	X	X	X	X	X	X								X	X		
Brunswick Community Hospital	Medical	X	X	X	X	X	X								X	X		
J. Arthur Dosher Memorial Hospital	Medical	X	X	X	X	X	X								X	X		
Austin Facility	Medical	X	X	X	X	X	X								X	X		

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Brunswick Interagency Program	Medical	X	X	X	X	X	X							X	X	X		
C&R Precious Stone	Medical	X	X	X	X	X	X					X			X	X		
Conley's Home Place	Medical	X	X	X	X	X	X								X	X		
D&E Precious Stone	Medical	X	X	X	X	X	X					X			X	X		
Human Interactive Services Respite	Medical	X	X	X	X	X	X							X		X		
Life, Inc./Folly Street Group Home	Medical	X	X	X	X	X	X								X	X		
Life, Inc./Lockwood Street Group Home	Medical	X	X	X	X	X	X										X	X
Mary and Tasha Home	Medical	X	X	X	X	X	X								X	X		
McCray Home	Medical	X	X	X	X	X	X					X				X		
My Brother's Keeper - Cornwallis	Medical	X	X	X	X	X	X								X	X		
Ramsey Facility	Medical	X	X	X	X	X	X								X	X	X	X
Shallotte Group Home	Medical	X	X	X	X	X	X								X	X		
Smigiel Home	Medical	X	X	X	X	X	X					X						
Smith Home	Medical	X	X	X	X	X	X								X	X		
South Brunswick Counseling Services	Medical	X	X	X	X	X	X	X	X						X	X		
Southeastern Mental Health	Medical	X	X	X	X	X	X								X	X		
The Counseling Center	Medical	X	X	X	X	X	X					X			X	X		
Wilmington Treatment Ctr-Outpatient Ser	Medical	X	X	X	X	X	X								X	X		
Windsor R.T.P.	Medical	X	X	X	X	X	X								X	X		
Autumn Care of Shallotte	Medical	X	X	X	X	X	X								X	X		
Brunswick Cove Nursing Center	Medical	X	X	X	X	X	X								X	X		
Ocean Trail Convalescent Center, Inc.	Medical	X	X	X	X	X	X								X	X		
Liberty Nursing Services, LLC	Medical	X	X	X	X	X	X					X			X	X		
New Hanover County																		
New Hanover County Emergency Management	EOC/Response	X	X	X	X	X	X							X	X	X	X	X
Carolina Beach Fire Department	Fire/EMS	X	X	X	X	X	X									X		
Kure Beach Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
New Hanover County Fire/Rescue	Fire/EMS	X	X	X	X	X	X							X	X	X	X	X

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
New Hanover County Fire/Rescue 2	Fire/EMS	X	X	X	X	X	X						X	X	X	X	X	X
New Hanover County Fire/Rescue 3	Fire/EMS	X	X	X	X	X	X								X	X	X	X
New Hanover County Fire/Rescue 4	Fire/EMS	X	X	X	X	X	X									X		
New Hanover County Fire/Rescue 5	Fire/EMS	X	X	X	X	X	X							X	X	X		
New Hanover County Fire/Rescue 6	Fire/EMS	X	X	X	X	X	X							X	X	X		
New Hanover County Fire/Rescue 7	Fire/EMS	X	X	X	X	X	X								X	X		
New Hanover County Fire/Rescue 8	Fire/EMS	X	X	X	X	X	X								X	X		
Wilmington Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		X
Wilmington Fire Department 2	Fire/EMS	X	X	X	X	X	X								X	X		X
Wilmington Fire Department 3	Fire/EMS	X	X	X	X	X	X								X	X	X	X
Wilmington Fire Department 4	Fire/EMS	X	X	X	X	X	X							X	X	X		X
Wilmington Fire Department 5	Fire/EMS	X	X	X	X	X	X								X	X		
Wilmington Fire Department 6	Fire/EMS	X	X	X	X	X	X							X	X	X		
Wilmington Fire Department 7	Fire/EMS	X	X	X	X	X	X								X	X		
Wilmington Fire Department 8	Fire/EMS	X	X	X	X	X	X								X	X		
Wilmington Fire Department 9	Fire/EMS	X	X	X	X	X	X											
Wrightsville Beach Fire Department	Fire/EMS	X	X	X	X	X	X	X	X				X	X	X	X		
NEW HANOVER REGIONAL EMERGENCY MEDICAL SERVICES STATION 1	Fire/EMS	X	X	X	X	X	X						X	X	X	X		
OGDEN VOLUNTEER FIRE DEPARTMENT INCORPORATED	Fire/EMS	X	X	X	X	X	X							X	X	X		
MYRTLE GROVE VOLUNTEER FIRE DEPARTMENT INCORPORATED	Fire/EMS	X	X	X	X	X	X								X	X		
FEDERAL POINT FIRE AND RESCUE INCORPORATED	Fire/EMS	X	X	X	X	X	X								X	X		
CASTLE HAYNE VOLUNTEER FIRE DEPARTMENT INCORPORATED	Fire/EMS	X	X	X	X	X	X								X	X	X	X
WILMINGTON INTERNATIONAL AIRPORT RESCUE BASE	Fire/EMS	X	X	X	X	X	X							X		X		X
NEW HANOVER REGIONAL EMERGENCY MEDICAL SERVICES - AIRLINK STATION	Fire/EMS	X	X	X	X	X	X							X		X		X

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
NEW HANOVER REGIONAL EMERGENCY MEDICAL SERVICES STATION 2	Fire/EMS	X	X	X	X	X	X							X	X	X	X	X
INVISTA EMERGENCY MEDICAL TECHNICIAN	Fire/EMS	X	X	X	X	X	X						X	X	X	X	X	X
BUREAU OF ALCOHOL TOBACCO FIREARMS AND EXPLOSIVES - WILMINGTON FIELD OFFICE	Police	X	X	X	X	X	X									X	X	X
NEW HANOVER COUNTY SHERIFFS OFFICE- PATROL DIVISION	Police	X	X	X	X	X	X							X	X	X	X	X
ALCOHOLIC BEVERAGE CONTROL LAW ENFORCEMENT - DISTRICT III OFFICE	Police	X	X	X	X	X	X								X	X	X	X
NORTH CAROLINA STATE PORTS AUTHORITY - WILMINGTON POLICE DEPARTMENT	Police	X	X	X	X	X	X						X	X		X	X	X
NEW HANOVER COUNTY SHERIFF - NARCOTICS VICE SQUAD AND DETECTIVE UNIT	Police	X	X	X	X	X	X							X	X	X	X	X
NORTH CAROLINA DIVISION OF PARKS - FORT FISHER	Police	X	X	X	X	X	X	X	X			X			X	X		
NORTH CAROLINA DIVISION OF PARKS - CAROLINA BEACH STATE PARK	Police	X	X	X	X	X	X								X	X		
UNITED STATES DRUG ENFORCEMENT ADMINISTRATION - WILMINGTON	Police	X	X	X	X	X	X	X	X					X	X	X	X	X
WILMINGTON INTERNATIONAL AIRPORT - AIRPORT PUBLIC SAFETY	Police	X	X	X	X	X	X							X		X		X
UNIVERSITY OF NORTH CAROLINA-WILMINGTON	Police	X	X	X	X	X	X									X		
UNITED STATES CUSTOMS AND BORDER PROTECTION - PORT OF ENTRY - WILMINGTON	Police	X	X	X	X	X	X							X	X	X		X
UNITED STATES MARSHALS SERVICE - WILMINGTON	Police	X	X	X	X	X	X	X	X					X	X	X	X	X
WRIGHTSVILLE BEACH POLICE DEPARTMENT	Police	X	X	X	X	X	X	X	X				X	X	X	X		
WILMINGTON POLICE DEPARTMENT	Police	X	X	X	X	X	X						X	X	X	X	X	X
KURE BEACH POLICE DEPARTMENT	Police	X	X	X	X	X	X								X	X		
CAROLINA BEACH POLICE DEPARTMENT	Police	X	X	X	X	X	X								X	X		
NEW HANOVER SHERIFFS OFFICE / NEW HANOVER COUNTY DETENTION CENTER	Police	X	X	X	X	X	X							X		X	X	X

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UNITED STATES INTERNAL REVENUE SERVICE CRIMINAL INVESTIGATION DIVISION - WILMINGTON	Police	X	X	X	X	X	X									X	X	X
NORTH CAROLINA STATE HIGHWAY PATROL TROOP B DISTRICT VI	Police	X	X	X	X	X	X							X	X	X		
Holly Tree Elementary	School	X	X	X	X	X	X								X	X		
Dr Hubert Eaton Sr Elem	School	X	X	X	X	X	X						X	X	X	X		
Ogden Elementary	School	X	X	X	X	X	X							X		X		
Bradley Creek Elementary	School	X	X	X	X	X	X									X		
Carolina Beach Elementary	School	X	X	X	X	X	X	X	X						X	X		
R Freeman Sch of Engineering	School	X	X	X	X	X	X	X	X					X	X	X		X
College Park Elementary	School	X	X	X	X	X	X							X	X	X		
Edwin A Alderman Elementary	School	X	X	X	X	X	X									X		
Emma B Trask Middle	School	X	X	X	X	X	X						X	X	X	X		
Emsley A Laney High	School	X	X	X	X	X	X						X	X	X	X		
Forest Hills Elementary	School	X	X	X	X	X	X									X	X	X
Gregory Elementary	School	X	X	X	X	X	X							X	X	X		X
Heyward C Bellamy Elem	School	X	X	X	X	X	X									X		
John J Blair Elementary	School	X	X	X	X	X	X								X	X		
John T Hoggard High	School	X	X	X	X	X	X								X	X		
Mary C Williams Elementary	School	X	X	X	X	X	X									X		
Myrtle Grove Middle	School	X	X	X	X	X	X									X		
New Hanover High	School	X	X	X	X	X	X								X	X		X
Lakeside	School	X	X	X	X	X	X	X	X					X		X	X	X
Pine Valley Elementary	School	X	X	X	X	X	X									X		
RolandGrise Middle	School	X	X	X	X	X	X								X	X		
Dr John Codington Elem	School	X	X	X	X	X	X								X	X		
Sunset Park Elementary	School	X	X	X	X	X	X						X	X	X	X	X	X
A H Snipes Academy of Arts/Des	School	X	X	X	X	X	X							X	X	X	X	X

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Williston Middle	School	X	X	X	X	X	X							X	X	X		X
Winter Park Model Elementary	School	X	X	X	X	X	X								X	X		
Wrightsboro Elementary	School	X	X	X	X	X	X								X	X		X
Cape Fear Center for Inquiry	School	X	X	X	X	X	X								X	X		
Wrightsville Beach Elem	School	X	X	X	X	X	X						X	X	X	X		
Walter L Parsley Elementary	School	X	X	X	X	X	X											
Eugene Ashley High	School	X	X	X	X	X	X								X	X		
Charles P Murray Middle	School	X	X	X	X	X	X								X	X		
Isaac M Bear High	School	X	X	X	X	X	X								X	X		
M C S Noble Middle	School	X	X	X	X	X	X								X	X		
Lake Forest Academy	School	X	X	X	X	X	X									X	X	X
Murrayville Elementary	School	X	X	X	X	X	X									X		
Wilmington Early College High	School	X	X	X	X	X	X						X	X	X	X		
Edwin A Anderson Elementary	School	X	X	X	X	X	X									X		
Wilmington Preparatory Academy	School	X	X	X	X	X	X								X	X		
Mary Sidberry Mosley PLC	School	X	X	X	X	X	X							X		X	X	X
Castle Hayne Elementary	School	X	X	X	X	X	X								X	X	X	X
Holly Shelter Middle	School	X	X	X	X	X	X								X	X	X	X
D.C. Virgo Preparatory Academy	School	X	X	X	X	X	X							X	X	X	X	X
Calvary Christian School	School	X	X	X	X	X	X						X	X	X	X	X	X
Cape Fear Academy	School	X	X	X	X	X	X								X	X		
Carolina Christian Academy	School	X	X	X	X	X	X							X	X	X		X
Children's Schoolhouse	School	X	X	X	X	X	X								X	X		X
Coastal Christian High School	School	X	X	X	X	X	X								X	X		
Friends School	School	X	X	X	X	X	X								X	X		
Hill School of Wilmington	School	X	X	X	X	X	X									X	X	X
Innovative Academy	School	X	X	X	X	X	X								X	X		
Myrtle Grove Christian School	School	X	X	X	X	X	X								X	X		

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New Horizons Elem. School	School	X	X	X	X	X	X								X	X		
Northside School of Christian Leadership	School	X	X	X	X	X	X							X	X	X		
Pathways Mid. & High. School	School	X	X	X	X	X	X									X	X	X
Peace Rose Montessori School	School	X	X	X	X	X	X								X	X	X	X
Pine Valley Wee Care Kindergarten	School	X	X	X	X	X	X								X	X		
Providence Preparatory Academy	School	X	X	X	X	X	X								X	X		
Southeastern Autism Academy	School	X	X	X	X	X	X									X	X	X
St. Mary Catholic School	School	X	X	X	X	X	X							X	X	X		X
St. Mark Catholic School	School	X	X	X	X	X	X								X	X		
The James B Dudley Academy	School	X	X	X	X	X	X	X	X						X	X		X
The School of Wonder	School	X	X	X	X	X	X								X	X		
Waterview Learning Academy	School	X	X	X	X	X	X							X	X	X		X
Wilmington Christian Academy	School	X	X	X	X	X	X								X	X		
Wilmington SDA School	School	X	X	X	X	X	X								X	X	X	X
Wilmington Acad. of Arts & Sci	School	X	X	X	X	X	X											
Wilmington Outdoor Microschool	School	X	X	X	X	X	X								X	X		
UNIVERSITY OF NORTH CAROLINA-WILMINGTON	School	X	X	X	X	X	X								X	X		X
MILLER-MOTTE TECHNICAL COLLEGE	School	X	X	X	X	X	X							X	X	X	X	X
CAPE FEAR COMMUNITY COLLEGE	School	X	X	X	X	X	X							X	X	X	X	X
New Hanover Regional Medical Center-Nor	Medical	X	X	X	X	X	X								X	X		
New Hanover Regional Medical Center	Medical	X	X	X	X	X	X									X		
New Hanover Regional Medical Center-Pen	Medical	X	X	X	X	X	X							X	X	X	X	X
New Hanover Regional Medical Center-Ort	Medical	X	X	X	X	X	X								X	X		
The Wilmington Treatment Center, Inc.	Medical	X	X	X	X	X	X							X	X	X		
Wilmington Health Associates	Medical	X	X	X	X	X	X							X		X		
Wilmington SurgCare	Medical	X	X	X	X	X	X									X		X
Cardiac Rehab Program of the Coastal He	Medical	X	X	X	X	X	X									X		
Eldo Family Care Home #3	Medical	X	X	X	X	X	X								X	X	X	X

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Jordan's Family Care Home	Medical	X	X	X	X	X	X								X	X	X	X
Judge Family Care Home #1	Medical	X	X	X	X	X	X							X	X	X		
Judge Family Care Home #4	Medical	X	X	X	X	X	X							X	X	X		
Lowe Family Care Home #2	Medical	X	X	X	X	X	X								X	X		
Lowe Family Care Home #3	Medical	X	X	X	X	X	X								X	X		
Lowe's Family Care Home #1	Medical	X	X	X	X	X	X								X	X		
Alpha-Omega Health, Inc.	Medical	X	X	X	X	X	X								X	X		
American HomePatient	Medical	X	X	X	X	X	X									X	X	X
AmeriCare	Medical	X	X	X	X	X	X								X	X	X	X
Apria Healthcare, Inc.	Medical	X	X	X	X	X	X									X	X	X
Arcadia Health Care	Medical	X	X	X	X	X	X								X	X		X
AssistedCare, Inc.	Medical	X	X	X	X	X	X									X	X	X
Cape Fear Home Care of Wilmington, Inc.	Medical	X	X	X	X	X	X							X	X	X		X
Cape Fear Respicare, Inc.	Medical	X	X	X	X	X	X								X	X		
Continuum Home Care of Northchase	Medical	X	X	X	X	X	X						X	X	X	X		
DMS Services, Inc	Medical	X	X	X	X	X	X									X	X	X
HealthMate Home Care	Medical	X	X	X	X	X	X									X	X	X
Herring Associates Inc.	Medical	X	X	X	X	X	X								X	X		X
Howell Support Services, LLC	Medical	X	X	X	X	X	X								X	X	X	X
Interim HealthCare	Medical	X	X	X	X	X	X								X	X	X	X
Kight's Medical Corp.	Medical	X	X	X	X	X	X								X	X		
Liberty Home Care	Medical	X	X	X	X	X	X								X	X		X
Liberty Medical Specialties, Inc.	Medical	X	X	X	X	X	X									X	X	X
Lincare, Inc.	Medical	X	X	X	X	X	X						X	X	X	X	X	X
Lowery's Family Care	Medical	X	X	X	X	X	X								X	X	X	X
Maxim Healthcare Services	Medical	X	X	X	X	X	X								X	X	X	X
Medox Healthcare, Inc.	Medical	X	X	X	X	X	X							X	X	X		X
Option Care of Wilmington	Medical	X	X	X	X	X	X								X	X		

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Oxy-Care Equipment Company	Medical	X	X	X	X	X	X								X	X		X
Palliative Care Center of Lower Cape Fe	Medical	X	X	X	X	X	X							X	X	X		X
Plantation Village	Medical	X	X	X	X	X	X											
PSA HealthCare	Medical	X	X	X	X	X	X								X	X		
Well Care Health Services, Inc.	Medical	X	X	X	X	X	X								X	X		
Well Care Home Health	Medical	X	X	X	X	X	X								X	X		
Alterra Clare Bridge of Wilmington	Medical	X	X	X	X	X	X								X	X		
Champions at Porters Neck	Medical	X	X	X	X	X	X											
Fannie Norwood Memorial Home	Medical	X	X	X	X	X	X								X	X		X
Hermitage House Rest Home	Medical	X	X	X	X	X	X								X	X		X
Nielsen's Rest Home	Medical	X	X	X	X	X	X								X	X		
Port City Plantation	Medical	X	X	X	X	X	X								X	X		
Port South Village/Carmen D. Villa	Medical	X	X	X	X	X	X								X	X	X	X
Port South Village/Catherine S. Villa	Medical	X	X	X	X	X	X								X	X	X	X
Port South Village/Crystal L. Villa	Medical	X	X	X	X	X	X								X	X	X	X
Port South Village/Lorraine B. Villa	Medical	X	X	X	X	X	X								X	X	X	X
Port South Village/Tara L. Villa	Medical	X	X	X	X	X	X								X	X	X	X
Port South Village/Teresa C. Villa	Medical	X	X	X	X	X	X								X	X	X	X
Sherwood Manor Rest Home	Medical	X	X	X	X	X	X									X		X
Spring Arbor of Wilmington	Medical	X	X	X	X	X	X								X	X		
The Commons at Brightmore	Medical	X	X	X	X	X	X								X	X		
The Kempton at Brightmore	Medical	X	X	X	X	X	X								X	X		
The Meadows of Wilmington, Inc.	Medical	X	X	X	X	X	X								X	X		
Carolina Hospice and Palliative Care	Medical	X	X	X	X	X	X								X	X		X
Hospice Care Center	Medical	X	X	X	X	X	X							X		X		
Lower Cape Fear Hospice, Inc.	Medical	X	X	X	X	X	X							X	X	X		X
Cape Fear Hospital	Medical	X	X	X	X	X	X								X	X		
New Hanover Regional Medical Center	Medical	X	X	X	X	X	X									X		

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Alandale	Medical	X	X	X	X	X	X								X	X		
Banks Therapeutic Home	Medical	X	X	X	X	X	X								X	X	X	X
Barker Residence	Medical	X	X	X	X	X	X	X	X						X	X		
Bethel	Medical	X	X	X	X	X	X									X		
Bonds Home	Medical	X	X	X	X	X	X								X	X	X	X
Brighton Road Facility	Medical	X	X	X	X	X	X									X		
Bryant Home	Medical	X	X	X	X	X	X							X	X	X	X	X
Cape Fear Group Homes Day Program	Medical	X	X	X	X	X	X								X	X	X	X
Cape Fear Respite Home	Medical	X	X	X	X	X	X	X	X						X	X		
Carolyn's Home	Medical	X	X	X	X	X	X							X	X	X	X	X
Chester Street Home	Medical	X	X	X	X	X	X								X	X		
Coastal Horizons Center, Inc.	Medical	X	X	X	X	X	X							X	X	X		X
Copymatic of Wilmington	Medical	X	X	X	X	X	X							X	X	X	X	X
Dixon Home	Medical	X	X	X	X	X	X									X		
Drug and Alcohol Assessment Services	Medical	X	X	X	X	X	X								X	X	X	X
East Coast Solutions	Medical	X	X	X	X	X	X								X	X	X	X
EL Ogden	Medical	X	X	X	X	X	X						X	X	X	X		
Eltringham Facility	Medical	X	X	X	X	X	X	X	X						X	X		
Evergreen Health Services	Medical	X	X	X	X	X	X								X	X		
Farr Facility	Medical	X	X	X	X	X	X									X		
Gingrich Home	Medical	X	X	X	X	X	X						X	X	X	X		X
Greenville Loop Group Home	Medical	X	X	X	X	X	X	X	X							X		
Harvest of Wilmington	Medical	X	X	X	X	X	X								X	X		X
Holland Facility	Medical	X	X	X	X	X	X								X	X		
House of Love	Medical	X	X	X	X	X	X								X	X		
Human Interactive Services Inc,	Medical	X	X	X	X	X	X									X		X
Hunters Trail RTP	Medical	X	X	X	X	X	X						X	X	X	X		
Kelly House	Medical	X	X	X	X	X	X								X	X	X	X

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Kerr House	Medical	X	X	X	X	X	X									X		
Keys Community Rehabilitation Program	Medical	X	X	X	X	X	X							X	X	X	X	X
Lancaster Home	Medical	X	X	X	X	X	X							X	X	X		
LIFE, Inc./Cherokee Trail Group Home	Medical	X	X	X	X	X	X									X		
LIFE, Inc./Masonboro Sound	Medical	X	X	X	X	X	X											
Lifetime Resources, Inc. Echo Farms Gro	Medical	X	X	X	X	X	X								X	X		
Longleaf Hills Drive	Medical	X	X	X	X	X	X								X	X		
Mill Creek Court	Medical	X	X	X	X	X	X									X		X
Myrtle Grove Group Home	Medical	X	X	X	X	X	X								X	X		
New Directions Counseling Center	Medical	X	X	X	X	X	X								X	X		
New Hanover Treatment Center	Medical	X	X	X	X	X	X							X	X	X		X
New Visions	Medical	X	X	X	X	X	X								X	X	X	X
Ocean House	Medical	X	X	X	X	X	X							X	X	X	X	X
Partners in Healing Counseling Center	Medical	X	X	X	X	X	X								X	X		
Patrick Home	Medical	X	X	X	X	X	X	X	X						X	X	X	X
Plum Nearly 1	Medical	X	X	X	X	X	X	X	X						X	X		X
Plum Nearly 2	Medical	X	X	X	X	X	X	X	X						X	X		X
Portofino Home	Medical	X	X	X	X	X	X						X	X	X	X		X
Robert E. Lee Group Home	Medical	X	X	X	X	X	X									X		
Robin Hood Group Home	Medical	X	X	X	X	X	X									X		X
Rubinstein Facility	Medical	X	X	X	X	X	X									X		
SCI Day Program	Medical	X	X	X	X	X	X							X	X	X		X
SCI-Coastal House I and II	Medical	X	X	X	X	X	X	X	X				X	X	X	X	X	X
Searise	Medical	X	X	X	X	X	X								X	X	X	X
Setter Lane RTP	Medical	X	X	X	X	X	X									X		
Shelley	Medical	X	X	X	X	X	X							X	X	X		
Southeastern Center for MH/DD/SAS	Medical	X	X	X	X	X	X									X		X
Southeastern Center-DWI/ Criminal Justi	Medical	X	X	X	X	X	X								X	X		

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Stepping Stone Manor	Medical	X	X	X	X	X	X							X	X	X	X	X
Tab Ballis LCSW, CCAS	Medical	X	X	X	X	X	X							X	X	X		X
The Russell Home	Medical	X	X	X	X	X	X								X	X		
The W.A.V.E. (Wilmington Adult Vocation	Medical	X	X	X	X	X	X	X	X				X	X	X	X	X	X
UCP-Lakewood	Medical	X	X	X	X	X	X									X		
Watshare Today and Beyond	Medical	X	X	X	X	X	X							X	X	X	X	X
Wilmington Day Program	Medical	X	X	X	X	X	X								X	X	X	X
Wilmington Treatment Center Outpatient	Medical	X	X	X	X	X	X								X	X		
The Wilmington Treatment Center, Inc.	Medical	X	X	X	X	X	X							X	X	X		
Autumn Care of Myrtle Grove	Medical	X	X	X	X	X	X								X	X		
Britthaven of North Chase	Medical	X	X	X	X	X	X						X	X	X	X		
Britthaven of Wrightsville	Medical	X	X	X	X	X	X							X	X	X		
Cornelia Nixon Davis Health Care Center	Medical	X	X	X	X	X	X											
Cypress Pointe Rehabilitation and Health	Medical	X	X	X	X	X	X									X		X
Liberty Commons Nursing and Rehabilitat	Medical	X	X	X	X	X	X							X	X	X		
Mariner Health of Wilmington	Medical	X	X	X	X	X	X							X	X	X		X
Liberty Nursing Services, LLC	Medical	X	X	X	X	X	X								X	X		X
Maxim Healthcare Services, Inc.	Medical	X	X	X	X	X	X								X	X	X	X
Mega Force Staffing	Medical	X	X	X	X	X	X								X	X	X	X
Professional Healthcare Consultants	Medical	X	X	X	X	X	X								X	X		X
Onslow County																		
Onslow County Emergency Management	EOC/Response	X	X	X	X	X	X								X	X		
Back Swamp Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Half Moon Volunteer Fire Department, In	Fire/EMS	X	X	X	X	X	X											
Haws Run Volunteer Fire Department, Inc	Fire/EMS	X	X	X	X	X	X											
Holly Ridge Volunteer Fire & Rescue Dep	Fire/EMS	X	X	X	X	X	X						X	X	X	X		
Hubert Volunteer Fire Department, Inc.	Fire/EMS	X	X	X	X	X	X								X	X		
Hubert Volunteer Fire Department, Inc. 2	Fire/EMS	X	X	X	X	X	X											

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Jacksonville Fire & Emergency Services	Fire/EMS	X	X	X	X	X	X								X	X		
Jacksonville Fire & Emergency Services 2	Fire/EMS	X	X	X	X	X	X									X		
Jacksonville Fire & Emergency Services 3	Fire/EMS	X	X	X	X	X	X							X	X	X		
Jacksonville Fire & Emergency Services 4	Fire/EMS	X	X	X	X	X	X								X	X		
Nine Mile Volunteer Fire & Rescue, Inc.	Fire/EMS	X	X	X	X	X	X	X	X									
North Topsail Beach Fire Department	Fire/EMS	X	X	X	X	X	X	X	X									
North Topsail Beach Fire Department 2	Fire/EMS	X	X	X	X	X	X	X	X						X	X		
Onslow County Fire Rescue	Fire/EMS	X	X	X	X	X	X						X	X				
Onslow County Fire Rescue 2	Fire/EMS	X	X	X	X	X	X								X	X		
Piney Green Volunteer Fire Department,	Fire/EMS	X	X	X	X	X	X								X	X	X	X
Pumpkin Center Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X							X	X	X		
Rhodestown Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Richlands Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Southwest Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X									X		
Swansboro Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Turkey Creek Fire and Rescue, Inc.	Fire/EMS	X	X	X	X	X	X											
Turkey Creek Fire and Rescue, Inc. 2	Fire/EMS	X	X	X	X	X	X									X		
Verona Volunteer Fire Department, Inc.	Fire/EMS	X	X	X	X	X	X								X	X		
ALBERT J ELLIS AIRPORT CRASH FIRE AND RESCUE	Fire/EMS	X	X	X	X	X	X									X		
CAMP LEJEUNE FIRE DEPARTMENT-DOD	Fire/EMS	X	X	X	X	X	X									X		
NINE MILE VOLUNTEER RESCUE SQUAD	Fire/EMS	X	X	X	X	X	X											
ONSLOW COUNTY EMERGENCY MEDICAL SERVICES STATION 2	Fire/EMS	X	X	X	X	X	X									X		
ONSLOW COUNTY EMERGENCY MEDICAL SERVICES STATION 6	Fire/EMS	X	X	X	X	X	X								X	X		
ONSLOW COUNTY EMERGENCY MEDICAL SERVICES STATION 5	Fire/EMS	X	X	X	X	X	X								X	X		

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ONSLOW COUNTY EMERGENCY MEDICAL SERVICES STATION 4	Fire/EMS	X	X	X	X	X	X									X		
ONSLOW COUNTY EMERGENCY MEDICAL SERVICES STATION 7	Fire/EMS	X	X	X	X	X	X	X	X						X	X		
SNEADS FERRY VOLUNTEER FIRE DEPARTMENT	Fire/EMS	X	X	X	X	X	X									X		
COASTAL AMBULANCE SERVICE	Fire/EMS	X	X	X	X	X	X											
ONSLOW COUNTY EMERGENCY MEDICAL SERVICES	Fire/EMS	X	X	X	X	X	X								X	X		
JACKSONVILLE VOLUNTEER RESCUE SQUAD	Fire/EMS	X	X	X	X	X	X						X	X	X	X		
HAWS RUN VOLUNTEER RESCUE - EMERGENCY MEDICAL SERVICES	Fire/EMS	X	X	X	X	X	X											
NAVAL HOSPITAL CAMP LEJEUNE-DOD	Fire/EMS	X	X	X	X	X	X									X		
RICHLANDS VOLUNTEER RESCUE SQUAD	Fire/EMS	X	X	X	X	X	X								X	X		
SWANSBORO EMERGENCY MEDICAL SERVICES	Fire/EMS	X	X	X	X	X	X								X	X		
TOWN OF SWANSBORO POLICE DEPARTMENT	Police	X	X	X	X	X	X								X	X		
NORTH CAROLINA DIVISION OF PARKS - HAMMOCKS BEACH STATE PARK	Police	X	X	X	X	X	X	X	X									
NORTH CAROLINA STATE HIGHWAY PATROL TROOP B DISTRICT III	Police	X	X	X	X	X	X								X	X		
HOLLY RIDGE POLICE DEPARTMENT	Police	X	X	X	X	X	X						X	X	X	X		
ALBERT J ELLIS AIRPORT POLICE	Police	X	X	X	X	X	X									X		
RICHLANDS POLICE DEPARTMENT	Police	X	X	X	X	X	X								X	X		
NORTH TOPSAIL BEACH POLICE DEPARTMENT	Police	X	X	X	X	X	X	X	X						X	X		
CITY OF JACKSONVILLE POLICE DEPARTMENT	Police	X	X	X	X	X	X								X	X		
ONSLOW COUNTY SHERIFFS OFFICE / ONSLOW COUNTY JAIL	Police	X	X	X	X	X	X								X	X		
Hunters Creek Middle	School	X	X	X	X	X	X									X		
Morton Elementary	School	X	X	X	X	X	X											
Swansboro Elementary	School	X	X	X	X	X	X								X	X		
Swansboro High	School	X	X	X	X	X	X								X	X		

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Richlands Elementary	School	X	X	X	X	X	X								X	X		
Richlands High	School	X	X	X	X	X	X								X	X		
Summersill Elementary	School	X	X	X	X	X	X											
Trexler Middle	School	X	X	X	X	X	X								X	X		
Hunters Creek Elementary	School	X	X	X	X	X	X											
Queens Creek Elementary	School	X	X	X	X	X	X								X	X		
Bell Fork Elementary	School	X	X	X	X	X	X						X	X	X	X		
Blue Creek Elementary	School	X	X	X	X	X	X								X	X		
Clyde Erwin Elementary	School	X	X	X	X	X	X							X	X	X		
Dixon Elementary	School	X	X	X	X	X	X								X	X		
Dixon Middle	School	X	X	X	X	X	X								X	X		
Dixon High	School	X	X	X	X	X	X								X	X		
Jacksonville Commons Elem	School	X	X	X	X	X	X								X	X		
Jacksonville High	School	X	X	X	X	X	X											
Jacksonville Commons Middle	School	X	X	X	X	X	X								X	X		
New Bridge Middle	School	X	X	X	X	X	X								X	X		
Northwoods Elementary	School	X	X	X	X	X	X											
Northwoods Park Middle	School	X	X	X	X	X	X	X	X									
Parkwood Elementary	School	X	X	X	X	X	X											
Sand Ridge Elementary	School	X	X	X	X	X	X											
Silverdale Elementary	School	X	X	X	X	X	X											
Southwest Elementary	School	X	X	X	X	X	X								X	X		
Southwest High	School	X	X	X	X	X	X								X	X		
Southwest Middle	School	X	X	X	X	X	X								X	X		
Swansboro Middle	School	X	X	X	X	X	X								X	X		
White Oak High	School	X	X	X	X	X	X											
Richlands Primary	School	X	X	X	X	X	X								X	X		
Northside High	School	X	X	X	X	X	X							X		X		

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Carolina Forest Elementary	School	X	X	X	X	X	X									X		
Brewster Middle	School	X	X	X	X	X	X											
Delalio Elementary	School	X	X	X	X	X	X								X	X		
Carla Johnson Primary School	School	X	X	X	X	X	X											
Lejeune High	School	X	X	X	X	X	X											
Tarawa Terrace I Elementary	School	X	X	X	X	X	X								X	X		
Tarawa Terrace II Elementary	School	X	X	X	X	X	X								X	X		
Bitz Intermediate School	School	X	X	X	X	X	X											
Meadow View Elementary	School	X	X	X	X	X	X											
Stateside Elementary	School	X	X	X	X	X	X											
Heroes Elementary	School	X	X	X	X	X	X											
Born Again Christian Academy	School	X	X	X	X	X	X								X	X		
Coastline Christian Academy	School	X	X	X	X	X	X							X	X	X		
F.A.C.T. Day Treatment School	School	X	X	X	X	X	X							X	X	X		
Fellowship Christian Academy	School	X	X	X	X	X	X								X	X		
Georgetown village minded academy	School	X	X	X	X	X	X							X	X	X		
Grace Classical School	School	X	X	X	X	X	X											
Infant of Prague Catholic School	School	X	X	X	X	X	X								X	X		
Jacksonville Christian Academy	School	X	X	X	X	X	X							X		X		
Liberty Christian Academy	School	X	X	X	X	X	X								X	X		
Living Water Christian School	School	X	X	X	X	X	X									X		
Milestones Academy	School	X	X	X	X	X	X								X	X		
Montessori Children's School	School	X	X	X	X	X	X							X	X	X		
North Shore Academy	School	X	X	X	X	X	X								X	X		
One World Montessori LLC	School	X	X	X	X	X	X								X	X		
Onslow Christian Academy	School	X	X	X	X	X	X											
Shiloh Institute of Learning	School	X	X	X	X	X	X						X	X	X	X		
St. Anne's Parish Day School	School	X	X	X	X	X	X											

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Stella Maris Classical Academy	School	X	X	X	X	X	X	X	X						X	X		
Village Academy	School	X	X	X	X	X	X								X	X		
Grace Classical School	School	X	X	X	X	X	X											
COASTAL CAROLINA COMMUNITY COLLEGE	School	X	X	X	X	X	X							X	X	X		
Onslow Memorial Hospital	Medical	X	X	X	X	X	X						X	X	X	X		
Naval Hospital at Camp Lejeune	Medical	X	X	X	X	X	X									X		
Brynn Marr Hospital	Medical	X	X	X	X	X	X								X	X		
SurgiCare of Jacksonville	Medical	X	X	X	X	X	X						X	X	X	X		
Healthy Living Cardiac Rehabilitation	Medical	X	X	X	X	X	X							X	X	X		
Brown's Family Care Home	Medical	X	X	X	X	X	X						X	X	X	X		
Charles Family Care Home	Medical	X	X	X	X	X	X							X		X		
Pearl's Family Care Home #1	Medical	X	X	X	X	X	X					X						
Pearl's Family Care Home #2	Medical	X	X	X	X	X	X											
Pearl's Family Care Home #3	Medical	X	X	X	X	X	X											
Turner Manor	Medical	X	X	X	X	X	X								X	X		
Agape Health Services	Medical	X	X	X	X	X	X								X	X		
AmeriCare	Medical	X	X	X	X	X	X								X	X		
Apria Healthcare, Inc.	Medical	X	X	X	X	X	X							X	X	X		
Continuum Home Care and Hospice	Medical	X	X	X	X	X	X									X		
Interim HealthCare	Medical	X	X	X	X	X	X							X	X	X		
Liberty Home Care	Medical	X	X	X	X	X	X									X		
Norcare Home Medical	Medical	X	X	X	X	X	X									X		
Onslow County Home Health and Hospice	Medical	X	X	X	X	X	X								X	X		
Onslow Senior Services	Medical	X	X	X	X	X	X								X	X		
Professional Nursing Service, Inc.	Medical	X	X	X	X	X	X							X		X		
Wilson's Home Care Agency	Medical	X	X	X	X	X	X								X	X		
Carebridge Assisted Living Community	Medical	X	X	X	X	X	X								X	X		
Liberty Commons Assisted Living	Medical	X	X	X	X	X	X									X		

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Lighthouse Village	Medical	X	X	X	X	X	X								X	X		
Onslow Pines Rest Home	Medical	X	X	X	X	X	X								X	X		
Season's Cove Assisted Living	Medical	X	X	X	X	X	X											
The Meadows of Holly Ridge	Medical	X	X	X	X	X	X						X	X	X	X		
Carolina Hospice and Palliative Care	Medical	X	X	X	X	X	X									X		
Onslow Memorial Hospital	Medical	X	X	X	X	X	X							X	X	X		
A&S Children Services	Medical	X	X	X	X	X	X							X		X		
Anna's Care, Inc.	Medical	X	X	X	X	X	X											
Bell Home	Medical	X	X	X	X	X	X									X		
Brynn Marr House	Medical	X	X	X	X	X	X								X	X		
Byron Hawkins Home	Medical	X	X	X	X	X	X						X	X	X	X		
Cape Cod	Medical	X	X	X	X	X	X											
Carobell Day Program/Day Activity Program	Medical	X	X	X	X	X	X											
Carobell Developmental Day Program	Medical	X	X	X	X	X	X											
Carobell Group Home	Medical	X	X	X	X	X	X							X	X	X		
CDTEG, Inc.	Medical	X	X	X	X	X	X								X	X		
Center For Counseling & Evaluations	Medical	X	X	X	X	X	X								X	X		
Claytor Home	Medical	X	X	X	X	X	X								X	X		
Cleveland Family Home	Medical	X	X	X	X	X	X	X	X						X	X		
Coastal Transitional Services, Inc.	Medical	X	X	X	X	X	X						X	X	X	X		
Countryview Day Program	Medical	X	X	X	X	X	X							X		X		
Countryview Residential	Medical	X	X	X	X	X	X									X		
Day Reporting Center	Medical	X	X	X	X	X	X								X	X		
DeLeon Home	Medical	X	X	X	X	X	X									X		
DeLigio Home	Medical	X	X	X	X	X	X							X	X	X		
Diane Drive	Medical	X	X	X	X	X	X								X	X		
Estrella Home	Medical	X	X	X	X	X	X								X	X		
F.A.C.T. Day Treatment Program	Medical	X	X	X	X	X	X								X	X		

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Fant Home	Medical	X	X	X	X	X	X											
Fergerson Facility	Medical	X	X	X	X	X	X											
Ford Home	Medical	X	X	X	X	X	X											
Fritz Home	Medical	X	X	X	X	X	X							X				
Gibberry Group Home	Medical	X	X	X	X	X	X					X						
Glancy Street Home	Medical	X	X	X	X	X	X								X	X		
Greenbriar-J	Medical	X	X	X	X	X	X							X	X	X		
Hampton Home	Medical	X	X	X	X	X	X									X		
Harris Home	Medical	X	X	X	X	X	X									X		
Hillside Court	Medical	X	X	X	X	X	X								X	X		
Linda Shorts Home	Medical	X	X	X	X	X	X								X	X		
Manheim Home	Medical	X	X	X	X	X	X								X	X		
Martha's Group Home, Inc.	Medical	X	X	X	X	X	X	X	X				X	X	X	X		
Martha's House, Inc.	Medical	X	X	X	X	X	X									X		
McCord Home	Medical	X	X	X	X	X	X											
McCullen Home	Medical	X	X	X	X	X	X											
McCullough Home	Medical	X	X	X	X	X	X							X		X		
McIver Home	Medical	X	X	X	X	X	X							X	X	X		
Meadows Home	Medical	X	X	X	X	X	X							X	X	X		
Moore Home	Medical	X	X	X	X	X	X									X		
Nantucket	Medical	X	X	X	X	X	X									X		
Neal Home	Medical	X	X	X	X	X	X											
New Horizons of Living	Medical	X	X	X	X	X	X									X		X
Oakwood	Medical	X	X	X	X	X	X							X	X	X		
Onslow County Behavioral HealthCare Ser	Medical	X	X	X	X	X	X						X	X	X	X		
Onslow County Behavioral Healthcare Ser	Medical	X	X	X	X	X	X							X	X	X		
Onslow County Behavioral Healthcare Ser	Medical	X	X	X	X	X	X							X	X	X		
Perez Home	Medical	X	X	X	X	X	X								X	X		

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Pritchett Home	Medical	X	X	X	X	X	X						X	X	X	X		
Project Voice	Medical	X	X	X	X	X	X						X	X	X	X		
Queen's Pond	Medical	X	X	X	X	X	X											
Rickey's Place	Medical	X	X	X	X	X	X									X		
Sandridge	Medical	X	X	X	X	X	X											
Sea Oats Counseling Center	Medical	X	X	X	X	X	X								X	X		
Shadowridge Retreat	Medical	X	X	X	X	X	X									X		
Shepard House	Medical	X	X	X	X	X	X											
Silverleaf Lodge	Medical	X	X	X	X	X	X							X	X	X		
Simon's Home	Medical	X	X	X	X	X	X									X		
Sir Arthur	Medical	X	X	X	X	X	X							X		X		
Spann Home	Medical	X	X	X	X	X	X									X		
St. John's Court	Medical	X	X	X	X	X	X							X	X	X		
Starling Facility	Medical	X	X	X	X	X	X											
Steeplechase	Medical	X	X	X	X	X	X							X	X	X		
Stillwater Cove	Medical	X	X	X	X	X	X								X	X		
Suffolk Home	Medical	X	X	X	X	X	X									X		
Tegtmeier Home	Medical	X	X	X	X	X	X									X		
Townsend Home	Medical	X	X	X	X	X	X											
Vrooman Home	Medical	X	X	X	X	X	X								X	X		
Walls Home	Medical	X	X	X	X	X	X							X		X		
Williams Home	Medical	X	X	X	X	X	X											
Winter Place	Medical	X	X	X	X	X	X											
Brynn Marr Hospital	Medical	X	X	X	X	X	X								X	X		
Britthaven of Jacksonville	Medical	X	X	X	X	X	X						X	X	X	X		
Britthaven of Onslow	Medical	X	X	X	X	X	X							X	X	X		
Pender County																		
Pender County Emergency Management	EOC/Response	X	X	X	X	X	X							X	X	X		X

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Atkinson Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Burgaw Fire Department	Fire/EMS	X	X	X	X	X	X							X	X	X	X	X
Pender EMS and Fire, Inc	Fire/EMS	X	X	X	X	X	X								X	X		
Pender EMS and Fire, Inc 2	Fire/EMS	X	X	X	X	X	X								X	X		
Pender EMS and Fire, Inc 3	Fire/EMS	X	X	X	X	X	X								X	X		
Pender EMS and Fire, Inc 4	Fire/EMS	X	X	X	X	X	X								X	X		
Pender EMS and Fire, Inc 5	Fire/EMS	X	X	X	X	X	X					X				X		
Pender EMS and Fire, Inc 6	Fire/EMS	X	X	X	X	X	X					X			X	X		
Penderlea Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Penderlea Fire Department 2	Fire/EMS	X	X	X	X	X	X										X	X
Penderlea Fire Department 3	Fire/EMS	X	X	X	X	X	X								X	X		
Rocky Point Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X							X	X	X	X	X
Rocky Point Volunteer Fire Department 2	Fire/EMS	X	X	X	X	X	X								X	X	X	X
Surf City Fire Department	Fire/EMS	X	X	X	X	X	X							X	X	X		
The Maple Hill Volunteer Fire Departmen	Fire/EMS	X	X	X	X	X	X								X	X		
Topsail Beach Fire Department	Fire/EMS	X	X	X	X	X	X	X	X						X	X		
UNION RESCUE SQUAD	Fire/EMS	X	X	X	X	X	X								X	X	X	X
NORTH CAROLINA DIVISION OF FOREST RESOURCES DISTRICT 8 - PENDER COUNTY	Fire/EMS	X	X	X	X	X	X								X	X		
HAMPSTEAD VOLUNTEER FIRE DEPARTMENT INCORPORATED	Fire/EMS	X	X	X	X	X	X								X	X		
SHILOH-COLUMBIA VOLUNTEER FIRE DEPARTMENT INCORPORATED STATION 1900	Fire/EMS	X	X	X	X	X	X								X	X		
PENDER VOLUNTEER EMERGENCY MEDICAL SERVICES AND RESCUE INCORPORATED STATION 4	Fire/EMS	X	X	X	X	X	X	X	X						X	X		
PENDER EMERGENCY MEDICAL SERVICES	Fire/EMS	X	X	X	X	X	X								X	X		
NORTH CAROLINA STATE HIGHWAY PATROL TROOP B DISTRICT IV - SUBSTATION	Police	X	X	X	X	X	X								X	X	X	X
SURF CITY POLICE DEPARTMENT	Police	X	X	X	X	X	X	X	X						X	X		

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
TOPSAIL BEACH POLICE DEPARTMENT	Police	X	X	X	X	X	X	X	X						X	X		
BURGAW POLICE DEPARTMENT	Police	X	X	X	X	X	X							X	X	X	X	X
PENDER COUNTY SHERIFFS OFFICE	Police	X	X	X	X	X	X							X	X	X		X
Pender High	School	X	X	X	X	X	X								X	X		
Penderlea Elementary	School	X	X	X	X	X	X								X	X		
Rocky Point Primary	School	X	X	X	X	X	X							X	X	X		X
Topsail High	School	X	X	X	X	X	X								X	X		
Topsail Middle	School	X	X	X	X	X	X								X	X		
West Pender Middle	School	X	X	X	X	X	X								X	X		
Burgaw Elementary	School	X	X	X	X	X	X								X	X	X	X
Burgaw Middle	School	X	X	X	X	X	X						X	X	X	X	X	X
North Topsail Elementary	School	X	X	X	X	X	X											
Malpass Corner Elementary	School	X	X	X	X	X	X								X	X		
South Topsail Elementary	School	X	X	X	X	X	X									X		
Cape Fear Elementary	School	X	X	X	X	X	X								X	X		
Cape Fear Middle	School	X	X	X	X	X	X								X	X		
Heide Trask High	School	X	X	X	X	X	X						X	X	X	X	X	X
Pender Early College High	School	X	X	X	X	X	X						X	X	X	X	X	X
Topsail Elementary	School	X	X	X	X	X	X								X	X		
Penderlea Christian Academy	School	X	X	X	X	X	X											
Topsail Montessori School	School	X	X	X	X	X	X								X	X		
Forest Lane Family Care Home #1	Medical	X	X	X	X	X	X							X	X	X		
Forest Lane Family Care Home #2	Medical	X	X	X	X	X	X							X	X	X		
Karon's Family Care Home	Medical	X	X	X	X	X	X								X	X		
Piney Wood Family Care Home	Medical	X	X	X	X	X	X								X	X		
Liberty Home Care	Medical	X	X	X	X	X	X	X	X				X	X	X	X	X	X
Major Home Care	Medical	X	X	X	X	X	X								X	X		
Pender Adult Services, Inc.	Medical	X	X	X	X	X	X							X	X	X		X

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Pender County DSS	Medical	X	X	X	X	X	X							X	X	X		X
Pender Home Health	Medical	X	X	X	X	X	X						X	X	X	X	X	X
Well Care Health Services, Inc.	Medical	X	X	X	X	X	X							X	X	X	X	X
The Meadows of Burgaw	Medical	X	X	X	X	X	X							X	X	X	X	X
Pender Memorial Hospital, Inc.	Medical	X	X	X	X	X	X							X	X	X	X	X
Carr Facility	Medical	X	X	X	X	X	X											
CDTEG, Inc.	Medical	X	X	X	X	X	X							X	X	X		X
Janice Nichols Home	Medical	X	X	X	X	X	X								X	X	X	X
Pender County Center	Medical	X	X	X	X	X	X							X	X	X		X
Robert Ayers Home	Medical	X	X	X	X	X	X								X	X	X	X
Huntington Health Care	Medical	X	X	X	X	X	X						X	X	X	X	X	X
Woodbury Wellness Center, Inc.	Medical	X	X	X	X	X	X								X	X		
Karon's Family Care Home	Medical	X	X	X	X	X	X								X	X		
Liberty Home Care	Medical	X	X	X	X	X	X	X	X				X	X	X	X	X	X
Major Home Care	Medical	X	X	X	X	X	X								X	X		
Pender Adult Services, Inc.	Medical	X	X	X	X	X	X							X	X	X		X
Pender County DSS	Medical	X	X	X	X	X	X							X	X	X		X
The Meadows of Burgaw	Medical	X	X	X	X	X	X							X	X	X	X	X
Pender County Center	Medical	X	X	X	X	X	X							X	X	X		X
Robert Ayers Home	Medical	X	X	X	X	X	X								X	X	X	X
Huntington Health Care	Medical	X	X	X	X	X	X						X	X	X	X	X	X
Woodbury Wellness Center, Inc.	Medical	X	X	X	X	X	X								X	X		

Source: NC OneMap

SECTION 7
CAPABILITY ASSESSMENT

This section discusses the capability of the participating jurisdictions in the Southeastern NC 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 the 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.[1] As with any planning process, it is important to try to establish feasible goals, objectives, and/or actions based on an understanding of the organization's capacity (agencies and/or departments) to implement the proposed strategies. The capability assessment helps determine practical mitigation actions that are 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, or programs already in place and 2) an analysis of its capacity to implement mitigation measures. Careful examination of local capabilities helps identify existing gaps, shortfalls, or weaknesses with ongoing government activities that potentially hinder proposed mitigation activities and possibly exacerbate community hazard vulnerability. A capability assessment acknowledges the existing mitigation measures (completed or underway) at the local government level, which should be leveraged and enhanced through future mitigation efforts.

The capability assessment completed for the SENC Region serves as a critical planning step and an integral part of the foundation for designing an effective hazard mitigation strategy. Coupled with the risk assessment, the capability assessment helps identify and target meaningful mitigation actions for incorporation in the Mitigation Strategy portion of the Hazard Mitigation Plan. This helps establish the goals and objectives for the region to pursue under this Plan and ensures that such goals and objectives are feasible under given local conditions.

[1] While the Final Rule for implementing the Disaster Mitigation Act of 2000 does not require a local capability assessment to be completed for local hazard mitigation plans, it is a critical step in developing a mitigation strategy that meets the needs of the region while taking into account their own unique abilities. The Rule does state that a community's mitigation strategy should be "based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools" (44 CFR, Part 201.6(c)(3)).

7.2 CONDUCTING THE CAPABILITY ASSESSMENT

To facilitate the inventory and analysis of local government capabilities within the Southeast NC region, the Capability Assessment sections from the previous Southeastern NC Regional Hazard Mitigation Plan were reviewed and relevant information on capabilities *were* documented in this update. The project consultant then reviewed County and municipal websites to determine additional capabilities for documentation. Finally, the participating jurisdictions reviewed the draft version of this update and provided any supplemental or missing capability information before the final plan was completed and adopted.

Capabilities that were reviewed included documentation on existing local plans, policies, programs, or ordinances that contribute to and/or hinder the Region's ability to implement hazard mitigation actions. Other indicators included information related to the Region's fiscal, administrative, and technical capabilities, such as access to local budgetary and personnel resources for mitigation purposes, as well as any existing education and outreach programs that can be used to promote mitigation. The participating jurisdictions were also asked to comment on the current political climate with respect to hazard mitigation, an important consideration for any local planning or decision-making process.

At a minimum, the capability assessment provides an extensive and consolidated inventory of existing local plans, ordinances, programs, and resources in place or under development, in addition to their overall effect on hazard loss reduction. In completing the assessment, local officials were also asked to conduct a self-assessment of their jurisdiction's specific capabilities. The capability assessment thereby not only helps accurately assess the degree of local capability, but it also serves as a good source of introspection for counties and local jurisdictions that want to improve their capabilities as identified gaps, weaknesses, or conflicts can be recast as opportunities for specific actions to be proposed as part of the Mitigation Action Plan.

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 jurisdictions in the SENC Region to implement hazard mitigation activities. All information is based upon the input provided by local government officials.

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 jurisdictions in the SENC 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 jurisdictions in the SENC Region. A checkmark indicates that the given item is currently in place and being implemented. 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
Brunswick County	√	√	√	√	√	√			√	√	√	√	√		√	√	√	√	√	√		√	√		√	√
Village of Bald Head Island	√	√	√	√	√					√	√	√			√	√	√	√	√			√	√		√	√
Town of Belville	√	√	√	√						√	√	√			√	√	√	√	√			√	√		√	
City of Boiling Spring Lakes	√	√	√	√	√	√			√	√	√	√			√	√	√	√	√	√		√	√		√	
Town of Bolivia	√	√	√							√	√				√	√	√	√	√			√	√		√	
Town of Calabash	√	√	√		√				√	√	√				√	√	√	√	√	√		√	√		√	
Town of Carolina Shores	√	√	√		√					√	√				√	√	√	√	√	√		√	√		√	√
Town of Caswell Beach	√	√	√							√	√				√	√	√	√	√			√	√		√	√

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 Holden Beach	√	√	√	√	√					√	√				√	√	√	√	√			√	√		√	√
Town of Leland	√	√	√	√	√	√				√	√	√	√		√	√	√	√	√			√	√		√	√
Town of Navassa	√	√	√	√	√					√	√				√	√	√	√	√			√	√		√	
City of Northwest	√	√	√							√	√				√	√	√	√	√	√		√	√		√	
Town of Oak Island	√	√	√	√	√					√	√	√			√	√	√	√	√	√		√	√		√	√
Town of Ocean Isle Beach	√	√	√	√	√					√	√	√			√	√	√	√	√			√	√		√	√
Town of Saint James	√	√	√	√		√			√	√	√	√			√	√	√	√	√	√		√	√		√	√
Town of Sandy Creek	√	√								√	√				√		√	√	√			√	√			
Town of Shallotte	√	√	√	√	√					√	√	√			√	√	√	√	√	√		√	√		√	
City of Southport	√	√	√	√	√				√	√	√	√			√	√	√	√	√	√		√	√		√	√

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 Sunset Beach	√	√	√	√	√					√	√	√			√	√	√	√	√	√		√	√		√	√
Town of Varnamtown	√	√	√							√	√				√	√	√	√	√			√	√		√	
New Hanover County	√	√	√	√	√	√	√	√	√	√	√	√			√	√	√	√	√	√	√	√	√		√	√
Town of Carolina Beach	√	√	√	√	√	√	√	√	√	√	√	√			√	√	√	√	√		√	√	√		√	√
Town of Kure Beach	√	√	√	√		√	√	√	√	√	√	√			√	√	√	√	√			√	√		√	√
City of Wilmington	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√		√	
Town of Wrightsville Beach	√	√	√	√	√	√	√	√	√	√	√	√			√	√	√	√	√	√		√	√		√	√
Onslow County	√	√	√	√	√	√			√	√	√	√	√		√	√	√	√	√			√	√		√	√
City of Jacksonville	√	√		√	√	√			√	√	√	√		√	√	√	√	√	√	√		√	√		√	√

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 Holly Ridge	√	√	√			√					√				√	√	√	√	√			√	√		√	
Town of North Topsail Beach	√	√	√	√	√	√			√	√	√	√			√	√	√	√	√	√		√	√		√	√
Town of Richlands	√	√		√	√	√			√		√	√			√	√	√	√	√			√	√		√	
Town of Swansboro	√	√	√	√	√	√				√	√		√	√	√	√	√	√	√	√		√	√		√	
Pender County	√	√				√				√	√	√	√		√	√	√	√	√	√		√	√		√	√
Town of Atkinson	√	√	√								√				√	√	√	√	√	√		√	√		√	
Town of Burgaw	√	√	√	√							√	√			√	√	√	√	√	√		√	√		√	
Village of Saint Helena	√	√	√								√				√	√	√	√	√	√		√	√		√	
Town of Surf City	√	√	√	√	√	√			√	√	√	√	√		√	√	√	√	√		√	√	√		√	

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 Topsail Beach	√	√	√	√	√						√	√			√	√	√	√	√			√	√		√	√
Town of Watha	√	√	√								√				√	√	√	√	√			√	√		√	

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.

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 Capability Assessment documents community capabilities across a range of emergency management plans to assess each participating jurisdiction's willingness to plan and their level of technical planning proficiency. Some examples of emergency management capabilities include the following:

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.

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.

Emergency Operations Plan

An emergency operations plan outlines responsibilities and the means by which resources are deployed during and following an emergency or disaster.

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.

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. The Capability Assessment documents general planning capabilities and the degree to which hazard mitigation is integrated into other ongoing planning efforts in the region.

Some examples of general planning capabilities include the following:

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.

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.

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 damage. 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.

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.

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.

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.

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.

Other Relevant Plans and/or Planning Processes

Military Ocean Terminal Sunny Point (MOTSU) Joint Land Use Study

MOTSU is the largest military terminal in the world. It serves as the Army's primary East-coast deep water port for containerized ammunition and is a transfer point between rail, trucks, and ships for the import and export of weapons, ammunition, explosives and military equipment for United States Army. Recently, MOTSU partnered with the Cape Fear Council of Governments and the jurisdictions of Brunswick County, New Hanover County, Boiling Spring Lakes, Carolina Beach, Kure Beach, Leland, Southport to develop a joint land use study.

There is a Public Safety coordination element to the Joint Land Use Study that could be evaluated to see if there are elements that could compliment or be integrated with the regional hazard mitigation plan.

Resilient Redevelopment Plans

Following Hurricane Matthew, the State of North Carolina provided funding through the Disaster recovery Act of 2016 to assist impacted communities with the development of Resilient Redevelopment Plans. Plans were developed for all four counties in the SENC region. The primary goals were to: 1) develop strategic plans and actions; and 2) define any unmet funding needs required to implement those actions after other funds are used. The resulting resilient redevelopment plans served as the foundation for any supplemental funding received through Congress, the North Carolina General Assembly and other funding sources. These plans also provided the basis for the state's Recovery Action Plan required by the U.S. Department of Housing and Urban Development heeded to spend funds allocated through the Community Development Block Grant – Disaster Relief program. The Resilient Redevelopment Plans should be evaluated to see what opportunities are present for integration with the hazard mitigation plan.

Resilient Coastal Communities Program

The N.C. Resilient Coastal Communities Program (RCCP), administered by the N.C. Department of Environmental Quality's (NCDEQ) Division of Coastal Management (DCM) is designed to support a locally driven process for setting coastal resilience goals, assessing community capacity, and identifying and prioritizing projects that strengthen resilience to coastal hazards. The projects will align closely with the mitigation goals identified in this regional hazard mitigation plan. The program is funded by the N.C. General Assembly and the National Fish and Wildlife Foundation (NFWF). The program provides both financial and technical assistance to help local governments overcome barriers to resilience and adaptation planning. The program aims to build local capacity and advance a proactive, equitable, and sustainable approach to coastal resilience. Through a structured, four-phase planning framework, participating communities assess their vulnerabilities and develop "shovel-ready" projects tailored to their specific risks and needs. RCCP communities in the SENC Region include Burgaw, Carolina Beach, Holden Beach, Holly Ridge, Jacksonville, Leland, Navassa, New Hanover County, North Topsail Beach, Oak Island, Ocean Isle Beach, Pender County, Shallotte, Southport, Swansboro, Sunset Beach, Surf City, Topsail Beach, and Wilmington.

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.

NFIP information for each participating jurisdiction in the SENC Region can be found in **Table 7.2** below.

TABLE 7.2 NFIP INFORMATION FOR PARTICIPATING JURISDICTIONS

Jurisdiction	Date Joined	Current Map Effective Date	Policies in Force	Total Coverage	Claims	Claims Payments
BRUNSWICK COUNTY						
Village of Bald Head Island	5/15/86	8/28/18	862	$793,546,000	714	$5,829,770.53
Town of Belville	6/2/06	8/28/18	86	$27,680,000	9	$19,619.49
City of Boiling Spring Lakes	3/2/89	8/28/18	210	$66,118,000	104	$2,334,624.58
Town of Bolivia	6/2/06	10/16/08	24	$7,048,000	4	$78,887.79
Town of Calabash	2/4/88	8/28/18	193	$63,040,000	6	$70,048.06
Town of Carolina Shores	8/28/18	8/28/18	665	$212,721,000	34	$941,278.12
Town of Caswell Beach	1/17/86	8/28/18	468	$124,261,000	206	$1,341,144.05
Town of Holden Beach	5/26/72	8/28/18	1,920	$564,560,000	2291	$12,642,024.10

Jurisdiction	Date Joined	Current Map Effective Date	Policies in Force	Total Coverage	Claims	Claims Payments
Town of Leland	10/19/92	8/28/18	1,609	$525,389,000	75	$4,539,602.75
Town of Navassa	6/6/06	12/6/19	24	$7,698,000	4	$141,562.19
City of Northwest	11/12/98	12/6/19	11	$3,234,000	1	$4,178.69
Town of Oak Island	7/1/99	8/28/18	3,605	$1,018,758,000	1513	$13,350,649.20
Town of Ocean Isle Beach	11/17/72	8/28/18	2,924	$793,546,000	2081	$9,050,887.09
Town of Sandy Creek*	--	--	0	$0	0	$0
Town of Shallotte	1/3/86	8/28/18	201	$66,439,000	35	$939,820.59
City of Southport	4/15/77	8/28/18	718	$232,839,000	196	$4,416,960.45
Town of St James	6/27/00	8/28/18	1,176	$382,142,000	122	$915,605.84
Town of Sunset Beach	11/17/72	8/28/18	1,931	$551,446,000	270	$650,691.75
Town of Varnamtown	5/30/01	8/28/18	17	$5,302,000	5	$28,312.32
Unincorporated Brunswick	5/15/86	12/6/19	4,271	$1,304,181,000	852	$16,729,034.57
ONSLOW COUNTY						
Town of Holly Ridge	7/8/08	1/17/25	146	$47,091,000	5	$41,219.00
City of Jacksonville	2/15/85	2/16/07	639	$198,212,000	302	$5,107,596.49
Town of North Topsail Beach	06/15/90	1/17/25	1,452	$327,025,000	1501	$19,303,810.69
Town of Richlands	7/3/86	6/19/20	23	$8,017,000	12	$486,217.12
Town of Swansboro	10/18/83	6/19/20	212	$64,968,000	134	$2,098,723.68
Unincorporated Onslow	7/2/87	1/17/25	2,243	$683,680,000	1868	$28,614,794.55
NEW HANOVER COUNTY						
Town of Carolina Beach	5/2/75	8/28/18	3,952	$879,804,000	3029	$35,744,012.78
Town of Kure Beach	1/6/82	2/16/07	971	$285,707,000	777	$24,458,970.56
City of Wilmington	4/17/78	8/28/18	4,054	$1,237,973,000	656	$9,688,480.31
Town of Wrightsville Beach	10/6/70	8/28/18	2,595	$693,787,000	3546	$42,698,355.36
Unincorporated New Hanover	07/17/78	1/17/25	6,005	$1,892,289,000	3102	$45,842,601.38

Jurisdiction	Date Joined	Current Map Effective Date	Policies in Force	Total Coverage	Claims	Claims Payments
PENDER COUNTY						
Town of Atkinson	9/22/10	12/6/19	0	$0	0	$0.00
Town of Burgaw	01/19/00	1/17/25	103	$31,286,000	45	$1,403,527.44
Village of Saint Helena	8/25/11	1/17/25	7	$2,133,000	0	$0.00
Town of Surf City	5/2/77	1/17/25	2,059	$556,626,000	1906	$14,571,871.23
Town of Topsail Beach	9/30/77	02/16/07	1,095	$308,429,000	2282	$20,564,286.78
Town of Watha	2/14/97	1/17/25	1	$349,000	0	$0.00
Unincorporated Pender	2/15/85	1/17/25	2,236	$683,241,000	1427	$58,286,607.21

*Source: FEMA NFIP Policy Statistics; *Community not in NFIP*

All but one jurisdiction in the Southeastern NC region 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.

CRS communities in the Southeastern NC Region include the following:

- Bald Head Island (Class 7)
- Brunswick County (Class 8)
- Carolina Shores (Class 8)
- Carolina Beach (Class 6)
- Caswell Beach (Class 8)
- Holden Beach (Class 6)
- Jacksonville (Class 8)
- Kure Beach (Class 8)
- Leland (Class 7)
- New Hanover County (Class 7)
- North Topsail Beach (Class 5)
- Oak Island 9 (Class 6)
- Ocean Isle Beach (Class 7)
- Onslow County (Class 8)
- Pender County (Class 7)
- Southport (Class 7)
- St. James (Class 7)
- Sunset Beach (Class 6)
- Topsail Beach (Class 6)
- Wrightsville Beach (Class 7)

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.

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.

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.

Flood Damage Prevention Ordinance

A flood damage prevention ordinance establishes minimum building standards in the floodplain with the intent to minimize public and private losses due to flood conditions. 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.

Substantial Damage Estimates

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.

Jurisdiction	Local Floodplain Management Regulations	Designated Officials for SD/SI Determinations	Process Used to Make SD/SI Determinations	Communication Procedures for SD/SI Requirements
BRUNSWICK COUNTY	The County maintains a county-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 8).	The County Codes Director is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between Brunswick County Emergency Management, Police and Fire Departments, Permitting Departments and all jurisdictions within the County that participate in the NFIP. 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: a. Estimation of market value or obtaining appraisal b. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure c. Determination of whether work constitutes substantial improvement/repair of damage 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 County staff and compliance with building codes and flood prevention ordinance required.
Bald Head Island	The Village maintains a village-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 7).	The Development Services Director is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Village staff and Brunswick County Emergency Management, Police and Fire Departments, Permitting Departments. Following a flood event, Village staff (along with other County, municipal and mutual aid staff as needed) conduct damage assessments and collect data on damaged structures. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: a. Estimation of market value or obtaining appraisal b. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure c. Determination of whether work constitutes substantial improvement/repair of damage	If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Village staff and compliance with building codes and flood prevention ordinance required.

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.	
Belville	The Town maintains a town-wide Flood Damage Prevention Ordinance.	Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: d. Estimation of market value or obtaining appraisal e. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure f. Determination of whether work constitutes substantial improvement/repair of damage 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.
Boiling Spring Lakes	The City maintains a city-wide Flood Damage Prevention Ordinance.	The UDO Administrator is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant City staff and Brunswick County Emergency Management, Police and Fire Departments, Permitting Departments. 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: a. Estimation of market value or obtaining appraisal b. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure c. Determination of whether work constitutes substantial improvement/repair of damage 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 City staff and compliance with building codes and flood prevention ordinance required.

Jurisdiction	Local Floodplain Management Regulations	Designated Officials for SD/SI Determinations	Process Used to Make SD/SI Determinations	Communication Procedures for SD/SI Requirements
Bolivia	The Town participates in the NFIP.	Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick County Emergency Management, Police and Fire Departments, Permitting Departments.	As a member of the NFIP, Bolivia is required to have a Flood Damage Prevention Ordinance. It is likely the town adopted that of Brunswick County (see above).	It is likely the town adopted that of Brunswick County (see above).
Calabash	The Town participates in the NFIP.	Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick County Emergency Management, Police and Fire Departments, Permitting Departments.	As a member of the NFIP, Calabash is required to have a Flood Damage Prevention Ordinance, which is found in Article 19 of the Town's Unified Development Ordinance Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: a. Estimation of market value or obtaining appraisal b. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure c. Determination of whether work constitutes substantial improvement/repair of damage 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.
Carolina Shores	The Town maintains a town-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 8).	The UDO Administrator is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:	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.

Jurisdiction	Local Floodplain Management Regulations	Designated Officials for SD/SI Determinations	Process Used to Make SD/SI Determinations	Communication Procedures for SD/SI Requirements
			a. Estimation of market value or obtaining appraisal b. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure c. Determination of whether work constitutes substantial improvement/repair of damage This process involves comparing the damage assessment information with permit applications.	
Caswell Beach	The Town maintains a town-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 8).	The Town Manager is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: d. Estimation of market value or obtaining appraisal e. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure f. Determination of whether work constitutes substantial improvement/repair of damage 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.
Holden Beach	The Town maintains a town-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 6).	The Building Inspector and Development Services Director is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process:	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.

Jurisdiction	Local Floodplain Management Regulations	Designated Officials for SD/SI Determinations	Process Used to Make SD/SI Determinations	Communication Procedures for SD/SI Requirements
			g. Estimation of market value or obtaining appraisal h. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure i. Determination of whether work constitutes substantial improvement/repair of damage This process involves comparing the damage assessment information with permit applications.	
Leland	The Town maintains a town-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 7).	Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: j. Estimation of market value or obtaining appraisal k. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure l. Determination of whether work constitutes substantial improvement/repair of damage 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.
Navassa	The Town participates in the NFIP.	Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick County Emergency Management, Police and Fire Departments, Permitting Departments.	As a member of the NFIP, Navassa is required to have a Flood Damage Prevention Ordinance. It is likely the town adopted that of Brunswick County (see above).	It is likely the town adopted that of Brunswick County (see above).

Jurisdiction	Local Floodplain Management Regulations	Designated Officials for SD/SI Determinations	Process Used to Make SD/SI Determinations	Communication Procedures for SD/SI Requirements
Northwest	The Town participates in the NFIP.	Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick County Emergency Management, Police and Fire Departments, Permitting Departments.	As a member of the NFIP, Northwest is required to have a Flood Damage Prevention Ordinance. It is likely the town adopted that of Brunswick County (see above).	It is likely the town adopted that of Brunswick County (see above).
Oak Island	The Town maintains a town-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 6).	The Development Services Director is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: m. Estimation of market value or obtaining appraisal n. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure o. Determination of whether work constitutes substantial improvement/repair of damage 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.

Jurisdiction	Local Floodplain Management Regulations	Designated Officials for SD/SI Determinations	Process Used to Make SD/SI Determinations	Communication Procedures for SD/SI Requirements
Ocean Isle Beach	The Town maintains a town-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 7).	The Planning and Zoning Administrator is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: p. Estimation of market value or obtaining appraisal q. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure r. Determination of whether work constitutes substantial improvement/repair of damage 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.
Sandy Creek*				
Shallotte	The Town maintains a town-wide Flood Damage Prevention Ordinance.	Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: s. Estimation of market value or obtaining appraisal t. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure u. Determination of whether work constitutes substantial improvement/repair of damage 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.

Jurisdiction	Local Floodplain Management Regulations	Designated Officials for SD/SI Determinations	Process Used to Make SD/SI Determinations	Communication Procedures for SD/SI Requirements
Southport	The City maintains a city-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 7).	The UDO Administrator is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant City staff and Brunswick County Emergency Management, Police and Fire Departments, Permitting Departments. 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: v. Estimation of market value or obtaining appraisal w. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure x. Determination of whether work constitutes substantial improvement/repair of damage 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 City staff and compliance with building codes and flood prevention ordinance required.
St. James	The Town maintains a town-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 7).	The Town Manager is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: y. Estimation of market value or obtaining appraisal z. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure aa. Determination of whether work constitutes substantial improvement/repair of damage 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.

Jurisdiction	Local Floodplain Management Regulations	Designated Officials for SD/SI Determinations	Process Used to Make SD/SI Determinations	Communication Procedures for SD/SI Requirements
Sunset Beach	The Town maintains a town-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 6).	The Town Administrator is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: bb. Estimation of market value or obtaining appraisal cc. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure dd. Determination of whether work constitutes substantial improvement/repair of damage 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.
Varnamtown	The Town maintains a town-wide Flood Damage Prevention Ordinance.	The Planning Board Chairperson is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Brunswick 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: ee. Estimation of market value or obtaining appraisal ff. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure gg. Determination of whether work constitutes substantial improvement/repair of damage 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.

Jurisdiction	Local Floodplain Management Regulations	Designated Officials for SD/SI Determinations	Process Used to Make SD/SI Determinations	Communication Procedures for SD/SI Requirements
NEW HANOVER COUNTY	The County maintains a county-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 7).	The County Planning Director is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between New Hanover County Emergency Management, Police and Fire Departments, Permitting Departments and all jurisdictions within the County that participate in the NFIP. 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: d. Estimation of market value or obtaining appraisal e. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure f. Determination of whether work constitutes substantial improvement/repair of damage 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 County staff and compliance with building codes and flood prevention ordinance required.
Carolina Beach	The Town maintains a town-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 6).	The Town Official is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and New Hanover 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: a. Estimation of market value or obtaining appraisal b. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure c. Determination of whether work constitutes substantial improvement/repair of damage 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.

Jurisdiction	Local Floodplain Management Regulations	Designated Officials for SD/SI Determinations	Process Used to Make SD/SI Determinations	Communication Procedures for SD/SI Requirements
Kure Beach	The Town maintains a town-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 8).	The Building Inspector is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and New Hanover 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: d. Estimation of market value or obtaining appraisal e. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure f. Determination of whether work constitutes substantial improvement/repair of damage 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.
Wilmington	The City maintains a city-wide Flood Damage Prevention Ordinance.	Determination of substantial damage is a coordinated effort between relevant City staff and New Hanover County Emergency Management, Police and Fire Departments, Permitting Departments.	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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: g. Estimation of market value or obtaining appraisal h. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure i. Determination of whether work constitutes substantial improvement/repair of damage 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 City staff and compliance with building codes and flood prevention ordinance required.
Wrightsville	The Town maintains a town-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 7).	The Director of Planning is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and New Hanover County Emergency Management, Police and Fire Departments, Permitting Departments. Following a flood event, Town staff (along with other County, municipal and mutual aid	If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes

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 as needed) conduct damage assessments and collect data on damaged structures. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: j. Estimation of market value or obtaining appraisal k. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure l. Determination of whether work constitutes substantial improvement/repair of damage This process involves comparing the damage assessment information with permit applications.	and flood prevention ordinance required.
ONSLOW COUNTY	The County maintains a county-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 8).	The County Planning Director is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between Onslow County Emergency Management, Police and Fire Departments, Permitting Departments and all jurisdictions within the County that participate in the NFIP. 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: g. Estimation of market value or obtaining appraisal h. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure i. Determination of whether work constitutes substantial improvement/repair of damage 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 County staff and compliance with building codes and flood prevention ordinance required.
Holly Ridge	The Town maintains a town-wide Flood Damage Prevention Ordinance.	The Building Codes Administrator is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Onslow County Emergency Management, Police and Fire Departments, Permitting Departments. Following a flood event, Town staff (along with other County, municipal and mutual aid	If work constitutes substantial improvement or repair of substantial damage, applicants are notified by Town staff and compliance with building codes

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 as needed) conduct damage assessments and collect data on damaged structures. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: a. Estimation of market value or obtaining appraisal b. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure c. Determination of whether work constitutes substantial improvement/repair of damage This process involves comparing the damage assessment information with permit applications.	and flood prevention ordinance required.
Jacksonville	The City maintains a city-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 8).	The City Manager is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant City staff and Onslow County Emergency Management, Police and Fire Departments, Permitting Departments. 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: d. Estimation of market value or obtaining appraisal e. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure f. Determination of whether work constitutes substantial improvement/repair of damage 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 City staff and compliance with building codes and flood prevention ordinance required.
North Topsail Beach	The Town maintains a town-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 5).	The Planning Director is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Onslow 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	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.

Jurisdiction	Local Floodplain Management Regulations	Designated Officials for SD/SI Determinations	Process Used to Make SD/SI Determinations	Communication Procedures for SD/SI Requirements
			assessments and collect data on damaged structures. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: m. Estimation of market value or obtaining appraisal n. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure o. Determination of whether work constitutes substantial improvement/repair of damage This process involves comparing the damage assessment information with permit applications.	
Richlands	The Town maintains a town-wide Flood Damage Prevention Ordinance.	The Town Administrator is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Onslow 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: p. Estimation of market value or obtaining appraisal q. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure r. Determination of whether work constitutes substantial improvement/repair of damage 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.
Swansboro	The Town maintains a town-wide Flood Damage Prevention Ordinance.	The Town Planner is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Onslow 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	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.

Jurisdiction	Local Floodplain Management Regulations	Designated Officials for SD/SI Determinations	Process Used to Make SD/SI Determinations	Communication Procedures for SD/SI Requirements
			assessments and collect data on damaged structures. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: s. Estimation of market value or obtaining appraisal t. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure u. Determination of whether work constitutes substantial improvement/repair of damage This process involves comparing the damage assessment information with permit applications.	
PENDER COUNTY	The County maintains a county-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 7).	The County Administrator is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between Pender County Emergency Management, Police and Fire Departments, Permitting Departments and all jurisdictions within the County that participate in the NFIP. 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: j. Estimation of market value or obtaining appraisal k. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure l. Determination of whether work constitutes substantial improvement/repair of damage 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 County staff and compliance with building codes and flood prevention ordinance required.
Atkinson	The Town participates in the NFIP.	Determination of substantial damage is a coordinated effort between relevant Town staff and Pender County Emergency Management, Police and Fire	As a member of the NFIP, Atkinson is required to have a Flood Damage Prevention Ordinance. It is likely the town adopted that of Pender County (see above).	It is likely the town adopted that of Pender County (see above).

Jurisdiction	Local Floodplain Management Regulations	Designated Officials for SD/SI Determinations	Process Used to Make SD/SI Determinations	Communication Procedures for SD/SI Requirements
		Departments, Permitting Departments.		
Burgaw	The Town maintains a town-wide Flood Damage Prevention Ordinance.	The Director of Inspections and/or Town Planner is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Pender 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: v. Estimation of market value or obtaining appraisal w. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure x. Determination of whether work constitutes substantial improvement/repair of damage 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.
Saint Helena	The City maintains a city-wide Flood Damage Prevention Ordinance.	The City Engineer is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant City staff and Pender County Emergency Management, Police and Fire Departments, Permitting Departments. 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: y. Estimation of market value or obtaining appraisal z. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure aa. Determination of whether work constitutes substantial improvement/repair of damage	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.

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.	
Surf City	The Town maintains a town-wide Flood Damage Prevention Ordinance.	The Building Inspector is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Pender 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: bb. Estimation of market value or obtaining appraisal cc. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure dd. Determination of whether work constitutes substantial improvement/repair of damage 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.
Topsail Beach	The Town maintains a town-wide Flood Damage Prevention Ordinance and participates in the CRS (Class 6).	The Planning Director is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Pender 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: ee. Estimation of market value or obtaining appraisal ff. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure gg. Determination of whether work constitutes substantial improvement/repair of damage	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.

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.	
Watha	The Town maintains a town-wide Flood Damage Prevention Ordinance.	The Mayor is designated as the Floodplain Administrator.	Determination of substantial damage is a coordinated effort between relevant Town staff and Pender 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. Substantial damages/improvements determined by Floodplain Administrator with Building Official coordination using the following process: hh. Estimation of market value or obtaining appraisal ii. Cost comparison to improve, to repair a damaged building to pre-damaged condition, or combined, vs. market value of building/structure jj. Determination of whether work constitutes substantial improvement/repair of damage 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.

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 Capability Assessment captured information on administrative and technical capability through the identification of available staff and personnel resources.

Table 7.4 provides summary results for the SENC Region 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
Brunswick County	√	√	√	√	√	√			√	√	√	√	√	√
City of Boiling Spring Lakes	√	√	√		√	√			√	√	√		√	√
City of Jacksonville	√	√	√	√	√	√			√	√	√	√	√	√
City of Northwest						√				√	√		√	√
City of Southport	√	√	√		√	√		√	√	√	√		√	√
City of Wilmington	√	√	√		√	√	√		√	√	√		√	√
New Hanover County	√	√	√	√	√	√		√	√	√	√	√	√	√
Onslow County	√		√	√	√	√			√	√	√	√	√	√
Pender County	√	√	√	√	√	√			√	√	√	√	√	√

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 Atkinson						√				√	√		√	√
Town of Belville	√	√	√		√	√			√	√	√		√	√
Town of Bolivia						√				√	√		√	√
Town of Burgaw						√				√	√		√	√
Town of Calabash	√	√	√	√	√	√			√	√	√		√	√
Town of Carolina Beach	√	√	√		√	√			√	√	√		√	√
Town of Carolina Shores	√	√	√			√				√	√		√	√
Town of Caswell Beach	√	√	√			√				√	√		√	√

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 Holden Beach	√	√	√			√				√	√		√	√
Town of Holly Ridge						√				√	√		√	√
Town of Kure Beach	√	√	√		√	√			√	√	√		√	√
Town of Leland	√	√	√	√		√			√	√	√		√	√
Town of Navassa	√	√	√		√	√				√	√		√	√
Town of North Topsail Beach	√	√	√	√	√	√			√	√	√		√	√
Town of Oak Island	√	√	√			√	√			√	√		√	√
Town of Ocean Isle Beach	√	√	√			√				√	√		√	√

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 Richlands	√				√	√				√	√		√	√
Town of Saint James	√	√	√		√	√				√	√		√	√
Town of Sandy Creek										√	√		√	√
Town of Shallotte	√	√	√			√				√	√		√	√
Town of Sunset Beach	√	√	√			√				√	√		√	√
Town of Surf City	√	√	√	√	√	√			√	√	√		√	√
Town of Swansboro	√	√	√	√	√	√	√		√	√	√		√	√
Town of Topsail Beach						√				√	√		√	√
Town of Varnamtown						√				√	√		√	√

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 Watha						√				√	√		√	√
Town of Wrightsville Beach	√	√	√		√	√			√	√	√		√	√
Village of Bald Head Island	√	√	√			√				√	√		√	√
Village of Saint Helena						√				√	√		√	√

7.3.3 Fiscal Capability

The ability of a local government to take action 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 Capability Assessment captures 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 SENC Region 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
Brunswick County	√	√									
City of Boiling Spring Lakes											
City of Jacksonville	√	√			√	√	√				√
City of Northwest											
City of Southport											
City of Wilmington	√	√	√		√	√	√	√	√		
New Hanover County	√	√			√	√	√				
Onslow County	√	√						√	√		√
Pender County	√	√									

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 Atkinson											
Town of Belville											
Town of Bolivia											
Town of Burgaw											
Town of Calabash											
Town of Carolina Beach					√	√	√				
Town of Carolina Shores											
Town of Caswell Beach											
Town of Holden Beach											
Town of Holly Ridge											
Town of Kure Beach					√	√	√	√	√	√	
Town of Leland	√	√				√		√	√	√	
Town of Navassa											
Town of North Topsail Beach	√	√	√					√	√	√	
Town of Oak Island											
Town of Ocean Isle Beach											
Town of Richlands	√	√					√	√	√	√	
Town of Saint James	√										
Town of Sandy Creek											
Town of Shallotte											
Town of Sunset Beach											

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 Surf City	√	√	√		√	√					√
Town of Swansboro	√	√	√			√		√	√	√	√
Town of Topsail Beach											
Town of Varnamtown											
Town of Watha											
Town of Wrightsville Beach					√	√	√				
Village of Bald Head Island											
Village of Saint Helena											

Source: Local Governments

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 SENC Region 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	Ongoing public education or information program (e.g., responsible water use, fire safety, household	Natural disaster or safety related school programs	StormReady certification	Firewise Communities certification	Public-private partnership initiatives addressing disaster-related issues	Other
Brunswick County				√	√		√
City of Boiling Spring Lakes		√					
City of Jacksonville							
City of Northwest							
City of Southport							
City of Wilmington	√	√					
New Hanover County	√	√		√			√
Onslow County		√		√			√
Pender County				√			√
Town of Atkinson							
Town of Belville							
Town of Bolivia							
Town of Burgaw							
Town of Calabash				√			
Town of Carolina Beach	√	√					
Town of Carolina Shores							
Town of Caswell Beach							
Town of Holden Beach							
Town of Holly Ridge							
Town of Kure Beach	√	√					

Jurisdiction	Local citizen groups or non-profit organizations focused on environmental protection, emergency	Ongoing public education or information program (e.g., responsible water use, fire safety, household	Natural disaster or safety related school programs	StormReady certification	Firewise Communities certification	Public-private partnership initiatives addressing disaster-related issues	Other
Town of Leland	√	√	√	√			
Town of Navassa							
Town of North Topsail Beach							
Town of Oak Island							
Town of Ocean Isle Beach				√			
Town of Richlands							
Town of Saint James	√	√			√		
Town of Sandy Creek							
Town of Shallotte							
Town of Sunset Beach							
Town of Surf City							
Town of Swansboro							
Town of Topsail Beach							
Town of Varnamtown							
Town of Watha							
Town of Wrightsville Beach	√	√					
Village of Bald Head Island							
Village of Saint Helena							

7.3.5 Mitigation Capability

This type of local capability refers to the mitigation strategies and actions that are developed by the communities in this plan.

Table 7.7 provides a summary of the results for the planning area regarding relevant mitigation resources. A checkmark (√) indicates that the given resource is locally available for hazard mitigation purposes.

TABLE 7.7: MITIGATION RESOURCES

Jurisdiction	Do you apply for mitigation grant funding?	Do you perform reconstruction projects?	Do you perform building elevations?	Do you perform acquisitions?
Brunswick County	√	√	√	√
City of Boiling Spring Lakes	√	√		
City of Jacksonville	√	√	√	√
City of Northwest				
City of Southport	√	√	√	√
City of Wilmington	√	√	√	√
New Hanover County	√	√	√	√
Onslow County	√	√	√	√
Pender County	√	√	√	√
Town of Atkinson				
Town of Belville				
Town of Bolivia				
Town of Burgaw	√	√	√	√
Town of Calabash	√		√	
Town of Carolina Beach	√	√	√	√
Town of Carolina Shores	√	√	√	√
Town of Caswell Beach	√	√	√	√
Town of Holden Beach	√	√	√	√

Jurisdiction	Do you apply for mitigation grant funding?	Do you perform reconstruction projects?	Do you perform building elevations?	Do you perform acquisitions?
Town of Holly Ridge				
Town of Kure Beach	√	√	√	√
Town of Leland	√	√	√	√
Town of Navassa	√	√	√	√
Town of North Topsail Beach	√	√	√	√
Town of Oak Island	√	√	√	√
Town of Ocean Isle Beach	√	√	√	√
Town of Richlands				
Town of Saint James	√	√		
Town of Sandy Creek				
Town of Shallotte	√	√	√	√
Town of Sunset Beach	√	√	√	√
Town of Surf City	√	√	√	√
Town of Swansboro	√	√	√	√
Town of Topsail Beach	√	√	√	√
Town of Varnamtown				
Town of Watha				
Town of Wrightsville Beach	√	√	√	√
Village of Bald Head Island	√	√	√	√
Village of Saint Helena				

7.3.6 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 Capability Assessment captures information on political capability of the SENC Region. Local governments 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.). The comments provided by the participating jurisdictions are listed below:

- Onslow County's leadership is very strict on floodplain management. County planning continues to enforce programs to reduce hazard impacts, and the County is working to ensure compliance in hazard mitigation.
- The City of Jacksonville has implemented policies, procedures and ordinances that support hazard mitigation. The City has a floodplain management plan with an assigned floodplain manager. The City has worked extensively in flood prone areas such as Shoreline Dr. to remove affected properties from hazard area. The City participates in code enforcement and plan review programs. The City has a Capital Improvement Plan that supports hazard mitigation with the new Jacksonville Marina being a prime example in addition to storm-water improvements. The City has an Emergency Operations Plan that is regularly reviewed and practiced. City council has illustrated their support for hazard mitigation through a resolution to join the SRHMP and through programs that waive fees during disaster recovery.
- The Town of Swansboro has taken proactive steps to develop several plans and programs which aid in the mitigation and reduction of hazards in our community.
  Those plans/programs are as follows:
  1. Regional Hazard Mitigation Plan in conjunction with the Onslow County Emergency Services Department (in process);
  2. Flood Damage Prevention Ordinance (Updated 2020);
  3. Watershed Restoration Plan (2017);
  4. CAMA Land Use Plan Update (2019);
  5. Stormwater Enterprise Fund (Collected Annually); and
  6. Emergency Operations Plan (Updated Annually).

  More information and copies of these plans can be found on our website at https://swansboro-nc.org/.
- Pender County has exhibited political commitment to reduce the impact of future hazard events through requiring two feet of freeboard in Special Flood Hazard Areas, applying for grant

funding to mitigate future risk to structures damaged by storms, and implementing the Pender 2.0 Comprehensive Land Use Plan which encourages the conservation of environmental features for their natural storm protection functions.

7.3.7 Local Self-Assessment

In addition to the inventory and analysis of specific local capabilities, the Capability Assessment asked counties and local jurisdictions within the SENC Region 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. Local government representatives classified each of the aforementioned capabilities as either "limited," "moderate," or "high."

Table 7.8 summarizes the results of the self-assessment for the SENC Region.

TABLE 7.8: SELF-ASSESSMENT OF CAPABILITY

Jurisdiction	Plans, Ordinances, Codes and Programs	Administrative and Technical Capability	Fiscal Capability	Education and Outreach Capability	Mitigation Capability	Political Capability	OVERALL CAPABILITY
Brunswick County	High	High	High	Moderate	Moderate	High	High
City of Boiling Spring Lakes	High	Moderate	Limited	High	Unrated	Moderate	Moderate
City of Jacksonville	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated
City of Northwest	Limited	Limited	Limited	Unrated	Unrated	Limited	Limited
City of Southport	High	High	Unrated	Unrated	Unrated	Unrated	Limited
City of Wilmington	Moderate	Moderate	Moderate	Unrated	Unrated	Moderate	Moderate
New Hanover County	Moderate	Moderate	Limited	Unrated	Unrated	Moderate	Moderate
Onslow County	High	High	Moderate	High	High	Moderate	Moderate
Pender County	Moderate	Moderate	Limited	Moderate	Moderate	Moderate	Moderate
Town of Atkinson	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated
Town of Belville	Moderate	Moderate	Moderate	Unrated	Unrated	Moderate	Moderate

Jurisdiction	Plans, Ordinances, Codes and Programs	Administrative and Technical Capability	Fiscal Capability	Education and Outreach Capability	Mitigation Capability	Political Capability	OVERALL CAPABILITY
Town of Bolivia	Limited	Limited	Moderate	Unrated	Unrated	Limited	Limited
Town of Burgaw	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated
Town of Calabash	Moderate	Moderate	Moderate	Unrated	Unrated	Moderate	Moderate
Town of Carolina Beach	Moderate	Moderate	Moderate	Unrated	Unrated	Moderate	Moderate
Town of Carolina Shores	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated
Town of Caswell Beach	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated
Town of Holden Beach	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated
Town of Holly Ridge	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated
Town of Kure Beach	Limited	Limited	Limited	Unrated	Unrated	Limited	Limited
Town of Leland	Moderate	Moderate	Moderate	Unrated	Unrated	Moderate	Moderate
Town of Navassa	Limited	Limited	Limited	Unrated	Unrated	Limited	Limited
Town of North Topsail Beach	High	High	Moderate	Moderate	Moderate	High	High
Town of Oak Island	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated
Town of Ocean Isle Beach	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated
Town of Richlands	Moderate	Moderate	Limited	Moderate	Moderate	Moderate	Moderate
Town of Saint James	High	Moderate	High	Moderate	Moderate	Moderate	High
Town of Sandy Creek	Limited	Limited	Limited	Unrated	Unrated	Limited	Limited
Town of Shallotte	Moderate	Limited	Moderate	Unrated	Unrated	Moderate	Limited
Town of Sunset Beach	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated
Town of Surf City	High	High	High	High	High	Moderate	High

Jurisdiction	Plans, Ordinances, Codes and Programs	Administrative and Technical Capability	Fiscal Capability	Education and Outreach Capability	Mitigation Capability	Political Capability	OVERALL CAPABILITY
Town of Swansboro	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Town of Topsail Beach	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated
Town of Varnamtown	Limited	Limited	Limited	Unrated	Unrated	Limited	Limited
Town of Watha	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated
Town of Wrightsville Beach	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated
Village of Bald Head Island	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated
Village of Saint Helena	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated	Unrated

7.4 CONCLUSIONS ON LOCAL CAPABILITY

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

This section of the plan provides the blueprint for the participating jurisdictions in the Southeastern NC Region to follow in order to become less vulnerable to their identified hazards. It is based on general consensus of the Southeastern NC Regional Hazard Mitigation Planning Committee and the findings and conclusions of the *Capability Assessment* and *Risk Assessment*. It consists of the following five subsections:

- 8.1 Introduction
- 8.2 Mitigation Goals
- 8.3 Identification and Analysis of Mitigation Techniques
- 8.4 Selection of Mitigation Techniques for the Southeastern NC Region
- 8.5 Plan Update Requirement

8.1 INTRODUCTION

The intent of the Mitigation Strategy is to provide the communities in the Southeastern NC Region with the goals that will serve as guiding principles for future mitigation policy and project administration, along with an analysis of mitigation techniques available to meet those goals and reduce the impact of identified hazards. It is designed to be comprehensive, strategic, and functional in nature:

- In being *comprehensive*, the development of the strategy includes a thorough review of all hazards and identifies extensive mitigation measures intended to not only reduce the future impacts of high-risk hazards, but also to help the region achieve compatible economic, environmental, and social goals.
- In being *strategic*, the development of the strategy ensures that all policies and projects proposed for implementation are consistent with pre-identified, long-term planning goals.
- In being *functional,* each proposed mitigation action is linked to established priorities and assigned to specific departments or individuals responsible for their implementation with target completion deadlines. When necessary, funding sources are identified that can be used to assist in project implementation.

The first step in designing the Mitigation Strategy includes the identification of mitigation goals. Mitigation goals represent broad statements that are achieved through the implementation of more specific mitigation actions. These actions include both hazard mitigation policies (such as the

regulation of land in known hazard areas through a local ordinance) and hazard mitigation projects that seek to address specifically targeted hazard risks (such as the acquisition and relocation of a repetitive loss structure).

The second step involves the identification, consideration, and analysis of available mitigation measures to help achieve the identified mitigation goals. This is a long-term, continuous process sustained through the development and maintenance of this Plan. Alternative mitigation measures will continue to be considered as future mitigation opportunities are identified, as data and technology improve, as mitigation funding becomes available, and as this Plan is maintained over time.

The third and last step in designing the Mitigation Strategy is the selection and prioritization of specific mitigation actions for the Southeastern NC Region (provided separately in Section 9: *Mitigation Action Plan*). Each county and participating jurisdiction has its own Mitigation Action Plan (MAP) that reflects the needs and concerns of that jurisdiction. The MAP represents an unambiguous and functional plan for action and is considered to be the most essential outcome of the mitigation planning process. The MAP includes a prioritized listing of proposed hazard mitigation actions (policies and projects) for Brunswick, New Hanover, Onslow and Pender counties and their municipal jurisdictions to complete.

Each action has accompanying information, such as those departments or individuals assigned responsibility for implementation, potential funding sources, and an estimated target date for completion. The MAP provides those departments or individuals responsible for implementing mitigation actions with a clear roadmap that also serves as an important tool for monitoring success or progress over time. The cohesive collection of actions listed in the MAP can also serve as an easily understood menu of mitigation policies and projects for those local decision makers who want to quickly review the recommendations and proposed actions of the Regional Hazard Mitigation Plan.

In preparing each Mitigation Action Plan for the Southeastern NC Region, officials considered the overall hazard risk and capability to mitigate the effects of hazards as recorded through the risk and capability assessment process, in addition to meeting the adopted mitigation goals and unique needs of the community.

8.1.1 Mitigation Action Prioritization

All existing mitigation actions found in the Mitigation Action Plan were previously prioritized by the participating jurisdictions. For the 2026 update of the plan the members of the Regional Hazard Mitigation Planning Committee were asked, as part of the process of providing a status update for each action, to make sure that the assigned priority for each action was still appropriate. Prioritization of the proposed mitigation actions was based on the following strategies:

1. High Priority – Highly cost-effective, administratively feasible and politically feasible strategies that should be implemented in fiscal years 2026/2027 and 2027/2028 and be continued.
2. Medium Priority – Strategies that have at least two of the following characteristics (but not all three) and should be implemented in fiscal years 2026/2027 to 2027/2028:
    a. Highly cost-effective; or
    b. Administratively feasible, given current levels of staffing and resources; or
    c. Are politically popular and supportable given the current environment.

3. Low Priority – Strategies that have at least one of the following characteristics (but not two or three) and should be implemented in the next five (5) years (by the end of 2031/2032):
    a. Highly cost-effective; or
    b. Administratively feasible, given current levels of staffing and resources; or
    c. Are politically popular and supportable given the current environment.

The point of contact for each county helped coordinate the prioritization process by reviewing each action and working with the lead agency/department responsible to determine a priority for each action using the factors listed above.

As the actions were reviewed as part of the 2026 update of the plan, each community was asked to review the priority assigned to each action and ensure that the priority had not changed. If the priority of a particular action did change, the participating jurisdictions were asked to revise those priorities accordingly using same criteria as defined above.

8.2 MITIGATION GOALS

44 CFR Requirement

44 CFR Part 201.6(c)(3)(i): The mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

The primary goal of all local governments is to promote public health, safety, and welfare of its citizens. In keeping with this standard, Brunswick, New Hanover, Onslow and Pender counties and the participating municipalities have developed five goal statements for local hazard mitigation planning in the region. In developing these goals, the project consultant reviewed the goals from the previous plan and discussed them with the Regional Hazard Mitigation Planning Committee.

The proposed regional goals were presented, reviewed, voted upon, and accepted by the Regional Hazard Mitigation Planning Committee at their second meeting. Minimal revisions to the wording of the goals were made. Each goal, purposefully broad in nature, serves to establish parameters that were used in developing more mitigation actions. The Southeastern NC Regional Mitigation Goals are presented in **Table 8.1**. Consistent implementation of actions over time will ensure that community goals are achieved.

As part of the development of the 2026 update of this plan, the goals found in Table 8.1 were reviewed and discussed at the 11/20/25 meeting of the Regional Hazard Mitigation Planning Committee. It was determined that goals 1-8 are still applicable for the region and only minor revisions to the wording of the goals were recommended. Goal #9 was added based on committee feedback.

TABLE 8.1: SOUTHEASTERN NC REGIONAL MITIGATION GOALS

	Goal
Goal #1	Work to improve existing local government policies and codes to reduce impacts of all hazards.
Goal #2	Design and implement specific mitigation measures to protect vulnerable public and private properties.
Goal #3	Increase the protection of critical facilities and infrastructure from hazard threats through retrofit projects for existing facilities and innovative design standards for new facilities.
Goal #4	Enhance public education programs to promote community awareness of all hazards and the hazard mitigation techniques available to reduce their impact.
Goal #5	Improve stormwater management through enhanced local government programs, policies, and practices.
Goal #6	Enhance each county's storm evacuation procedures through increased intergovernmental coordination between the Counties, the participating municipalities, and the State of North Carolina.
Goal #7	Increase the County's emergency management capabilities through sustained system and technology improvements.
Goal #8	Promote volunteer involvement in emergency preparedness and response through increased citizen awareness and training activities.
Goal #9	Implement mitigation activities that reduce adverse effects of hazards on vulnerable populations.

8.3 IDENTIFICATION AND ANALYSIS OF MITIGATION TECHNIQUES

44 CFR Requirement

44 CFR Part 201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effect of each hazard, with particular emphasis on new and existing buildings and infrastructure.

In formulating the Mitigation Strategy for the Southeastern NC Region, a wide range of activities were considered to help achieve the established mitigation goals, in addition to addressing any specific hazard concerns. These activities were discussed during the Southeastern NC Regional Hazard Mitigation Planning Committee meetings. In general, all activities considered by the Regional Hazard Mitigation Planning Committee can be classified under one of the following six broad categories of mitigation techniques: Prevention, Property Protection, Natural Resource Protection, Structural Projects, Emergency Services, and Public Awareness and Education. These are discussed in detail below.

8.3.1 Prevention

Preventative activities are intended to keep hazard problems from getting worse, and are typically

administered through government programs or regulatory actions that influence the way land is developed and buildings are built. They are particularly effective in reducing a community's future vulnerability, especially in areas where development has not occurred or capital improvements have not been substantial. Examples of preventative activities include:

- Planning and zoning
- Building codes
- Open space preservation
- Floodplain regulations
- Stormwater management regulations
- Drainage system maintenance
- Capital improvements programming
- Riverine / Shoreline / fault zone setbacks

Each of the prevention mitigation techniques is described in more detail in the Capability Assessment section (Section 7).

8.3.2 Property Protection

Property protection measures involve the modification of a site or the modification of existing buildings and structures to help them keep the hazard away or better withstand the forces of a hazard, or removal of the structures from hazardous locations. Examples include:

- Modification of the site to keep the hazard from reaching the building
  - Flood Barriers
  - Relocation
  - Building Elevation
  - Demolition
  - Demo/Rebuild
- Modify the building (retrofit) so it can withstand impacts of the hazard
  - Windproofing
  - Dry Floodproofing
  - Wet Floodproofing
  - Seismic design techniques
- Critical facilities protection
- Safe rooms, shutters, shatter-resistant glass
- Insurance (private property and public property)

Site Modification

Flood Barriers

A flood protection barrier can be built of dirt or soil (a "berm") or concrete or steel (a "floodwall"). Careful design is needed to ensure that it does not create additional flooding or drainage problems on neighboring properties. Depending on how well the ground drains, if floodwater stays up for more than an hour or two, the design needs to account for leaks, seepage of water underneath, and rainwater that will fall inside the perimeter. This is usually done with a sump or French drain to collect the internal groundwater and surface water and a pump and pipe to pump the internal drainage over the barrier. However, barriers can only be built so high and they can be overtopped by a flood higher than expected. Barriers made of earth are susceptible to erosion from rain and floodwater if not properly sloped, covered with grass, and properly maintained.

Relocation

Moving a flood-prone building to higher ground is the surest and safest way to protect it from flooding. While almost any building can be moved, the cost increases for heavier structures, such as those with exterior brick and stone walls, and for large or irregularly shaped buildings. Relocation is also preferred for large lots that include buildable areas outside the floodplain or where the owner has a new location available outside of the hazard zone.

Building Elevation

Elevating a building above the flood level can be almost as effective as moving it out of the floodplain. Once the building is raised, water is allowed to flow under and around the building, causing little or no damage to the structure or its contents. Raising a building above the flood level is cheaper than moving it and can be less disruptive to a neighborhood. Elevation has proven to be an acceptable and reasonable means of complying with floodplain regulations that require new, substantially improved, and substantially damaged buildings to be elevated above the base flood elevation. Building elevation protects the physical building but does not eliminate life safety or rescue needs during a flood event.

Demolition

Some buildings, especially heavily damaged or repetitively flooded ones, may not be the expense to protect them from future damage. In some cases, it is cheaper to demolish them and either replace them with new, flood protected structures or relocate the occupants to a safer site. Demolition is also appropriate for buildings that are difficult to move – such as larger, slab foundation or masonry structures – and for dilapidated structures that are not cost-beneficial to protect.

Demolition/Rebuild

If a building is not in good shape, elevating it may not be feasible or it may even be dangerous. An alternative is to demolish the structure and build a new one on the site that meets or exceeds all flood protection codes. However, it can be difficult to qualify for the FEMA funding to implement this technique and it is not a regularly funded option. Certain rules must be followed to qualify for federal funds for pilot reconstruction.

Site Modification (Retrofitting)

Dry Floodproofing

Dry floodproofing is a mitigation practice whereby one makes all areas of a structure below the flood protection level watertight. Dry floodproofing can be achieved by coating walls with waterproofing

compounds or plastic sheeting. Additionally, openings, such as doors, windows and vents, are closed, either permanently, with removable shields, or with sandbags. Dry floodproofing of new and existing nonresidential buildings in the regulatory floodplain is permitted under state, FEMA and local regulations. Dry floodproofing of existing residential buildings in the floodplain is also permitted as long as the building is not substantially damaged or being substantially improved. There are no restrictions for dry floodproofing buildings located outside the regulatory floodplain.

Dry floodproofing is only effective for areas of shallow flooding, such as areas with repetitive drainage problems. It does not protect from the deep flooding along lakes and larger rivers caused by hurricanes or other storms or velocity flooding where floodwater moves swiftly and can damage the dry floodproofing materials.

Wet Floodproofing

The alternative to dry floodproofing is wet floodproofing: water is let into the structure and everything that could be damaged by a flood is removed or elevated above the flood level. Structural components below the flood level are replaced with materials that are not subject to water damage. For example, concrete block walls are used instead of wooden studs and gypsum wallboard. Mechanical fixtures such as the furnace, water heater and laundry facilities are permanently relocated to a higher floor. Where the flooding is not deep, these appliances can be raised on blocks or platforms.

Insurance

Private Property

Although most homeowner's insurance policies do not cover a property for flood damage, an owner can insure a building for damage by surface flooding through the National Flood Insurance Program. Flood insurance coverage is provided for buildings and their contents damaged by a "general condition of surface flooding" in the area. Most people purchase flood insurance because it is required by the bank when they get a mortgage or home improvement loan. Usually, these policies just cover the building's structure and not the contents. Contents coverage can be purchased separately. Renters can buy contents coverage, even if the owner does not buy structural coverage on the building. Most people don't realize that there is a 30-day waiting period to purchase a flood insurance policy and there are limits on coverage.

Public Property

Governments can purchase commercial insurance policies. Larger local governments often self-insure and absorb the cost of damage to one facility, but if many properties are exposed to damage, self-insurance can drain the government's budget. Communities cannot expect federal disaster assistance to make up the difference after a flood.

8.3.3 Natural Resource Protection

Natural resource protection activities reduce the impact of natural hazards by preserving or restoring natural areas and their protective functions. Such areas include floodplains, wetlands, steep slopes, and sand dunes. Parks, recreation, or conservation agencies and organizations often implement these protective measures. Examples include:

- Wetland protection

- Erosion and sediment control
- Watershed management
- Stream/River Restoration
- Best Management Practices
- Dumping Regulations
- Farmland Protection
- Forest and vegetation management (e.g., fire resistant landscaping, fuel breaks, etc.)
- Habitat preservations
- Slope stabilization

Wetland Protection

Wetlands are often synonymous with floodplains and topographically depressed areas of a watershed. Many wetlands receive and store floodwater, thus slowing and reducing downstream flows. They also serve as a natural filter and help improve water quality, and they provide habitat for many species of fish, wildlife and plants. The Southeastern NC Region is characterized by many acres of wetlands.

Erosion and Sedimentation Control

Farmlands and construction sites typically contain large areas of bare exposed soil. Surface water runoff can erode soil from these sites, sending sediment into downstream waterways. Erosion also occurs along stream banks and shorelines as the volume and velocity of flow or wave action destabilize and wash away the soil. Sediment suspended in the water tends to settle out where flowing water slows down. This sediment can clog storm drains, drain tiles, culverts and ditches and reduce the water transport and storage capacity of river and stream channels, lakes and wetlands.

There are two principal strategies to address these problems: minimize erosion and control sedimentation. Techniques to minimize erosion include phased construction, minimal land clearing, and stabilizing bare ground as soon as possible with vegetation and other soil stabilizing practices. Many of the participating jurisdictions in the Southeastern NC Region have adopted Erosion and Sedimentation Control Ordinances and/or Stormwater Management Ordinances that address some of these issues.

Stream/River Restoration

There is a growing movement that has several names, such as "stream conservation," "bioengineering," or "riparian corridor restoration." The objective of these approaches is to return streams, stream banks and adjacent land to a more natural condition, including the natural meanders. Another term is "ecological restoration," which restores native indigenous plants and animals to an area.
A key component of these efforts is to use appropriate native plantings along the banks that resist erosion. This may involve retrofitting the shoreline with willow cuttings, wetland plants, or rolls of landscape material covered with a natural fabric that decomposes after the banks are stabilized with plant roots.

In all, restoring the right vegetation to a stream has the following advantages:

- Reduces the amount of sediment and pollutants entering the water
- Enhances aquatic habitat by cooling water temperature
- Provides food and shelter for both aquatic and terrestrial wildlife
- Can reduce flood damage by slowing the velocity of water
- Increases the beauty of the land and its property value
- Prevents property loss due to erosion
- Provides recreational opportunities, such as hunting, fishing and bird watching
- Reduces long-term maintenance costs

Best Management Practices

Point source pollutants come from pipes such as the outfall of a municipal wastewater treatment plant. They are regulated by the US EPA. Nonpoint source pollutants come from non-specific locations and are harder to regulate. Examples of nonpoint source pollutants are lawn fertilizers, pesticides, other chemicals, animal waste, oils from street surfaces and industrial areas, and sediment from agriculture, construction, mining and forestry. These pollutants are washed off the ground's surface by stormwater and flushed into receiving storm sewers, ditches and streams.

The term "best management practices" (BMPs) refers to design, construction and maintenance practices and criteria that minimize the impact of stormwater runoff rates and volumes, prevent erosion, protect natural resources and capture nonpoint source pollutants (including sediment). They can prevent increases in downstream flooding by attenuating runoff and enhancing infiltration of stormwater. They also minimize water quality degradation, preserve beneficial natural features onsite, maintain natural base flows, minimize habitat loss, and provide multiple usages of drainage and storage facilities. Many of the Stormwater Management Ordinances that are in place in the SENC Region contain regulations for stormwater BMPs. Because of the SENC Region’s unique geologic and hydrologic conditions (i.e., poorly drained soils and a shallow water table), the types of appropriate BMPs that can be effectively utilized in the region are limited.

Dumping Regulations

BMPs usually address pollutants that are liquids or are suspended in water that are washed into a lake or stream. Dumping regulations address solid matter, such as shopping carts, appliances and landscape waste that can be accidentally or intentionally thrown into channels or wetlands. Such materials may not pollute the water, but they can obstruct even low flows and reduce the channels' and wetlands' abilities to convey or clean stormwater.

Many cities have nuisance ordinances that prohibit dumping garbage or other "objectionable waste" on public or private property. Waterway dumping regulations need to also apply to "non-objectionable" materials, such as grass clippings or tree branches, which can kill ground cover or cause obstructions in channels. Regular inspections to catch violations should be scheduled.

In addition, many people do not realize the consequences of their actions. They may, for example, fill in the ditch in their front yard without realizing that is needed to drain street runoff. They may not understand how regrading their yard, filling a wetland, or discarding leaves or branches in a watercourse

can cause a problem to themselves and others. Therefore, a dumping enforcement program should include public information materials that explain the reasons for the rules as well as the penalties.

Farmland Protection

Farmland protection is an important piece of comprehensive planning and zoning throughout the United States. The purpose of farmland protection is to provide mechanisms for prime, unique, or important agricultural land to remain as such, and to be protected from conversion to non-agricultural uses.

Frequently, farm owners sell their land to residential or commercial developers, and the property is converted to non-agricultural land uses. With development comes more buildings, roads and other infrastructure. Urban sprawl occurs, which can lead to additional stormwater runoff and emergency management difficulties.

Farms on the edge of cities are often appraised based on the price they could be sold for to urban developers. This may drive farmers to sell to developers because their marginal farm operations cannot afford to be taxed as urban land. The Farmland Protection Program in the United States Department of Agriculture's 2002 Farm Bill (Part 519) allows for funds to go to state, tribal, and local governments as well as nonprofit organizations to help purchase easements on agricultural land to protect against the development of the land.

8.3.4 Structural Projects

Structural mitigation projects are intended to lessen the impact of a hazard by modifying the environmental natural progression of the hazard event through construction. They are usually designed by engineers and managed or maintained by public works staff. Examples include:

- Reservoirs
- Dams / levees / dikes / floodwalls
- Diversions / detention / retention
- Channel modification
- Storm sewers

Levees and Floodwalls

Probably the best-known flood control measure is a barrier of earth (levee) or concrete (floodwall) erected between the watercourse and the property to be protected. Levees and floodwalls confine water to the stream channel by raising its banks. However, they must be well designed to account for large floods, underground seepage, pumping of internal drainage, and erosion and scour.

Reservoirs and Detention

Reservoirs reduce flooding by temporarily storing flood waters behind dams or in storage or detention basins. Reservoirs lower flood heights by holding back, or detaining, runoff before it can flow downstream. Flood waters are detained until the flood has subsided, and then the water in the reservoir or detention basin is released or pumped out slowly at a rate that the river can accommodate downstream.

Reservoirs can be dry and remain idle until a large rain event occurs. Or they may be designed so that a lake or pond is created. The lake may provide recreational benefits or water supply (which could also help mitigate a drought).

Flood control reservoirs are most commonly built for one of two purposes. Large reservoirs are constructed to protect property from existing flood problems. Smaller reservoirs, or detention basins, are built to protect property from the stormwater runoff impacts of new development.

Diversion

A diversion is a new channel that sends floodwater to a different location, thereby reducing flooding along an existing watercourse. Diversions can be surface channels, overflow weirs, or tunnels. During normal flows, the water stays in the old channel. During floods, the floodwaters spill over to the diversion channel or tunnel, which carries the excess water to a receiving lake or river.

8.3.5 Emergency Services

Although not typically considered a “mitigation” technique, emergency service measures do minimize the impact of a hazard event on people and property. These common actions are taken immediately prior to, during, or in response to a hazard event. Examples include:

- Warning systems
- Evacuation planning and management
- Emergency response training and exercises
- Sandbagging for flood protection
- Installing temporary shutters for wind protection

Threat Recognition

The first step in responding to a flood is to know when weather conditions are such that an event could occur. With a proper and timely threat recognition system, adequate warnings can be disseminated. The National Weather Service (NWS) is the prime agency for detecting meteorological threats. Severe weather warnings are transmitted through NOAA's Weather Radio System. Local emergency managers can then provide more site-specific and timely recognition after the Weather Service issues a watch or a warning. A flood threat recognition system predicts the time and height of a flood crest. This can be done by measuring rainfall, soil moisture, and stream flows upstream of the community and calculating the subsequent flood levels.

On smaller rivers and streams, locally established rainfall and river gauges are needed to establish a flood threat recognition system. The NWS may issue a "flash flood watch." This is issued to indicate current or developing hydrologic conditions that are favorable for flash flooding in and close to the watch area, but the occurrence is neither certain nor imminent. These events are so localized and so rapid that a "flash flood warning" may not be issued, especially if no remote threat recognition equipment is available. In the absence of a gauging system on small streams, the best threat recognition system is to have local personnel monitor rainfall and stream conditions. While specific flood crests and times will not be predicted, this approach will provide advance notice of potential local or flash flooding.

Warning

The next step in emergency response following threat recognition is to notify the public and staff of other agencies and critical facilities. More people can implement protection measures if warnings are early and include specific details.

The NWS issues notices to the public using two levels of notification:

- Watch: conditions are right for flooding, thunderstorms, tornadoes or winter storms.
- Warning: a flood, tornado, etc., has started or been observed.

A more specific warning may be disseminated by the community in a variety of ways. The following are the more common methods:

- CodeRED countywide mass telephone emergency communication system
- Commercial or public radio or TV stations
- The Weather Channel
- Cable TV emergency news inserts
- Telephone trees/mass telephone notification
- NOAA Weather Radio
- Tone activated receivers in key facilities
- Outdoor warning sirens
- Sirens on public safety vehicles
- Door-to-door contact
- Mobile public address systems
- Email notifications

Just as important as issuing a warning is telling people what to do in case of an emergency. A warning program should include a public information component.

StormReady

The National Weather Service (NWS) established the StormReady program to help local governments improve the timeliness and effectiveness of hazardous weather-related warnings for the public. To be officially StormReady, a community must:

- Establish a 24-hour warning point and emergency operations center
- Have more than one way to receive severe weather warnings and forecasts and to alert the public
- Create a system that monitors weather conditions locally

- Promote the importance of public readiness through community seminars
- Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises

Being designated as a NWS StormReady community is a good measure of a community's emergency warning program for weather hazards. As documented in the Capability Assessment section of this plan, there are six StormReady communities in the SENC Region.

Response

The protection of life and property is the most important task of emergency responders. Concurrently with threat recognition and issuing warnings, a community should respond with actions that can prevent or reduce damage and injuries. Typical actions and responding parties include the following:

- Activating the emergency operations center (emergency preparedness)
- Closing streets or bridges (police or public works)
- Shutting off power to threatened areas (utility company)
- Passing out sand and sandbags (public works)
- Holding children at school or releasing children from school (school superintendent)
- Opening evacuation shelters (the American Red Cross)
- Monitoring water levels (public works)
- Establishing security and other protection measures (police)

An emergency action plan ensures that all bases are covered and that the response activities are appropriate for the expected threat. These plans are developed in coordination with the agencies or offices that are given various responsibilities.

Emergency response plans should be updated annually to keep contact names and telephone numbers current and to ensure that supplies and equipment that will be needed are still available. They should be critiqued and revised after disasters and exercises to take advantage of the lessons learned and of changing conditions. The end result is a coordinated effort implemented by people who have experience working together so that available resources will be used in the most efficient manner possible.

Evacuation and Shelter

There are six key components to a successful evacuation:

- Adequate warning
- Adequate routes
- Proper timing to ensure the routes are clear
- Traffic control
- Knowledgeable travelers

- Care for special populations (e.g., disabled persons, prisoners, hospital patients, schoolchildren)

Those who cannot get out of harm's way need shelter. Typically, the American Red Cross will staff shelters and ensure that there is adequate food, bedding, and wash facilities. Shelter management is a specialized skill. Managers must deal with problems like scared children, families that want to bring in their pets, and the potential for an overcrowded facility.

8.3.6 Public Education and Awareness

Public education and awareness activities are used to advise residents, elected officials, business owners, potential property buyers, and visitors about hazards, hazardous areas, and mitigation techniques they can use to protect themselves and their property. Examples of measures to educate and inform the public include:

- Outreach projects
- Speaker series / demonstration events
- Hazard map information
- Real estate disclosure
- Library materials
- School children educational programs
- Hazard expositions

Outreach Projects

Outreach projects are the first step in the process of orienting property owners to the hazards they face and to the concept of property protection. They are designed to encourage people to seek out more information in order to take steps to protect themselves and their properties. Awareness of the hazard is not enough; people need to be told what they can do about the hazard.

Thus, projects should include information on safety, health and property protection measures. Research has shown that a properly run local information program is more effective than national advertising or publicity campaigns. Therefore, outreach projects should be locally designed and tailored to meet local conditions.

Community newsletters/direct mailings: The most effective types of outreach projects are mailed or distributed to everyone in the community. In the case of floods, they can be sent only to floodplain property owners.

News media: Local newspapers can be strong allies in efforts to inform the public. Local radio stations and cable TV channels can also help. These media offer interview formats and cable TV may be willing to broadcast videos on the hazards.

Libraries and Websites: The two previous activities tell people that they are exposed to a hazard. The next step is to provide information to those who want to know more. The community library and local websites are obvious places for residents to seek information on hazards, hazard protection, and protecting natural resources.

Books and pamphlets on hazard mitigation can be given to libraries, and many of these can be obtained for free from state and federal agencies. Libraries also have their own public information campaigns with displays, lectures and other projects, which can augment the activities of the local government.

Today, websites are commonly used as research tools. They provide fast access to a wealth of public and private sites for information. Through links to other websites, there is almost no limit to the amount of up-to-date information that can be accessed on the Internet. Some examples of resources that can be found online include, but are not limited to, floodplain maps, information for homeowners on how to retrofit for floods and flood information for children.

Technical Assistance

Hazard Information

Residents and business owners that are aware of the potential hazards can take steps to avoid problems or reduce their exposure to flooding. Communities can easily provide map information from FEMA's FIRMs and Flood Insurance Studies. They may also assist residents in submitting requests for map amendments and revisions when they are needed to show that a building is located outside the mapped floodplain.

Some communities supplement what is shown on the FIRM with information on additional hazards, flooding outside mapped areas and zoning. When the map information is provided, community staff can explain insurance, property protection measures and mitigation options that are available to property owners. They should also remind inquirers that being outside the mapped floodplain is no guarantee that a property will never flood.

Property Protection Assistance

While general information provided by outreach projects or the library is beneficial, most property owners do not feel ready to retrofit their buildings without more specific guidance. Local building department staff are experts in construction. They can provide free advice, not necessarily to design a protection measure, but to steer the owner onto the right track. Building or public works department staff can provide the following types of assistance:

- Visit properties and offer protection suggestions,
- Recommend or identify qualified or licensed contractors,
- Inspect homes for anchoring of roofing and the home to the foundation, and
- Explain when building permits are needed for home improvements.

Public Information Program

A Program for Public Information (PPI) is a document that receives CRS credit. It is a review of local conditions, local public information needs, and a recommended plan of activities. A PPI consists of the following parts, which are incorporated into this plan:

- Description of the local flood hazard,
- The property protection measures appropriate for the flood hazard,
- Flood safety measures appropriate for the local situation,
- The public information activities currently being implemented within the community, including those being carried out by non-government agencies,
- Goals for the community's public information program,
- The outreach projects that will be done each year to reach the goals, and
- The process that will be followed to monitor and evaluate the projects.

8.4 SELECTION OF MITIGATION TECHNIQUES FOR THE SOUTHEASTERN NC REGION

To determine the most appropriate mitigation techniques for the communities in the Southeastern NC Region, the Regional Hazard Mitigation Planning Committee members thoroughly reviewed and considered the findings of the *Capability Assessment* and *Risk Assessment* to determine the best activities for their respective communities. Other considerations included the effect of each mitigation action on overall risk to life and property, its ease of implementation, its degree of political and community support, its general cost-effectiveness, and funding availability (if necessary).

8.5 PLAN UPDATE REQUIREMENT

In keeping with FEMA requirements for plan updates, the Mitigation Actions identified in the previous SENC Regional Hazard Mitigation Plan were evaluated to determine their 2026 implementation status. Updates on the implementation status of each action are provided. Any changes to the relative priority of the actions are noted as well. The mitigation actions provided in Section 9: *Mitigation Action Plan* include the mitigation actions from the previous plans as well as any new mitigation actions proposed through the 2026 planning process. Actions identified as completed in the 2021 version of the plan have been moved to Appendix E.

SECTION 9
MITIGATION ACTION PLAN

This section includes the listing of the mitigation actions proposed by the participating jurisdictions in the Southeastern NC Region. It consists of the following two subsections:

- 9.1 Overview
- 9.2 Mitigation Action Plans

44 CFR Requirement
44 CFR Part 201.6(c)(3)(iii): The mitigation strategy shall include an action plan describing how the actions identified in paragraph (c)(2)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction.

9.1 OVERVIEW

As described in the previous section, the Mitigation Action Plan, or MAP, provides a functional plan of action for each jurisdiction. It is designed to achieve the mitigation goals established in Section 8: *Mitigation Strategy* and will be maintained on a regular basis according to the plan maintenance procedures established in Section 10: *Plan Maintenance*.

Each proposed mitigation action has been identified as an effective measure (policy or project) to reduce hazard risk for the Southeastern NC Region. Each action is listed in the MAP in conjunction with background information such as hazard(s) addressed, relative priority, and estimated cost. Other information provided in the MAP includes potential funding sources to implement the action should funding be required (not all proposed actions are contingent upon funding). Most importantly, implementation mechanisms are provided for each action, including the designation of a lead agency or department responsible for carrying the action out as well as a timeframe for its completion. These implementation mechanisms ensure that the Southeastern NC Regional Hazard Mitigation Plan remains a functional document that can be monitored for progress over time. The proposed actions are not listed in priority order, though each has been assigned a priority level of "high," "moderate," or "low" as described below and in Section 8 (page 8.2).

The Mitigation Action Plan is organized by mitigation strategy category (Prevention, Property Protection, Natural Resource Protection, Structural Projects, Emergency Services, or Public Education and Awareness). The following are the key elements described in the Mitigation Action Plan:

- Hazard(s) Addressed—Hazard which the action addresses.
- Relative Priority—High, moderate, or low priority as assigned by the jurisdiction.
- Lead Agency/Department—Department responsible for undertaking the action.
- Potential Funding Sources—Local, State, or Federal sources of funds are noted here, where applicable.
- Implementation Schedule—Date by which the action the action should be completed.

More information is provided when possible.

- Implementation Status (2026)—Indication of completion, progress, deferment, or no change since the previous plan. If the action is new, that will be noted here.

9.2 MITIGATION ACTION PLANS

The mitigation actions proposed by each of the participating jurisdictions are listed in the MAPs on the following pages. **Table 9.1** shows the location of each jurisdiction's MAP within this section as well as the number of mitigation actions proposed by each jurisdiction. For Brunswick, New Hanover and Pender Counties, county-wide actions that apply to most of the jurisdictions in the County are provided. For the 2021 implementation status update, each municipality for which an action was applicable provided an update on the status of implementation for that action.

TABLE 9.1: INDIVIDUAL MAP LOCATIONS

Location	Page
SENC Regional Action	**9:4**
Brunswick County	**9:5**
Bald Head Island	9:16
Belville	9:21
Boiling Spring Lakes	9:26
Bolivia	9:33
Calabash	9:38
Carolina Shores	9:40
Holden Beach	9:44
Leland	9:45
Navassa	9:52
Northwest	9:59
Oak Island	9:60
Ocean Isle Beach	9:65
Sandy Creek	9:70
Shallotte	9:73
Southport	9:86
St. James	9:99
Sunset Beach	9:100
Varnamtown	9:106
New Hanover County	**9:112**
Carolina Beach	9:112
Kure Beach	9:112
Wilmington	9:112 and 9:141
Wrightsville	9:112 and 9:142
CFPUA	9:143
Onslow County	**9:145**
Holly Ridge	9:154
Jacksonville	9:156
North Topsail Beach	9:158
Richlands	9:171

Location	Page
Swansboro	9:172
Pender County	**9:178**
Atkinson	9:178
Burgaw	9:178
St. Helena	9:178
Surf City	9:197
Topsail Beach	9:178
Watha	9:178

Note: In the previous version of the plan, Brunswick County and the municipalities within the County combined many of their mitigation action plans into County-wide actions that covered all municipalities. For this update, many of the municipalities have decided to have their own, municipally-specific mitigation action plans.

Southeastern NC Regional Hazard Mitigation Action

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SENC 1	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 the application. Projects may include, but are not limited to: acquisition, elevation, mitigation reconstruction, and wet/dry flood proofing to commercial and/or residential structures as applicable; redundant power to critical facilities, storm shelters and other activities that reduce the loss of life and property as a result of impacts from natural hazards.	All Hazards	High	Brunswick County, Bald Head Island, Belville, Boiling Spring Lakes, Bolivia, Calabash, Carolina Shores, Caswell Beach, Holden Beach, Leland, Navassa, Northwest, Oak Island, Ocean Isle Beach, Sandy Creek, Sandy Creek, Shallotte, Southport, St. James, Sunset Beach, Varnamtown, New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach, Onslow County, Holly Ridge, Jacksonville, North Topsail Beach, Richlands, Swansboro, Pender County, Atkinson, Burgaw, St. Helena, Surf City, Topsail Beach, Watha	County Administrations, Municipal Administrations	General Funds	2026-2031	New action for the 2026 update. Applicable for all participating jurisdictions.

Brunswick County Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BC5	In conjunction with annual EOP updates, determine if access to all critical facilities is readily available in the event of a natural hazard event. Careful consideration should be given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified and coordinated for alternative transportation.	All Hazards	High	Brunswick Co Emergency Management, Support Agencies: Brunswick Transit, Schools, EMS, Public Utilities	General Funds	2026-2031	In Progress-In conjunction with annual Emergency Operations Plan updates, Brunswick County continues to evaluate access to critical facilities during natural hazard events, with particular attention to localized flooding and limited-access roadways. The County coordinates with facility owners and partner agencies to identify access constraints and develop contingency and alternative access or transportation plans where issues are identified.
BC8	Review respective Comprehensive Land Use Plans annually to ensure that the Future Land Use Maps adequately delineates portions of the County/ municipalities deemed unsuitable for development due to existing environmental conditions or other factors outlined in this plan.	All Hazards	Moderate	Brunswick Co Planning	General Funds, NCDPS, NCDEQ	2031	In progress- Currently being implemented by Brunswick County Planning, the North Carolina Coastal Management Act (CAMA) Land Use Plan. Blueprint Brunswick was approved by the Board of Commissioners and forwarded to the Coastal Resource Commission (CRC), where it was approved on 2/20/23.
BC10	Periodically evaluate local land development regulations for ability to target and direct growth to areas consistent with the land classification map, the water distribution system, and existing and future sewer systems.	Flooding	Moderate	Planning Supporting Agencies: Public Utilities	General Funds	2026-2031	In progress- Currently being implemented by Brunswick County Planning, Blueprint Brunswick has been approved. The County is currently updating its Unified Development Ordinance (i.e., Zoning Ordinance) with the assistance of a consultant to reflect the policies outlined in the Land Use Plan.
BC21	Continue to undertake the following actions to support maintenance of safe hurricane evacuation routes: Identify and support improvements to roads that serve as hurricane evacuation routes, post evacuation routes on County and Town websites, perform routine bridge	Hurricanes and Coastal Hazards	High	NCDOT Support Agencies: Brunswick County EM, Communications and IT	General Funds, NCDPS Support Agencies: EM,	2026-2031	In progress-Brunswick County continues to support the maintenance and improvement of hurricane evacuation routes through annual GIS review and updates of mapped evacuation routes and incorporation of revisions into the Emergency Operations Plan. The County coordinates with transportation and

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	and culvert maintenance, and raise bridges over streams that have documented flooding during significant rain events, support the planning and implementation of regional roadways				Communications, IT		municipal partners to address roadway, bridge, and culvert maintenance needs, evaluate flooding concerns along evacuation corridors, and support planning and implementation of regional roadway improvements.
BC25	Continue to support the guidelines of the Coastal Area Management Act and the efforts and programs of the NC Department of Environmental Quality, Division of Coastal Management and the Coastal Resources Commission to protect the coastal wetlands, estuarine waters, estuarine shorelines, and public trust waters of Brunswick County.	All Hazards	Moderate	Brunswick County Planning	General Funds, NCDEQ	2026-2031	In progress- Currently being implemented by Brunswick County Planning, Blueprint Brunswick has been drafted and adopted by Brunswick County and is currently under implementation. The CAMA-compliant document was approved by the Coastal Resource Commission (CRC) on 2/20/23.
BC27	Integrate publicly acquired land into public park and greenway systems. These efforts may be carried out through update of the County Blue/Greenway system, as well as municipal planning efforts.	All Hazards	Moderate	Brunswick County Planning Support Agencies: Brunswick County Parks and Rec, NCDOT	General Funds, NCDEQ, NCDOT	2026-2031	In progress-The NC Corridor Study for the East Coast Greenway has been completed. The Planning Department has requested that NCDOT merge the trail drawings included in the study with the NC 211 construction drawings for expanding the roadway to four (4) lanes. The Brunswick County Planning Department will focus on portions of the corridor that are outside the jurisdiction of the municipalities, looking for grant opportunities for the development of those sections of the Greenway. The municipalities will implement portions of the study area located within their jurisdiction as they implement their local plans.
BC29	Consider a policy for contractors to pick up building material and building debris prior to coastal storms.	Hurricanes and Coastal Hazards	High	Brunswick County Operations Services Support Agencies: EM	General Funds, FEMA	Action completed	Brunswick County: Completed Action to be removed during the 2031 update.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BC30	Continue to enforce minimum housing code to require the improvement of substandard housing.	All Hazards	High	Brunswick County Code Admin	General Funds	2026-2031	Deferred- The enforcement of the Minimum Housing Code to require the improvement of substandard housing continues to be deferred by Brunswick County Code Administration due to the lack of additional funding sources needed to add positions to address these deficiencies. Due to the unprecedented growth of the County, positions have been utilized for the related construction inspections.
BC32	Enhance and develop new public accesses to waterway resources in a manner as to protect sensitive environment areas from development and implement the priority recommendations contained in the Brunswick County Shoreline Access Plan.	All Hazards	Moderate	Brunswick County Planning	General Funds, NCDPS	2026-2031	Deferred- This task has been deferred by the County. The Brunswick County Shoreline Access Plan needs to be reviewed and updated with the assistance of our local partners. The last update was in 1990.
BC33	Improve Hazard Warning and Response Plan warning to assess effectiveness of emergency response plans.	All Hazards	High	Brunswick County EM	General Funds, NCDPS	2026-2031	Brunswick County continues to enhance hazard warning and response capabilities through coordinated use of multiple alerting platforms. Public notifications are delivered via Everbridge, the County website, and official social media channels, while evacuation routes and emergency shelter locations are routinely reviewed, updated, and posted. In coordination with North Carolina Emergency Management (NCEM), the County also supports activation of the Emergency Alert System (EAS) and Wireless Emergency Alerts (WEA) to provide geographically targeted, redundant life-safety messaging that supplements local notification systems. Ongoing efforts include evaluating alert effectiveness, message consistency, and public reach across all platforms, with identified improvements incorporated into warning and response procedures.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BC34	Continue and expand the program to retrofit schools and other public facilities to serve as emergency shelters.	All Hazards	Moderate	Brunswick County EM Support Agencies: Schools, HHS, DSS, Sheriff's Office, Admin, Brunswick Senior Resources	General Funds, NCDPS	2026-2031	In progress: Brunswick County continues to advance this mitigation action through the ongoing work of the Shelter Mapping Task Force. The Task Force is actively conducting site evaluations of existing school and public facilities to assess wind ratings, flood risk, life-safety systems, ADA accessibility, and emergency power capabilities. Recent walkthroughs and engineering reviews have identified varying hurricane wind ratings across facilities, highlighted generator and infrastructure gaps, and informed the need for alternative or supplemental shelter locations. Findings are being used to refine shelter capacity assumptions in coordination with DSS and to guide future retrofit priorities, capital improvement planning, and grant-eligible mitigation projects. This effort supports the continued refinement of the county shelter plan beyond the 2020 update and strengthens long-term shelter resiliency for high-wind and severe weather events.
BC35	Provide training for "first responders" in identifying and reporting opportunities to mitigate the effects of future disasters at both the county and municipal level.	All Hazards	High	Brunswick County EM Support Agencies: Fire, EMS, BCSO, NC Community College System	General Funds, NCDPS	2026-2031	In progress- Brunswick County continues to provide and coordinate training for first responders focused on identifying and reporting mitigation opportunities at the county and municipal levels. Training is tailored to identify capability gaps and agency-specific needs and is delivered in coordination with Brunswick Community College, NC Emergency Management, and private training partners.
BC36	Work with industry to develop emergency response plans for specific industries and ensure that all plans are fully coordinated with County emergency management	All Hazards	Moderate	Brunswick Co Emergency Management	General Funds	2026-2031	In progress: Brunswick County continues to work collaboratively with industry partners through the Local Emergency Planning Committee (LEPC) to coordinate and align facility-specific

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	plans. These efforts will be carried out in conjunction with the County LEPC.						emergency response plans with County emergency management plans and procedures. Industry partners regularly participate in LEPC meetings, information sharing, and planning discussions, supporting ongoing review of hazardous materials inventories, response capabilities, and notification protocols.
BC37	Brunswick County will support NCDOT and NCDPS in efforts to evaluate and improve capacity of evacuation routes.	All Hazards	High	NCDOT & NCDPS Support Agencies: Brunswick County Planning, EM	General Funds, NCDPS	2026-2031	As growth and development continue across Brunswick County, evacuation routes are routinely evaluated to assess capacity and identify constraints. The County coordinates with NCDOT, NCDPS, municipal partners, and emergency management to review emergency access roads and evacuation points, and to develop recommendations for maintenance, repairs, and capacity improvements.
BC41	Support Section 206 Lower Lockwood Folly River Aquatic Habitat Restoration Project (removal of sediment bars to increase tidal flushing and improve aquatic habitat).	Flooding	High	Brunswick County Planning	General Funds, NCDEQ, NCDOT	2026-2031	Deferred- Brunswick County and shoreline protection coalition partners will work with DEQ and USACE to seek funding to address this issue.
BC44	Establish locations for flood awareness signs – show elevations of high water during/after Hurricanes Matthew, Florence, and Potential Tropical Cyclone 8 the base flood, and the base flood plus 2 feet. Signs should be surveyed to serve as elevation reference marks.	Flooding	Low	Brunswick County Flood Planning Supporting Agencies: Brunswick County EM, NCDOT	General Funds	2026-2031	In progress- Hurricane Floyd highwater signs are in place. Data has been collected for placement of high water elevations during Hurricanes Matthew, Florence and PTC 8 and need to fund creating the signs and placement with the assistance of a survey and labor crew.
BC46	Continue to expand upon the Alert Emergency Notification System available to all residents. Brunswick County Emergency Management will coordinate with all municipal jurisdictions regarding registration	All Hazards	High	Brunswick County EM, PIO	General Funds, NCDPS	Action to be deleted.	Brunswick County: Action to be deleted. It will be removed from the 2031 update.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	through the Brunswick County Emergency Notification Registration Portal.						
BC47	Establish and maintain retrofitting techniques and publicize in the public libraries, and also through citizen newsletters.	All Hazards	High	Brunswick County Library	General Funds, NCDPS	Action complete	COMPLETE: Library has educational materials about retrofitting, mitigating, and general resilience available to all residents. Library also educates residents through outreach, participation in events, and publicizing educational materials via social media and newsletters.
BC48	Coordinate with local churches and Spanish speaking representatives to disperse information about the hazards prevalent in the area and the steps they can take to mitigate these hazards.	All Hazards	Moderate	Brunswick County EM VOAD Support Agencies: AFN Coordinator, HHS	General Funds	2026-2031	Completed and ongoing. The Access and Functional Needs (AFN) Coordinator has actively engaged with local churches and Spanish-speaking community representatives to disseminate hazard awareness and disaster preparedness information. This outreach has included participation in multiple community events and direct coordination with faith-based partners, including Saint Brendan's Church, which serves the county's largest Spanish-speaking congregation. Preparedness presentations were conducted, and educational materials were distributed in both English and Spanish to ensure broad accessibility. This outreach effort is sustained through regularly scheduled community events held throughout the year, with the AFN Coordinator consistently participating on an annual basis to reinforce preparedness messaging. Funding for these activities is supported through the County's General Fund.
BC49	Maintain and enhance preparedness for fixed nuclear facilities, radiological transportation incidents, and radiological/nuclear Weapons of Mass Destruction (WMD) events. This action includes regularly	Radiological Emergency – Fixed Nuclear Facilities	High	EM Nuclear Support Agencies: REP	General Funds, NCDPS	2026-2031	In progress-Brunswick County continues to maintain radiological and nuclear preparedness in coordination with the Brunswick Nuclear Taskforce, County LEPC, Brunswick Nuclear Power Plant, and supporting partners. The County

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	reviewing and updating radiological response plans; sustaining a current inventory of specialized equipment, materials, and technical knowledge; and evaluating proactive measures to reduce impacts from radiological or nuclear incidents. Adequate funding will be maintained to support required equipment, training, and sustainment activities. Coordination will occur through the County Local Emergency Planning Committee (LEPC) and in partnership with the Brunswick Nuclear Power Plant to address technological and man-made radiological hazards that may require emergency action.)			Taskforce and Stakeholders			maintains plans and procedures outlining initial response actions, roles, and responsibilities for radiological/nuclear incidents. Ongoing efforts focus on sustaining equipment, training, institutional knowledge, and identifying capability gaps and funding needs to support continued preparedness.
BC50	Work closely with the Brunswick County Sheriff's Office on improving the County's multi-jurisdictional communications system in an effort to enhance interoperability.	All Hazards	High	Brunswick County Communications Support Agencies: Brunswick County EM, Fire, EMS	General Funds, NCDPS	2026-2031	In progress-Brunswick County Sheriff's Office facilitates a local public safety system that coordinates resources for emergency fire, law, and EMS responses through a common operating window through CentralSquare Pro CAD system and NC SHP's VIPER radio. Systems are designed to support new technology as it is adopted across disciplines with efforts to streamline responses across agencies and ensure uptime during major events.
BC54	Identify areas where placement of flood monitoring gauges could be placed to improve flood warning capabilities of FIMAN.	Flooding	High	Brunswick County EM	State and Federal Grants	2026-2031	In progress: Brunswick County continues to improve flood warning capabilities by incorporating flood monitoring gauges into new bridge construction and infrastructure projects.
BC55	Continue to work with Brunswick Nuclear Power Station to plan for any events which might require emergency action.	Radiological Emergency - Fixed Nuclear Facilities	High	Brunswick County EM (Nuclear)	Staff time, State and Federal Grants	Action to be deleted	Brunswick County has decided to delete this action. It will be removed from future updates.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BC56	Work with appropriate stakeholders to identify areas where dam failure could occur and develop emergency action plans for those dams, as needed.	Dam Failure	High	Brunswick County Planning Support Agency: Brunswick County EM	Staff time, State and Federal Grants	Action to be deleted.	Brunswick County has decided to delete this action. It will be removed from future updates.
BC57	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 the application. Projects may include, but are not limited to: acquisition, elevation, mitigation reconstruction, and wet/dry flood proofing to commercial and/or residential structures as applicable; redundant power to critical facilities, storm shelters and other activities that reduce the loss of life and property as a result of impacts from natural hazards.	All Hazards	High	Brunswick County EM Support Agencies: All County Departments	General Funds	2026-2031	New action for 2026-2031. Eligible projects may include, but are not limited to, property acquisition and demolition, structure elevation, mitigation reconstruction, wet and dry floodproofing, installation of redundant power systems at critical facilities, development or enhancement of storm shelter facilities, and other cost-effective mitigation measures designed to reduce loss of life, property damage, and post-disaster recovery costs. Project identification will be informed by hazard risk assessments, post-disaster damage data, and coordination with municipal partners, state agencies, and FEMA to ensure technical feasibility and eligibility. This action is continuous in nature and supports long-term risk reduction by positioning Brunswick County to leverage federal mitigation funding opportunities as they become available, particularly following federally declared disasters.
BC58	Develop and implement a stormwater and hydrology assessment program focused on mitigating hazardous materials and radiological fallout risks within the 10-mile Emergency Planning Zone (EPZ). The program will evaluate roadside ditches and stormwater detention facilities to identify vulnerabilities that could contribute to the spread or pooling of contaminants and assess	All Hazards	Moderate	Brunswick County EM Support Agencies: Brunswick County Engineering "Stormwater" NCDOT, Environmental Health	General Funds	2026-2031	New actions for 2026-2031. This initiative strengthens preparedness for hazardous materials and radiological incidents within the 10-mile EPZ by reducing secondary contamination pathways, supporting emergency worker decontamination and reception operations, and improving coordinated stormwater control during response activities. The action enhances multi-agency capability led by Emergency Management, with Engineering

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	opportunities to support emergency worker decontamination operations, reception and monitoring areas, and controlled runoff management during response operations. Emergency Management will serve as the lead agency, with support from County Engineering (Stormwater) and Environmental Health to enhance preparedness and reduce secondary contamination pathways during radiological or hazardous materials incidents.						(Stormwater) and Environmental Health support, and aligns with mitigation strategies for low-probability, high-consequence events.
BC59	Brunswick County will conduct recurring training and develop standardized training products to improve the readiness and effectiveness of non-essential personnel who support emergency operations. Training will be specifically tailored to the operational use of critical emergency management systems, including WebEOC, Everbridge, and damage assessment tools. This action strengthens institutional knowledge, improves continuity of operations, and reduces operational delays during disasters by ensuring a broader pool of trained personnel is available to support response and recovery functions.	All Hazards	Moderate	Brunswick County EM Support Agency: Brunswick County IT	General Funds	2026-2031	New Action 2026-2031. This mitigation action is a capability measure that enhances Brunswick County's emergency management operational readiness and continuity of operations. By institutionalizing recurring training and standardized training products for non-essential personnel who support emergency operations, the County expands the pool of trained personnel available during staffing shortages, prolonged incidents, or multiple concurrent hazard events. Improved proficiency in WebEOC, Everbridge, and damage assessment tools strengthens situational awareness, emergency communications, and post-disaster damage assessment accuracy, thereby reducing operational delays and supporting timely response and recovery operations. Costs are associated with staff time, training development, instructional materials, system access, and recuring delivery of training.
BC60	Brunswick County will design and plan storm-rated recreation center facilities to function as hardened	All Hazards	High	Brunswick County EM	General Funds	2026-2031	Expands storm-rated shelter capacity, protects life safety during extreme weather events, strengthens community

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	public shelters during high-wind and severe weather events. This action includes evaluating existing and proposed recreation centers for structural upgrades or new construction to meet applicable wind and flood design standards, incorporating safe room components, emergency power capabilities, ADA-compliant access, and life-safety systems. Designing recreation centers with dual-use shelter functionality increases shelter capacity, reduces reliance on school facilities, and provides resilient community infrastructure capable of supporting evacuation, sheltering, and post-disaster recovery operations.			Support Agency: Brunswick County Planning, Parks and Recreation, Facilities Management, Engineering,			resilience, and improves eligibility for federal mitigation funding by investing in resilient, multi-purpose public facilities.
BC61	Develop and implement a coordinated, countywide invasive species inventory and management framework for early detection and rapid response across Brunswick County's coastal plain. The program will address terrestrial and aquatic invasive plants and animals and prioritize monitoring, control, mitigation, eradication, education, and ecological restoration based on environmental risk. Implementation will be pursued through multi-agency partnerships and grant funding opportunities with NCDA&CS, NCWRC, NC Forest Service, NCDEQ Division of Water Resources, NC Cooperative Extension, USDA (APHIS and NRCS), U.S. Fish and Wildlife Service, U.S. Forest Service, and the North Carolina Invasive Plant Council.	Flooding, Wildfire, Drought	Moderate	Cooperative Extension Support Agency: Brunswick County EM, Planning, Environmental Partners	General Funds	2026-2031	Early detection and rapid response significantly reduce long-term management and restoration costs while preventing irreversible ecological damage. This action demonstrates proactive risk reduction and sustained capability building consistent with FEMA mitigation funding eligibility.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BC62	Relocate the pump station along S. Navassa Road out of the existing flood zones.	Hurricanes and Coastal Hazards	High	Brunswick Regional Water and Sewer H2GO	Staff Time, Local, State and Federal Grants	2027	New action for the 2026 plan. Design ongoing.
BC63	Successfully design and operate Aquifer Storage Recovery (ASR) for emergency water supply. ASR ensures finished water availability during droughts or catastrophic failures at the RO treatment plant due to natural hazards.	Drought Hurricanes and Coastal Hazards Tornadoes/Thunderstorms	High	Brunswick Regional Water and Sewer	Staff Time, Local, State and Federal Grants	2028	Hydrogeology studies began in 2014

Bald Head Island Mitigation Action Plan

For several of the mitigation actions identified for Bald Head Island, Brunswick County is the lead agency and Bald Head Island supports implementation of these actions. Those actions that have a corresponding Brunswick County action has the County action number listed below the Bald Head Island Action # in the first column.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BHI1	Continue to support the Bald Head Island Conservancy and the Smith Island Land Trust in their efforts to acquire land for open space preservation. It is the Village's desire that these properties be deed restricted and maintained in their natural state.	All Hazards	High	Bald Head Island Administration	General Funds, SILT	2026-2031	In addition to making property owners aware of the Smith Island Land Trust (SILT) and its mission, BHI assists SILT to ensure that conservation properties are maintained and managed to protect water quality, wildlife habitat, and provide natural open spaces on BHI. We assist to identify potential preservation violations before they occur and notify the SILT immediately, so problems are mitigated.
BHI2	Continue to maintain a local early warning system relating to notifications regarding flooding and other man-made disasters. This effort should involve all citizens and visitors, as well as the Village's critical infrastructure system.	All Hazards	High	Bald Head Island Emergency Services Brunswick County Emergency Services	General Funds, NCDPS	2026-2031	Bald Head Island has its own CodeRed emergency notification registry, an e-newsletter blast, social media channels (Facebook, Twitter, Instagram, YouTube), and will be launching a PEG channel with scrolling capability on Spectrum in the near future. Outreach to rental agencies to promote these channels to our visitors is planned.
BHI3 (BC5)	In conjunction with annual EOP updates, determine if access to all critical facilities is readily available in the event of a natural hazard event. Careful consideration should be given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified and coordinated for alternative transportation.	All Hazards	High	Bald Head Island	General Funds	2026-2031	Ongoing: Bald Head Island updated its EOP to include rental of high-water vehicles.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BHI4 (BC8)	Review respective Comprehensive Land Use Plans annually to ensure that the Future Land Use Maps adequately delineates portions of the County/ municipalities deemed unsuitable for development due to existing environmental conditions or other factors outlined in this plan.	All Hazards	Moderate	BHI	General Funds, NCDPS, NCDEQ	2026-2031	See update provided by Brunswick County.
BHI5 (BC10)	Periodically evaluate local land development regulations for ability to target and direct growth to areas consistent with the land classification map, the water distribution system, and existing and future sewer systems	Flooding	Moderate	BHI	General Funds	2026-2031	Deferred. This item will be reviewed again during the 2031 update of this plan.
BHI6 (BC21)	Continue to undertake the following actions to support maintenance of safe hurricane evacuation routes: Identify and support improvements to roads that serve as hurricane evacuation routes, post evacuation routes on County and Town websites, perform routine bridge and culvert maintenance, and raise bridges over streams that have documented flooding during significant rain events, support the planning and implementation of regional roadways	Hurricanes and Coastal Hazards	High	BHI	General Funds, NCDPS	2026-2031	See update provided by Brunswick County.
BHI7 (BC25)	Continue to support the guidelines of the Coastal Area Management Act and the efforts and programs of the NC Department of Environmental Quality, Division of Coastal Management and the Coastal Resources Commission to protect the coastal wetlands, estuarine waters, estuarine shorelines, and public trust waters of Brunswick County.	All Hazards	Moderate	BHI	General Funds, NCDEQ	2026-2031	See update provided by Brunswick County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BHI8 (BC27)	Integrate publicly acquired land into public park and greenway systems. These efforts may be carried out through update of the County Blue/Greenway system, as well as municipal planning efforts.	All Hazards	Moderate	BHI	General Funds, NCDPS, NCDEQ	2026-2031	See update provided by Brunswick County.
BHI9 (BC29)	Consider a policy for contractors to pick up building material and building debris prior to coastal storms.	Hurricanes and Coastal Hazards	High	BHI	General Funds, FEMA	Completed	Completed This action will be removed for the 2031 update of this plan.
BHI10 (BC30)	Continue to enforce minimum housing code to require the improvement of substandard housing.	All Hazards	High	BHI	General Funds	2026-2031	See update provided by Brunswick County.
BHI11 (BC32)	Enhance and develop new public accesses to waterway resources in a manner as to protect sensitive environment areas from development and implement the priority recommendations contained in the Brunswick County Shoreline Access Plan.	All Hazards	Moderate	BHI	General Funds, NCDPS	2026-2031	See update provided by Brunswick County.
BHI12 (BC33)	Improve Hazard Warning and Response Plan warning to assess effectiveness of emergency response plans.	All Hazards	High	BHI	General Funds, NCDP	2026-2031	See update provided by Brunswick County
BHI13 (BC34)	Continue and expand the program to retrofit schools and other public facilities to serve as emergency shelters.	All Hazards	Moderate	BHI	General Funds, NCDPS	2026-2031	See update provided by Brunswick County
BHI14 (BC35)	Provide training for “first responders” in identifying and reporting opportunities to mitigate the effects of future disasters at both the county and municipal level.	All Hazards	High	BHI	General Funds, NCDPS	2026-2031	See update provided by Brunswick County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BHI15 (BC37)	Brunswick County will support NCDOT and NCDPS in efforts to evaluate and improve capacity of evacuation routes.	All Hazards	High	BHI	General Funds	2026-2031	See update provided by Brunswick County.
BHI16 (BC41)	Support Section 206 Lower Lockwood Folly River Aquatic Habitat Restoration Project (removal of sediment bars to increase tidal flushing and improve aquatic habitat).	Flood	High	BHI	General Funds, NCDEQ, NCDOT	2026-2031	Deferred: Brunswick County and shoreline protection coalition partners will work with DEQ and USACE to seek funding to address this issue.
BHI18 (BC44)	Establish locations for flood awareness signs – show elevations of high water during/after Hurricanes Matthew, Florence, and PTC8 the base flood, and the base flood plus 2 feet. Signs should be surveyed to serve as elevation reference marks.	Flooding	Low	BHI	General Funds	2026-2031	See update provided by Brunswick County
BHI19 (BC46)	Continue to expand upon the Alert Emergency Notification System available to all residents. Brunswick County Emergency Management will coordinate with all municipal jurisdictions regarding registration through the Brunswick County Emergency Notification Registration Portal.	All Hazards	High	BHI	General Funds, NCDPS	2026-2031	Bald Head Island promotes Brunswick County's CodeRed emergency notification system in its PPI materials and promotes its own CodeRed registry.
BHI20 (BC47)	Establish and maintain retrofitting techniques and publicize in the public libraries, and also through citizen newsletters.	All Hazards	High	BHI	General Funds, NCDPS	Action Complete	See update provided by Brunswick County.
BHI21 (BC48)	Coordinate with local churches and Spanish speaking representatives to disperse information about the hazards prevalent in the area and the steps they can take to mitigate these hazards.	All Hazards	Moderate	BHI	General Funds	Completed 2026-2031	See update provided by Brunswick County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BHI22 (BC49)	Maintain Radiological/Nuclear preventative and response preparedness for fixed nuclear facilities, transportation and Weapons of Mass Destruction incidents. Continue to maintain a plan of action to maintain materials and knowledge base for addressing all Radiological/Nuclear events. Continue to assess proactive action measures in response to a Radiological/Nuclear event. This responsibility must be supported by provisions of adequate funding for materials, equipment and training necessary to maintain this preparedness. These efforts should be coordinated with the County LEPC and Brunswick Nuclear Power Plant to address man-made/technological hazards that may require emergency action)	Radiological Emergency – Fixed Nuclear Facilities	High	BHI	General Funds, NCDPS	2026-2031	See update provided by Brunswick County.
BHI23 (BC50)	Work closely with the Brunswick County Sheriff's Office on improving the County's multi-jurisdictional communications system in an effort to enhance interoperability.	All Hazards	High	BHI	General Funds, NCDPS	2026-2031	See update provided by Brunswick County.

Belville Mitigation Action Plan

For most of the mitigation actions identified for Belville, Brunswick County is the lead agency and Belville supports implementation of these actions. The corresponding Brunswick County action is listed below the Action # in the first column.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
B1 (BC5)	In conjunction with annual EOP updates, determine if access to all critical facilities is readily available in the event of a natural hazard event. Careful consideration should be given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified and coordinated for alternative transportation.	All Hazards	High	Brunswick Co Emergency Management, Support Agencies: Support Agencies: Brunswick Transit, Schools, EMS, Public Utilities, Flood/Code Administration Belville Administration	General Funds	2026-2031	See update provided by the County. The Town is updating their Hurricane Plan and works with Brunswick County Emergency Management
B2 (BC8)	Review respective Comprehensive Land Use Plans annually to ensure that the Future Land Use Maps adequately delineates portions of the County/ municipalities deemed unsuitable for development due to existing environmental conditions or other factors outlined in this plan.	All Hazards	Moderate	Brunswick Co Planning Support Agency: Belville Administration	General Funds, NCDPS, NCDEQ	2031	See update provided by the County. The Town is updating its 2030 Vision Plan into a 2040/2050 Vision and Land Use Plan.
B3 (BC10)	Periodically evaluate local land development regulations for ability to target and direct growth to areas consistent with the land classification map, the water distribution system, and existing and future sewer systems.	Flooding	Moderate	Brunswick Co Planning Supporting Agencies: Public Utilities Belville Administration	General Funds	2026-2031	See update provided by the County. The Vision 2030 was completed. The Tow is updating its Vision Plan into a 2040/2050 Vision and Land Use Plan.
B4 (BC21)	Continue to undertake the following actions to support maintenance of safe hurricane evacuation routes: Identify and support improvements to roads that serve as hurricane evacuation routes, post evacuation routes on County and Town websites, perform routine bridge and culvert maintenance,	Hurricanes and Coastal Hazards	High	Brunswick County EM NCDOT Support Agency: Belville Administration	General Funds, NCDPS Support Agencies: EM, Communications, IT	2026-2031	See update provided by the County. Hurricane plan currently in place, has recently be updated and is working towards development of a Comprehensive Emergency Management Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	and raise bridges over streams that have documented flooding during significant rain events, support the planning and implementation of regional roadways						
B5 (BC25)	Continue to support the guidelines of the Coastal Area Management Act and the efforts and programs of the NC Department of Environmental Quality, Division of Coastal Management and the Coastal Resources Commission to protect the coastal wetlands, estuarine waters, estuarine shorelines, and public trust waters of Brunswick County.	All Hazards	Moderate	Brunswick County Planning Support Agency: Belville Administration	General Funds, NCDEQ	2026-2031	See update provided by the County. The Town will continue to support DCM and Brunswick County with these efforts
B6 (BC27)	Integrate publicly acquired land into public park and greenway systems. These efforts may be carried out through update of the County Blue/Greenway system, as well as municipal planning efforts.	All Hazards	Moderate	Brunswick County Planning Support Agencies: Parks and Rec, NCDOT Belville Administration	General Funds, NCDEQ, NCDOT	2026-2031	See update provided by the County. Belville developed a Brunswick Riverwalk Site Specific Master Plan to guide the development of the park. Currently Phase I is complete. Phase II has started construction.
B7 (BC29)	Consider a policy for contractors to pick up building material and building debris prior to coastal storms.	Hurricanes and Coastal Hazards	High	Operations Services Support Agencies: EM Belville Administration	General Funds, FEMA	2026-2031	See update provided by the County. Outlined in the Hurricane plan. All debris and port of johns must be removed before impending storms.
B8 (BC30)	Continue to enforce minimum housing code to require the improvement of substandard housing.	All Hazards	High	Brunswick County Code Admin Support Agency: Belville Administration	General Funds	2026-2031	See update provided by the County. Brunswick Count handles the Town's inspections. Belville will continue to support the County through an interlocal agreement. Belville has also adopted a minimum housing code.
B9 (BC32)	Enhance and develop new public accesses to waterway resources in a manner as to protect sensitive environment areas from development and implement the priority recommendations	All Hazards	Moderate	Brunswick County Planning Support Agency: Belville Administration	General Funds, NCDPS	2026-2031	See update provided by the County. Complete for Belville: The Town of Belville was awarded grant funds to install a non motorized boat launch for canoes, kayaks, row boats, and

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	contained in the Brunswick County Shoreline Access Plan.						paddleboards; and to replace the damaged boat dock at the motorized boat ramp.
B10 (BC34)	Continue and expand the program to retrofit schools and other public facilities to serve as emergency shelters.	All Hazards	Moderate	Brunswick County EM Support Agencies: Schools, HHS, DSS, Sheriff's Office, Admin, Brunswick Senior Resources Belville Administration	General Funds, NCDPS	2026-2031	See update provided by the County. Belville will work with Brunswick County EM and the Board of Education
B11 (BC35)	Provide training for "first responders" in identifying and reporting opportunities to mitigate the effects of future disasters at both the county and municipal level.	All Hazards	High	Brunswick County EM Support Agencies: Fire, EMS, BCSO, NC Community College System Belville Administration	General Funds, NCDPS	2026-2031	See update provided by the County. Belville will use Duke Energy Education Pavilion to provide training
B12 (BC37)	Brunswick County will support NCDOT and NCDPS in efforts to evaluate and improve capacity of evacuation routes.	All Hazards	High	NCDOT & NCDPS Support Agencies: Planning, EM Belville Administration	General Funds, NCDPS	2026-2031	See update provided by the County. Current subdivision ordinance requires inter parcel access
B13 (BC41)	Support Section 206 Lower Lockwood Folly River Aquatic Habitat Restoration Project (removal of sediment bars to increase tidal flushing and improve aquatic habitat).	Flooding	High	Brunswick County Planning Support Agency: Belville Administration	General Funds, NCDEQ, NCDOT	2026-2031	See update provided by the County. Follow Brunswick County's recommendations
B14 (BC44)	Establish locations for flood awareness signs – show elevations of high water during/after Hurricanes Matthew, Florence, and Potential Tropical Cyclone 8 the base flood, and the base flood plus 2 feet. Signs should be surveyed to serve as elevation reference marks.	Flooding	Low	Brunswick County Flood Planning Supporting Agencies: EM, NCDOT Belville Administration	General Funds	2026-2031	See update provided by the County. Work with HOA's and other community associations to gather and monitor data

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
B15 (BC46)	Continue to expand upon the Alert Emergency Notification System available to all residents. Brunswick County Emergency Management will coordinate with all municipal jurisdictions regarding registration through the Brunswick County Emergency Notification Registration Portal.	All Hazards	High	Brunswick County EM, PIO Support Agency: Belville Administration	General Funds, NCDPS	Action to be deleted.	Brunswick County has marked this action to be deleted. It will be removed from the 2031 update.
B16 (BC47)	Establish and maintain retrofitting techniques and publicize in the public libraries, and also through citizen newsletters.	All Hazards	High	Brunswick County Library Support Agency: Belville Administration	General Funds, NCDPS	2026-2031	See update provided by the County. Conduct community workshops semi annually
B17 (BC48)	Coordinate with local churches and Spanish speaking representatives to disperse information about the hazards prevalent in the area and the steps they can take to mitigate these hazards.	All Hazards	Moderate	Brunswick County EM VOAD Support Agencies: AFN Coordinator, HHS Belville Administration		2026-2031	See update provided by the County. Town will spearhead outreach efforts to churches and minority groups
B18 (BC50)	Work closely with the Brunswick County Sheriff's Office on improving the County's multi-jurisdictional communications system in an effort to enhance interoperability.	All Hazards	High	Brunswick County Communications Support Agencies: EM, Fire, EMS Belville Administration	General Funds, NCDPS	2026-2031	See update provided by the County. The Town provides this list as an ongoing process as new homes, streets, and developments are approved.
B19 (BC54)	Identify areas where placement of flood monitoring gauges could be placed to improve flood warning capabilities of FIMAN.	Flooding	High	Brunswick County EM Support Agency: Belville Administration	State and Federal Grants	2026-2031	See update provided by the County. This action is not applicable for Belville.
B20 (BC55)	Continue to work with Brunswick Nuclear Power Station to plan for any events which might require emergency action.	Radiological Emergency - Fixed Nuclear Facilities	High	Brunswick County EM (Nuclear) Support Agency: Belville Administration	Staff time, State and Federal Grants	Action to be deleted	Brunswick County has decided to delete this action.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
B21 (BC56)	Work with appropriate stakeholders to identify areas where dam failure could occur and develop emergency action plans for those dams, as needed.	Dam Failure	High	Brunswick County Planning Support Agency: Brunswick County EM Support Agency: Belville Administration	Staff time, State and Federal Grants	Action to be deleted.	Brunswick County has decided to delete this action.
B22	Consider submitting an application to join the Community Rating System using Hazard Mitigation components to fulfill application requirements.	Flooding	High	Town of Belville Administration	General Funds, NCDPS	2026-2031	The Town has considered and is interested in submitting an application for the CRS.

Boiling Spring Lakes Mitigation Action Plan

For some of the mitigation actions identified for Boiling Spring Lakes, Brunswick County is the lead agency and the City supports implementation of these actions. Where applicable, the corresponding Brunswick County action is listed below the Action # in the first column.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BSL1	Consider offering incentives for the use of permeable driveways and surfaces to reduce runoff and promote	Drought	Moderate	Municipal Administration	N/A	Completed	Completed - UDO limits impervious coverage to no more than 30%. Use of permeable driveways and surfaces required for any coverage in excess of 30%.
BSL2	Develop preparedness plan for tornadoes and earthquakes that addresses immediate search and rescue efforts and enhances public awareness and education.	Tornadoes/Thunderstorms Earthquakes	Moderate	Municipal Administration	General Funds	Completed	Completed - City website includes emergency preparedness information, links to various social media pages where information will be posted by the PIO, links to sign up for Code-Red alerts through the city, as well as alerts through the county. Emergency Response Plan addresses tornadoes (severe weather) and earthquakes with Police Dept.
BSL3	Acquire sites and/or obtain agreements with local churches and businesses to serve as safe sites within the City	All Hazards	Moderate	Municipal Administration	General Funds, NCDPS	Completed	Completed - New library/senior center building to serve as a safe site. Building is located in close proximity to both the Police Dept. and the Fire Dept., and directly next to City Hall. This action will be
BSL4	Ensure the new police department is hazard resistant.	All Hazards	High	Municipal Administration	General Funds, NCDPS	Completed	Completed - Construction of new police department building completed in 2023. Site is outside of floodplain and flood prone areas. Fire-rated doors and proper fire separation between key areas. Reinforced entry points. Bulletproof glass at service window. Command center
BSL5	Acquire property to integrate into Charles Schneider Park and	Flooding	Moderate	Municipal Administration	General Funds, NCDEQ	Action to be deleted	Deleted – Lack of general funds. This item will not be included in the 2031 update of this plan.
BSL6	Consider possible secondary evacuation route for Section 21 and Section 11	Flooding	Moderate	Municipal Administration	General Funds, NCDPS	2026-2031	Carried Forward - City unable to coordinate with, and get approval from MOTSU (Military Ocean Terminal at Sunny Point) to extend

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BSL7	Placement of information stations throughout the City to provide residents with access to critical information in the event	All Hazards	Moderate	Municipal Administration	General Funds	Completed	Completed - Information stations at fire stations located on NC 87, Miller Rd., Frink Lake Dr., Fifty Lakes Dr., and at Spring Lake Park, BSL Community Center, BSL Library/Sr. Ctr. This action will be
BSL8	Incorporate flood protection and drainage system maintenance information into website	Flooding	Moderate	Municipal Administration	General Funds	Completed	Completed - City website has several pages dedicated to flood protection information. New Stormwater Dept. page has been added to the website. Public Works Dept. page has drainage system maintenance information
BSL9	Use GIS to map hazard areas and at-risk structures	All Hazards	Moderate	Municipal Administration	General Funds	Completed	Completed - GIS map used with review of all development applications. This action will be
BSL10	Establish, adopt and enforce minimum housing code for the improvement of	All Hazards	Moderate	Municipal Administration	General Funds	Completed	Completed - City adopted a minimum housing code on 5.2.2023 Ord. No. 2023-08 This action will be moved to Appendix
BSL11	Develop and distribute educational materials specific to tornado preparedness, warning systems, and sheltering procedures	Tornadoes/Thunderstorms	Moderate	Municipal Administration	General Fund	2027	New Action for 2026 Plan
BSL12	Install backup power systems at Community Center & Library/Sr. Ctr.	Tornadoes/Thunderstorms Hurricane & Coastal Hazards	Moderate	Municipal Administration	General Fund Grants	2031	New Action for 2026 Plan
BSL13	Update City's Emergency Response Plan	All Hazards	High	Municipal Administration	General Fund	2027	New Action for 2026 Plan
BSL14	Identify and support vulnerable populations in accessing emergency preparedness resources	All Hazards	High	Municipal Administration	General Fund	2027	New Action for 2026 Plan
BSL15	Update zoning regulations to increase building setbacks for waterfront properties	Flooding	Moderate	Municipal Administration	General Fund	2026	New Action for 2026 Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BSL16	Update zoning regulations to require elevated buildings in flood prone areas	Flooding	High	Municipal Administration	General Fund	2026	New Action for 2026 Plan
BSL17	Improve local drainage systems by obtaining easements in order to maintain vital drainage ditches and enlarging storm drains and increasing pump capacities	Hurricane & Coastal Hazards, Flooding	High	Municipal Administration	General Fund	2031	New Action for 2026 Plan
BSL18	Develop evacuation plan and incorporate into City's Emergency Response Plan	All Hazards	High	Municipal Administration	General Fund Grants	2031	New Action for 2026 Plan
BSL19	Incorporate NC Dam Safety Emergency Action Plan as appendix to City's Emergency Response Plan	Hurricane & Coastal Hazards Flooding	Moderate	Municipal Administration	General Fund	2031	New Action for 2026 Plan
BSL20	Launch public awareness campaign focused on educating residents about the risk of heat, how to stay cool, and how to prevent heat related illnesses	Excessive Heat	Moderate	Municipal Administration	General Fund	2027	New Action for 2026 Plan
BSL21	Designate cooling centers to be stocked with water, snacks, air conditioning on excessive heat days and promote to residents through public outreach	Excessive Heat	Moderate	Municipal Administration	General Fund	2027	New Action for 2026 Plan
BSL22	Conduct public education campaign prior to hurricane season to ensure	Hurricane & Coastal Hazards Flooding	High	Municipal Administration	General Fund	2027	New Action for 2026 Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	residents understand flood risks, have emergency response plans in place, and are prepared to take action when a warning is issued						
BSL23	Launch public awareness campaign to educate residents about fire prevention, safety, and how to prepare for a wildfire, including guidelines on safe burning, reducing the risk of accidental ignitions, clearing debris around homes, and removing dead trees, brush, and vegetation	Wildfire	Moderate	Municipal Administration	General Fund	2028	New Action for 2026 Plan
BSL24	Participate in the Firewise USA Program	Wildfire	Moderate	Municipal Administration	General Fund	2031	New Action for 2026 Plan
BSL25	Provide educational material about the City's mosquito control program and effective mosquito prevention	Infectious Disease	Moderate	Municipal Administration	General Fund	2027	New Action for 2026 Plan
BSL26	Ensure the availability of PPE (gloves, masks, etc.) for essential City staff	Infectious Disease	High	Municipal Administration	General Fund	2026	New Action for 2026 Plan
BSL27	Implement requirement for all Planning/Zoning Dept. staff to complete the NFIP101 course	Hurricane & Coastal Hazards Flooding	Moderate	Municipal Administration	General Fund	2031	New Action for 2026 Plan
BSL28	Implement regular cybersecurity awareness programs for employees	Cyber Security	Moderate	Municipal Administration	General Fund	2026	New Action for 2026 Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BSL29	Elevate the Mitchell Prince Bridge on NC 87 to ensure it remains passable during flooding events	Hurricane & Coastal Hazards Flooding	High	NCDOT	NCDOT (STIP) Grants	2031	New Action for 2026 Plan
BSL30	Consider possible secondary evacuation route for Section 21 and Section 11	All Hazards	Moderate	Municipal Administration	General Fund Grants	2031	Carried over from 2021 Plan
BSL31	Actively work with Federal, State, local and private partners to identify mitigation measures and secure funding via grants to alleviate flooding	Hurricane & Coastal Hazards Flooding	High	Municipal Administration	General Fund Grants	2031	New Action for 2026 Plan
BSL32	Acquire generators or other forms of redundant power supply to ensure that critical facilities and infrastructure remain operational where normal power supply is not available	All Hazards	High	Municipal Administration	Grants	2028	New Action for 2026 Plan
BSL33	Work to proactively implement recommendations in the Stormwater Management Master Plan	Hurricane & Coastal Hazards Flooding	High	Municipal Administration	General Fund Grants	2028	New Action for 2026 Plan
BSL34	Implement drainage improvement projects to reduce stormwater related flooding	Hurricane & Coastal Hazards Flooding	High	Municipal Administration	General Fund Grants	2028	New Action for 2026 Plan
BSL35	Establish locations for flood awareness signs	Flooding	Low	Municipal Administration	General Fund	2028	Carried over from 2021 Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BSL36 (BC21)	Continue to undertake the following actions to support maintenance of safe hurricane evacuation routes: Identify and support improvements to roads that serve as hurricane evacuation routes, post evacuation routes on County and Town websites, perform routine bridge and culvert maintenance, and raise bridges over streams that have documented flooding during significant rain events, support the planning and implementation of regional roadways	Hurricane	High	BSL	General Funds, NCDPS	2026-2031	Boiling Spring Lakes- Addressed on an ongoing basis; Stormwater Master Plan adopted; HMGP dam reconstruction project underway
BSL37 (BC27)	Integrate publicly acquired land into public park and greenway systems. These efforts may be carried out through update of the County Blue/Greenway system, as well as municipal planning efforts.	All	Moderate	BSL	General Funds, NCDEQ, NCDOT	2026-2031	Addressed on an ongoing basis; Pedestrian Plan completed
BSL38 (BC29)	Consider a policy for contractors to pick up building material and building debris prior to coastal storms.	Hurricanes and Coastal Hazards	Moderate	BSL	General Funds, FEMA	2026-2031	Department policy for notification in place
BSL39 (BC30)	Continue to enforce minimum housing code to require the improvement of substandard housing.	All	High	BSL	General Funds	2026-2031	Minimum housing code adopted

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BSL40 (BC44)	Establish locations for flood awareness signs – show elevations of high water during/after Hurricane Matthew, Florence, and PTC8 the base flood, and the base flood plus 2 feet. Signs should be surveyed to serve as elevation reference marks.	Flood	High	General Funds	General Funds	2026-2031	In progress- Data has been collected for placement of high water elevations during Hurricane Matthew, Florence, and PTC8.

Bolivia Mitigation Action Plan

For all of the mitigation actions identified for Bolivia, Brunswick County is the lead agency, and Bolivia supports implementation of these actions. The corresponding Brunswick County action is listed below the Action # in the first column.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BV1 (BC5)	In conjunction with annual EOP updates, determine if access to all critical facilities is readily available in the event of a natural hazard event. Careful consideration should be given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified and coordinated for alternative transportation.	All Hazards	High	Brunswick Co Emergency Management, Support Agencies: Support Agencies: Brunswick Transit, Schools, EMS, Public Utilities, Flood/Code Administration Bolivia Administration	General Funds	2026-2031	See update provided by the County. Bolivia would like to be notified when alternate thoroughfares run through the Town or ETJ.
BV2 (BC8)	Review respective Comprehensive Land Use Plans annually to ensure that the Future Land Use Maps adequately delineates portions of the County/ municipalities deemed unsuitable for development due to existing environmental conditions or other factors outlined in this plan.	All Hazards	Moderate	Brunswick Co Planning Support Agency: Bolivia Administration	General Funds, NCDPS, NCDEQ	2026-2031	See update provided by the County. Bolivia: See update provided by the County – the Town is interested in taking more action to make certain areas unfit for development.
BV3 (BC10)	Periodically evaluate local land development regulations for ability to target and direct growth to areas consistent with the land classification map, the water distribution system, and existing and future sewer systems.	Flooding	Moderate	Brunswick Co Planning Supporting Agencies: Public Utilities Bolivia Administration	General Funds	2026-2031	See update provided by the County. Bolivia supports the County' implementation of this action. The Town would like assistance with this action.
BV4 (BC21)	Continue to undertake the following actions to support maintenance of safe hurricane evacuation routes: Identify and support improvements	Hurricanes and Coastal Hazards	High	Brunswick County EM NCDOT Support Agency:	General Funds, NCDPS	2026-2031	See update provided by the County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	to roads that serve as hurricane evacuation routes, post evacuation routes on County and Town websites, perform routine bridge and culvert maintenance, and raise bridges over streams that have documented flooding during significant rain events, support the planning and implementation of regional roadways			Bolivia Administration	Support Agencies: EM, Communications, IT		
BV5 (BC25)	Continue to support the guidelines of the Coastal Area Management Act and the efforts and programs of the NC Department of Environmental Quality, Division of Coastal Management and the Coastal Resources Commission to protect the coastal wetlands, estuarine waters, estuarine shorelines, and public trust waters of Brunswick County.	All Hazards	Moderate	Brunswick County Planning Support Agency: Bolivia Administration	General Funds, NCDEQ	2026-2031	See update provided by the County.
BV6 (BC27)	Integrate publicly acquired land into public park and greenway systems. These efforts may be carried out through update of the County Blue/Greenway system, as well as municipal planning efforts.	All Hazards	Moderate	Brunswick County Planning Support Agencies: Parks and Rec, NCDOT Bolivia Administration	General Funds, NCDEQ, NCDOT	2026-2031	See update provided by the County. NC 211 Corridor does not apply to Bolivia. This action will be removed in the 2031 update of this plan.
BV7 (BC29)	Consider a policy for contractors to pick up building material and building debris prior to coastal storms.	Hurricanes and Coastal Hazards	High	Operations Services Support Agencies: EM Bolivia Administration	General Funds, FEMA	2026-2031	See update provided by the County.
BV8 (BC30)	Continue to enforce minimum housing code to require the improvement of substandard housing.	All Hazards	High	Brunswick County Code Admin	General Funds	2026-2031	See update provided by the County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
				Support Agency: Bolivia Administration			
BV9 (BC32)	Enhance and develop new public accesses to waterway resources in a manner as to protect sensitive environment areas from development and implement the priority recommendations contained in the Brunswick County Shoreline Access Plan.	All Hazards	Moderate	Brunswick County Planning Support Agency: Bolivia Administration	General Funds, NCDPS	2026-2031	See update provided by the County. This action does not apply to Bolivia. It will be removed from the 2031 update of this plan.
BV10 (BC34)	Continue and expand the program to retrofit schools and other public facilities to serve as emergency shelters.	All Hazards	Moderate	Brunswick County EM Support Agencies: Schools, HHS, DSS, Sheriff's Office, Admin, Brunswick Senior Resources Bolivia Administration	General Funds, NCDPS	2026-2031	See update provided by the County.
BV11 (BC35)	Provide training for "first responders" in identifying and reporting opportunities to mitigate the effects of future disasters at both the county and municipal level.	All Hazards	High	Brunswick County EM Support Agencies: Fire, EMS, BCSO, NC Community College System Bolivia Administration	General Funds, NCDPS	2026-2031	See update provided by the County. This action does not apply to Bolivia. It will be removed from the 2031 update of this plan.
BV12 (BC37)	Brunswick County will support NCDOT and NCDPS in efforts to evaluate and improve capacity of evacuation routes. These efforts will be carried out with support from NCDOT and NCDPS.	All Hazards	High	NCDOT & NCDPS Support Agencies: Planning, EM Bolivia Administration	General Funds, NCDPS	2026-2031	See update provided by the County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
BV13 (BC41)	Support Section 206 Lower Lockwood Folly River Aquatic Habitat Restoration Project (removal of sediment bars to increase tidal flushing and improve aquatic habitat).	Flooding	High	Brunswick County Planning Support Agency: Bolivia Administration	General Funds, NCDEQ, NCDOT	2026-2031	See update provided by the County. This action does not apply to Bolivia. It will be removed from the 2031 update of this plan.
BV14 (BC44)	Establish locations for flood awareness signs – show elevations of high water during/after Hurricanes Matthew, Florence, and Potential Tropical Cyclone 8 the base flood, and the base flood plus 2 feet. Signs should be surveyed to serve as elevation reference marks.	Flooding	Low	Brunswick County Flood Planning Supporting Agencies: EM, NCDOT Bolivia Administration	General Funds	2026-2031	See update provided by the County. The Town would like to also include signs for PTC#8 which impacted Bolivia.
BV15 (BC46)	Continue to expand upon the Alert Emergency Notification System available to all residents. Brunswick County Emergency Management will coordinate with all municipal jurisdictions regarding registration through the Brunswick County Emergency Notification Registration Portal.	All Hazards	High	Brunswick County EM, PIO Support Agency: Bolivia Administration	General Funds, NCDPS	Action to be deleted.	Brunswick County has marked this action to be deleted. It will be removed from the 2031 update.
BV16 (BC47)	Establish and maintain retrofitting techniques and publicize in the public libraries, and also through citizen newsletters.	All Hazards	High	Brunswick County Library Support Agency: Bolivia Administration	General Funds, NCDPS	2026-2031	See update provided by the County.
BV17 (BC48)	Coordinate with local churches and Spanish speaking representatives to disperse information about the hazards prevalent in the area and the steps they can take to mitigate these hazards.	All Hazards	Moderate	Brunswick County EM VOAD Support Agencies: AFN Coordinator, HHS Bolivia Administration		2026-2031	See update provided by the County.
BV18 (BC50)	Work closely with the Brunswick County Sheriff's Office on improving the County's multi-jurisdictional	All Hazards	High	Brunswick County Communications	General Funds, NCDPS	2026-2031	See update provided by the County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	communications system in an effort to enhance interoperability.			Support Agencies: EM, Fire, EMS Bolivia Administration			
BV19 (BC54)	Identify areas where placement of flood monitoring gauges could be placed to improve flood warning capabilities of FIMAN.	Flooding	High	Brunswick County EM Support Agency: Bolivia Administration	State and Federal Grants	2026-2031	See update provided by the County. Bolivia supports the County's implementation of this action. This action has been deferred by Bolivia Administration.
BV20 (BC55)	Continue to work with Brunswick Nuclear Power Station to plan for any events which might require emergency action.	Radiological Emergency - Fixed Nuclear Facilities	High	Brunswick County EM (Nuclear) Support Agency: Bolivia Administration	Staff time, State and Federal Grants	Action to be deleted	Brunswick County has decided to delete this action.
BV21 (BC56)	Work with appropriate stakeholders to identify areas where dam failure could occur and develop emergency action plans for those dams, as needed.	Dam Failure	High	Brunswick County Planning Support Agency: Brunswick County EM Support Agency: Bolivia Administration	Staff time, State and Federal Grants	Action to be deleted.	Brunswick County has decided to delete this action.
BV22	Consider submitting an application to join the Community Rating System using Hazard Mitigation components to fulfill applications requirements.	Flooding	High	Bolivia Administration	General Funds/NCDPS	2026-2031	The Town is interested in joining the program. Technical assistance for joining is needed.

Calabash Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
C1	Explore grant opportunities to improve stormwater infrastructure to prevent possible flooding.	Flooding	High	Administration	General Fund, Grant Funds	2026-2031	New Action Item
C2	Provide community meetings to educate the public on possible hazards in Calabash	All Hazards	High	Administration	General Fund, Grant Funds	2026-2031	New Action Item
C3	Integrate publicly acquired land into public park and greenway systems. These efforts may be carried out through update of the County Blue/Greenway system, as well as municipal planning efforts	All Hazards	High	Administration	General Fund, Grant Funds	2026-2031	Ongoing – pending funding and staff availability
C4	Continue to proactively seek out grant funding through NCEM and FEMA for mitigation of repetitive loss properties (RLPs) from future flood 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. The County will assist all municipal jurisdictions in working through the structural mitigation grant funding process.	Flooding	High	Administration	General Fund, Grant Funds	2026-2031	Ongoing – pending funding and staff availability

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
C5 (BC27)	Integrate publicly acquired land into public park and greenway systems. These efforts may be carried out through update of the County Blue/Greenway system, as well as municipal planning efforts.	All Hazards	Moderate	Brunswick County Planning Support Agencies: Parks and Rec, NCDOT Calabash Administration	General Funds, NCDEQ, NCDOT	2026-2031	See update provided by the County. In progress for Calabash - Ongoing when opportunities arise or present themselves. The Town of Calabash Acquired Waterfront Property that is currently being converted into a public park. This aligns with our parks & recreation master plan.
C6 (BC29)	Consider a policy for contractors to pick up building material and building debris prior to coastal storms.	Hurricanes and Coastal Hazards	High	Operations Services Support Agencies: Brunswick County EM Calabash Administration	General Funds, FEMA	2026-2031	See update provided by the County. Deferred- Need to review and coordinate with our building inspection and permitting department to generate policy and educational material.
C7 (BC33)	Improve Hazard Warning and Response Plan warning to assess effectiveness of emergency response plans.	All Hazards	High	Brunswick County Emergency Management Supporting Agencies: Calabash Administration	General Funds, NCDPS	2026-2031	In progress- Plan implemented to address this concern by Town Departments. The town's website and social media are used to provide information prior to, during and post disasters. Continuing working with Brunswick County EM.
C7 (BC44)	Establish locations for flood awareness signs – show elevations of high water during/after Hurricanes Matthew, Florence, and Potential Tropical Cyclone 8 the base flood, and the base flood plus 2 feet. Signs should be surveyed to serve as elevation reference marks.	Flooding	Low	Brunswick County Flood Planning Supporting Agencies: EM, NCDOT Calabash Administration	General Funds	2026-2031	See update provided by the County. Ongoing for Calabash - This element is currently handled jointly with NCDEQ and request them to come out survey and flag areas when the need arises.

Carolina Shores Mitigation Action Plan

For some of the mitigation actions identified for Carolina Shores, Brunswick County is the lead agency, and Carolina Shores supports implementation of these actions. The corresponding Brunswick County action is listed below the Action # in the first column.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
CS1 (BC29)	Consider a policy for contractors to pick up building material and building debris prior to coastal storms.	Hurricanes and Coastal Hazards	High	Operations Services Support Agencies: EM Carolina Shores Administration	General Funds, FEMA	2026-2031	See update provided by the County. Action is complete for Carolina Shores. Policy is in place by Building Inspections Department.
CS2 (BC44)	Establish locations for flood awareness signs – show elevations of high water during/after Hurricanes Matthew, Florence, and Potential Tropical Cyclone 8 the base flood, and the base flood plus 2 feet. Signs should be surveyed to serve as elevation reference marks.	Flooding	Low	Brunswick County Flood Planning Supporting Agencies: EM, NCDOT Carolina Shores Administration	General Funds	2028	See update provided by the County. Ongoing for Carolina Shores. Will be complete by 2028.
CS3	Seek grants to improve stormwater infrastructure to prevent possible flooding.	Flooding	High	Carolina Shores Administration	General Fund, Grant Funds	2026-2031	New Action Item
CS4	Seek grants to buy or retrofit residential properties that flood or are affected by disaster.	Flooding	High	Carolina Shores Administration	General Fund, Grant Funds	2026-2031	New Action Item
CS5	Provide community meetings to educate the public on possible hazards in Carolina Shores	All Hazards	High	Carolina Shores Administration	General Fund, Grant Funds	2026-2031	New Action Item
CS6	Continue debris removal program to correct problem sites at both the County and municipal level.	All Hazards	High	Carolina Shores Public Works	General Fund, Grant Funds	2026-2031	Ongoing – pending funding and staff availability

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
CS7	Continue to proactively seek out grant funding through NCEM and FEMA for mitigation of repetitive loss properties (RLPs) from future flood 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. The County will assist all municipal jurisdictions in working through the structural mitigation grant funding process.	Flooding	High	Carolina Shores Administration	General Fund, Grant Funds	2026-2031	Ongoing – pending funding and staff availability

Caswell Beach Mitigation Action Plan

For all of the mitigation actions identified for Caswell Beach, Brunswick County is the lead agency, and the town supports implementation of these actions. The corresponding Brunswick County action is listed below the Action # in the first column.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
CSWB1 (BC20)	Continue to require 404 wetlands and 100-year floodplain areas to be delineated on all preliminary subdivision plats for lands within and adjacent to the proposed subdivision.	Flood	Moderate	Caswell Beach	General Funding	2019 Completed	Accomplished in 2019 with the creation of the Conservation Zone. The waters leading into the ICW are now protected by zoning restrictions
CSWB2 (BC22)	Continue to support the US Army Corps of Engineers' regulations, the applicable guidelines of the Coastal Area Management Act, and the use of local land use ordinances to regulate development of freshwater swamps, marshes, and 404 wetlands.	Flood	High	Caswell Beach	General Funding, NCDEQ	2019 Completed	Accomplished in 2019 with the creation of the Conservation Zone. The waters leading into the ICW are now protected by zoning restrictions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
CSWB3 (BC49)	Maintain and enhance preparedness for fixed nuclear facilities, radiological transportation incidents, and radiological/nuclear Weapons of Mass Destruction (WMD) events. This action includes regularly reviewing and updating radiological response plans; sustaining a current inventory of specialized equipment, materials, and technical knowledge; and evaluating proactive measures to reduce impacts from radiological or nuclear incidents. Adequate funding will be maintained to support required equipment, training, and sustainment activities. Coordination will occur through the County Local Emergency Planning Committee (LEPC) and in partnership with the Brunswick Nuclear Power Plant to address technological and man-made radiological hazards that may require emergency action.)	Nuclear	High	Caswell Beach	General Funds, NCDPS	In progress	In progress-Brunswick County continues to maintain radiological and nuclear preparedness in coordination with the Brunswick Nuclear Taskforce, County LEPC, Brunswick Nuclear Power Plant, and supporting partners. The County maintains plans and procedures outlining initial response actions, roles, and responsibilities for radiological/nuclear incidents. Ongoing efforts focus on sustaining equipment, training, institutional knowledge, and identifying capability gaps and funding needs to support continued preparedness.
CSWB4 (BC51)	Monitor the status of backup generators, communications, and vehicles for all critical public facilities. In addition, develop a list of providers of emergency equipment.	Power Outage	High	Caswell Beach	General Funds, NCDPS	Ongoing	The Town Carries out routine maintenance on an annual basis through the Town's Public Works Department. Two new generators were acquired during the implementation period.

Holden Beach Mitigation Action Plans

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
HB1	Continue to monitor and improve the town- wide water system. This effort will include: increase water pressure on west end of island by improving water availability, upsizing, or installing new lines; Relocate all critical elements of the Town's wastewater system above base flood elevation, including all pump stations and control mechanisms.	Flooding	Moderate	Holden Beach Administration	General Funds, NCDEQ, HMGP	Completed	Completed - Lift station 4 complete/ construction has started on lift station three and design work has begun on 1&2. Town wide water system has had an engineering update waterflow has been recorded on west end and Water system has been added to the long-term capital improvement plan
HB2	Full assessment with preliminary costs for new fully staffed fire station lifted out of the floodzone.	Flooding	High	Planning Department	Grants	2027	In progress: Assessment completed with cost estimation and includes parts of the Capital Improvement plan.
HB3	The design/working plan for stromwater improvements Town wide.	Flooding	High	Holden Beach Administration	Grants, General Funds	2026	In Progress: Stormwater master plan in 300 Block of Ocean Boulevard East and East End of Mullet St & East End of Avenue A
HB4	New retrofits for Floodproofing lower level of lift station #4	Flooding	Moderate	Planning Department	Grants, General Funds	2027	In progress: Contract Engineer. Prepare request/design and proposal. Engage with contractors to construct hardened covered wall sections.
HB5	Elevation of electrical components on lift station #1 floodproofing with access.	Flooding	Moderate	Planning Department	General Funds, Water Fund	2027	In progress: Procure approval for establishing a structure to make lift station #1 weather resistant as lift station #1 is in the ground but above the base flood elevation.
HB6	Raise awareness of rip currents.	Flooding	High	Planning Department	General Funds	2025	Completed: Install rip current signs and floatation devices along public beach accesses and continue to educate the public/staff.

Leland Mitigation Action Plan

For all of the mitigation actions identified for Leland, Brunswick County is the lead agency, and Leland supports implementation of these actions. The corresponding Brunswick County action is listed below the Action # in the first column.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
L1 (BC5)	In conjunction with annual EOP updates, determine if access to all critical facilities is readily available in the event of a natural hazard event. Careful consideration should be given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified and coordinated for alternative transportation.	All Hazards	High	Brunswick Co Emergency Management, Support Agencies: Support Agencies: Brunswick Transit, Schools, EMS, Public Utilities, Flood/Code Administration Leland Administration	General Funds	2026-2031	See update provided by the County. In Progress. Leland monitors access and impediments to access to critical facilities and incorporates necessary improvements or changes into annual budget and CIP as necessary.
L2 (BC8)	Review respective Comprehensive Land Use Plans annually to ensure that the Future Land Use Maps adequately delineates portions of the County/ municipalities deemed unsuitable for development due to existing environmental conditions or other factors outlined in this plan.	All Hazards	Moderate	Brunswick Co Planning Support Agency: Leland Administration	General Funds, NCDPS, NCDEQ	Complete	See update provided by the County. Complete for Leland – this analysis was performed in Leland 2045 plan which was adopted in 2021. Action to be revisited in 2031.
L3 (BC10)	Periodically evaluate local land development regulations for ability to target and direct growth to areas consistent with the land classification map, the water distribution system, and existing and future sewer systems.	Flooding	Moderate	Brunswick Co Planning Supporting Agencies: Public Utilities Leland Administration	General Funds	2026-2031	See update provided by the County. In progress for Leland. Comprehensive development regulation has begun and is anticipated to end March 2027.
L4 (BC21)	Continue to undertake the following actions to support maintenance of safe hurricane evacuation routes:	Hurricanes and Coastal Hazards	High	Brunswick County EM NCDOT	General Funds, NCDPS	2026-2031	See update provided by the County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	Identify and support improvements to roads that serve as hurricane evacuation routes, post evacuation routes on County and Town websites, perform routine bridge and culvert maintenance, and raise bridges over streams that have documented flooding during significant rain events, support the planning and implementation of regional roadways			Support Agency: Leland Administration	Support Agencies: EM, Communications, IT		In progress. Leland participates in transportation planning and project prioritization with the Wilmington MPO. The Town has a designated page for hurricane preparation, which includes links to Know Your Zone and Evacuation Routes.
L5 (BC25)	Continue to support the guidelines of the Coastal Area Management Act and the efforts and programs of the NC Department of Environmental Quality, Division of Coastal Management and the Coastal Resources Commission to protect the coastal wetlands, estuarine waters, estuarine shorelines, and public trust waters of Brunswick County.	All Hazards	Moderate	Brunswick County Planning Support Agency: Leland Administration	General Funds, NCDEQ	2026-2031	See update provided by the County. In Progress. Leland's comprehensive plan was certified as a CAMA land use plan in 2025 and is coordinating with DCM to take over CAMA local permitting.
L6 (BC27)	Integrate publicly acquired land into public park and greenway systems. These efforts may be carried out through update of the County Blue/Greenway system, as well as municipal planning efforts.	All Hazards	Moderate	Brunswick County Planning Support Agencies: Parks and Rec, NCDOT Leland Administration	General Funds, NCDEQ, NCDOT	2026-2031	See update provided by the County. In progress. Leland has acquired numerous acres of land and designated it as conservation and for public park and access uses, and will continue to. The Town adopted a Green Network Master Plan in 2024.
L7 (BC29)	Consider a policy for contractors to pick up building material and building debris prior to coastal storms.	Hurricanes and Coastal Hazards	High	Operations Services Support Agencies: EM Leland Administration	General Funds, FEMA	2026-2031	See update provided by the County. Complete. Leland has a debris management plan and contracts for post-disaster debris pickup.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
L8 (BC30)	Continue to enforce minimum housing code to require the improvement of substandard housing.	All Hazards	High	Brunswick County Code Admin Support Agency: Leland Administration	General Funds	2026-2031	See update provided by the County. Complete. Leland has a debris management plan and contracts for post-disaster debris pickup.
L9 (BC32)	Enhance and develop new public accesses to waterway resources in a manner as to protect sensitive environment areas from development and implement the priority recommendations contained in the Brunswick County Shoreline Access Plan.	All Hazards	Moderate	Brunswick County Planning Support Agency: Leland Administration	General Funds, NCDPS	2026-2031	See update provided by the County. In progress. Cypress Cove Park offers public water access for kayaks and other nonmotorized boats, as well as significant riparian buffer. Leland has acquired several properties for Sturgeon Creek Park and undergone significant design planning. The park will feature low impact development and Leland has partnered with NC WRC for a boat ramp at this park. Leland was also awarded $443K in 2025 for water access enhancements at Sturgeon Creek Park."
L10 (BC33)	Improve Hazard Warning and Response Plan warning to assess effectiveness of emergency response plans.	All Hazards	High	Brunswick County EM Support Agency Leland Administration	General Funds, NCDPS	2026-2031	Deferred. Leland intends to pursue funding opportunities for stream and flood gauges
L11 (BC34)	Continue and expand the program to retrofit schools and other public facilities to serve as emergency shelters.	All Hazards	Moderate	Brunswick County EM Support Agencies: Schools, HHS, DSS, Sheriff's Office, Admin, Brunswick Senior Resources	General Funds, NCDPS	2026-2031	See update provided by the County. Action to be deleted for Leland – it will be removed from the 2031 update.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
				Leland Administration			
L12 (BC35)	Provide training for "first responders" in identifying and reporting opportunities to mitigate the effects of future disasters at both the county and municipal level.	All Hazards	High	Brunswick County EM Support Agencies: Fire, EMS, BCSO, NC Community College System Leland Administration	General Funds, NCDPS	2026-2031	See update provided by the County. In progress. Leland trains all staff including first responders that increases awareness pertaining to risk mitigation.
L13 (BC37)	Brunswick County will support NCDOT and NCDPS in efforts to evaluate and improve capacity of evacuation routes.	All Hazards	High	NCDOT & NCDPS Support Agencies: Planning, EM Leland Administration	General Funds, NCDPS	2026-2031	See update provided by the County. In progress. Leland emergency services staff, Public Services staff, and Planning staff individually and collaboratively work to improve the street networks for more interconnectivity. Leland also maintains situational awareness about the locations of populations that may need evacuation assistance such as assisted living, medical facilities, etc.
L14 (BC41)	Support Section 206 Lower Lockwood Folly River Aquatic Habitat Restoration Project (removal of sediment bars to increase tidal flushing and improve aquatic habitat).	Flooding	High	Brunswick County Planning Support Agency: Leland Administration	General Funds, NCDEQ, NCDOT	2026-2031	See update provided by the County. This action is not applicable for Lelland – it will be removed from the 2031 update.
L15 (BC44)	Establish locations for flood awareness signs – show elevations of high water during/after Hurricanes Matthew, Florence, and Potential Tropical Cyclone 8 the base flood, and the base flood plus	Flooding	Low	Brunswick County Flood Planning	General Funds	2026-2031	See update provided by the County. Deferred. Willing to discuss partnerships with the County to facilitate this in Leland limits.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	2 feet. Signs should be surveyed to serve as elevation reference marks.			Supporting Agencies: EM, NCDOT Leland Administration			
L16 (BC46)	Continue to expand upon the Alert Emergency Notification System available to all residents. Brunswick County Emergency Management will coordinate with all municipal jurisdictions regarding registration through the Brunswick County Emergency Notification Registration Portal.	All Hazards	High	Brunswick County EM, PIO Support Agency: Leland Administration	General Funds, NCDPS	Action to be deleted.	Brunswick County has marked this action to be deleted. It will be removed from the 2031 update. In progress. Leland partners with and coordinates with the County for emergency notifications, and Leland will continue to explore opportunities for enhanced and additional notifications.
L17 (BC47)	Establish and maintain retrofitting techniques and publicize in the public libraries, and also through citizen newsletters.	All Hazards	High	Brunswick County Library Support Agency: Leland Administration	General Funds, NCDPS	Complete	See update provided by the County. Complete for Leland. Information related to flood damage mitigation is placed in the Leland Library as part of the Town's commitment in the CRS program.
L18 (BC48)	Coordinate with local churches and Spanish speaking representatives to disperse information about the hazards prevalent in the area and the steps they can take to mitigate these hazards.	All Hazards	Moderate	Brunswick County EM VOAD Support Agencies: AFN Coordinator, HHS Leland Administration		Complete	See update provided by the County. Complete for Leland. The Town provides flood and emergency preparation information in both English and Spanish through a variety of channels including the website and in hard copies in various local businesses and organizations.
L19 (BC49)	Maintain and enhance preparedness for fixed nuclear facilities, radiological transportation	Radiological Emergency – Fixed Nuclear Facility	High	Brunswick County EM Nuclear	General Funds, NCDPS	2026-2031	See update provided by Brunswick County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	incidents, and radiological/nuclear Weapons of Mass Destruction (WMD) events. This action includes regularly reviewing and updating radiological response plans; sustaining a current inventory of specialized equipment, materials, and technical knowledge; and evaluating proactive measures to reduce impacts from radiological or nuclear incidents. Adequate funding will be maintained to support required equipment, training, and sustainment activities. Coordination will occur through the County Local Emergency Planning Committee (LEPC) and in partnership with the Brunswick Nuclear Power Plant to address technological and man-made radiological hazards that may require emergency action.)			Support Agency Leland Administration			Complete. Leland follows Brunswick County's nuclear response plan in conjunction with Duke Energy and coordinated by the LEPC.
L20 (BC50)	Work closely with the Brunswick County Sheriff's Office on improving the County's multi-jurisdictional communications system in an effort to enhance interoperability.	All Hazards	High	Brunswick County Communications Support Agencies: EM, Fire, EMS Leland Administration	General Funds, NCDPS	Complete	See update provided by the County. Complete for Leland
L21 (BC54)	Identify areas where placement of flood monitoring gauges could be placed to improve flood warning capabilities of FIMAN.	Flooding	High	Brunswick County EM Support Agency: Leland Administration	State and Federal Grants	2026-2031	See update provided by the County. Action deferred for Leland
L22 (BC55)	Continue to work with Brunswick Nuclear Power Station to plan for	Radiological Emergency - Fixed Nuclear Facilities	High	Brunswick County EM (Nuclear)	Staff time, State and	Action to be deleted	Brunswick County has decided to delete this action.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	any events which might require emergency action.			Support Agency: Leland Administration	Federal Grants		In progress for Leland.
L23 (BC56)	Work with appropriate stakeholders to identify areas where dam failure could occur and develop emergency action plans for those dams, as needed.	Dam Failure	High	Brunswick County Planning Support Agency: Brunswick County EM Support Agency: Leland Administration	Staff time, State and Federal Grants	Action to be deleted.	Brunswick County has decided to delete this action. This action is not applicable for Leland. It will be removed from future plan updates.

Navassa Mitigation Action Plans

For most of the mitigation actions identified for Navassa, Brunswick County is the lead agency and Navassa supports implementation of these actions. The corresponding Brunswick County action is listed below the Action # in the first column.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
N1 (BC5)	In conjunction with annual EOP updates, determine if access to all critical facilities is readily available in the event of a natural hazard event. Careful consideration should be given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified and coordinated for alternative transportation.	All Hazards	High	Brunswick Co Emergency Management, Municipal Administrations Support Agencies: Brunswick Transit, Schools, EMS, Public Utilities, Flood/Code Administration Navassa Administration	General Funds	2026-2031	See update provided by County. Navassa: Ongoing through coordination with Brunswick County Emergency Management
N2 (BC8)	Review respective Comprehensive Land Use Plans annually to ensure that the Future Land Use Maps adequately delineates portions of the County/ municipalities deemed unsuitable for development due to existing environmental conditions or other factors outlined in this plan.	All Hazards	Moderate	Brunswick Co Planning Navassa Administration	General Funds, NCDPS, NCDEQ	2031	See update provided by Brunswick County The Town will be working through the development of a Comprehensive Plan in 2026.
N3 (BC10)	Periodically evaluate local land development regulations for ability to target and direct growth to areas consistent with the land classification map, the water distribution system, and existing and future sewer systems.	Flooding	Moderate	Planning Supporting Agencies: Public Utilities Navassa Administration	General Funds	2026-2031	See update provided by Brunswick County Navassa: In progress: The Town conducts annual reviews of all Land Development Regulations
N4 (BC21)	Continue to undertake the following actions to support maintenance of safe hurricane evacuation routes: Identify and support improvements to roads that serve as hurricane evacuation routes, post evacuation	Hurricanes and Coastal Hazards	High	NCDOT Navassa Administration	General Funds, NCDPS Support Agencies:	2026-2031	See update provided by Brunswick County Navassa: In Progress: The Town of Navassa continues to work closely with Brunswick County

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	routes on County and Town websites, perform routine bridge and culvert maintenance, and raise bridges over streams that have documented flooding during significant rain events, support the planning and implementation of regional roadways				EM, Communications, IT		Emergency Management on these efforts.
N5 (BC25)	Continue to support the guidelines of the Coastal Area Management Act and the efforts and programs of the NC Department of Environmental Quality, Division of Coastal Management and the Coastal Resources Commission to protect the coastal wetlands, estuarine waters, estuarine shorelines, and public trust waters of Brunswick County.	All Hazards	Moderate	Brunswick County Planning Navassa Administration	General Funds, NCDEQ	2026-2031	See update provided by Brunswick County Navassa: The Town continues to regulate development with CAMA defined Areas of Environmental Concerns through implementation of the Town's CAMA Land Use Plan.
N6 (BC27)	Integrate publicly acquired land into public park and greenway systems. These efforts may be carried out through update of the County Blue/Greenway system, as well as municipal planning efforts.	All Hazards	Moderate	Brunswick County Planning Support Agencies: Brunswick County Parks and Rec, NCDOT Navassa Administration	General Funds, NCDEQ, NCDOT	2026-2031	See update provided by Brunswick County. Navassa: The Town continues to receive land donations through the development process. The Town will be incorporating these newly acquired parcels into the Town's Comprehensive/Parks and Recreation Plan.
N7 (BC29)	Consider a policy for contractors to pick up building material and building debris prior to coastal storms.	Hurricanes and Coastal Hazards	High	Brunswick County Operations Services Support Agencies: Brunswick County EM Navassa Administration	General Funds, FEMA	2026-2031	See update provided by Brunswick County. Navassa: Deleted: The Town does not currently have the staff or means to ensure this is carried out properly.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
N8 (BC30)	Continue to enforce minimum housing code to require the improvement of substandard housing.	All Hazards	High	Brunswick County Code Admin Support Agency Navassa Administration	General Funds	2026-2031	See update provided by Brunswick County. Navassa: The Town is currently in the process of initiating a formal minimum housing code enforcement program. The Town has initially identified 20 units for treatment.
N9 (BC32)	Enhance and develop new public accesses to waterway resources in a manner as to protect sensitive environment areas from development and implement the priority recommendations contained in the Brunswick County Shoreline Access Plan.	All Hazards	Moderate	Brunswick County Planning Support Agency Navassa Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County. Navassa: The Town continues to seek out opportunities for public access to open water. The Town is in the process of developing a waterfront park and will continue to seek out additional opportunities.
N10 (BC33)	Improve Hazard Warning and Response Plan warning to assess effectiveness of emergency response plans (warning and evacuating critical facilities, getting persons out of flood-prone or isolated areas, controlling vehicles on evacuation routes, evacuation of hazard materials).	All Hazards	High	Brunswick County EM Support Agency Navassa Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County. The Town of Navassa continues to work closely with Brunswick County Emergency Management on these efforts.
N11 (BC34)	Continue and expand the program to retrofit schools and other public facilities to serve as emergency shelters.	All Hazards	Moderate	Brunswick County EM Support Agencies: Schools, HHS, DSS, Sheriff's Office, Admin, Brunswick Senior Resources Navassa Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County. Navassa: The Town of Navassa continues to work closely with Brunswick County Emergency Management on these efforts.
N12 (BC35)	Provide training for "first responders" in identifying and	All Hazards	High	Brunswick County EM	General Funds,	2026-2031	See update provided by Brunswick County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	reporting opportunities to mitigate the effects of future disasters at both the county and municipal level.			Support Agencies: Fire, EMS, BCSO, NC Community College System Navassa Administration	NCDPS		The Town continues to ensure that all Town staff are trained and prepared for emergency management capabilities.
N13 (BC37)	Brunswick County will support NCDOT and NCDPS in efforts to evaluate and improve capacity of evacuation routes.	All Hazards	High	NCDOT & NCDPS Support Agencies: Brunswick County Planning and EM Navassa Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County. The Town of Navassa continues to work closely with Brunswick County Emergency Management on these efforts.
N14 (BC41)	Support Section 206 Lower Lockwood Folly River Aquatic Habitat Restoration Project (removal of sediment bars to increase tidal flushing and improve aquatic habitat).	Flooding	High	Brunswick County Planning Support Agency Navassa Administration	General Funds, NCDEQ, NCDOT	2026-2031	See update provided by Brunswick County.
N15 (BC44)	Establish locations for flood awareness signs – show elevations of high water during/after Hurricanes Matthew, Florence, and Potential Tropical Cyclone 8 the base flood, and the base flood plus 2 feet. Signs should be surveyed to serve as elevation reference marks.	Flooding	Low	Brunswick County Flood Planning Supporting Agencies: Brunswick County EM, NCDOT Navassa Administration	General Funds	2026-2031	See update provided by Brunswick County. Acton to be deleted for Navassa as it is not relevant for the Town.
N16 (BC46)	Continue to expand upon the Alert Emergency Notification System available to all residents. Brunswick County Emergency Management will coordinate with all municipal jurisdictions regarding registration through the Brunswick County	All Hazards	High	Brunswick County EM, PIO Support Agency Navassa Administration	General Funds, NCDPS	Action to be deleted.	Brunswick County has flagged this action to be deleted. It will be removed from the 2031 update. The Town of Navassa continues to work closely with Brunswick

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	Emergency Notification Registration Portal.						County Emergency Management on these efforts.
N17 (BC47)	Establish and maintain retrofitting techniques and publicize in the public libraries, and also through citizen newsletters.	All Hazards	High	Brunswick County Library Support Agency Navassa Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County.
N18 (BC48)	Coordinate with local churches and Spanish speaking representatives to disperse information about the hazards prevalent in the area and the steps they can take to mitigate these hazards.	All Hazards	Moderate	Brunswick County EM VOAD Support Agencies: AFN Coordinator, HHS Navassa Administration		2026-2031	See update provided by Brunswick County.
N19 (BC49)	Maintain and enhance preparedness for fixed nuclear facilities, radiological transportation incidents, and radiological/nuclear Weapons of Mass Destruction (WMD) events. This action includes regularly reviewing and updating radiological response plans; sustaining a current inventory of specialized equipment, materials, and technical knowledge; and evaluating proactive measures to reduce impacts from radiological or nuclear incidents. Adequate funding will be maintained to support required equipment, training, and sustainment activities. Coordination will occur through the County Local Emergency Planning Committee (LEPC) and in partnership with the Brunswick Nuclear Power Plant to address technological and man-made radiological hazards that may require emergency action	Radiological Emergency – Fixed Nuclear Facilities	High	Brunswick County EM Nuclear Support Agencies: REP Taskforce and Stakeholders Navassa Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County. The Town of Navassa continues to work closely with Brunswick County Emergency Management on these efforts.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
N20 (BC50)	Work closely with the Brunswick County Sheriff's Office on improving the County's multi-jurisdictional communications system in an effort to enhance interoperability.	All Hazards	High	Brunswick County Communications Support Agencies: EM, Fire, EMS Navassa Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County. Navassa: The Town of Navassa continues to work closely with Brunswick County Sheriff's Department on these efforts.
N21 (BC54)	Identify areas where placement of flood monitoring gauges could be placed to improve flood warning capabilities of FIMAN.	Flooding	High	Brunswick County EM	State and Federal Grants	2026-2031	See update provided by Brunswick County. This action is not relevant for Navassa. It will be deleted from future plan updates.
N22 (BC55)	Continue to work with Brunswick Nuclear Power Station to plan for any events which might require emergency action.	Radiological Emergency - Fixed Nuclear Facilities	High	Brunswick County EM (Nuclear)	Staff time, State and Federal Grants	Action to be deleted	Brunswick County has decided to delete this action. This action is not relevant for Navassa. It will be deleted from future plan updates.
N23 (BC56)	Work with appropriate stakeholders to identify areas where dam failure could occur and develop emergency action plans for those dams, as needed.	Dam Failure	High	Brunswick County Planning Support Agency: Brunswick County EM	Staff time, State and Federal Grants	Action to be deleted.	Brunswick County has decided to delete this action. This action is not relevant for Navassa. It will be deleted from future plan updates.
N24	The Town of Navassa will continue to proactively identify, pursue, and apply for federal and state grant funding opportunities to mitigate flooding impacts throughout the Town's jurisdiction. These efforts will focus on structural and non-structural flood mitigation projects, including drainage improvements, culvert upgrades, stream restoration, floodplain reconnection, and nature-based	Flooding	High	Navassa Administration	State and Federal Grants	2026- 2031	New Action for the 2026 plan.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	solutions. The Town will coordinate with the North Carolina Department of Public Safety (NCDPS), FEMA, and regional partners to ensure project eligibility and alignment with funding priorities.						
N25	The Town of Navassa will work to advance flood mitigation concepts into grant-ready projects by completing necessary planning, engineering scoping, environmental review coordination, and cost estimation. Priority will be given to projects addressing repetitive flooding, critical infrastructure vulnerabilities, and areas experiencing increased runoff due to upstream development pressures.	Flooding	High	Navassa Administration	State and Federal Grants	2026-2031	New Action for the 2026 plan.

Northwest Mitigation Action Plans

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
NW1	Construct storm drainage piping and ditch improvements as follows: 3,300 LF of ditch improvements; 1,200 LF of new ditch; 2,250 LF of ditch improvements; 1,200 LF of new ditch; 435 LF of ditch improvements; 2,100 LF of new ditch; 300 LF of ditch improvements; 5,195 of new ditch; 1,492 LF of new ditch; 1,900 LF of new ditch and piping; Installation of 50 LF of RCP pipe	Flooding	High	Northwest Administration	General Funds, NCDEQ	2025	Completed: As part of their central town part project, improvements completed and certified by NCDEQ in 2025.
NW2	Adopt the Brunswick County stormwater ordinance to allow county engineering to review all new residential and commercial construction within the town limits.	Flooding	High	Northwest Administration	General Funds	2026	New Action item

Oak Island Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
OKI-1	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 also outline sound techniques for floodplain development and floodproofing of existing structures. The County will also maintain staff educated on these issues to work with prospective builders.	Flooding	High	Oak Island Development Services, Oak Island Emergency Services, Oak Island Administrations	General Funds	Completed: A Library of materials that focuses on educating citizens, builders, realtors and developers about the dangers associated with floodplain development has been created.	To monitor and continuously update and maintain a library of materials focused on educating citizens, builders, realtors and developers about the dangers associated with floodplain development.
OKI-2	When possible, ensure that no public and/or critical facilities are proposed for flood hazard areas. Additionally, when siting new public/critical facilities, the information and data outlined in this plan will be factored into the decision-making process.	Flooding	High	Oak Island Development Services, Oak Island Emergency Services, Oak Island Administrations	General Funds	Ongoing: Development Services reviews all proposed location for public and /or critical facilities to assure placement are outside of flood hazard areas or are engineered to minimize flood damage.	Continue to review and prevent the placement of public and\or critical facilities within flood hazard areas and to use the information and data outlined in this plan into the decision-making process.
OKI-3	In conjunction with annual EOP updates, determine if access to all critical facilities is readily available in the event of a natural hazard event. Careful consideration should be given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified and coordinated, establish a plan for alternative transportation.	All Hazards	High	Oak Island Development Services, Oak Island Emergency Services, Oak Island Administrations	General Funds	Ongoing: Oak Island has created a map of all its critical facilities and is reviewing temporary locations to move during a natural hazard event if needed.	Continually update flood prone area map and look at alternative transportation and temporary relocation of critical facilities in the event of a natural hazard event.
OKI-4	Maintain Town Stormwater Ordinances in conjunction with land use ordinances for compatibility of EPA Phase II NPDES requirements. These efforts should also include analysis of stormwater hotspots and potential remedies for these issues.	Flooding	High	Oak Island Development Services, Oak Island Public Works, Oak Island Administrations	General Funds, NCDEQ	Ongoing: Oak Island continually maintains and updates it Stormwater Ordinance. Oak Island has identified and mapped low	To complete repairs to Oak Island's existing stormwater system and to continue to look at alternative stormwater designs that are compatible with Oak Island's Phase II NPDES permit.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
						lying areas prone to flooding. Public Works has prioritized stormwater maintenance in these areas and repairs to existing stormwater system.	
OKI-5	Review respective Comprehensive Land Use Plans annually to ensure that the Future Land Use Maps adequately delineates portions of Oak Island deemed unsuitable for development due to existing environmental conditions or other factors outlined in this plan.	All Hazards	Moderate	Oak Island Development Services, Oak Island Administration	General Funds, NCDPS, NCDEQ	Ongoing: Oak Island reviews it Comprehensive Land Use Plan on an annual basis and has implemented new development standards.	To continue to review Oak Islands Comprehensive Land Use Plan on an annual basis and to update as needed.
OKI-6	Review and update as necessary the Flood Damage Prevention Ordinance to ensure maximum protection from flood hazard events.	Flooding	High	Oak Island Development Services, Oak Island Administration	General Funds, NCDPS	Ongoing: Oak Island adopted the most current State model Flood Damage Prevention ordinance in October 2017, updated in April of 2018 and reviews on an annual basis.	To continue annual reviews of the Flood Damage Prevention Ordinance and update as necessary.
OKI-7	Work closely with NCDOT and the Cape Fear Regional MPO to improve road access standards and protect the integrity of significant traffic-carrying roadways throughout the County. These efforts should specifically target the issue of restriping highway intersections and lane markings for higher visibility.	All Hazards	Moderate	Brunswick Co Administration, Oak Island Development Services, Oak Island Public Works, Oak Island Administrations, NC Department of Transportation Cape Fear Regional MPO	General Funds, NCDOT	Ongoing: Oak Island continuously works with NCDOT and attends the Cape Fear Regional MPO meetings to improve road access standards and improvements to the highway system.	To maintain Oak Island's communication with NCDOT and participation with the Cape Fear Regional MPO to work towards improving road access standards and protect the integrity of significant traffic-carrying roadways throughout the County.
OKI-8	Continue to undertake the following actions to support maintenance of safe hurricane evacuation routes: Identify and support improvements to roads that serve as hurricane evacuation routes, post evacuation routes on County and	Hurricanes and Coastal Hazards	High	Brunswick Co Emergency Operations Center, Oak Island Emergency Services, Oak Island Administrations	General Funds, NCDPS	Oak Island continues to evaluate hurricane evacuation routes off the island throughout the county. Currently	Oak Island will continue to work with the County on updating evacuation routes and procedures for access after a severe hazard event. Complete – Barbee Bridge Deck debris removed 12/25; bi annual inspection by NCDOT 2025

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	Town websites, perform routine bridge and culvert maintenance, and raise bridges over streams that have documented flooding during significant rain events, support the planning and implementation of regional roadways					reviewing procedures for property owners and residents access onto the island after a severe hazard event.	
OKI-9	Continue to proactively seek out grant funding through NCEM and FEMA for mitigation of repetitive loss properties (RLPs) from future flood events. Oak Island 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. The County will assist all municipal jurisdictions in working through the structural mitigation grant funding process.	Flooding	High	Oak Island Development Services, Oak Island Administration Brunswick Co Administration	General Funds, NCDPS	Oak Island Maintains a RLP list and reviews it annually for grants through NCEM and FEMA for mitigation of RLP from future flood events.	Oak Island will continue to maintain a RLP list and review on an annually basis for grants through the NCEM and FEMA for mitigation of RLP from future flood events.
OKI-10	Integrate publicly acquired land into public park and greenway systems. These efforts may be carried out through update of the County Blue/Greenway system, as well as municipal planning efforts.	All Hazards	Moderate	Oak Island Development Services, Oak Island Administration Brunswick Co Administration	General Funds, NCDEQ, NCDOT	Ongoing: Coordinating with Brunswick County on possible connection points and review of applicable jurisdictional plans.	Continue to identify public lands that are suitable for greenway repurposing and blueway zones.
OKI-11	Continue to enforce the NC State Building Code. Oak Island 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, Oak Island will work to ensure that all structures, including manufactured homes, are properly anchored to minimize potential impacts stemming from a disaster event.	Flooding, Hurricanes and Coastal Hazards	High	Oak Island Development Services	General Funds	Ongoing: Oak Island has adopted, maintains and enforces the current NC State Building Codes. Oak Island performs required inspections to ensure that all structures, including manufactured homes, are properly anchored to minimize potential impacts stemming from a disaster event.	Continue enforcement of the current NC State Building Codes and required inspection to ensure that all structures, including manufactured homes, are properly anchored to minimize potential impacts stemming from a disaster event.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
OKI-12	Improve Hazard Warning and Response Plan warning to assess effectiveness of emergency response plans.	All Hazards	High	Brunswick Co Emergency Operations Center, Oak Island Emergency Services, Oak Island Administrations	General Funds, NCDPS	Ongoing: Oak Island has updated its EOP/Hurricane Preparedness, Evacuation and Recovery Plan on an annual basis. The Plan details warning protocol, evacuation procedures, reentry procedures and after reentry.	Oak Island will continue to review and update its EOP/Hurricane Preparedness, Evacuation and Recovery Plan on an annual basis.
OKI-13	Provide training for "first responders" in identifying and reporting opportunities to mitigate the effects of future disasters at both the county and municipal level.	All Hazards	High	Oak Island Emergency Services, Oak Island Administrations	General Funds, NCDPS	Ongoing: Oak Island, at minimum provides an annual event exercise where an After Action Report is prepared that identifies opportunities to help mitigate the effects of future disasters.	Oak Island will continue to perform annual event exercises and prepare After Action Reports that will help identify opportunities to mitigate the effects of future disasters. In progress, review/update evacuation routes; add /EVACUATE page
OKI-14	Continue to work closely with real estate agents to ensure that prospective buyers are educated about development within a flood hazard area. Oak Island will prepare materials for dissemination to local real estate agents to assist in this education process. Additionally, materials and information regarding mitigation and retrofitting techniques will be made available on Oak Island's websites.	Flooding	High	Oak Island Development Services, Oak Island Administration	General Funds, NCDPS, FEMA	Ongoing: Oak Island conducts annual workshops for real estate agents and contractors to educate them on development within a flood hazard area.	Continue providing annual workshops for real estate agents and contractors to educate them on development within a flood hazard area
NEW OKI-15	Oak Island will develop a Terrorism Risk Management Program. The program will identify potential threats, perform site assessments to determine personal and facilities vulnerability and how to protect the facility and its occupants.	Terrorism	Moderate	Oak Island Emergency Services, Oak Island Administrations	General Funds, NCDPS	2026-2031	The Town is still working to develop this program pending staff time and funding.
NEW OKI-16	Oak Island will develop Cyber Attack Management Program. The program will require periodic review of Oak Island's computer network security and provide a	Cyber Security	High	Oak Island Administration, Oak Island IT Department	General Funds, NCDPS	2026-2031	The Town is still working to develop this program pending staff time and funding.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	mitigation plan to prevent any type of a cyber-attack.						
NEW OKI-17	Oak Island will develop an Infectious Disease Risk Management Program. The program will identify ways to manage the spread of disease and to contain an outbreak. The plan will contain information on coordination with other city, county, regional, state and federal agencies and other organizations responding to a larger public health emergency; perform site assessments to determine personal and facilities vulnerability and how to protect the facility and its occupants.	Infectious Disease	High	Oak Island Emergency Services, Oak Island Administration	General Funds, NCDPS, FEMA	2026-2031	The Town is still working to develop this program pending staff time and funding.

Ocean Isle Beach Mitigation Action Plans

For many of the mitigation actions identified for Ocean Isle Beach, Brunswick County is the lead agency and the town supports implementation of these actions. The corresponding Brunswick County action is listed below the Action # in the first column.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
OIB3	Improve overall safety measures regarding ingress and egress from town. Initially, the town will achieve this strategy by installing five cameras at designated locations.	All Hazards	Moderate	Ocean Isle Beach Administration Brunswick County Emergency Services	General Funds, NCDPS	Completed	Completed – this action will be removed from future updates.
OIB4	As part of the Town 's 2024 Water Friction Loss Analysis Study, the Town plans to upgrade water line infrastructure to improve fire flow based on professional engineering recommendations.	Wildfire	Moderate	Ocean Isle Beach Fire Department / Water Department	General Funds, NCDPS, Enterprise Funds	2026 -2031	This action will be revisited during the 2031 updates of the plan.
OIB5	The Town will improve coastal flooding awareness by installing tidal gauges in preselected locations that provide real time data to the public via the Town's website.	Flooding	Moderate	Town of Ocean Isle Beach Administration	General Funds, NCDPS, NWS	2026-2027	This action will be revisited during the 2031 updates of the plan.
O1B6	Continue to support efforts to place spoil materials from channel maintenance and dredging on municipal beach strand, as well as continue to pursue funding of beach renourishment projects, as warranted	Geological Hazards (Sinkholes, Coastal Erosion)	Moderate	Town of Ocean Isle Beach Administration	General Funds, NCDPS, NCDEQ	2026-2027	This action will be revisited during the 2031 updates of the plan.
OIB7	Seek grant finding for mitigation opportunities eligible under the most current version of the UHMA Guidance and Public Assistance 406 mitigation Guidance at the time of the application Projects may include, but are not limited to: acquisition, elevation, mitigation reconstruction, and wet dry flood proofing to commercial and/or residential structures as applicable: redundant power to critical facilities, storm shelters and other activities that	Flooding	Moderate	Town of Ocean Isle Beach Administration	General Funds, NCDPS, NWS	2026-2027	This action will be revisited during the 2031 updates of the plan.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	reduce the loss of life property as a result of impacts from natural hazards						
OIB8 (BC8)	Review respective Comprehensive Land Use Plans annually to ensure that the Future Land Use Maps adequately delineates portions of the County/ municipalities deemed unsuitable for development due to existing environmental conditions or other factors outlined in this plan.	All Hazards	Moderate	Brunswick Co Planning Support Agency Ocean Isle Beach Administration	General Funds, NCDPS, NCDEQ	Action to be deleted for OIB.	See update provided by Brunswick County Action to be deleted as an ongoing maintenance activity for the Town.
OIB9 (BC10)	Periodically evaluate local land development regulations for ability to target and direct growth to areas consistent with the land classification map, the water distribution system, and existing and future sewer systems.	Flooding	Moderate	Planning Supporting Agencies: Public Utilities Ocean Isle Beach Administration	General Funds	Complete for OIB	See update provided by Brunswick County Complete for OIB *Approved CAMA LUP 2025
OIB10 (BC21)	Continue to undertake the following actions to support maintenance of safe hurricane evacuation routes: Identify and support improvements to roads that serve as hurricane evacuation routes, post evacuation routes on County and Town websites, perform routine bridge and culvert maintenance, and raise bridges over streams that have documented flooding during significant rain events, support the planning and implementation of regional roadways	Hurricanes and Coastal Hazards	High	NCDOT Ocean Isle Beach Administration	General Funds, NCDPS Support Agencies: EM, Communications, IT	Action to be deleted for OIB	See update provided by Brunswick County Action to be deleted as an ongoing maintenance activity for the Town.
OIB11 (BC25)	Continue to support the guidelines of the Coastal Area Management Act and the efforts and programs of the NC Department of Environmental Quality, Division of Coastal Management and the Coastal Resources Commission to protect the coastal wetlands, estuarine waters, estuarine shorelines, and public trust waters of Brunswick County.	All Hazards	Moderate	Brunswick County Planning Ocean Isle Beach Administration	General Funds, NCDEQ	Action completed for OIB	See update provided by Brunswick County Complete for OIB *Approved CAMA LUP 2025
OIB12 (BC27)	Integrate publicly acquired land into public park and greenway systems. These efforts may be carried out through	All Hazards	Moderate	Brunswick County Planning	General Funds,	Action to be deleted for OIB	See update provided by Brunswick County

	update of the County Blue/Greenway system, as well as municipal planning efforts.			Support Agencies: Brunswick County Parks and Rec, NCDOT Ocean Isle Beach Administration	NCDEQ, NCDOT		Action to be deleted as an ongoing maintenance activity for the Town.
OIB13(BC29)	Consider a policy for contractors to pick up building material and building debris prior to coastal storms.	Hurricanes and Coastal Hazards	High	Brunswick County Operations Services Support Agencies: Brunswick County EM Ocean Isle Beach Administration	General Funds, FEMA	Action complete for OIB	See update provided by Brunswick County. Complete for OIB -outlined in the Emergency Preparedness Plan. All debris and port-o-johns must be removed before impending storms.
OIB14(BC30)	Continue to enforce minimum housing code to require the improvement of substandard housing.	All Hazards	High	Brunswick County Code Admin Support Agency Ocean Isle Beach Administration	General Funds	Action to be deleted for OIB	See update provided by Brunswick County Action to be deleted as an ongoing maintenance activity for the Town.
OIB15(BC32)	Enhance and develop new public accesses to waterway resources in a manner as to protect sensitive environment areas from development and implement the priority recommendations contained in the Brunswick County Shoreline Access Plan.	All Hazards	Moderate	Brunswick County Planning Support Agency Ocean Isle Beach Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County. OIB: In progress - the Town of Ocean Isle Beach has secured, and continues to pursue, CAMA access grants for public beach access.
OIB16 (BC33)	Improve Hazard Warning and Response Plan warning to assess effectiveness of emergency response plans.	All Hazards	High	Brunswick County EM Support Agency Ocean Isle Beach Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County. OIB: In progress - the Town of Ocean Isle Beach uses Code Red to provide alert warning information, website and social medial are used to provide information prior to and during disasters.
OIB17(BC34)	Continue and expand the program to retrofit schools and other public facilities to serve as emergency shelters.	All Hazards	Moderate	Brunswick County EM Support Agencies: Schools, HHS, DSS, Sheriff's Office, Admin, Brunswick Senior Resources Ocean Isle Beach Administration	General Funds, NCDPS	Action to be deleted for OIB	See update provided by Brunswick County. Action to be deleted for OIB. Brunswick County provides shelter locations.
OIB18(BC35)	Provide training for “first responders” in identifying and reporting opportunities to mitigate the effects of future disasters at both the county and municipal level.	All Hazards	High	Brunswick County EM Support Agencies: Fire, EMS, BCSO, NC	General Funds, NCDPS	Action to be deleted for OIB	See update provided by Brunswick County. Action to be deleted for OIB. The Town’s Fire Department works to improve fire event

				Community College System Ocean Isle Beach Administration			preparedness on a day-to-day basis. These efforts involve continued education, training exercises and outreach.
OIB19(BC37)	Brunswick County will support NCDOT and NCDPS in efforts to evaluate and improve capacity of evacuation routes. These efforts will be carried out with support from NCDOT and NCDPS.	All Hazards	High	NCDOT & NCDPS Support Agencies: Brunswick County Planning and EM Ocean Isle Beach Administration	General Funds, NCDPS	Action to be deleted for OIB	See update provided by Brunswick County Action to be deleted as an ongoing maintenance activity for the Town.
OIB20(BC41)	Support Section 206 Lower Lockwood Folly River Aquatic Habitat Restoration Project (removal of sediment bars to increase tidal flushing and improve aquatic habitat).	Flooding	High	Brunswick County Planning Support Agency Ocean Isle Beach Administration	General Funds, NCDEQ, NCDOT	Action to be deleted for OIB	See update provided by Brunswick County Action to be deleted for OIB as it is not applicable for the Town.
OIB21(BC44)	Establish locations for flood awareness signs – show elevations of high water during/after Hurricanes Matthew, Florence, and Potential Tropical Cyclone 8 the base flood, and the base flood plus 2 feet. Signs should be surveyed to serve as elevation reference marks.	Flooding	Low	Brunswick County Flood Planning Supporting Agencies: Brunswick County EM, NCDOT Ocean Isle Beach Administration	General Funds	Action to be deleted for OIB	See update provided by Brunswick County. Acton to be deleted for OIB.
OIB22 (BC46)	Continue to expand upon the Alert Emergency Notification System available to all residents. Brunswick County Emergency Management will coordinate with all municipal jurisdictions regarding registration through the Brunswick County Emergency Notification Registration Portal.	All Hazards	High	Brunswick County EM, PIO Support Agency Ocean Isle Beach Administration	General Funds, NCDPS	Action to be deleted.	Brunswick County has flagged this action to be deleted. It will be removed from the 2031 update. Delete for OIB - as ongoing maintenance activity. OIB uses Code Red to provide alert warning information, website and social medial are used to provide information prior to and during disasters.
OIB23 (BC47)	Establish and maintain retrofitting techniques and publicize in the public libraries, and also through citizen newsletters.	All Hazards	High	Brunswick County Library Support Agency Ocean Isle Beach Administration	General Funds, NCDPS	Complete for OIB	See update provided by Brunswick County. OIB: Complete - Material provided at Brunswick County Public Library and provided in Newsletters
OIB24 (BC48)	Coordinate with local churches and Spanish speaking representatives to disperse information about the hazards prevalent in the area and the steps they can take to mitigate these hazards.	All Hazards	Moderate	Brunswick County EM VOAD Support Agencies: AFN Coordinator, HHS		Action to be deleted for OIB	See update provided by Brunswick County. OIB: Delete as local activity, provided by County Operations

				Ocean Isle Beach Administration			
OIB25 (BC49)	Maintain and enhance preparedness for fixed nuclear facilities, radiological transportation incidents, and radiological/nuclear Weapons of Mass Destruction (WMD) events. This action includes regularly reviewing and updating radiological response plans; sustaining a current inventory of specialized equipment, materials, and technical knowledge; and evaluating proactive measures to reduce impacts from radiological or nuclear incidents. Adequate funding will be maintained to support required equipment, training, and sustainment activities. Coordination will occur through the County Local Emergency Planning Committee (LEPC) and in partnership with the Brunswick Nuclear Power Plant to address technological and man-made radiological hazards that may require emergency action.	Radiological Emergency – Fixed Nuclear Facilities	High	Brunswick County EM Nuclear Support Agencies: REP Taskforce and Stakeholders Ocean Isle Beach Administration	General Funds, NCDPS	Complete for OIB	See update provided by Brunswick County. Complete for OIB - Information provided in Emergency Preparedness Plan
OIB26 (BC50)	Work closely with the Brunswick County Sheriff's Office on improving the County's multi-jurisdictional communications system in an effort to enhance interoperability.	All Hazards	High	Brunswick County Communications Support Agencies: EM, Fire, EMS Ocean Isle Beach Administration	General Funds, NCDPS	Complete for OIB	See update provided by Brunswick County. Complete for OIB – part of day-to-day activities
OIB27 (BC54)	Identify areas where placement of flood monitoring gauges could be placed to improve flood warning capabilities of FIMAN.	Flooding	High	Brunswick County EM	State and Federal Grants	2026-2031	See update provided by Brunswick County. Delete for OIB - listed as a new action plan for OIB for tidal gauges

Sandy Creek Mitigation Action Plans

Action #	Description	Hazard(s) Addressed	Relative Priority	Potential Funding Sources	Lead Agency/Department Responsible	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SC1	Conduct weekly personal welfare check phone calls to vulnerable residents during extreme heat, extreme cold, and power outage events. If no response is received after three (3) call attempts, the Town will conduct an in-person welfare check.	Excessive Heat	Low	Low (<$50k)	Town, CERT	General Funds, Grants	Y1-Y5	New action for the 2026 plan
SC2	Emergency road access to Hwy 87	Flooding	High	High (>$500k)	Town, County, NCDOT	State / Federal	Y2-Y4	New action for the 2026 plan
SC3	Repair/raise Joe Baldwin Drive & ditching	Flooding	Moderate	Medium ($50k-$500k)	Town, County, NCDOT	State / Federal	Y2-Y3	New action for the 2026 plan
SC4	Maintain and utilize the Town's existing emergency notification and text alert system for all public alerts, warnings, and emergency communication s.	Flooding	Low	Low (<$50k)	Public Works	General Funds	Y1-Y5	New action for the 2026 plan
SC5	Maintain and utilize the Town's existing emergency notification and text alert system for all public alerts, warnings, and emergency communication s.	All Hazards	Low	Low (<$50K)	Administration	General Funds	Y1-Y5	New action for the 2026 plan
SC6	Coordinate hurricane evacuation planning, evacuation routes, and recovery actions using NCDOT-designated evacuation routes and guidance.	Excessive Heat	Low	Medium ($50k-$500K)	Town, CERT	General Funds	Y1-Y5	New action for the 2026 plan
SC7	Open and clear all roadside and drainage ditching to improve stormwaterflow and tie local ditching into main drainage systems where feasible	Flooding	High	High (>$500K)	Town, County EM	State/ Federal	Y2-Y5	New action for the 2026 plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Potential Funding Sources	Lead Agency/Department Responsible	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SC8	Wildfire preparedness actions	Wildfire	Low	Low (<$50k)	Town, NCFS	Grants	Y2-Y5	New action for the 2026 plan
SC9	Infectious disease preparedness	Infectious Disease	Low	Low (<$50k)	Town, County Health	General Funds	Y2-Y5	New action for the 2026 plan
SC10	Post-disaster food distribution coordination	All Hazards	Low	Low (<$50k)	Town, Churches	Donations	Y1-Y5	New action for the 2026 plan
SC11	Stormwater planning &funding pursuit	Flooding	Moderate	Medium ($50k- $500k)	Town, County	BRIC, HMGP	Y1-Y5	New action for the 2026 plan
SC12	Tornado preparedness &SAR readiness	Tornadoes/ Thunderstorms	Low	Low (<$50k)	Town, Schools	General Funds	Y1-Y5	New action for the 2026 plan
SC13	Sheltering during emergencies will be coordinated through Brunswick County Emergency Management, which maintains responsibility for shelter operations.	Hurricanes and Coastal Hazards, Flooding	Low	Low (<$50k)	Town, Schools	General Fund	Y1-Y3	New action for the 2026 plan
SC14	Minimum housing code enforcement	All Hazards	Low	Low (<$50k)	Administration	General Fund	Y2-Y4	New action for the 2026 plan
SC15	Water system monitoring and improvement	Flooding	Moderate	High (>$500k)	Utilities	Capital Funds	Y1-Y5	New action for the 2026 plan
SC16	Wastewater tie-in coordination	Flooding	High	Low (<$50k)	Town, Sewer Dist	State Grants	Y3-Y5	New action for the 2026 plan
SC17	Hwy 74/76 intersection improvements	Hurricanes and Coastal Hazards	High	High (>$500k)	NCDOT, RPO	State/ Federal	Y2-Y5	New action for the 2026 plan
SC18	Debris removal contractor policy	Hurricane	Low	Low (<$50k)	Town	General Funds	Y1-Y5	New action for the 2026 plan
SC19	Generator maintenance and emergency power	All Hazards	Moderate	Medium ($50k- $500k)	Town	Grants	Y1-Y5	New action for the 2026 plan
SC20	Grant pursuit for mitigation actions	All Hazards	Low	Low (<$50k)	Town, County	HMGP, BRIC	Y1-Y5	New action for the 2026 plan
SC21	Ingress/egress zoning enforcement	Flooding	Low	Low (<$50k)	Planning	General Funds	Y1-Y5	New action for the 2026 plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Potential Funding Sources	Lead Agency/Department Responsible	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SC22	Coordinate with NCDOT and Northwest to evaluate, design, and pursue enlargement of the culvert along the Hwy 74/7 6 drainage corridor to improve stormwater conveyance, reduce roadway flooding, and maintain reliable access for residents, emergency services, and regional transportation. The Town will work with Brunswick County, NCDOT, and other partners to develop a grant-ready project scope, benefit-cost analysis, and required environmental documentation to pursue FEMA Hazard Mitigation Grant Program (HMGP) and Building Resilient Infrastructure and Communities (BRIC) funding, as well as applicable state transportation and infrastructure mitigation funding programs.	Flooding	Moderate	Medium ($50k-$500k)	Town, NCDOT	State, Federal	Y2-Y5	New action for the 2026 plan

Shallotte Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SH1	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 also outline sound techniques for floodplain development and floodproofing of existing structures. The County will also maintain staff educated on these issues to work with prospective builders.	Flooding	High	Shallotte	Shallotte Planning	General Funds	2026-2031	Continuing
SH2	Continue/expand efforts to partners with area utility districts to encourage proper development of regional water and sewer systems.	Flooding	High	Shallotte	Shallotte Utilities	General Funds, NCDPS, NCDEQ	2026-2031	The Town manages only the sewer utility. As of May 1, 2023, the Town no longer operates a water utility; Brunswick County now manages all water services. Only the sewer-related portion of this action will remain in future updates and plans. The Town has an open-end contract to purchase water from Brunswick County utilities. The town also adds or increases line size in order to supply adequate flow and supply as needed.
SH3	When possible, ensure that no public and/or critical facilities are proposed for flood hazard areas. Additionally, when siting new public/critical facilities, the information and data outlined in this plan will be factored into the decision-making process.	Flooding	High	Shallotte	Shallotte Administration	General Funds	2026-2031	The Town will review the Flood Risk Information System prior to placing critical facilities
SH4	In coordination with participating municipal jurisdictions, continue to accept gifts/donations of land located in hazard areas or rendered unbuildable by	Flooding, Geological Hazards (Sinkholes,	Moderate	Shallotte	Shallotte Administration	General Funds, NCDPS	2026-2031	The Town would evaluate any proposed donation of property along the Shallotte River for the purpose of river access

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	storms or other events, for the purpose of shorefront access.	Coastal Erosion						
SH5	In conjunction with annual EOP updates, determine if access to all critical facilities is readily available in the event of a natural hazard event. Careful consideration should be given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified and coordinated, establish a plan for alternative transportation.	All Hazards	High	Shallotte	Shallotte Administration	General Funds	2026-2031	The Town will review the Flood Risk Information System prior to placing critical facilities
SH6	Maintain County and Town Stormwater Ordinances in conjunction with land use ordinances for compatibility of EPA Phase II NPDES requirements. These efforts should also include analysis of stormwater hotspots and potential remedies for these issues.	Flooding	High	Shallotte	Shallotte Planning	General Funds, NCDEQ	2026-2031	The Town has an adopted stormwater ordinance which is periodically reviewed with the Town's engineering service
SH7	Consider submitting an application to join the Community Rating System using Hazard Mitigation components to fulfill application requirements.	Flooding	High	Shallotte	Shallotte Planning	General Funds, NCDPS	Completed	Completed- The Town considered applying to the CRS during the 2018 update to the Town's flood rick ordinances and maps. Given current staffing and the number of insured properties it was deemed infeasible. The Town will re-evaluate with future updates to flood regulations.
SH8	Review respective Comprehensive Land Use Plans annually to ensure that the Future Land Use Maps adequately delineates portions of the County/ municipalities deemed unsuitable for development due to existing environmental conditions or other factors outlined in this plan.	All Hazards	Moderate	Shallotte	Shallotte Planning	General Funds, NCDPS, NCDEQ	Completed	The Town is currently in the process of updating the Future Land Use Map portion of the 2018 plan. Staff will propose funding updates/revisions to the overall plan with future budget adoptions.
SH9	Review and update as necessary the Flood Damage Prevention Ordinance to ensure maximum protection from flood	Flooding	High	Shallotte	Shallotte Planning	General Funds, NCDPS	Completed	In 2018 the Town completed an update its flood risk ordinances and maps. The

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	hazard events. Additionally, jurisdictions with freeboard requirements adopted at the local level will continue to enforce these minimum standards (Brunswick County freeboard requirements is two feet above BFE).							Town currently requires a two (2) foot freeboard.
SH10	Periodically evaluate local land development regulations for ability to target and direct growth to areas consistent with the land classification map, the water distribution system, and existing and future sewer systems.	Flooding	Moderate	Shallotte	Shallotte Planning & Utilities	General Funds	2026-2031	The Town continually evaluates both its land use regulations and maps for appropriate growth.
SH11	Work closely with NCDOT and the Grand Strand Area Transportation Study MPO to improve road access standards and protect the integrity of significant traffic-carrying roadways throughout the Town These efforts should specifically target the issue of restriping highway intersections and lane markings for higher visibility.	All Hazards	Moderate	Shallotte	Shallotte Administration	General Funds, NCDOT	2026-2031	The Town continues to work with both NCDOT and the GSATS MPO to improve road access standards and protect the integrity of significant traffic-carrying roadways throughout the Town
SH12	Continue to consider incorporating the concept of cluster subdivision development into the County's subdivision regulations. Employing this development option, if adopted, will provide for a development pattern which minimizes impacts on environmentally sensitive portions of the County, including floodplains.	All Hazards	Moderate	Shallotte	Shallotte Planning	General Funds, NCDEQ	Completed	The Town currently has regulations in place allowing residential cluster development
SH13	Review rebuilding activities after major storm events to determine how revisions to existing policies and procedures could help minimize repetitive losses.	Flooding	High	Shallotte	Shallotte Planning	General Funds, NCDPS, FEMA	2026-2031	The Town will continue to review rebuilding activities after major storm events to determine how revisions to existing policies and procedures could help minimize repetitive losses
SH14	Maintain all FEMA Elevation Certificates, FEMA Floodproofing Certificates for non-residential structures, and where applicable, a V Zone Design Certificate for	Flooding	High	Shallotte	Shallotte Planning	General Funds	Completed	In 2018 the Town contracted with Brunswick County Code Administration for the

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	all structures built or floodproofed since application to the CRS. V Zone Design Certification must be maintained only for structures built subsequent to January 1, 2013.							administration of, to include record keeping, Town's floodplain requirements.
SH15	Review written policies on water and sewer system extensions and tap on policies to ensure that the County is adequately addressing and discouraging inappropriate development in sensitive environmental areas and areas prone to flood or storm surge hazards.	Flooding	High	Shallotte,	Shallotte Utilities	General Funds, Sewer Districts	2026-2031	The Town will review written policies on water and sewer extensions and taps on policies to address and discourage development in sensitive environmental areas and areas prone to flood or storm surge hazards.
SH16	Consider the data and recommendations outlined in this plan when preparing updates to Capital Improvements Plans. All recommendations regarding capital expenditures will focus on siting all infrastructure and public facilities outside of the Flood Hazard Area.	All Hazards	Moderate	Shallotte	Shallotte Administration	General Funds	2026-2031	The Town will continue to consider data and recommendations outlined in this plan when preparing updates to Capital Improvements Plans. All recommendations regarding capital expenditures will focus on siting all infrastructure and public facilities outside of the Flood Hazard Area.
SH17	Inventory existing lots and structures within flood hazard areas to establish baseline data regarding current state of development. These efforts will be incorporated into the comprehensive planning process.	Flooding	Low	Shallotte	Shallotte Planning	General Funds, NCDPS, NCDEQ	2026-2031	The Town will Inventory existing lots and structures within flood hazard areas to establish baseline data regarding current state of development.
SH18	Support commercial forestry activities, provided significant adverse impacts on natural resource systems are fully mitigated. Such activities should be considered in accordance with the standards and recommendations of the US Forest Service.	All Hazards	High	Shallotte	Shallotte Planning	General Funds, NCFS	2026-2031	The Town has implemented a tree protection ordinance and will continue to advocate for the preservation of natural vegetation and wherever possible to preservation of heritage trees.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SH19	Continue to support beach municipalities in maintenance/protection of beaches as well as protecting shorelines under County jurisdiction.	Geological Hazards (Sinkholes, Coastal Erosion)	High	Shallotte	Shallotte Administration	USACE	2026-2031	The Town will, when possible, support beach municipalities in maintenance/protection of beaches as well as protecting shorelines under County jurisdiction.
SH20	Continue to require 404 wetlands and 100-year floodplain areas to be delineated on all preliminary subdivision plats for lands within the proposed subdivision.	Flooding	Moderate	Shallotte	Shallotte Planning	General Funds, NCDPS, NCDEQ	2026-2031	The Town will continue to require 404 wetlands and 100-year floodplain areas to be delineated on all preliminary subdivision plats for lands within the proposed subdivision.
SH21	Continue to undertake the following actions to support maintenance of safe hurricane evacuation routes: Identify and support improvements to roads that serve as hurricane evacuation routes, post evacuation routes on Town websites, and work with NCDOT to raise bridges over streams that have documented flooding during significant rain events, support the planning and implementation of regional roadways	Hurricanes and Coastal Hazards	High	Shallotte	Shallotte Administration	General Funds, NCDPS	2026-2031	Continue to undertake actions to support maintenance of safe hurricane evacuation routes: Identify and support improvements to roads that serve as hurricane evacuation routes, post evacuation routes on County and Town websites, perform routine bridge and culvert maintenance, and work with NCDOT to raise bridges over streams that have documented flooding during significant rain events, support the planning and implementation of regional roadways
SH22	Continue to support the US Army Corps of Engineers' regulations, the applicable guidelines of the Coastal Area Management Act, and the use of local land use ordinances to regulate development of freshwater swamps, marshes, and 404 wetlands.	Flooding	High	Shallotte	Shallotte Planning	General Funds, NCDEQ	2026-2031	Continue to support the US Army Corps of Engineers' regulations, the applicable guidelines of the Coastal Area Management Act, and the use of local land use ordinances to regulate

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								development of freshwater swamps, marshes, and 404 wetlands.
SH24	Continue to enforce respective flood damage prevention ordinances and participate in the National Flood Insurance Program. Subdivision regulations will be enforced – requiring elevation monuments to be set so that floodplain elevations can be more easily determined. Additionally, municipalities with freeboard requirements shall continue to enforce this standard locally.	Flooding	High	Shallotte	Shallotte Planning	General Funds	2026-2031	The Town has updated its flood damage prevention ordinance and maps. The Town has contracted with Brunswick County Code Administration for the review and enforcement of flood prevention plans and permits. The Town will continue to see that these standards are enforced.
SH25	Continue to support the guidelines of the Coastal Area Management Act and the efforts and programs of the NC Department of Environmental Quality, Division of Coastal Management and the Coastal Resources Commission to protect the coastal wetlands, estuarine waters, estuarine shorelines, and public trust waters of Brunswick County.	All Hazards	Moderate	Shallotte	Shallotte Administration & Planning	General Funds, NCDEQ	2026-2031	The Town will continue to support the guidelines of the Coastal Area Management Act and the efforts and programs of the NC Department of Environmental Quality, Division of Coastal Management and the Coastal Resources Commission to protect the coastal wetlands, estuarine waters, estuarine shorelines, and public trust waters of the Town.
SH26	Continue to proactively seek out grant funding through NCEM and FEMA for mitigation of repetitive loss properties (RLPs) from future flood 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. The County will assist all municipal jurisdictions in working through the structural mitigation grant funding process.	Flooding	High	Shallotte	Shallotte Administration and Planning	General Funds, NCDPS	2026-2031	The Town will continue to proactively seek out grant funding through NCEM and FEMA for mitigation of repetitive loss properties (RLPs) from future flood 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. The County will assist

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								all municipal jurisdictions in working through the structural mitigation grant funding process.
SH27	Integrate publicly acquired land into public park and greenway systems. These efforts may be carried out through update of the County Blue/Greenway system, as well as municipal planning efforts.	All Hazards	Moderate	Shallotte	Shallotte Administration	General Funds, NCDEQ, NCDOT	2026-2031	The Town continues to seek the integration of public land into municipal park and greenway systems. These efforts may be carried out through update of the County Blue/Greenway system, as well as municipal planning efforts.
SH28	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.	Flooding	High	Shallotte	Shallotte Administration	General Funds	2026-2031	The Town contracts with Brunswick County Code Administration for the enforcement of State Building Code.
SH29	Consider a policy for contractors to pick up building material and building debris prior to coastal storms.	Hurricanes and Coastal Storms	High	Shallotte	Shallotte Planning	General Funds, FEMA	2026-2031	The Town will consider a policy for contractors to pick up building material and building debris prior to coastal storms.
SH30	Continue to enforce minimum housing code to require the improvement of substandard housing.	All Hazards	Moderate	Shallotte	Shallotte Administration	General Funds	2026-2031	The Town may look into contracting with Brunswick County Code Administration for the adoption and enforcement of a minimum housing ordinance.
SH31	Continue providing density credits for developments that establish perpetual easements for ecologically sensitive lands.	All Hazards	Low	Shallotte	Shallotte Administration and Planning	General Funds	2026-2031	The Town will explore providing density credits for developments that establish perpetual easements for ecologically sensitive lands.

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SH32	Enhance and develop new public accesses to waterway resources in a manner as to protect sensitive environment areas from development and implement the priority recommendations contained in the Brunswick County Shoreline Access Plan.	All Hazards	Moderate	Shallotte	Shallotte Administration	General Funds, NCDPS	2026-2031	The Town has begun work on the Shallotte Riverwalk which will provide pedestrian and kayak access to the Shallotte River.
SH33	Improve Hazard Warning and Response Plan (warning and evacuating critical facilities, getting persons out of flood-prone or isolated areas, controlling vehicles on evacuation routes, evacuation of hazard materials).	All Hazards	High	Shallotte	Shallotte Fire/Rescue Department	General Funds, NCDPS	2026-2031	The Fire/Rescue Department continues to work closely with Brunswick County Emergency Services and the Brunswick County Sheriff's Office in the preparedness and response strategies.
SH35	Provide training for "first responders" in identifying and reporting opportunities to mitigate the effects of future disasters at both the county and municipal level.	All Hazards	High	Shallotte	Shallotte Fire/Rescue Department	General Funds, NCDPS	2026-2031	The Fire/Rescue Department continues to work closely with Brunswick County Emergency Services and the Brunswick County Sheriff's Office in the preparedness and response strategies. Annually, the Fire/Rescue Department revisits the Hazard Risk Assessment to evaluate potential risks and further enhance planning and response measures.
SH36	Work with industry to develop emergency response plans for specific industries and ensure that all plans are fully coordinated with County emergency management plans. These efforts will be carried out in conjunction with the County LEPC.	All Hazards	Moderate	Unincorporated Brunswick County	Shallotte Fire/Rescue Department	General Funds	2026-2031	The Fire/Rescue Department continues to work closely with Brunswick County Emergency Services and Brunswick County Code Enforcement/Inspections Department in the preparedness and response strategies.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								Annually, the Fire/Rescue Department revisits the Hazard Risk Assessment to evaluate potential risks and includes specific industries in enhancing response measures.
SH37	Evaluate areas with limited evacuation capacity and pursue methods of improving capacity.	All Hazards	High	Shallotte	Shallotte Fire/Rescue Department	General Funds, NCDPS	2026-2031	The Fire/Rescue Department continues to work closely with Brunswick County Emergency Services, the Town of Shallotte Police Department and Brunswick County Code Enforcement/Inspections Department in the evacuation strategies.
SH38	Continue debris removal program to correct problem sites at the municipal level.	All Hazards	High	Shallotte	Shallotte Public Administration and Works	General Funds, NCDPS	2026-2031	The Town will continue to evaluate potential debris removal program to correct problem sites at both the County and municipal level.
SH39	Continue to maintain/enforce an overall cap of 5% on post-development stormwater discharge increase over pre-development conditions through the Town's stormwater management program.	Flooding	High	Shallotte	Shallotte Planning	General Funds, NCDPS	2026-2031	The Town will continue to maintain/enforce an overall cap of 5% on post-development stormwater discharge increase over pre-development conditions through the Town's County's stormwater management program.
SH42	Continue implementation of EPA Phase II requirements. These efforts shall include providing oversight services to county municipalities.	All Hazards	High	Shallotte	Shallotte Planning	General Funds, NCDEQ	2026-2031	The Town will continue implementation of EPA Phase II requirements. These efforts shall include providing oversight services to county municipalities

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SH43	Incorporate new FEMA digital FIRMs into the County GIS when necessary. This effort shall also include maintenance and inventory of all County land parcel data.	Flooding	High	Shallotte	Shallotte Planning	General Funds, NCDPS	2026-2031	The Town uses the County GIS layers within the municipal geodatabase.
SH44	Establish locations for flood awareness signs – show elevations of high water during/after Hurricanes Matthew, Florence and Potential Tropical Cyclone 8, the base flood, and the base flood plus 2 feet. Signs should be surveyed to serve as elevation reference marks.	Flooding	Low	Shallotte	Shallotte Planning	General Funds	2026-2031	The town will establish locations for flood awareness signs – show elevations of high water during/after Hurricanes Matthew, Florence and Potential Tropical Cyclone 8, the base flood, and the base flood plus 2 feet. Signs should be surveyed to serve as elevation reference marks.
SH45	Continue to work closely with real estate agents to ensure that prospective buyers are educated about development within a flood hazard area. The County will prepare materials for dissemination to local real estate agents to assist in this education process. Additionally, materials and information regarding mitigation and retrofitting techniques will be made available on County and municipal websites.	Flooding	High	Shallotte	Shallotte Planning	General Funds, NCDPS, FEMA	2026-2031	The Town will continue to work closely with real estate agents to ensure that prospective buyers are educated about development within a flood hazard area. The County will prepare materials for dissemination to local real estate agents to assist in this education process. Additionally, materials and information regarding mitigation and retrofitting techniques will be made available on County and municipal websites.
SH46	Continue to expand upon the Alert Emergency Notification System available to all residents. Brunswick County Emergency Management will coordinate with all municipal jurisdictions regarding registration through the Brunswick County Emergency Notification Registration Portal.	All Hazards	High	Shallotte	Shallotte Administration and Fire Dept	General Funds, NCDPS	2026-2031	The Fire/Rescue Department continues to work closely with Brunswick County Emergency Services to gather and disseminate pertinent information to the public.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								This information is being delivered via social media, Code Red and Reverse 911.
SH47	Establish and maintain retrofitting techniques and publicize in the public libraries, and also through citizen newsletters.	All Hazards	High	Shallotte	Shallotte Planning	General Funds, NCDPS	2026-2031	The Town contracts with Brunswick County Code Administration to maintain retrofitting techniques and publicize in the public libraries.
SH48	Coordinate with local churches and Spanish speaking representatives to disperse information about the hazards prevalent in the area and the steps they can take to mitigate these hazards.	All Hazards	Moderate	Shallotte	Shallotte Administration	Staff time, General Funds	2026-2031	The Town will coordinate with local churches and Spanish speaking representatives to disperse information about the hazards prevalent in the area and the steps they can take to mitigate these hazards.
SH49	Maintain and enhance preparedness for fixed nuclear facilities, radiological transportation incidents, and radiological/nuclear Weapons of Mass Destruction (WMD) events. This action includes regularly reviewing and updating radiological response plans; sustaining a current inventory of specialized equipment, materials, and technical knowledge; and evaluating proactive measures to reduce impacts from radiological or nuclear incidents. Adequate funding will be maintained to support required equipment, training, and sustainment activities. Coordination will occur through the County Local Emergency Planning Committee (LEPC) and in partnership with the Brunswick Nuclear Power Plant to address technological and man-made radiological hazards that may require emergency action.)	Radiological Emergency – Fixed Nuclear Facilities	High	Shallotte	Shallotte Fire/Rescue Department	General Funds, NCDPS	2026-2031	The Fire/Rescue Department continues to work closely with Brunswick County Emergency Services in the planning and response strategies relating to the nuclear power plant. The Fire/Rescue Department regularly participates in regional decontamination and response drills at area key points of interest. Additionally, the Fire/Rescue Department works closely with Sunny Point Military Ocean Terminal in the preparedness and response to Hazardous Materials and High-Hazards marine vessel incident response.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SH50	Work closely with the Brunswick County Sheriff's Office on improving the County's multi-jurisdictional communications system in an effort to enhance interoperability.	All Hazards	High	Shallotte	Shallotte PD	General Funds, NCDPS	2026-2031	The Shallotte Police Department will continue to work with the Brunswick County Sheriff Department along with other law enforcement partners to improve the multi-jurisdiction communications system for enhanced interoperability.
SH51	Monitor the status of backup generators, communications, and vehicles for all critical public facilities. In addition, develop a list of providers of emergency equipment.	All Hazards	High	Shallotte	Shallotte Fire/Rescue Department	General Funds, NCDPS	2026-2031	The Fire/Rescue Department continues to work closely with Brunswick County Emergency Services and Brunswick County Code Enforcement/Inspections Department in the preparedness and response strategies. Annually, the Fire/Rescue Department revisits the Hazard Risk Assessment to evaluate potential risks and includes specific infrastructure items. Working closely with Brunswick County Emergency Services, a list of equipment providers is compiled and maintained.
SH52	Maintain fire event preparedness by ensuring fire hydrants are working properly and coordinating with the NC State Forest Service. These efforts will include the inspection of all fire hydrants. Additionally, County Emergency Services will incorporate the improvement of firefighting procedures into these efforts.	Wildfire	High	Shallotte	Shallotte Fire/Rescue Department	General Funds, NCPDS, NCFS	2026-2031	The Fire/Rescue Department continues to work closely with Brunswick County Public Utilities, the Town of Shallotte Public Utilities Department and Brunswick County Code Enforcement/Inspections

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								Department in the location and maintenance of fire hydrants. Annually, each fire hydrant is maintained, in good repair and ensured to be operable and have an acceptable rate of flow. The Fire/Rescue Department revisits the Hazard Risk Assessment to evaluate potential risks with regards to Wildland Urban interface and works closely with Brunswick County Emergency Services and NC Forest Services to enhance response measures.

Southport Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SP1	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 also outline sound techniques for floodplain development and floodproofing of existing structures. The County will also maintain staff educated on these issues to work with prospective builders.	Flooding	High	Southport	Brunswick Co Planning, Brunswick Co Emergency Services Southport Administration	General Funds	2026-2031	Complete - The City's Planning & Inspections Department maintains a library of materials to educate community stakeholders with floodplain development. The City of Southport has hardcopies at its office as well as digital resources on its website. These materials are also made available through local library branches and provided to local real estate agents in an effort to provide comprehensive education and outreach regarding development in hazard prone areas. The City's designated floodplain administrator is a certified floodplain manager (CFM) and receives regular training in order to offer assistance to citizens. The City's Planning and Inspections Department maintains a well-trained staff which provides comprehensive services to property owners regarding building and development. These services include guidance regarding development in the defined flood hazard areas.
SP2	Continue/expand efforts to partners with area utility districts to encourage proper development of regional water and sewer systems.	Flooding	High	Southport	Brunswick Co Administration Brunswick Co Sewer Districts, Southport Administration	General Funds, NCDPS, NCDEQ	2026-2031	This is part of the daily operations of the County. The City of Southport receives water and sewer services from the County.
SP3	When possible, ensure that no public and/or critical facilities are proposed for flood hazard areas. Additionally, when siting new public/critical facilities, the information and data outlined in this plan will be factored into the decision-making process.	Flooding	High	Southport	Brunswick Co Administration Southport Administration	General Funds	2026-2031	Part of the daily operations, the City ensures that critical public facilities are not proposed for flood hazard areas. Public works and planning and inspection staff work together to ensure local facilities are out of SFHAs where possible.
SP4	In coordination with participating municipal jurisdictions, continue to accept gifts/donations of land located in	Flooding, Geological Hazards	Moderate	Southport	Brunswick Co Administration	General Funds, NCDPS	2026-2031	Part of Southport's daily operations In order to reduce the loss of property, the city continues to be interested in

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	hazard areas or rendered unbuildable by storms or other events, for the purpose of shorefront access.	(Sinkholes, Coastal Erosion)			Southport Administration			accepting future land donations in flood hazard areas. The city will accept all land donations when they become available and work with the Division of Coastal Management for grant opportunities to develop the property for shoreline access.
SP5	In conjunction with annual EOP updates, determine if access to all critical facilities is readily available in the event of a natural hazard event. Careful consideration should be given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified, establish a plan for alternative transportation.	All Hazards	High	Southport	Brunswick Co Emergency Operations Center, Southport Administration	General Funds	2026-2031	The City reviews and updates the local Emergency Operations Plan in conjunction with Brunswick County Emergency Management annually.
SP6	Maintain County and Town Stormwater Ordinances in conjunction with land use ordinances for compatibility of EPA Phase II NPDES requirements. These efforts should also include analysis of stormwater hotspots and potential remedies for these issues.	Flooding	High	Southport	Brunswick Co Administration Southport Administration	General Funds, NCDEQ	2026-2031	The City updated the local stormwater ordinance and adopted the changes in October 2025 to include water quality and quantity controls for both residential and nonresidential properties. The City has completed a stormwater plan that includes mapping of identified hotspots. The plan also provides remedies for stormwater issues.
SP7	Continue to work to improve CRS rating.	Flooding	High	Southport	Southport Administration	General Funds, NCDPS	2026-2031	The City of Southport has a Level 7 CRS rating. The Hazard Mitigation Plan contributes points to the City's CRS efforts. The City will continue its CRS efforts and is researching the requirements for the Building Code Effectiveness Grading Schedule (BCEGS) in order to become a Level 6 CRS community.
SP8	Review respective Comprehensive Land Use Plans annually to ensure that the Future Land Use Maps adequately delineates portions of the County/ municipalities deemed unsuitable for development due to existing	All Hazards	Moderate	Southport	Brunswick Co Planning Southport Administration	General Funds, NCDPS, NCDEQ	2026-2031	The City adopted its 2050 Comprehensive Plan in October 2025. The plan includes a future land use plan that is developed using the Division of Coastal Management's land suitability analysis, which determines the most vulnerable

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	environmental conditions or other factors outlined in this plan.							and sensitive land due to existing environmental conditions and other factors including hazards.
SP9	Review and update as necessary the Flood Damage Prevention Ordinance to ensure maximum protection from flood hazard events. Additionally, jurisdictions with freeboard requirements adopted at the local level will continue to enforce these minimum standards (Brunswick County freeboard requirements is two feet above BFE).	Flooding	High	Southport	Brunswick County Administration, Southport Administration	General Funds, NCDPS	2026-2031	Southport enforces its Flood Damage Prevention Ordinance as part of the daily operations of the city. Freeboard requirement is 3 ft above BFE and higher regulatory standards include non-conversion agreements below BFE and requiring pre-construction, construction, and post construction elevation certificates. Policies in the comprehensive plan direct staff to review the Flood Ordinance with consideration of a citywide freeboard requirement.
SP10	Periodically evaluate local land development regulations for ability to target and direct growth to areas consistent with the land classification map, the water distribution system, and existing and future sewer systems.	Flooding	Moderate	Southport	Brunswick Co Administration, Southport Administration	General Funds	2026-2031	The city consistently and continually reviews the UDO for updates to ensure development is occurring in the most suitable areas. A full review of the UDO and rewrite will begin in 2026.
SP11	Work closely with NCDOT and the Cape Fear Regional MPO to improve road access standards and protect the integrity of significant traffic-carrying roadways throughout the County. These efforts should specifically target the issue of restriping highway intersections and lane markings for higher visibility.	All Hazards	Moderate	Southport	Brunswick Co Administration Southport Administration, NC Department of Transportation Cape Fear Regional MPO	General Funds, NCDOT	2026-2031	Daily activities. This is an ongoing effort by the City of Southport and the County as a whole. The City is an active participant in the Cape Fear RPO along with NCDOT and works with other jurisdictions to allocate points for different projects to maintain and improve the traffic carrying capacity in the region. The Cape Fear RPO also works with the Wilmington MPO and Grand Strand MPO to monitor the carrying capacity for Southeastern Region.
SP12	Review rebuilding activities after major storm events to determine how revisions to existing policies and procedures could help minimize repetitive losses.	Flooding	High	Southport	Brunswick Co Administration Southport Administration	General Funds, NCDPS, FEMA	2026-2031	Part of the daily operations. The city's building inspectors, fire marshal, and floodplain administrator conduct post storm inspections on buildings and areas that are affected by natural disasters. Mapping and monitoring of repetitive loss properties provides staff with baseline

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								information on where to direct development and how to update ordinances to reduce property loss and damage.
SP13	Maintain all FEMA Elevation Certificates, FEMA Floodproofing Certificates for non-residential structures, and where applicable, a V Zone Design Certificate for all structures built or floodproofed since application to the CRS. V Zone Design Certification must be maintained only for structures built subsequent to January 1, 2013.	Flooding	High	Southport	Brunswick Co Planning Southport Administration	General Funds	2026-2031	The City maintains all FEMA Elevation Certificates, FEMA Floodproofing certificates, and V Zone Design Certificates. Part of daily operations.
SP14	Review written policies on water and sewer system extensions and tap on policies to ensure that the County is adequately addressing and discouraging inappropriate development in sensitive environmental areas and areas prone to flood or storm surge hazards.	Flooding	High	Southport	Brunswick Co Administration Brunswick Co Sewer Districts, Southport Administration	General Funds, Sewer Districts	2026-2031	Part of the daily operations and long range planning initiatives of the city is consideration of utility districts. Cluster development patterns that promote conservation of sensitive environmental areas is preferred over conventional subdivisions and strip nonresidential development.
SP15	Consider the data and recommendations outlined in this plan when preparing updates to Capital Improvements Plans. All recommendations regarding capital expenditures will focus on siting all infrastructure and public facilities outside of the Flood Hazard Area.	All Hazards	Moderate	Southport	Brunswick Co Administration Southport Administration	General Funds	2026-2031	Part of the daily operations. The City of Southport considers this hazard mitigation plan when preparing Capital Improvement Plans. The City continues to focus siting infrastructure and public facilities outside of the Flood Hazard Area when possible.
SP16	Inventory existing lots and structures within flood hazard areas to establish baseline data regarding current state of development. These efforts will be incorporated into the comprehensive planning process.	Flooding	Low	Southport	Brunswick Co Administration Southport Administration	General Funds, NCDPS, NCDEQ	2026-2031	The city has a preliminary list of properties within the floodplain, although, with the recent relinquishment of the ETJ and increase in development throughout the corporate limits, the list will be updated to reflect these changes.
SP17	Support commercial forestry activities, provided significant adverse impacts on natural resource systems are fully	All Hazards	High	Southport	NC Forest Service, Brunswick Co Emergency Services	General Funds, NCFS	N/A	The City of Southport does not have commercial forestry activities in its jurisdiction.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	mitigated. Such activities should be considered in accordance with the standards and recommendations of the US Forest Service. The County also advocates the voluntary participation of commercial forestry interests in the State of North Carolina's best management practice program for forestry management.				Southport Administration			
SP18	Continue to require 404 wetlands and 100-year floodplain areas to be delineated on all preliminary subdivision plats for lands within and adjacent to the proposed subdivision.	Flooding	Moderate	Southport	Brunswick Co Administration Brunswick Co Emergency Operations Center, NCDEQ, Southport Administration	General Funds, NCDPS, NCDEQ	2026-2031	Daily operations of the city. The City of Southport requires 404 wetlands and 100-year floodplain areas to be delineated on preliminary subdivision plats for lands within and adjacent to the proposed subdivision. 404 wetlands are not eligible for calculation of open space in subdivisions/PUDs/conditional zoning requests.
SP19	Continue to undertake the following actions to support maintenance of safe hurricane evacuation routes: Identify and support improvements to roads that serve as hurricane evacuation routes, post evacuation routes on County and Town websites, perform routine bridge and culvert maintenance, and raise bridges over streams that have documented flooding during significant rain events, support the planning and implementation of regional roadways	Hurricanes and Coastal Hazards	High	Southport	Brunswick Co Emergency Operations Center, Southport Administration	General Funds, NCDPS	2026-2031	Part of daily operations. The City does this from a regional approach, working as a part of the Cape Fear RPO and with NCDOT to identify and support transportation improvements along evacuation routes. The City works with NCDOT to perform bridge and culvert maintenance along state roads. During storm and flood events the City works with the County to get the most up to date information on evacuation routes/road closures and disseminates the information we receive on our website.
SP20	Continue to support the US Army Corps of Engineers' regulations, the applicable guidelines of the Coastal Area Management Act, and the use of local land use ordinances to regulate development of freshwater swamps, marshes, and 404 wetlands.	Flooding	High	Southport	Brunswick Co Administration Southport Administration NCDEQ	General Funds, NCDEQ	2026-2031	Part of daily operations. The City of Southport continues to support the US Army Corps of Engineers' regulations, the applicable guidelines of the Coastal Area Management Act, and the use of local land use ordinances to regulate development of freshwater swamps, marshes, and 404 wetlands. Further, the City has multiple CAMA Local Permit

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								Officers on staff that ensure issue minor development permits on behalf of the Division of Coastal Management.
SP21	Support the relocation of structures endangered by erosion, if the relocated structure will be in compliance with all applicable policies and regulations. Additionally, the issue of tax base loss should be taken into account within municipal jurisdictions.	Geological Hazards (Sinkholes, Coastal Erosion)	High	Southport	Brunswick Co Planning NCDPS, Southport Administration	General Funds, NCDPS	2026-2031	Part of daily operations. In the event structures become endangered by erosion and are relocated, city development services staff will ensure that all codes and regulations are met. The loss of tax base will be taken into account with any erosion within the corporate limits of the city.
SP22	Continue to enforce respective flood damage prevention ordinances and participate in the National Flood Insurance Program. Subdivision regulations will be enforced – requiring elevation monuments to be set so that floodplain elevations can be more easily determined. Additionally, municipalities with freeboard requirements shall continue to enforce this standard locally.	Flooding	High	Southport	Brunswick Co Planning Brunswick Co Administration, Southport Administration	General Funds	2026-2031	As part of daily operations, the City of Southport enforces it's flood damage prevention ordinance including a 3 foot freeboard requirement. The city is a participant in the National Flood Insurance Program and Community Rating System.
SP23	Continue to support the guidelines of the Coastal Area Management Act and the efforts and programs of the NC Department of Environmental Quality, Division of Coastal Management and the Coastal Resources Commission to protect the coastal wetlands, estuarine waters, estuarine shorelines, and public trust waters of Brunswick County.	All Hazards	Moderate	Southport	Brunswick Co Administration Southport Administration	General Funds, NCDEQ	2026-2031	CAMA approved comprehensive plan adopted in 2025. Southport supports the Coastal Area Management Act and follows the rules of the Coastal Resources Commission. The city with its local permit officers enforce the program to protect the areas of environmental concern along and the waters of Brunswick County.
SP24	Continue to proactively seek out grant funding through NCEM and FEMA for mitigation of repetitive loss properties (RLPs) from future flood 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. The	Flooding	High	Southport	Brunswick Co Administration Southport Administration	General Funds, NCDPS	2026-2031	Part of Daily operations. The City of Southport will continue to monitor repetitive loss properties within the city's jurisdiction and attempt to get grant funding through NCEM and FEMA for mitigation. Coordination with county staff will continue for maintenance of RLPs and grant programs.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	County will assist all municipal jurisdictions in working through the structural mitigation grant funding process.							
SP25	Integrate publicly acquired land into public park and greenway systems. These efforts may be carried out through update of the County Blue/Greenway system, as well as municipal planning efforts.	All Hazards	Moderate	Southport	Brunswick Co Administration Southport Administration	General Funds, NCDEQ, NCDOT	2026-2031	The City of Southport integrates publicly acquired land into its park system, when possible. Staff monitor adjacent properties to city parks to encourage connectivity between the existing park system and buffers for wetlands and floodplains.
SP26	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.	Flooding, Geological Hazards (Sinkholes, Coastal Erosion)	High	Southport	Brunswick Co Inspections Southport Administration	General Funds	2026-2031	Part of daily operations The City of Southport Inspections Department enforces the NC State Building Code. Through enforcement of the NC State Building Code, the City of Southport ensures that all structures are properly anchored. The planning department ensures that manufactured homes are sited on properties that have lower probabilities of flooding.
SP27	Consider a policy for contractors to pick up building material and building debris prior to coastal storms.	Hurricanes and Coastal Hazards	High	Southport	Brunswick Co Administration Southport Administration	General Funds, FEMA	2026-2031	There is a policy of working with contractors to clear and/or secure building material and building debris prior to coastal storms.
SP28	Continue to enforce minimum housing code to require the improvement of substandard housing.	All Hazards	High	Southport	Brunswick Co Administration Southport Administration	General Funds	2026-2031	Part of daily operations. The City of Southport has updated the minimum housing ordinance process require the improvement or demolition of substandard housing.
SP29	Continue providing density credits for developments that establish perpetual easements for ecologically sensitive lands.	All Hazards	Low	Southport	Brunswick Co Administration Southport Administration	General Funds	2027	The city will consider adding density bonuses when reviewing and updating the UDO in the next year.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SP30	Enhance and develop new public accesses to waterway resources in a manner as to protect sensitive environment areas from development and implement the priority recommendations contained in the Brunswick County Shoreline Access Plan.	All Hazards	Moderate	Southport	Brunswick Co Administration Southport Administration	General Funds, NCDPS	2026-2031	The City of Southport continues to investigate new opportunities to develop public water access with improvements that protect sensitive habitat. The city will prepare a shoreline access plan/module in conjunction with Parks and Recreation Master Plan
SP31	Improve Hazard Warning and Response Plan (warning and evacuating critical facilities, getting persons out of flood-prone or isolated areas, controlling vehicles on evacuation routes, evacuation of hazard materials).	All Hazards	High	Southport	Brunswick Co Emergency Operations Center, Brunswick Co Administration Southport Administration	General Funds, NCDPS	2026-2031	The City of Southport works with Brunswick County Emergency Management in an ongoing process to improve hazard warning and response. The City of Southport is included in Brunswick County's ReadyBrunswick Program and issues warnings/response through TextMyGov. The City of Southport also works with the Brunswick County Sherriff's office to monitor evacuation routes.
SP32	Continue and expand the program to retrofit schools and other public facilities to serve as emergency shelters.	All Hazards	Moderate	Southport	Brunswick Co Schools Brunswick Co Administration, Southport Administration	General Funds, NCDPS	2026-2031	The City of Southport follows Brunswick County's lead when it comes to retrofitting schools and public facilities to serve as emergency shelters. The County currently it's three high schools as the emergency shelters. Brunswick County has established a shelter taskforce to identify shelter needs and evaluate shelter locations. The county shelter plan was updated August 2020. The updated plan modified shelter locations based on sheltering capabilities and resiliency of each shelter location. The taskforce continues to identified critical needs to improve shelter resiliency.
SP33	Provide training for "first responders" in identifying and reporting opportunities to mitigate the effects of future disasters at both the county and municipal level.	All Hazards	High	Southport	Brunswick Co Emergency Services Southport Administration	General Funds, N CDPS	2026-2031	The City of Southport Police Department and Fire Department have a well-trained staff that regularly participates in training sessions.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SP34	Evaluate areas with limited evacuation capacity and pursue methods of improving capacity. These efforts will be carried out with support from NCDOT and NCDPS.	All Hazards	High	Southport	Brunswick Co Emergency Services Southport Administration	General Funds, NCDPS	2026-2031	The city participates in the Cape Fear RPO which considers capacity and evacuation in conjunction with NCDOT. Evacuation routes and capacity has become a priority since the city was impacted by PTC8 and roads were washed out.
SP35	Continue debris removal program to correct problem sites at both the County and municipal level.	All Hazards	High	Southport	Brunswick Co Emergency Services Brunswick Co Administration Southport Administration	General Funds, NCDPS	2026-2031	Part of daily operations. Debris removal is part of the city's post storm action plan.
SP36	Continue to maintain/enforce an overall cap of 5% on post-development stormwater discharge increase over pre-development conditions through the County's stormwater management program.	Flooding	High	Southport	Brunswick Co Engineering Brunswick Co Administration Southport Administration	General Funds, NCDPS	2026-2031	2025 stormwater ordinance updates control both water quality and quantities which keeps stormwater runoff limited to levels up to 5% over pre-development runoff.
SP37	Continue to support efforts to place spoil materials from channel maintenance and dredging on Brunswick County beaches, including each of the incorporated municipalities, as warranted.	All Hazards	Moderate	Southport	Brunswick Co Administration Southport Administration	General Funds, NCDPS	2026-2031	Part of daily operations. The City of Southport continues to support the efforts of local beach communities to receive beach nourishment from channel maintenance and dredging.
SP38	Support Section 206 Lower Lockwood Folly River Aquatic Habitat Restoration Project (removal of sediment bars to increase tidal flushing and improve aquatic habitat).	Flooding	High	Southport	Brunswick Co Administration, Southport Administration	General Funds, NCDEQ, NCDOT	2026-2031	This is a county level operation. Southport supports habitat restoration projects throughout Brunswick County.
SP39	Continue implementation of EPA Phase II requirements. These efforts shall include providing oversight services to county municipalities.	All Hazards	High	Southport	Brunswick Co Engineering Brunswick Co Administration Southport Administration	General Funds, NCDEQ	2026-2031	Part of daily operations. Stormwater controls for residential and nonresidential development supports implementation of EPA Phase II requirements.
SP40	Incorporate new FEMA digital FIRMs into the County GIS when necessary. This effort shall also include	Flooding	High	Southport	Brunswick Co Administration Southport Administration	General Funds, NCDPS	2026-2031	City parcel data is maintained by the county. The city coordinates with county staff to confirm boundaries of digital

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	maintenance and inventory of all County land parcel data.							FIRMs - most recent maps are available on the County's GIS
SP41	Establish locations for flood awareness signs – show elevations of high water during/after Hurricane Floyd, the base flood, and the base flood plus 2 feet. Signs should be surveyed to serve as elevation reference marks.	Flooding	Low	Southport	Brunswick Co Emergency Services Brunswick Co Administration Southport Administration	General Funds	2026-2031	The City has worked with NCDPS to establish reference levels and benchmarks inside the City in order to better understand the impact of floods and to increase awareness. The city will install high water signs in appropriate locations for storms that have impacted the city
SP42	Continue to work closely with real estate agents to ensure that prospective buyers are educated about development within a flood hazard area. The County will prepare materials for dissemination to local real estate agents to assist in this education process. Additionally, materials and information regarding mitigation and retrofitting techniques will be made available on County and municipal websites.	Flooding	High	Southport	Brunswick Co Planning Brunswick Co Administration Southport Administration	General Funds, NCDPS, FEMA	2026-2031	Part of daily operations. The City's Planning & Inspections Department maintains a library of materials to educate community stakeholders with floodplain development. The City of Southport has hardcopies at its office as well as digital resources on its website. These materials are also made available through local library branches and provided to local real estate agents in an effort to provide comprehensive education and outreach regarding development in hazard prone areas. The City's designated floodplain administrator is a certified floodplain manager (CFM) and receives regular training in order to offer assistance to citizens. The City's Planning and Inspections Department maintains a well-trained staff which provides comprehensive services to property owners regarding building and development. These services include guidance regarding development in the defined flood hazard areas.
SP43	Continue to expand upon the Alert Emergency Notification System available to all residents. Brunswick County Emergency Management will coordinate with all municipal jurisdictions regarding registration through the Brunswick	All Hazards	High	Southport	Brunswick Co Administration Southport Administration	General Funds, NCDPS	2026-2031	Residents from the City of Southport are eligible to register with Brunswick County's Everbridge system ReadyBrunswick which sends emergency information. The City also alerts residents through TextMyGov and maintains it's

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	County Emergency Notification Registration Portal.							website and social media in order to get emergency information out to residents.
SP44	Establish and maintain retrofitting techniques and publicize in the public libraries, and also through citizen newsletters.	All Hazards	High	Southport	Brunswick Co Emergency Services Brunswick Co Administration Southport Administration	General Funds, NCDPS	2026-2031	The City's Planning & Inspections Department maintains a library of materials to educate community stakeholders with floodplain development. The materials need to be inventoried and publicity needs to be implemented in citywide publications.
SP45	Coordinate with local churches and Spanish speaking representatives to disperse information about the hazards prevalent in the area and the steps they can take to mitigate these hazards.	All Hazards	Moderate	Southport	Southport Administration		2026-2031	The city will coordinate with the county volunteer and non-profit coordinator to establish a program within the city. The planning and inspections department offers floodplain and other FEMA resources in Spanish.
SP46	Maintain nuclear event preparedness. Develop a plan of action to maintain the materials and knowledge base for addressing a nuclear event, or develop preliminary measures to assist the county until the representatives arrive. This responsibility must be supported by provision of adequate funding for materials and training necessary to maintain this preparedness. These efforts should be coordinated with the County LEPC to also include addressing man-made/ technological hazards.	Radiological Emergency – Fixed Nuclear Facilities	High	Southport	Brunswick Co Emergency Services Southport Administration	General Funds, NCDPS	2026-2031	The City of Southport Fire Department and Police Department communicates with Brunswick County Emergency Services on this matter and participates in training sessions with other jurisdictions in order to prepare them to assist in the event of a nuclear emergency.
SP47	Work closely with the Brunswick County Sheriff's Department on improving the County's multi-jurisdictional communications system in an effort to enhance interoperability.	All Hazards	High	Southport	Brunswick Co Sheriff's Office, Southport Administration	General Funds, NCDPS	2026-2031	The City of Southport has continued to work with the Brunswick County Sherriff's Department in order to improve and enhance interoperability of the County's E 911 Communications System. Brunswick County Emergency Services provides updates and coordination with EMS and Fire Departments to update plans and protocols for response. Coordinate

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								implementation of new technology to improve response and data collection.
SP48	Monitor the status of backup generators, communications, and vehicles for all critical public facilities. In addition, develop a list of providers of emergency equipment.	All Hazards	High	Southport	Southport Administration	General Funds, NCDPS	2026-2031	Part of daily operations. The City of Southport Fire Department, Police Department, and Public Works Department all work together to monitor the status of backup generators, communications, and vehicles for all critical public facilities. The City has generators at City Hall, the Public Works Building, and the Fire Department. The City has a list of providers to go to in case they need emergency equipment.
SP49	Maintain fire event preparedness by ensuring fire hydrants are working properly and coordinating with the NC State Forest Service. These efforts will include the inspection of all fire hydrants. Additionally, County Emergency Services will incorporate the improvement of firefighting procedures into these efforts.	Wildfire	High	Southport	Brunswick Co Emergency Services Municipal Fire Departments, NC Forest Service Southport Administration	General Funds, NCPDS, NCFS	2026-2031	Part of daily operations. The City of Southport Fire Department and Brunswick County Water Department work together to ensure that fire hydrants are working properly. The City of Southport inspects all fire hydrants and tests them as part of the ISO Rating process.
SP50	Continue to enforce and adopt water shortage response plans and water shortage ordinances for municipalities operating central water service.	Drought	High	Southport	Southport Administration	General Funds, NCDEQ	2026-2031	Part of daily operations. The city receives all water and wastewater services from Brunswick County.
SP51	Limit development adjacent to the railroad tracks.	Hazardous Substances	Moderate	Southport	Southport Administration	General Funds	Action to be deleted	Action to be deleted. The Town does not have land adjacent to railroad tracks.
SP52	Complete and adopt the Resilient Coastal Community Program (RCCP) Vulnerability assessment report	All Hazards	High	Southport	Southport Administration	NCDEQ General Funds	2031	New Action for the 2026 update
SP53	Complete stormwater system improvements and consider expansion per the capital improvement plan.	All Hazards	High	Southport	Southport Administration	General Funds FEMA NCDEQ other State Programs	2031	New Action for the 2026 update

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SP54	Install shoreline stabilization along vulnerable shorelines. Incorporate living shorelines where possible	Flooding Geological Hazards (Sinkholes, Coastal Erosion) Hurricanes and Coastal Hazards	High	Southport	Southport Administration	General Funds FEMA NCDEQ	2031	New Action for the 2026 update
SP55	Participate in updates of the Brunswick Nuclear Plant Emergency Plans	Radiological Emergency – Fixed Nuclear Facilities	High	Southport	Southport Administration	Staff Time	2031	New Action for the 2026 update
SP56	Conduct annual training for employees and prepare citywide policies for network security	Cyber Security	Low	Southport	Southport Administration	General funds	2031	New Action for the 2026 update

St James Mitigation Action Plans

Action #	Description	Hazards Addressed	Lead Agency	Relative Priority	Implementation Schedule	Potential Funding Source	Implementation Status (2026)
SJ1	Identify significant incidents that could cause life safety or public health issues in St. James	All Hazards	SJEM	High	2026	General Funds	The Town continually examines incidents and updates its EOP accordingly.
SJ2	Determine need for cameras in critical areas of St. James where residents could be isolated	Flooding	SJEM	Moderate	2028	Grant funds; SJPOA	Town is seeking HMP funds to monitor flooding events in high hazard areas.
SJ3	Seek ways to preclude resident isolation during severe storms; Provide real time information during storms to inform residents and deploy resources.	Flooding	Town; SJPOA	Moderate	2027	General Funds;SJPOA	Continue to seek funds to address areas of the town that can become isolated during flooding events.
SJ4	Conducting Annual Severe Storm Seminar, wildfire seminar and other education programs	All Hazards	SJEM	Moderate	2026-2030	General Fund	Continue to host annual emergency preparedness seminar for town residents.
SJ5	Maintenance and Improvement of Community Infrastructure, Individual Home Survival, Increased Awareness, Education and Support	Wildfire	Firewise Committee	High	2026	General Fund	2026 Firewise Action Plan to be submitted to NFPA 11/21/26 for review and approval. Will begin plan implementation in January 2026
SJ6	Annual Review of Department SOP; Annual Review of Policies and Procedures, Review of Large Scale Road Closure procedures, annual review of long term vehicle and equipment program as part of capital budget plan.	All Hazards	SJFD	Moderate	2026-2030	SJFD	Annually review fire department plans and procedures.
SJ7	Automated Pond Level control system; Periodic cleaning of debris from bridges, culverts and swales.	Flooding	SJPOA	High	2026-2030	SJPOA	Annual preventive maintenance.
SJ8	Establish automated pond control levels on golf course ponds; Program to maintain course bridges, culvers and swales free of debris	Flooding	Troon	High	2026-2030	Troon	Annual preventive maintenance.
SJ9	Continue participation with the Community Rating System using Hazard Mitigation plan components to fulfill 5-year renewal of program.	Flooding	Town; BC	High	2026	Town	The town is up for its 5-year renewal of plan.

Sunset Beach Mitigation Action Plans

For some of the mitigation actions identified for Sunset Beach, Brunswick County is the lead agency and the town supports implementation of these actions. The corresponding Brunswick County action is listed below the Action # in the first column.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SB5	Educate citizens to listen for watches and warnings issued by the National Weather Service	All Hazards	Moderate	Sunset Beach Administration	General Funds	2031	The Town uses the Town website and the Fire Department website and social media outlets to share information to the public on listening to and having a warning system.
SB6	Encourage home owners to review insurance policies as part of an overall family disaster plan	All Hazards	Moderate	Sunset Beach Administration	General Funds	2031	The Town will initiate presentations and distribute literature to Home Owner and Property Owner Association groups.
SB7	Seek funding to retrofit/construct Town-owned facilities for improved resilience to all hazards with the use of the latest building materials and technology. This could include, but is not limited to, wind retrofits, backup generators, ignition-resistant materials, lightning protection, hail-resistant roofing, and anchoring fixed building equipment.	All Hazards	High	Sunset Beach Administration	G CIP; Grants	2031	The Town is interested in evaluating and possibly retrofitting its existing buildings to be more resilient during storms and other hazards.
SB8	Identify property and funding for the construction of an Emergency Operation Center	All Hazards	High	Sunset Beach Administration	CIP; Grants	2031	The Town is interested in identifying potential sites and possibly constructing a centrally-located EOC
SB9 (BC5)	In conjunction with annual EOP updates, determine if access to all critical facilities is readily available in the event of a natural hazard event. Careful consideration should be given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified, establish a plan for alternative transportation.	All Hazards	High	Brunswick County EM Support Agency Sunset Beach Administration	General Funds	2026-2031	See update provided by Brunswick County. Sunset Beach continually updates emergency plans and procedures. Contingency plans are implemented when needed.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SB10 (BC8)	Review respective Comprehensive Land Use Plans annually to ensure that the Future Land Use Maps adequately delineates portions of the County/ municipalities deemed unsuitable for development due to existing environmental conditions or other factors outlined in this plan.	All Hazards	Moderate	Brunswick Co Planning Support Agency Sunset Beach Administration	General Funds, NCDPS, NCDEQ	2026-2031	See update provided by Brunswick County Sunset Beach is currently drafting a new and updated Future Land Use Plan. The current Future Land Use Plan is reviewed and monitored by the Planning Board and Town staff routinely. The anticipated adoption date for the new Future Land Use Plan is Fall/Winter 2026.
SB11 (BC10)	Periodically evaluate local land development regulations for ability to target and direct growth to areas consistent with the land classification map, the water distribution system, and existing and future sewer systems.	Flooding	Moderate	Brunswick County Planning Supporting Agencies: Public Utilities Sunset Beach Administration	General Funds	Complete for Sunset Beach	See update provided by Brunswick County Sunset Beach. Completed. New land development code adopted in 2023.
SB12 (BC21)	Continue to undertake the following actions to support maintenance of safe hurricane evacuation routes: Identify and support improvements to roads that serve as hurricane evacuation routes, post evacuation routes on County and Town websites, perform routine bridge and culvert maintenance, and raise bridges over streams that have documented flooding during significant rain events, support the planning and implementation of regional roadways	Hurricanes and Coastal Hazards	High	NCDOT Support Agency Sunset Beach Administration	General Funds, NCDPS Support Agencies: EM, Communications, IT	2026-2031	See update provided by Brunswick County Sunset Beach works with Brunswick County officials as needed to comply with this activity.
SB13 (BC25)	Continue to support the guidelines of the Coastal Area Management Act and the efforts and programs of the NC Department of Environmental Quality, Division of Coastal Management and the Coastal Resources Commission to protect the coastal wetlands, estuarine waters, estuarine shorelines, and	All Hazards	Moderate	Brunswick County Planning Support Agency Sunset Beach Administration	General Funds, NCDEQ	Action completed for Sunset Beach	See update provided by Brunswick County Sunset Beach: This activity is part of the day-to-day activity of the town and should be removed from future plan updates. CAMA Land Use Plan update is anticipated to be completed by Fall/Winter 2026.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	public trust waters of Brunswick County.						
SB14 (BC27)	Integrate publicly acquired land into public park and greenway systems. These efforts may be carried out through update of the County Blue/Greenway system, as well as municipal planning efforts.	All Hazards	Moderate	Brunswick County Planning Support Agencies: Brunswick County Parks and Rec, NCDOT Sunset Beach Administration	General Funds, NCDEQ, NCDOT	2026-2031	See update provided by Brunswick County Sunset Beach: Town acquired property on the island in 2022 for the construction of and use of Majestic Oaks Park.
SB15 (BC29)	Consider a policy for contractors to pick up building material and building debris prior to coastal storms.	Hurricanes and Coastal Hazards	High	Brunswick County Operations Services Support Agencies: Brunswick County EM Sunset Beach Administration	General Funds, FEMA	Action complete for Sunset Beach	See update provided by Brunswick County. Sunset Beach: Completed. This is an ongoing activity. Town Building Inspections staff contact contractors to pick up and secure building materials prior to a coastal storm.
SB16 (BC30)	Continue to enforce minimum housing code to require the improvement of substandard housing.	All Hazards	High	Brunswick County Code Admin Support Agency Sunset Beach Administration	General Funds	Action completed for Sunset Beach	See update provided by Brunswick County Sunset Beach: Completed. A minimum housing code was adopted by the Town in 2022 and is regularly enforced.
SB17 (BC32)	Enhance and develop new public accesses to waterway resources in a manner as to protect sensitive environment areas from development and implement the priority recommendations contained in the Brunswick County Shoreline Access Plan.	All Hazards	Moderate	Brunswick County Planning Support Agency Sunset Beach Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County. Sunset Beach: Ongoing activity. Town staff submits grant proposals annually or the budget allocates funds to improve or repair walkways.
SB18 (BC33)	Improve Hazard Warning and Response Plan warning to assess effectiveness of emergency response plans (warning and evacuating critical facilities, getting persons out of flood-prone or isolated areas, controlling vehicles on evacuation routes, evacuation of hazard materials).	All Hazards	High	Brunswick County EM Support Agency Sunset Beach Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County. Sunset Beach: Ongoing activity. The Town coordinates or works with Brunswick County to accomplish this activity

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SB19 (BC34)	Continue and expand the program to retrofit schools and other public facilities to serve as emergency shelters.	All Hazards	Moderate	Brunswick County EM Support Agencies: Schools, HHS, DSS, Sheriff's Office, Admin, Brunswick Senior Resources Sunset Beach Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County. Sunset Beach: Works with Brunswick County officials as needed to comply with this activity.
SB20 (BC35)	Provide training for "first responders" in identifying and reporting opportunities to mitigate the effects of future disasters at both the county and municipal level.	All Hazards	High	Brunswick County EM Support Agencies: Fire, EMS, BCSO, NC Community College System Sunset Beach Administration	General Funds, NCDPS	Action completed for Sunset Beach	See update provided by Brunswick County. Sunset Beach: Completed. Town first responders attends Brunswick trainings annually.
SB21 (BC37)	Evaluate areas with limited evacuation capacity and pursue methods of improving capacity. These efforts will be carried out with support from NCDOT and NCDPS.	All Hazards	High	NCDOT & NCDPS Support Agencies: Brunswick County Planning and EM Sunset Beach Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County Sunset Beach: Ongoing task. Continually evaluates areas with limited evacuation capacity and coordinates with Brunswick County.
SB22 (BC41)	Support Section 206 Lower Lockwood Folly River Aquatic Habitat Restoration Project (removal of sediment bars to increase tidal flushing and improve aquatic habitat).	Flooding	High	Brunswick County Planning Support Agency Sunset Beach Administration	General Funds, NCDEQ, NCDOT	Action to be deleted for Sunset Beach	See update provided by Brunswick County Action to be deleted for Sunset Beach as it is not applicable for the Town.
SB23 (BC44)	Establish locations for flood awareness signs – show elevations of high water during/after Hurricanes Matthew, Florence, and Potential Tropical Cyclone 8 the base flood, and the base flood plus 2 feet. Signs should be surveyed to serve as elevation reference marks.	Flooding	Low	Brunswick County Flood Planning Supporting Agencies: Brunswick County EM, NCDOT Sunset Beach Administration	General Funds	2026-2031	See update provided by Brunswick County. Sunset Beach: No action taken at this time by the municipality.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
SB24 (BC46)	Continue to expand upon the Alert Emergency Notification System available to all residents. Brunswick County Emergency Management will coordinate with all municipal jurisdictions regarding registration through the Brunswick County Emergency Notification Registration Portal.	All Hazards	High	Brunswick County EM, PIO Support Agency Sunset Beach Administration	General Funds, NCDPS	Action to be deleted.	Brunswick County has flagged this action to be deleted. It will be removed from the 2031 update. Sunset Beach: Works with Brunswick County officials as needed to comply with this activity.
SB25 (BC47)	Establish and maintain retrofitting techniques and publicize in the public libraries, and also through citizen newsletters.	All Hazards	High	Brunswick County Library Support Agency Sunset Beach Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County. Sunset Beach: Ongoing. Newsletters, emails, etc. are routinely sent out.
SB26 (BC48)	Coordinate with local churches and Spanish speaking representatives to disperse information about the hazards prevalent in the area and the steps they can take to mitigate these hazards.	All Hazards	Moderate	Brunswick County EM VOAD Support Agencies: AFN Coordinator, HHS Sunset Beach Administration	Staff Time	2026-2031	See update provided by Brunswick County. Sunset Beach: Rely on Brunswick County for this activity.
SB27 (BC49)	Maintain and enhance preparedness for fixed nuclear facilities, radiological transportation incidents, and radiological/nuclear Weapons of Mass Destruction (WMD) events. This action includes regularly reviewing and updating radiological response plans; sustaining a current inventory of specialized equipment, materials, and technical knowledge; and evaluating proactive measures to reduce impacts from radiological or nuclear incidents. Adequate funding will be maintained to support required equipment, training, and sustainment activities. Coordination will occur through the County Local Emergency Planning Committee (LEPC) and in partnership with the	Radiological Emergency – Fixed Nuclear Facilities	High	Brunswick County EM Nuclear Support Agencies: REP Taskforce and Stakeholders Sunset Beach Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County. Sunset Beach: Works with Brunswick County officials as needed to address this activity.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	Brunswick Nuclear Power Plant to address technological and man-made radiological hazards that may require emergency action						
SB28 (BC50)	Work closely with the Brunswick County Sheriff's Office on improving the County's multi-jurisdictional communications system in an effort to enhance interoperability.	All Hazards	High	Brunswick County Communications Support Agencies: EM, Fire, EMS Sunset Beach Administration	General Funds, NCDPS	2026-2031	See update provided by Brunswick County. Sunset Beach: Ongoing. Works with Brunswick County to address this activity.

Varnamtown Mitigation Action Plan

For all of the mitigation actions identified for Varnamtown, Brunswick County is the lead agency and Varnamtown supports implementation of these actions as best they can. The corresponding Brunswick County action is listed below the Action # in the first column.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
V1 (BC5)	In conjunction with annual EOP updates, determine if access to all critical facilities is readily available in the event of a natural hazard event. Careful consideration should be given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified and coordinated for alternative transportation.	All Hazards	High	Brunswick Co Emergency Management, Support Agencies: Support Agencies: Brunswick Transit, Schools, EMS, Public Utilities, Flood/Code Administration Varnamtown Administration	General Funds	2026-2031	See update provided by the County. Varnamtown supports the County' implementation of this action.
V2 (BC8)	Review respective Comprehensive Land Use Plans annually to ensure that the Future Land Use Maps adequately delineates portions of the County/ municipalities deemed unsuitable for development due to existing environmental conditions or other factors outlined in this plan.	All Hazards	Moderate	Brunswick Co Planning Support Agency: Varnamtown Administration	General Funds, NCDPS, NCDEQ	2031	See update provided by the County. Varnamtown supports the County' implementation of this action. This action is in progress by Varnamtown Administration
V3 (BC10)	Periodically evaluate local land development regulations for ability to target and direct growth to areas consistent with the land classification map, the water distribution system, and existing and future sewer systems.	Flooding	Moderate	Brunswick Co Planning Supporting Agencies: Public Utilities Varnamtown Administration	General Funds	2026-2031	See update provided by the County. Varnamtown supports the County' implementation of this action. This action is in progress by Varnamtown Administration
V4 (BC21)	Continue to undertake the following actions to support maintenance of safe hurricane evacuation routes:	Hurricanes and Coastal Hazards	High	Brunswick County EM NCDOT	General Funds, NCDPS	2026-2031	See update provided by the County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	Identify and support improvements to roads that serve as hurricane evacuation routes, post evacuation routes on County and Town websites, perform routine bridge and culvert maintenance, and raise bridges over streams that have documented flooding during significant rain events, support the planning and implementation of regional roadways			Support Agency: Varnamtown Administration	Support Agencies: EM, Communications, IT		Varnamtown supports the County' implementation of this action. This action is in progress by Varnamtown Administration
V5 (BC25)	Continue to support the guidelines of the Coastal Area Management Act and the efforts and programs of the NC Department of Environmental Quality, Division of Coastal Management and the Coastal Resources Commission to protect the coastal wetlands, estuarine waters, estuarine shorelines, and public trust waters of Brunswick County.	All Hazards	Moderate	Brunswick County Planning Support Agency: Varnamtown Administration	General Funds, NCDEQ	2026-2031	See update provided by the County. Varnamtown supports the County' implementation of this action. This action is in progress by Varnamtown Administration
V6 (BC27)	Integrate publicly acquired land into public park and greenway systems. These efforts may be carried out through update of the County Blue/Greenway system, as well as municipal planning efforts.	All Hazards	Moderate	Brunswick County Planning Support Agencies: Parks and Rec, NCDOT Varnamtown Administration	General Funds, NCDEQ, NCDOT	2026-2031	See update provided by the County. Varnamtown supports the County' implementation of this action. This action is in progress by Varnamtown Administration
V7 (BC29)	Consider a policy for contractors to pick up building material and building debris prior to coastal storms.	Hurricanes and Coastal Hazards	High	Operations Services Support Agencies: EM Varnamtown Administration	General Funds, FEMA	2026-2031	See update provided by the County. Varnamtown supports the County' implementation of this action. This action has been deferred by Varnamtown Administration

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
V8 (BC30)	Continue to enforce minimum housing code to require the improvement of substandard housing.	All Hazards	High	Brunswick County Code Admin Support Agency: Varnamtown Administration	General Funds	2026-2031	See update provided by the County. Varnamtown supports the County's implementation of this action. This action is in progress by Varnamtown Administration.
V9 (BC32)	Enhance and develop new public accesses to waterway resources in a manner as to protect sensitive environment areas from development and implement the priority recommendations contained in the Brunswick County Shoreline Access Plan.	All Hazards	Moderate	Brunswick County Planning Support Agency: Varnamtown Administration	General Funds, NCDPS	2026-2031	See update provided by the County. Varnamtown supports the County;s implementation of this action. This action has been deferred by Varnamtown Administration.
V10 (BC34)	Continue and expand the program to retrofit schools and other public facilities to serve as emergency shelters.	All Hazards	Moderate	Brunswick County EM Support Agencies: Schools, HHS, DSS, Sheriff's Office, Admin, Brunswick Senior Resources Varnamtown Administration	General Funds, NCDPS	2026-2031	See update provided by the County. Varnamtown supports the County's implementation of this action. This action has been deferred by Varnamtown Administration.
V11 (BC35)	Provide training for "first responders" in identifying and reporting opportunities to mitigate the effects of future disasters at both the county and municipal level.	All Hazards	High	Brunswick County EM Support Agencies: Fire, EMS, BCSO, NC Community College System Varnamtown Administration	General Funds, NCDPS	2026-2031	See update provided by the County. Varnamtown supports the County's implementation of this action. This action has been deferred by Varnamtown Administration.
V12 (BC37)	Brunswick County will support NCDOT and NCDPS in efforts to evaluate and improve capacity of	All Hazards	High	NCDOT & NCDPS	General Funds, NCDPS	2026-2031	See update provided by the County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	evacuation routes. These efforts will be carried out with support from NCDOT and NCDPS.			Support Agencies: Planning, EM Varnamtown Administration			Varnamtown supports the County's implementation of this action. This action is in progress by Varnamtown Administration.
V13 (BC41)	Support Section 206 Lower Lockwood Folly River Aquatic Habitat Restoration Project (removal of sediment bars to increase tidal flushing and improve aquatic habitat).	Flooding	High	Brunswick County Planning Support Agency: Varnamtown Administration	General Funds, NCDEQ, NCDOT	2026-2031	See update provided by the County. Varnamtown supports the County's implementation of this action. This action has been deferred by Varnamtown Administration.
V14 (BC44)	Establish locations for flood awareness signs – show elevations of high water during/after Hurricanes Matthew, Florence, and Potential Tropical Cyclone 8 the base flood, and the base flood plus 2 feet. Signs should be surveyed to serve as elevation reference marks.	Flooding	Low	Brunswick County Flood Planning Supporting Agencies: EM, NCDOT Varnamtown Administration	General Funds	2026-2031	See update provided by the County. Varnamtown supports the County's implementation of this action. This action has been deferred by Varnamtown Administration.
V15 (BC46)	Continue to expand upon the Alert Emergency Notification System available to all residents. Brunswick County Emergency Management will coordinate with all municipal jurisdictions regarding registration through the Brunswick County Emergency Notification Registration Portal.	All Hazards	High	Brunswick County EM, PIO Support Agency: Varnamtown Administration	General Funds, NCDPS	Action to be deleted.	Brunswick County has marked this action to be deleted. It will be removed from the 2031 update.
V16 (BC47)	Establish and maintain retrofitting techniques and publicize in the public libraries, and also through citizen newsletters.	All Hazards	High	Brunswick County Library Support Agency: Varnamtown Administration	General Funds, NCDPS	2026-2031	See update provided by the County. Varnamtown has marked this action to be deleted. It will be removed from the 2031 update of this plan.
V17 (BC48)	Coordinate with local churches and Spanish speaking representatives to	All Hazards	Moderate	Brunswick County EM VOAD		2026-2031	See update provided by the County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	disperse information about the hazards prevalent in the area and the steps they can take to mitigate these hazards.			Support Agencies: AFN Coordinator, HHS Varnamtown Administration			Varnamtown supports the County's implementation of this action. This action is in progress by Varnamtown Administration.
V18 (BC50)	Work closely with the Brunswick County Sheriff's Office on improving the County's multi-jurisdictional communications system in an effort to enhance interoperability.	All Hazards	High	Brunswick County Communications Support Agencies: EM, Fire, EMS Varnamtown Administration	General Funds, NCDPS	2026-2031	See update provided by the County. Varnamtown supports the County's implementation of this action. This action is in progress by Varnamtown Administration.
V19 (BC54)	Identify areas where placement of flood monitoring gauges could be placed to improve flood warning capabilities of FIMAN.	Flooding	High	Brunswick County EM Support Agency: Varnamtown Administration	State and Federal Grants	2026-2031	See update provided by the County. Varnamtown supports the County's implementation of this action. This action has been deferred by Varnamtown Administration.
V20 (BC55)	Continue to work with Brunswick Nuclear Power Station to plan for any events which might require emergency action.	Radiological Emergency - Fixed Nuclear Facilities	High	Brunswick County EM (Nuclear) Support Agency: Varnamtown Administration	Staff time, State and Federal Grants	Action to be deleted	Brunswick County has decided to delete this action.
V21 (BC56)	Work with appropriate stakeholders to identify areas where dam failure could occur and develop emergency action plans for those dams, as needed.	Dam Failure	High	Brunswick County Planning Support Agency: Brunswick County EM Support Agency: Varnamtown Administration	Staff time, State and Federal Grants	Action to be deleted.	Brunswick County has decided to delete this action.

New Hanover County Mitigation Action Plans

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
NHC1	Maintain the County's Continuity of Operations Plan (COOP) and offer support to municipal partners in development and maintenance of their respective COOP planning efforts	All Hazards	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Emergency Management, New Hanover Co Administration, Municipal Administrations	General Funds, NCDPS	2031	New Hanover County: Continuing COOP development, reviews, and supporting exercise efforts for NHC partners. Carolina Beach: Deferred to County Kure Beach: Deferred to County Wilmington: Currently updating EOP and COOP to be completed in 2026. Wrightsville Beach: Deferred to County
NHC2	Enhance and maintain County geo-spatial information system (GIS) resources to effectively collect and share datasets to identify hazards and potential impacts, identify opportunities for mitigation and improvement for response, and effectively move toward recovery resulting in a more resilient community.	All Hazards	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Information Technology, New Hanover Co Administration; Municipal Administrations, New Hanover Co Emergency Management	General Funds	2031	New Hanover County: Implemented enterprise-wide access to ArcGIS Online (AGOL) with appropriate cyber-security processes in place. Carolina Beach: Coordinates information and resource sharing with NHC. Kure Beach: Coordinates information and resource sharing with NHC. Wilmington: Coordinates information and resource sharing with NHC. Wrightsville Beach: Coordinates information and resource sharing with NHC.
NHC3	Identify locality/municipality level critical infrastructure power needs,	All Hazards	High	New Hanover County, Carolina	New Hanover Co Emergency	General Funds,	2031	New Hanover County: Performing site power

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	assess, explore and install innovative back-up power resources and assets, and maintain existing alternate power infrastructure to support life-safety and critical infrastructure assets to reduce initial damages, and increase community response, recovery, and resiliency capability.			Beach, Kure Beach, Wilmington, Wrightsville Beach	Management, New Hanover Co Office of Resilience & Recovery, New Hanover Co Facilities Management, New Hanover Co. Fire/Rescue, Municipal Administrations	NCDPS, American Red Cross		assessments and needs assessments with State and local partners; continuing maintenance and integration of resources at established sites. Carolina Beach: Participating with NHC on site power assessments and offering subject matter expertise on municipal critical infrastructure sites. Kure Beach: Participating with NHC on site power assessments and offering subject matter expertise on municipal critical infrastructure sites. Wilmington: Participating with NHC on site power assessments and offering subject matter expertise on municipal critical infrastructure sites. Wrightsville Beach: Participating with NHC on site power assessments and offering subject matter expertise on municipal critical infrastructure sites.
NHC4	Enhance existing community outreach programs available through partner agencies such as Weather-Ready Nation, weather preparedness efforts through National Weather Service, Ready.gov resources through FEMA, and ReadyNHC resources. This includes adapting programs to ensure equity and inclusiveness of the community such as outreach for children, tourist populations,	All Hazards	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Emergency Management, New Hanover Co Administration Municipal Administrations	General Funds	2031	New Hanover County: Implementation of ReadyNHC programming based on resources from NWS, FEMA, and NCEM. Carolina Beach: Maintaining partnership with NHC for outreach programming and collaboration efforts.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	access and functional needs, and potentially underserved populations.							Kure Beach: Maintaining partnership with NHC for outreach programming and collaboration efforts. Wilmington: Maintaining partnership with NHC for outreach programming and collaboration efforts. Wrightsville Beach: Maintaining partnership with NHC for outreach programming and collaboration efforts.
NHC5	Support implementation of Stormwater Services projects as identified through system-wide assessments at the watershed-by-watershed level. This includes support for stream cleaning, debris management and removal, animal impediments, and other projects as identified to include natural and man-made structures to improve drainage and mitigate risk to life and damage to property.	Flooding	Moderate	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Engineering, New Hanover Co Administration, New Hanover Co Recovery & Resilience Office; Municipal Administrations	General Funds, Special Revenue Fund, NCDPS, Pre-Disaster Mitigation, Unified hazard Mitigation Assistance, BRICC, NCDEQ, USACE	2031	New Hanover County: Structure for Stormwater Services Program in the unincorporated areas of the County implemented on 07/01/2020. County continues partnership with USDA on the Countywide Beaver Management program. Carolina Beach: Carolina Beach: Remove beavers as reported and observed through private contractor. The Stormwater Division of the Town ensures compliance with NPDES Phase II regulations. The Division maintains and repairs the Town's stormwater system which includes cleaning and profiling ditches, repairing and installing drainage pipes, Vactor cleaning of stormwater pipe, pond maintenance, street sweeping, erosion control efforts, pollutant elimination and promoting the principles of maintaining a viable, clean, and safe stormwater system to aid in the protection from flooding.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								The Town maintains Carolina Beach Lake through water level control, algae and aquatic weed control, and foundation operation. Kure Beach: Maintaining partnership with NHC for collaboration efforts Wilmington: Maintaining partnership with NHC for collaboration efforts Wrightsville Beach: Maintaining partnership with NHC for collaboration efforts
NHC6	Support and implement training and resources to enforce the NC State Building Code and applicable Fire Code and other safety lifeline codes and ordinances to ensure that all structures, including manufactured homes, are properly anchored, built to minimize potential impacts stemming from a disaster event, and provide technology to support public safety communication lifeline assets.	All Hazards	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Inspections Municipal Inspections, New Hanover Co Fire/Rescue, New Hanover Co EM, New Hanover Co 911	General Funds	2031	New Hanover County: Enforcement of the NC State Building Code and Fire Code continues on an ongoing basis. During 2020, NHC began implementation of Section 510 in Fire Code - Emergency Responder Radio Coverage to enhance public safety lifeline communication efforts. Carolina Beach: Ongoing enforcement of Fire Code. Partner with NHC for enforcement of NC State Building Code. Kure Beach: Partners with NHC for assessment and enforcement efforts. Wilmington: Ongoing through administering Land Development Code Chapter 18. Partners with NHC for

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								assessment and enforcement efforts. Wrightsville Beach: Partners with NHC for assessment and enforcement efforts.
NHC7	Secure funding to retrofit/elevate wastewater pumping stations located in the 100-year floodplain. These infrastructure components routinely flood during flooding and storm surge events.	Flooding	Moderate	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Engineering New Hanover Co Administration Municipal Administrations, Cape Fear Public Utility Authority	General Funds, NCDPS, PDM, UHMA	2031	New Hanover County: CFPUA has mapped all systems, plants and infrastructure in GIS which are in floodplains and could be subject to future SLR. Pump station life-cycle is significantly less than the SLR projection timelines in the 2013 Pilot Study (50, 100 years). As such, current pump station upgrades and future pump stations are designed with flooding and SLR in mind. CFPUA has completed other pump station projects since 2013 that similarly addressed flood elevations as part of an overall upgrade. CFPUA has also initiated an Unmanned Aerial Vehicle (UAS/drone) program which will map elevations of all infrastructure (primarily pump stations) to aid with necessary data. That program is operational. Carolina Beach: Retrofitting and elevating equipment is an ongoing effort throughout the Town. The Town replaces and elevates wastewater pumping stations as needed. The Town completed an Asset Inventory Assessment to determine condition, criticality, and risk of water/sewer infrastructure.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								Kure Beach: Maintains partnership with NHC for assessment and outreach efforts. Wilmington: Maintains partnership with NHC for assessment and outreach efforts. Wrightsville Beach: The CFPUA has assumed ownership and operation of the Town of Wrightsville Beach's water and sewer infrastructure.
NHC9	Adopt updated Flood Insurance Rate Map data and Flood Damage Prevention Ordinance. Continue to evaluate Flood Damage Prevention Ordinance to ensure most effective floodplain management practices are being implemented.	Flooding	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Planning Municipal Administrations	General Funds, NCDPS	2031	New Hanover County: Updated Flood Insurance Rate Maps and the Flood Damage Prevention Ordinance were adopted by the Board of County Commissioners on July 9, 2018 and the final 17 panels in the new mapping data set went effective in January 2025. The Flood Damage Prevention Ordinance was incorporated as Article 9 of the Unified Development Ordinance upon its adoption in 2020, Staff regularly evaluates best practices in floodplain management for the consideration and implementation of potential amendments to the ordinance. Carolina Beach: Adopted FIRM Floodplain maps on August 28, 2018. Adopted a Unified Development Ordinance on July 9, 2024, which included an update of the Flood Damage Prevention Ordinance.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								Kure Beach: Coordinates with NHC Wilmington: Adopted FIRM Floodplain maps on August 28, 2018 Wrightsville Beach: Coordinates with NHC
NHC10	New Hanover County Engineering Department will undertake revising the Stormwater Ordinance to address the current conditions located throughout the county.	Flooding	Moderate	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Planning Wilmington Planning; Municipal Administrations	General Funds, NCDPS	2031	New Hanover County: The revised Stormwater Ordinance was adopted in 2021, and it was adopted into Article 10 of the Unified Development Ordinance in 2022. The updated Stormwater Design Manual was put in place in 2022. Carolina Beach: Adopted a Unified Development Ordinance on July 9, 2024, which included a new maximum impervious surface limit of 65% and a limit for the amount of fill that can be placed on a lot. Kure Beach: Coordinates with NHC Wilmington: Coordinates with NHC Wrightsville Beach: Coordinates with NHC
NHC11	Update and maintain existing impact and vulnerability analysis on hazard areas to address changes to floodplain, shoreline, and inlet conditions caused by natural and man-made forces and all locally	All Hazards	Moderate	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Engineering, New Hanover Co Administration, New Hanover Co EM, New Hanover	General Funds, NCDEQ, NCEM	2026-2031	New Hanover County: NHC Threat/Hazard Identification Risk Analysis (THIRA) continues to be updated annually.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	identified key resources and critical facilities that are identified through the county and municipal inventories.				Co Recovery & Resilience Office; Municipal Administrations			The county performs annual surveys of approximately 130 cross-shore transects along the county's ocean front shoreline, emphasizing the coastal storm damage reduction (CSDR) project templates for Wrightsville Beach, Carolina Beach, and Kure Beach. The volumetric calculations are used to assess annual shoreline morphological changes supporting (CSDR) maintenance schedules. The county's annual and quarterly coordination of inlet management projects are orchestrated through engineering, surveying and dredging elements of the private sector as well as with state and federal agencies. In addition to periodic master planning initiatives, the county regularly assesses changes to floodplain, shoreline, inland flooding and inlet conditions caused by natural and man-made forces following disasters. NHC applied to and received award for NC Resilient Coastal Communities Program for Upper Smith Creek Watershed Resilience Strategy and Project Prioritization to be completed by Summer 2026. Received NC Resilient Coastal Communities Program Phase 1 & 2 funding to conduct a vulnerability assessment and create a Resilience Strategy for

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								the Upper Smith Creek Watershed. Carolina Beach: Partner with NHC, DCM, and USACE. The Town is currently participating in the Resilient Coastal Communities Program (RCCP) administered by the NC DCM. The program provides funding and technical support to guide communities through a structured, four phase process that moves from understanding vulnerabilities to implementing resilience projects. Currently the Town is participating in Phases 1 and 2 which focuses on assessing local risks and identifying practical, community supported strategies to improve resilience. Kure Beach: Partners with NHC for assessment and efforts. Wilmington: Partners with NHC for assessment and efforts; to complete hazard vulnerability analysis as part of NCDEQ RCCP grant in 2025-2026. Wrightsville Beach: Partners with NHC for assessment and efforts.
NHC12	Identify and leverage resources and outreach opportunities to reduce and mitigate current and future risk for persons located in hazard prone properties, including, but not limited to, acquisition, elevation, retrofitting, and the	All Hazards	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Administration Municipal Administrations, New Hanover Co Emergency Management, New	General Funds, HMGP, PDM, UHMA, NCORR, SFHA, HUD,	2031	New Hanover County: The county sends annual notices to repetitive loss and severe repetitive loss property owners to educate them of potential options available for assistance to include access to acquisition,

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	conservation of open space and scenic areas and provision of public water access.				Hanover Co Office of Resilience & Recovery	CDBG, CBDG-DR, EWP, NCDPS, NCEM		elevation, and/or retrofitting of properties. Applications for support were submitted to the HMGP Program following Hurricanes Florence and Dorian, and the county has now completed ten residential acquisitions through HMGP funding for Hurricane Florence. The county also submitted applications for support to the NC Disaster Recovery Act housing assistance program, and funding was approved for four reconstruction projects and one acquisition. The NHC Northern Watersheds Flood Study was completed in 2025, which consisted of modeling areas not mapped on the current FIRM's with stakeholder outreach and engagement. NHC applied to and received award for NC Resilient Coastal Communities Program for Upper Smith Creek Watershed Resilience Strategy and Project Prioritization to be completed by Summer 2026. Purchased two tracts on Western Bank of the Cape Fear River for preservation. Carolina Beach: The Town sends out annual notices to repetitive loss and severe repetitive loss property owners Sent out notices for annual Hazard Mitigation grants. Maintains partnership with the

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								Cape Fear COG for assessment and outreach efforts. Kure Beach Maintains partnership with NHC for assessment and outreach efforts. Wilmington: Maintains partnership with NHC for assessment and outreach efforts. FMA grant application information was sent to SRLP properties in 2024. Wrightsville Beach: Maintains partnership with NHC for assessment and outreach efforts.
NHC13	Enhance CRS programming awareness for the community, focusing on hazard awareness with floodplain development, benefits of, and resources available with participation in the CRS program.	Flooding	High	New Hanover County, Carolina Beach, Kure Beach, Wrightsville Beach	New Hanover Co Planning, New Hanover Co Administration Municipal Administrations	General Funds, FEMA	2031	New Hanover County: Public information concerning the economic benefits of participation in the CRS is available on the county's website. This information is also included on a mailing sent to all residents who own property in Special Flood Hazard Areas in New Hanover County. Staff conducted outreach to local committee meetings, schools, nonprofit organizations, and participated in local events including National Night Out and GE's safety event, where flooding awareness and preparedness was a focus area. An analysis on actions to improve the county's CRS

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								rating in the next verification visit is underway and is anticipated to be complete in early 2026. Carolina Beach: Ongoing participation in the CRS Program as a Class 6 community. The Town sends a yearly brochure to residents in the SFHA that focuses on awareness and preparedness. The Town's website provides a multitude of educational resources for hazard awareness and preparedness. Educational brochures are available at Town Hall and the Pleasure Island Library. The Town participates in a local CRS users' group that provides information sharing and best practices for CRS communities in the region. Kure Beach: Completed – active participation in CRS since 2012. Wilmington: See update provided by the County. Wrightsville Beach: Maintains partnership with NHC for assessment and outreach efforts.
NHC14	Develop, conduct, deliver, and maintain multi-media all-hazard outreach programming to increase public awareness, preparedness, response, recovery, and mitigation efforts which are inclusive to all populations within the County	All Hazards	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Emergency Management, New Hanover Co Planning Municipal Administrations, NC Forest Service, New Hanover	General Funds, FEMA, NCFS, NCEM	2031	New Hanover County: Numerous outreach efforts to include ReadyNHC, integration with non-English speaking populations, and children have been implemented. The County maintains NHCTV to help share messaging, has a

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
					Communications and Outreach			strong social media presence, and incorporates numerous print and radio partners in messaging efforts. Agencies participate in numerous public safety agency outreach efforts centric to fire prevention, crime prevention, and disaster preparedness efforts. The County works with new property owners, contractors, real estate agents, builders, developers, and architects to become familiar with NFIP land use and building standards and principles for quality redevelopment and safe housing development through written materials. These materials are available through local building inspections departments, local library branches, and online. NFIP educational materials are maintained within the applicable departments, local library branches, and online. The County maintains access to the Southeast Regional Hazard Mitigation Plan on several websites for situational awareness for participating partners and the public. Staff continues to conduct outreach to local committee meetings, schools, nonprofit organizations, and participated in local events on an as needed or requested basis where flooding awareness and preparedness are focus areas.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								Carolina Beach: Maintains partnership with NHC for assessment and outreach efforts. Flood/Emergency Preparedness section on Town Website and yearly information brochure mailings to properties within the SFHA. Town operates and maintains CodeRed which is a community notification system and weather warning service to help disseminate important/critical information to citizens regarding hurricanes and other hazardous weather conditions, flooding, bridge closures, road closures, accidents, evacuations, etc. Kure Beach: Maintains partnership with NHC for assessment and outreach efforts. Wilmington: City Communications continues to support the Wilmington Fire Department and County agencies with the approved and recommended urban/wildfire interface safety messaging through the sharing of digital and print communications via multi-media platforms, to include live streaming on social media, b-roll for news media, and the regular use of several digital billboards within city limits. City Community Risk Reduction Coordinator regularly collaborates with New Hanover County Fire Prevention Office in various community events and

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								county-wide campaigns to promote best and safest practices for all citizens, and disseminate educational materials. Maintains partnership with NHC for assessment and outreach efforts. Wrightsville Beach: Maintains partnership with NHC for assessment and outreach efforts.
NHC15	Continue to implement standards for Firewise Communities/USA into the subdivision review process, i.e., addressed in local subdivision ordinance.	Wildfire	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Planning New Hanover Co Emergency Management, Municipal Administrations, New Hanover Co Fire/Rescue	General Funds	2031	New Hanover County: Maintain standards and processes as outlined in the County's Strategic Plan and integrate Fire Services and Emergency Management resources to support messaging. Carolina Beach: Maintains partnership with NHC for assessment and outreach efforts. Kure Beach: Maintains partnership with NHC for assessment and outreach efforts. Wilmington: Maintains partnership with NHC for assessment and outreach efforts. The City has not yet implemented Firewise but is researching it. Wrightsville Beach: Maintains partnership with NHC for assessment and outreach efforts.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
NHC16	Continue to explore technology, resources, and funding options to implement installation of sewer service in portions of the county that still rely on septic systems, particularly in areas that are subject to repetitive flooding.	Flooding	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Engineering New Hanover Co Administration Municipal Administrations, Cape Fear Public Utility Authority	General Funds, NCDEQ, NCDPS	2031	New Hanover County: Discussions are currently underway to potentially incorporate additional areas that currently run off well/septic into the CFPUA system. Typically, new developments (if not all) in New Hanover County have been connecting into CFPUA, AquaNC or the other municipal systems. Carolina Beach: Sewer is in place, very few septic; Maintains partnership with NHC for assessment and outreach efforts. Maintain and expand GIS to map location of services. Kure Beach: Maintains partnership with NHC for assessment and outreach efforts. Wilmington: Maintains partnership with NHC for assessment and outreach efforts. Wrightsville Beach: The CFPUA has assumed ownership and operation of the Town of Wrightsville Beach's water and sewer infrastructure..
NHC18	Continue to enforce additional land use regulations in Special Flood Hazard Areas, Areas of Environmental Concern through implementation of Unified Development Ordinance, Subdivision Ordinance, Flood	Flooding	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Planning Municipal Administrations	General Funds	2031	New Hanover County: The county's land use regulations and CAMA Minor permitting program are administered and implemented on an ongoing basis.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	Damage Prevention Ordinance, and CAMA Minor Permitting Program.							Carolina Beach: Adopted Unified Development Ordinance on July 9, 2024, that includes the ongoing implementation of the Flood Damage Prevention Ordinance and CAMA Minor Permit Program. Kure Beach: Maintains partnership with NHC for assessment and outreach efforts. Wilmington: Maintains partnership with NHC for assessment and outreach efforts. Wrightsville Beach: Maintains partnership with NHC for assessment and outreach efforts.
NHC21	Research, develop, and implement innovative and best practice approaches to floodplain management including density tradeoffs, cluster development regulations, and additional opportunities for land donation and dedication.	Flooding	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Planning, New Hanover Co Administration, Municipal Administrations	General Funds, NCDEQ	2031	New Hanover County: The New Hanover County Unified Development Ordinance continues to limit density for performance subdivisions in Special Flood Hazard Areas, retain Conservation Resource standards, and allow cluster development through performance zoning. Carolina Beach: Continues to enforce Flood Management regulations. Kure Beach: Coordinates information and resource sharing with NHC.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								Wilmington: Coordinates information and resource sharing with NHC. Wrightsville Beach: Coordinates information and resource sharing with NHC.
NHC22	Continue to develop, maintain, train, exercise, and revise the New Hanover County Health and Human Services Health Department Preparedness Plan to include the NHCHD Emergency Response, Community Containment, Mass Prophylaxis, Pandemic Influenza, Medical Countermeasure Plans, the Response Plans Development Review policy the Epidemiology (EPI) Team Policy, Radiological Countermeasure Dispensing Plan, and other public-health centric plans that support public safety and wellness.	Infectious Disease	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Health & Human Services – Health Department New Hanover Co Emergency Management, Municipal Administrations	General Funds, ASPR, CDC, NCEM, NCDHHS	2031	New Hanover County: Using guidance from NCDHHS, CDC, FEM, DHS, and other standardized best practices and lessons learned, plans have been developed to the CPG201 standard and HSEEP metrics are used for training and exercise program development. The County has been using these resources to manage the local COVID-19 response and conducts annual flu vaccine clinics to exercise various parts of the noted plans. Carolina Beach: Coordinates information and resource sharing with NHC. Kure Beach: Coordinates information and resource sharing with NHC. Wilmington: Coordinates information and resource sharing with NHC. Wrightsville Beach: Coordinates information and resource sharing with NHC.
NHC23	Develop, deliver, facilitate, assess, and revise standardized training and education opportunities to provide the whole community with	All Hazards	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington,	New Hanover Co Emergency Management, New Hanover Co	General Funds, NCEM, FEMA,	2031	New Hanover County: Conduct and facilitate all-hazard ICS position specific classes and mandated NIMS coursework.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	knowledge, skills, and abilities needed to coordinate preparedness, response, recovery, and mitigation for disasters.			Wrightsville Beach	Administration Municipal Administrations	NCDOI, NCDPS, NCOEMS		Developed and conducted numerous tabletop and functional exercises that were open to numerous stakeholders and public safety partners. Supported three CERT courses for community partners. Carolina Beach: Town employees are all required to be trained in IC 100, 200, 300, 400, 700, and 800 based on position. Coordinates information and resource sharing with NHC. The Town holds open houses for the Emergency Operations Center for the public to engage and ask questions. Kure Beach: Coordinates information and resource sharing with NHC. Wilmington: Coordinates information and resource sharing with NHC. Training is offered to city IMT staff of all-hazard ICS position specific classes and mandated NIMS coursework. Tabletop and functional exercises are offered to city IMT and public safety staff. Wrightsville Beach: Coordinates information and resource sharing with NHC.
NHC24	Expand, maintain, and sustain communication technology to support primary and redundant/backup operational	All Hazards	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Emergency Management, New Hanover Co Administration	General Funds, NCDPS	2031	New Hanover County: Participant on local Public Safety Communications Committee. Sustain radio communications system

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	preparedness, response, recovery, and mitigation efforts.				Municipal Administrations, New Hanover Co 911, New Hanover Co Resilience and Recovery Office New Hanover Co Information Technology			maintenance contracts and system upgrades. Partner with community stakeholders to enhance Wi-Fi, VOiP and broadband capability across the region. Development of Information Technology Coordination Group to standardize resources and communication efforts enterprise-wide. Carolina Beach: Carolina Beach: Coordinates information and resource sharing with NHC. Kure Beach: Participant on local Public Safety Communications Committee. Wilmington: Police is currently being assessed. Participant on local Public Safety Communications Committee. All WFD radios were updated and reprogrammed in July 2025. Wrightsville Beach: Participant on local Public Safety Communications Committee.
NHC27	Develop, maintain, train, and exercise information regarding Emergency Response and Re-Entry policies and procedures and relevant emergency response actions the public can take using emergency management outreach and communication procedures as outlined in the Emergency Operations Plan. All entities should be clear regarding all	All Hazards	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Emergency Management, Municipal Administrations	General Funds	2031	New Hanover County: Revised and implemented Emergency Operations Plan in June 2023 to one comprehensive document to support all partners and independent municipalities. Carolina Beach: Emergency Operations Plan Update completed in 2022. Continue to coordinate information and resource sharing with NHC.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	responsibilities outlined in the Emergency Operations Plan.							Conduct yearly EOC training with Town staff. Kure Beach: Coordinates information and resource sharing with NHC. Wilmington: Coordinates information and resource sharing with NHC. Wrightsville Beach: Coordinates information and resource sharing with NHC.
NHC29	Advocate and support efforts to coordinate with the NC Department of Transportation, relevant stakeholders, and participating jurisdictions to study, identify, fund, execute and maintain evacuation routes and other transportation infrastructure assets in the event of a natural or man-made disaster for more resilient road visibility and infrastructure to support current and future evacuation efforts.	All Hazards	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Emergency Management, Municipal Administrations, New Hanover Co. Office of Recovery & Resilience, New Hanover County Planning, New Hanover County Engineering	General Funds, NCDPS, NCDOT, HMGP, BRICC	2031	New Hanover County: Through existing partnerships, projects have been identified to enhance drainage along frequently flooded infrastructure that serve as primary evacuation routes which are awaiting funding and coordination with ongoing NCDOT projects. Carolina Beach: Coordinates information and resource sharing with NHC. Kure Beach: Coordinates information and resource sharing with NHC. Wilmington: Coordinates information and resource sharing with NHC. Wrightsville Beach: Coordinates information and resource sharing with NHC.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
NHC31	Continue to develop, maintain, train, and exercise with the various county/municipal fire departments to assure adequate fire protection during fire events, to include training, exercising, and developing response and recovery efforts for all fire-centric incidents including wildland/urban interface incidents.	Wildfire	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Emergency Management, Municipal Fire Departments, New Hanover Co Office of Resilience & Recovery	General Funds	2031	New Hanover County: Review and update existing MOUs. Develop and execute training and exercise opportunities with partner agencies. Enhancing outreach on WUI efforts to include defensible space and proper vegetative inclusion efforts. Defining and supporting efforts for effective and equitable policies and processes to support fire partners Carolina Beach: Coordinates information and resource sharing with NHC. Kure Beach: Coordinates information and resource sharing with NHC. Wilmington: Coordinates information and resource sharing with NHC. Wrightsville Beach: Coordinates information and resource sharing with NHC.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
NHC32	Procure additional emergency generators for wastewater pump stations within the floodplain. Assign fixed or portable generators as appropriate for site location.	Flooding	Moderate	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Administration Municipal Administrations, Cape Fear Public Utility Authority, New Hanover Co Emergency Management	General Funds, NCDPS, FEMA, BRICC	2031	New Hanover County: Over 70% of CFPUA's pump stations have on-site generators. All pump stations, both with on-site generators and without, have been retrofitted with adapters or can accept portable generators for secondary or tertiary back-up power. Portable generators are available for stations without fixed power and others as necessary. Carolina Beach: Supports collaboration and coordination with CFPUA Kure Beach: Supports collaboration and coordination with CFPUA Wilmington: Supports collaboration and coordination with CFPUA Wrightsville Beach: The CFPUA has assumed ownership and operation of the Town of Wrightsville Beach's water and sewer infrastructure.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
NHC33	Maintain vegetation-free perimeter buffers around groundwater well sites, pump stations, and drinking water storage tanks to mitigate wildfire hazards to critical infrastructure	Wildfire	Moderate	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Administration Municipal Administrations, Cape Fear Public Utility Authority, New Hanover Co Emergency Management, New Hanover Co Office of Resilience and Recovery	General Funds, NCDPS, NCDEQ, BRICC	2031	New Hanover County: CFPUA actively maintains vegetative buffers around infrastructure (tanks, wells, pump stations). Supports collaboration and coordination with CFPUA Carolina Beach: Town staff routinely mow and maintain vegetative areas around critical infrastructure. Kure Beach: Supports collaboration and coordination with CFPUA Wilmington: Supports collaboration and coordination with CFPUA Wrightsville Beach: Supports collaboration and coordination with CFPUA

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
NHC34	Continue to enforce and adopt water shortage response plans and water shortage ordinances for municipalities operating central water service.	Drought	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover County Administration Municipal Administrations, Cape Fear Public Utility Authority, New Hanover Co Emergency Management	General Funds, NCDEQ	2031	New Hanover County: CFPUA has a formal Water Emergency Event (Incident Action Plan) in place. This also applies to the City of Wilmington (entire City is in the CFPUA service area) and portions of the County excluding the beach towns. Carolina Beach: Supports collaboration and coordination with CFPUA Kure Beach: Supports collaboration and coordination with CFPUA Wilmington: See County Response Supports collaboration and coordination with CFPUA Wrightsville Beach: Supports collaboration and coordination with CFPUA

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
NHC35	Work with industry to develop emergency response plans for specific industries and ensure that all plans are fully coordinated with County emergency management plans. These efforts will be carried out in conjunction with the County LEPC.	All Hazards	Moderate	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co LEPC, New Hanover Co Emergency Management, Municipal Administrations	General Funds	2031	New Hanover County: Chairs regional LEPC and works to support private sector partners with Tier 2 reporting and planning development Carolina Beach: Supports collaboration and coordination with NHC; participates on LEPC Kure Beach: Supports collaboration and coordination with NHC; participates on LEPC Wilmington: Supports collaboration and coordination with NHC; participates on LEPC Wrightsville Beach: Supports collaboration and coordination with NHC; participates on LEPC
NHC36	Conduct Security/Privacy Risk Assessments- identify risks to organizational operations, organizational assets, and individuals. Identify and document vulnerabilities.	Cyber Security	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	NHC Information Technology, New Hanover Co Emergency Management, Municipal Administrations	General Funds	2026-2031	New Hanover County is still working to implement this action. Pending funding and staff availability. Carolina Beach: Coordinate with the Town's IT Company Dataprise and the National Guard to test out security, networks, firewalls, protocols, and more. Kure Beach, Wilmington, Wrightsville Beach: See update provided by the County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
NHC37	Continue to expand and improve upon bolstering local government computer network and systems against cyber threats by implementing industry-standard cyber security practices and compliance with cyber security standard frameworks such as NIST, SANS and applicable compliance requirements such as CJUS, HIPAA, and PCI.	Cyber Security	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	NHC Information Technology, New Hanover Co Emergency Management, Municipal Administrations	General Funds	2026-2031	New Hanover County is still working to implement this action. Pending funding and staff availability. Carolina Beach: Coordinate with the Town's IT Company Dataprise and the National Guard. Kure Beach, Wilmington, Wrightsville Beach: See update provided by the County.
NHC38	Develop, educate, execute, and fund processes and projects which include fortified areas of refuge in new building and retrofit projects to strengthen critical infrastructure and key resource sites from natural and man-made hazards.	All Hazards	Medium	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Emergency Management, New Hanover Co Office of Resilience and Recovery, NHC Facilities Management, New Hanover Co IT, New Hanover Co Planning, New Hanover Co Communications & Outreach NHC Fire Rescue, Municipal Administrations	Fire District, HMGP, FEMA, BRICC	2031	New Hanover County: Critical infrastructure needs have been considered and incorporated into the new Government Center building which was completed in 2023. Ensured inclusion of fortified areas of refuge in new and renovation construction efforts of County-owned facilities. Continued and developed additional training and support for departmental Emergency Action Plan efforts through NHC Risk Management with support from NHC EM. Additional opportunities will be considered on an on-going basis. Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach: See update provided by the County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
NHC39	Evaluate, assess, fund, conduct and support implementation of studies and projects to decrease instances of extended power outages and severity of impacts to critical infrastructure and key resources.	All Hazards	High	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Emergency Management, New Hanover Co Office of Resilience and Recovery, Municipal Administrations, Private Sector	General funds, FEMA, NCDEQ, Private sector	2031	New Hanover County: Coordinate with Duke Energy on storm preparation and improvements to power grid; presented to county leadership in August 2024. Carolina Beach: Coordinate with NHC and incorporate capital projects to reduce power outages on critical town infrastructure and facilities. Kure Beach, Wilmington, Wrightsville Beach: See update provided by the County.
NHC40	Evaluate, develop, and support implementation of infrastructure, programs, and other resources to reduce food insecurity issues that are directly affected by natural and man-made hazards to enhance mitigation, recovery and resilience efforts.	All Hazards	Low	New Hanover County, Carolina Beach, Kure Beach, Wilmington, Wrightsville Beach	New Hanover Co Emergency Management, New Hanover Co Office of Resilience and Recovery, Municipal Administrations, Private Sector	General funds, SBA, BRCC, Private sector	2031	New Hanover County is still working to implement this action. Pending funding and staff availability. Carolina Beach: Partner with NHC. Kure Beach, Wilmington, Wrightsville Beach: See update provided by the County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
NHC41	Reduce risk and enhance community resilience by conducting ongoing housing vulnerability and gap analyses, community outreach program(s), and supporting the creation of incremental resilient affordable and workforce housing.	All Hazards	Medium	New Hanover County, Wilmington	New Hanover Co Emergency Management, New Hanover Co Office of Resilience and Recovery, Municipal Administrations, Private Sector	General funds, SBA, BRCC, CBDG, NCORR Private sector	2031	New Hanover County: Implemented housing affordability initiatives to increase resiliency for low-to-moderate income workforce households from 2021 through 2024, with community development water and sewer loans programs continuing through 2026. Carolina Beach: Partner with NHC. Kure Beach, Wilmington, Wrightsville Beach: See update provided by the County.

Wilmington Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
ILM1	Maintain internal policies and procedures to support City employees in responding to emergency situations. Policies and procedures will include, but will not be limited to, an Inclement Weather Policy.	All Hazards	High	Wilmington Administration	General Funds	2031	The City will continue to seek opportunities to develop and improve, where necessary, internal policies and procedures. City of Wilmington has an established Inclement Weather Policy and Continuity Plan.
ILM2	Continue to provide training for City personnel through FEMA's Emergency Management Institute (EMI) including ICS 100, ICS 200, ICS 300, ICS 400, ICS 700, and IS 800.	All Hazards	High	Wilmington Administration	General Funds	2031	The City of Wilmington continues to provide access to FEMA's Emergency Management ICS training
ILM3	Partner with the County to incorporate hazard mitigation educational materials in existing communication vehicles such as city newsletters and city/county websites.	All Hazards	High	Wilmington Administration, New Hanover County Emergency Management	General Funds	2026-2031	The City of Wilmington continues to work with New Hanover County on hazard mitigation education materials and regularly distributes materials via social media and print.

Wrightsville Beach Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
WB-1	Construct new reinforced stormwater headwalls at 13 street ends (Henderson, Bay, Bermuda, Bahama, Palmetto, Raleigh, Charlotte, Augusta, Greensboro, Atlanta, Oxford, Fayetteville, and Asheville Streets) Each headwall will be built at greater elevation using steel and reinforced concrete to resist erosion and storm surge impacts. Stormwater outflows will be fitted with backflow preventers to reduce flooding duration, accelerate recession and recovery, and prevent contaminants from entering the Town during backflow events. After construction, the Town will maintain and inspect the headwalls annually to ensure long-term resilience	Flooding, Hurricanes and Coastal Hazards	High	Town of Wrightsville Beach	Town of Wrightsville Beach (Finance Department, Public Works Department, Town Manager's Office) in coordination with Andrew Consulting Engineers	FEMA Hazard Mitigation Grant Program; Town Capital Reserve Fund	2027-2032	New Project (construction); Ongoing project (maintenance and inspection)

Cape Fear Public Utility Authority Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
CFPUA1	Secure funding to retrofit/elevate wastewater pumping stations and other critical water and wastewater infrastructure located in flood prone areas. These infrastructure components routinely flood during flooding and storm surge events.	Flooding/ Hurricanes and Coastal Hazards	High	New Hanover County, Wrightsville Beach, Wilmington	Cape Fear Public Utility Authority	General Funds, NCDPS	2026-2031	CFPUA mapped all systems, plants and infrastructure in GIS which are in floodplains and could be subject to future sea level rise (SLR). Pump station life-cycle is significantly less than the SLR projection timelines in the 2013 Pilot Study (50, 100 years). As such, current pump station upgrades and future pump stations are designed with flooding and SLR in mind. CFPUA also gathered anecdotal data from field staff to help identify flood prone infrastructure. CFPUA has completed other pump station projects since 2013 that similarly addressed flood elevations as part of an overall upgrade. CFPUA also formally adopted the Southeastern NC Regional Hazard
CFPUA2	Procure or upgrade emergency generators for wastewater pump stations, wells, and other critical water and wastewater infrastructure in flood prone areas to ensure redundant power sources. Assign fixed or portable generators as appropriate for site location.	All Hazards	High	New Hanover County, Wrightsville Beach, Wilmington	Cape Fear Public Utility Authority	General Funds, NCDPS, FEMA	2026-2031	CFPUA continues replacing aging generators, assigning portable units, and integrating permanent standby power where feasible. Generator inventory and deployment plans are updated annually to support continuity of operations.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
CFPUA3	Continue to assess water and wastewater infrastructure vulnerabilities to hazards identified in this plan, including but not limited to, pump stations, wells, collections and distribution mains, water towers and storage tanks.	All Hazards	High	New Hanover County, Wilmington, Wrightsville Beach	CFPUA	General Funds, NCDPS	2026-2031	CFPUA maintains ongoing systemwide vulnerability assessments for pump stations, elevated tanks, distribution mains, and wastewater collection infrastructure. Findings guide prioritization within the annual capital improvement program.
CFPUA4	Procure infrastructure, materials, and engineering services to ensure water supply, water distribution, and wastewater collection main redundancies.	All Hazards	Moderate	New Hanover County, Wilmington, Wrightsville Beach	CFPUA	General Funds, NCDPS	2026-2031	CFPUA continues to implement pressure-zone redundancy and interconnection projects. Equipment inventory and emergency repair materials are regularly replenished to maintain operational readiness.
CFPUA5	Convert coastal drinking water supply wells that have been contaminated with saltwater and PFAS into emergency backup wells.	All Hazards	Moderate	New Hanover County, Wilmington, Wrightsville Beach	CFPUA	General Funds, NCDEQ, NCDPS	2026-2031	CFPUA continues monitoring PFAS and saltwater intrusion levels in current wells. Evaluation for decommissioning or potential emergency reuse remains ongoing.

Onslow County Mitigation Action Plans

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
PREVENTION							
P2	Onslow County's flood plain map will be modified prior to the new FEMA flood maps being approved.	Flooding, Hurricanes and Coastal Hazards	Medium	GIS, Planning & Development	General Funds	2026-2031	CARRY FORWARD: Preliminary FIRM data has been made available through the County GIS system both in house and to the public. Awaiting adoption of maps. 2024: Some of the preliminary FIRMS are still being reviewed with FEMA pending a dispute. All others have been approved. 2025: Floodplain ordinance automatically adopts any FIRM updates by FEMA. 117-2025 have been adopted. There are a few that are still pending..
P4	Onslow County will rely on its existing ordinances and land use controls to regulate development within the floodplain. Ensure codes and ordinances are enforced during the permitting and construction processes. Monitor sensitive areas for unpermitted construction activities.	Flooding	Medium	Planning & Development	General Funds	2026-2031	CARRY FORWARD: Onslow County is in the process currently of updating zoning and subdivision ordinances. 2024: Zoning and Subdivision Plans were updated and adopted November 2023. 2025: Continuing to monitor all construction and development within and near the floodplains.
P5	Pursue State and Federal grant funds to assist in the implementation of the recommendations included in this plan.	All Hazards	Medium	Emergency Services, Planning & Development	NCDPS Grants, FEMA Grants	2026-2031	CARRY FORWARD: Onslow County continuously seeks additional funding sources for mitigation planning and response. 2023: County continues to apply for funding to support mitigation. ARPA funds are being used to expand the current EOC, reinforce a fire station, and build new hurricane mitigation EMS stations. 2024: County is looking into applying for BRIC for a project at the Swansboro HS which is a primary shelter facility. 2025: Onslow has applied for the HMGP, BRIC, and several federal, state and local grants to help implement the actions identified in this plan.
P7	Adopt a policy prohibiting the development of critical public facilities in the l00-year floodplain in cases where viable alternatives exist. Such a policy could be enforced through the County's floodplain and subdivision ordinances and permit issuance process.	Flooding	Medium	Administration, Planning & Development	General Funds	2026-2031	CARRY FORWARD: Need to review. Continue to review all critical facilities to ensure they are complying. Critical facilities have been mapped. Recommend amendment to flood ordinance. 2024: New fire station was located outside the flood zone for mitigation. Planning for new EMS stations will also be outside the flood zone. Planning to review the flood ordinance in 2024/2025. 2025 - Current plans for the new Fire station and new EMS stations

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
							have been placed outside the flood zone. Two new VFDs were also constructed outside the flood zone.
P10	Retrofit critical facilities and county owned facilities for improved resilience to all hazards with the use new technology. This could include but is not limited to: wind retrofits, low water consumption fixtures, leak detectors, backup generators, ignition-resistant materials, 320 or 361 compliant safe rooms, lightning protection, hail resistant roofing, anchoring fixed building equipment.	All Hazards	Medium	County Administration, Asset & Facilities Management, Planning & Development, Emergency Services	General Funds, NCDPS Grants	2026-2031	CARRY FORWARD: Additional facilities are being considered for retrofits and upgrades. New facilities (County Govt. Center, CHS facility, New Animal Services Facility) upgrades are being built with COOP in mind as well as better hazard resiliency. Continue to look for methods to address vulnerabilities of critical infrastructure. 2023: ARPA funds are being used to expand the current EOC, reinforce a fire station, and build new hurricane mitigation EMS stations. 2024: Planning to apply for BRIC funds to help upfit the Swansboro HS shelter. County Courthouse had a flood barrier added to a low point that allowed penetration during Florence. Redesign of Senior Center will add a generator. 2025: Utilized ARPA funds to expand the EOC and increase the wind rating to better support future large scale disasters. Working to add a generator to our last primary disaster shelter. Building the new Fire Station generated at Cat 4 wind rating. Plan to build 3 new EMS stations also generated and at Cat 4 wind rating.
P11	Overhaul the County's Continuity of Operations Plan (COOP) to ensuring that updates are completed in accordance with current Onslow County policy and structure.	All Hazards	High	Emergency Services, All Departments	General Funds, Grants	2026-2031	CARRY FORWARD: 2023: COOP is being re-written to include new guidance. 2024: COOP is currently under redevelopment - goal is completion by Dan 31 2024. 2025: COOP was deferred to this year 2026. Development begins in January
PROPERTY PROTECTION							
PP2	Onslow County will support its storm hazard mitigation policies provided in the 2008 Onslow *County Coastal Area Management Act (CAMA) Land Use Plan*.	Flooding, Hurricanes and Coastal Hazards	Medium	Planning & Development	General Funds	Completed	COMPLETED
PP4	Install backup generators with automatic transfer switches and/or transfer switches for mobile generators on all critical facilities and critical utilities.	All Hazards	Medium	County Administration, Emergency Services, Asset & Facility Management	General Funds, Grants	2026-2031	CARRY FORWARD: Onslow County has applied for HMGP funds for 2 generators for emergency shelters. 2 new emergency shelter facilities are being constructed with generators included. County critical facilities are being constructed with generators or transfer switches. 2023: 2 new emergency shelters have been constructed to 152mph winds and fully generated. School system is working to generate a

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
							3rd emergency shelter. Plans to build a new fire station and 3 new EMS stations that will be built to hurricane standards and with generators. 2024: School system has awarded the bid and started work on the project to add a full building generator to Jacksonville Commons Middle School shelter. Design process continues with the new Fire Station. 2 new Volunteer Fire Stations have been built to higher wind ratings and with generators. 2025: JCMS generator is online. Application submitted for a grant to add a generator for Swansboro HS. Generator switches and mobile generators have been established for the 4 primary fuel sites for the County.
PP5	Develop new ingress/egress rules in the subdivision ordinance applying to the construction of all new neighborhoods. Ensure safe access in and out of neighborhoods during fires, flood events, or other hazard and prevent a single point of failure to evacuation by ensuring all neighborhoods have 2 access points.	All Hazards	Medium	Planning & Development	General Funds	Completed	COMPLETED
PP6	Onslow County will update aerial imagery every 2 to 4 years utilizing local aerial projects (pictometry, etc..) or state mapping projects.	All Hazards	Medium	GIS	General Funds, NCDPS Grants	2026-2031	CARRY FORWARD: 2024: Orthos have been completed and the County enters review process in August with approvals anticipated in Sept 2024. 2025: 2024 aerials/orthos have been fully updated and integrated into GIS.
PP7	Work with communities and citizens to address orphaned roads to ensure adequate ingress/egress of citizens and emergency responders during hazard events and day-to-day operations.	All Hazards	Medium	County Administration	General Funds, Grants	2026-2031	NEW ACTION IN 2026
PP8	Support water/wastewater partner agencies within the county in their effort to retrofit/elevate water/wastewater pumping stations located in the 100-year floodplain.	Flooding, Hurricanes and Coastal Hazards	Medium	Onslow Water & Sewer, City of Jacksonville, County Administration	General Funds, Grants	2026-2031	NEW ACTION IN 2026
PP9	Continue to expand and improve upon bolstering local government computer network and systems against cyber	Cyber Security	High	County ITS, County Administration, Emergency Services	General Funds, Grants	2026-2031	NEW ACTION IN 2026

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	threats by implementing industry-standard cyber security practices and compliance with cyber security standard frameworks.						
NATURAL RESOURCE PROTECTION							
NR3	Continue to support the guidelines of the Coastal Area Management Act and the efforts and programs of the NC Department of Environmental Quality, Division of Coastal Management, and the Coastal Resources Commission to protect the coastal wetlands, estuarine waters, estuarine shorelines, and public trust waters of Onslow County.	All Hazards	Medium	County Administration, Planning & Development, Emergency Services	General Funds, Grants, NCDEQ	2026-2031	NEW ACTION IN 2026
NR4	Support implementation of stormwater service projects as identified through system-wide assessments at the watershed-by watershed level. This includes support for stream cleaning, debris management and removal, animal impediments, and other projects as identified to include natural and man-made structures to improve drainage and mitigate risk to life and damage to property.	Flooding, Hurricanes and Coastal Hazards	Medium	County Administration, County Soil & Water, Planning & Development, County Environmental Services, NCDEQ	General Funds, Mitigation Grants, NCDEQ, USACE, NCDPS, General Grants	2026-2031	NEW ACTION IN 2026
NR5	Work to expand and develop County Parks system to provide additional green infrastructure, protected greenways, and floodplain protection.	Flooding, Hurricanes and Coastal Hazards, Excessive Heat	Medium	County Administration, County Parks & Recreation	General Funds, Grants	2026-2031	NEW ACTION IN 2026
EMERGENCY SERVICES							
ES1	Onslow County will educate its staff on the HAZUS software endorsed by FEMA.	Flooding, Hurricanes and Coastal Hazards	Medium	Emergency Management, GIS	General Funds, FEMA Grants	2026-2031	CARRY FORWARD: GIS will be sending personnel to attend updated HAZUS training. 2025: FEMA has discontinued in-person HAZUS Training. Working with GIS/ITS to provide the YouTube training and technical manuals to get staff trained. Will review the capabilities of the program to determine its continued use.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
ES2	Emergency Management and the Planning Department will work in conjunction to identify and maintain a list of all repetitive and severe repetitive loss properties within Onslow County and will attempt to seek grant funding to help mitigate the properties.	Flooding	High	Planning & Development, Emergency Services	General Funds, FEMA Grants	2026-2031	CARRY FORWARD: Onslow County continuously works to Reduce the number of repetitive loss structures in the County. 2023: County continues to work with SRL houses when funding is available. 2024: Met with state officials - new RL and SRL received. 2025: Maintain an updated list - used HMPG for mitigation after Florence. Do outreach annually.
ES3	Onslow County Volunteer Fire Departments will provide additional services during the times of emergency/ disasters.	All Hazards	Low	Emergency Services, Volunteer Fire Departments	General Funds	Completed	COMPLETED: Contracts are planned to be updated in 2020. Fire/Rescue Committee meets quarterly to review issues, contracts, and needs. 2023: Contracts have been re-negotiated and should begin signed by the end of the year. 2024: New contracts have been drafted and are currently in negotiations with the County and VFDs. 2025: Contracts are in the process of being signed and approved. Onslow County is undergoing a countywide fire study to review the current fire services model.
ES4	Onslow County will support its *Emergency Operations Plan (EOP)*.	All Hazards	High	Emergency Services, County Administration, Board of Commissioners	General Funds	2026-2031	CARRY FORWARD: The Onslow County Emergency Operations Plan is undergoing a complete realignment to match CPG 101, NC EOP, and post-Florence after action recommendations. 2023: Working through the final AAR recommendations from Florence. 2024: Annual review of EOP is complete and we expect approval of the revisions by Dec 2024. We are still working through our last few Florence AAR items. 2025: EOP has been updated. Will begin review using the new version of CPG 101 fall of 2025 for the 2026 review.
ES6	Develop a countywide database for managing NIMS training standards to include ICS 100,200,300,400,700,800 and additional courses as needed.	All Hazards	Low	Emergency Services, ITS	General Funds	2026-2031	CARRY FORWARD: 2023: WebEOC Board has been created and has been shared with outside agencies. Regular NIMS reporting is occurring with NCEM. 2024: Annual updated of the NIMS board are being monitored. We have 2 local fire members who are now ICS Trainers to help bring more classes local. We are working to get another 1 or 2 staff members trained. 2025: Working to develop an annual offering of in-person 100/200/300/400. Course will be open to county-wide staff and based on current training standards. Two new personnel within the county trained as ICS Instructors.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
ES7	Continue to develop, maintain, train, and exercise with the various county/municipal fire departments to assure adequate fire protection during hazard events, to include training, exercising, and developing response and recovery efforts for all fire-centric incidents including wildland/urban interface incidents.	All Hazards	Medium	Emergency Services	General Funds, Grants	2026-2031	NEW ACTION IN 2026
ES8	Improve Hazard Warning and Response Plan (warning and evacuating critical facilities, getting persons out of flood prone or isolated areas, controlling vehicles on evacuation routes, evacuation of hazard materials).	All Hazards	High	Emergency Services, County Administration	General Funds, Grants	2026-2031	NEW ACTION IN 2026
ES9	Continue to expand upon the Alert Emergency Notification System available to all residents. Onslow County Emergency Management will coordinate with all municipal jurisdictions regarding training, setup, and administration of municipal accesses.	All Hazards	High	Emergency Services, County Administration, Municipal Agencies	General Funds, Grants	2026-2031	NEW ACTION IN 2026
ES10	Continue to develop, maintain, train, exercise, and revise the Onslow County Health and Human Services Health Department Preparedness Plan to include Emergency Response, Community Containment, Mass Prophylaxis, Pandemic Influenza, Medical Countermeasure Plans, and other public-health centric plans that support public safety and wellness.	Infectious Disease	High	Public Health, Emergency Services	General Funds, NCDPS, NCDHHS, ASPR Grants	2026-2031	NEW ACTION IN 2026
ES11	Expand, maintain, and sustain communication technology to support primary and redundant/backup operational preparedness, response, recovery, and mitigation efforts.	All Hazards	High	Emergency Services	General Funds, NCDPS Grants	2026-2031	NEW ACTION IN 2026
STRUCTURAL							
S1	Onslow County will pursue the acquisition of properties in flood prone	Flooding, Hurricanes	Medium	Planning & Development	General Funds,	2026-2031	CARRY FORWARD: Onslow County submitted 13 residential structures for acquisition/elevations

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	areas when they are substantially damaged and meet the BCA requirements for acquisition. A re-use plan will be identified during the scoping process. Deed restrictions should be placed on properties that are acquired to prevent development.	and Coastal Hazards			NCDPS Grants, FEMA Grants		under the Florence HMGP funds. 2024: Reviewing funding mechanisms for future projects. Closed out the last Florence acquisition March 2024. 2025: Closed out all 8 projects that moved forward post Florence. Each has deed restrictions and re-use planning in perpetuity.
S2	Onslow County will support the elevation of structures above base flood elevation as an alternative when acquisition is not possible. Emphasis should be placed on structures located within the County's Repetitive Loss Areas. All elevations should meet State specifications and prioritization should be based on benefit/ cost rather than flood height. This action is based on the voluntary participation of property owners.	Flooding	Medium	Planning & Development	General Funds, Grants	2026-2031	CARRY FORWARD: Onslow County submitted 13 residential structures for acquisition/elevations under the Florence HMGP funds. 2024: Reviewing funding mechanisms for future projects. 2025: All Florence projects ended up being acquisitions. Continue to monitor for funding for elevations as projects are identified.
S4	County will develop a vulnerability assessment database of all of its identified critical infrastructure to include assessment for emergency generators when one is not already established. Develop necessary mitigation to identified hazards.	All Hazards	Medium	Emergency Services Human Resources	General Funds	2026-2031	CARRY FORWARD: Onslow County submitted 13 residential structures for acquisition/elevations under the Florence HMGP funds. 2023: Database has been developed and data entry has begun. New structures are being built with generators and/or transfer switches already in place. 2024: Working to move the database into WebEOC for additional access for staff and monitoring. Adding new facilities as they are brough online. 2025: Completed a build-out of critical infrastructure board in WebEOC. Working to add facilities to the board now.
S5	Continue to undertake the following actions to support maintenance of safe hurricane evacuation routes: Identify and support improvements to roads that serve as hurricane evacuation routes, post evacuation routes on County websites, perform routine bridge and culvert maintenance, and raise bridges over streams that have documented flooding during significant rain events, support the planning and implementation of regional roadways.	Hurricanes and Coastal Hazards	Medium	NCDOT, County Administration, Emergency Services, JUMPO	General Funds, Grants	2026-2031	NEW ACTION IN 2026

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
PUBLIC INFORMATION							
PI1	Onslow County will continue to educate its citizens on the importance of conserving water.	Drought	Medium	ONWASA	General Funds, Grants	2026-2031	CARRY FORWARD: Will integrate into CRS activities and will work with ONWASA and Cooperative Extension to provide information to citizens. 2024: Developing a pamphlet and one-pager to provide out information through pub-ed, in facilities, and online. 2025: Continuing to work with ONWASA to share water conservation information throughout Pub-ed.
PI2	Develop, enhance, and implement education programs aimed at mitigating natural hazards, and reducing the risk to citizens, public agencies, private property owners, businesses, and schools.	All Hazards	Medium	Emergency Services	General Funds, Grants	2026-2031	CARRY FORWARD: Onslow County is updating brochures, for several hazards including sinkholes, hurricanes, and evacuation. 2023: Sinkhole brochures have been updated and shared out with libraries, website, and government center. A new hurricane guide is under development. CodeRED brochures are being updated. Public Education opportunities are finally starting back and OCEM has given 6 pub-ed talks since October of 2022. 2024: Continue to work with citizens to address sinkhole concerns. Helping share out Know Your Zone evacuation information. Working to update the Onslow County Hurricane Guide. 2025: Continuing annual pub-ed, distribution of preparedness and recovery pamphlets.
PI5	Send a flood protection flyer to all properties in the County through a document that that is distributed to all residences. The flyer should include the following information: a general identification of the local flood hazard, flood safety, flood insurance, property protection, floodplain development permit requirements, and drainage system maintenance. In addition, the flyer should specifically state that although a particular house may not require flood insurance that does not mean that a garage or outbuilding on the property is not subject to flooding.	Flooding	Medium	Planning & Development, Emergency Services	General Funds, Grants	2026-2031	CARRY FORWARD: Working to integrate as a part of CRS capabilities. Reached out to properties in floodplain with information about rebuilding in the floodplain after Florence. Coordinate with tax office for an insert with next year's tax letters. 2024/2025: Planning pushes an annual flyer/letter to all RL/SRL with the included information.
PI6	Provide information on the Onslow County website that explains what you can do to protect your property from	Wildfire	Low	Emergency Services	General Funds	Completed	COMPLETED: Will work to get the information stood up and ensure that it is updated annually. Currently under development. Should be completed in 2021.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	wildfires. This should include ways for individuals to stay safe in addition to ways to prevent property loss.						2023: was deferred due to COVID activities. Plan to completed by mid-2024. 2024: EM participating with the Croatan Area Wildfire Mitigation Partner Committee. Will use the information from that group to help develop out the Wildfire mitigation page. Will also be utilizing Firewise Principals. 2025: Continuing to work with the Wildfire Mitigation Committee. Waiting for information to make the updates to our pages and develop pamphlets to hand out.
PI8	Provide brochures on the Onslow County website explaining to residents what to do if they find a sinkhole on agricultural land, on commercial or industrial sites, or at their residential property	Geological Hazards (Sinkholes, Coastal Erosion)	Low	Emergency Services	General Funds, Grants	Completed	COMPLETED: Onslow County is in the process of updating several hazard specific brochures to include sinkholes, hurricanes, and evacuations. 2023: Sinkhole brochures have been updated and shared out with libraries, website, and government center. 2024: Continue to work with citizens to address sinkhole concerns. Maintain updated brochures and information as it is available. 2025: COMPLETED: Maintain updated pamphlets on website and available to answer citizen questions as they call. Will update information if anything changes.
PI11	Educate citizens regarding the dangers of extreme heat and the steps they can take to protect themselves when extreme temperatures occur.	Excessive Heat	Medium	Emergency Services, Public Health	General Funds, Grants	2026-2031	NEW ACTION IN 2026
PI12	Create Program for Public Information (PPI) to implement communication projects that reduce flood risk, increase flood awareness, and support informed decision-making for residents, businesses, and stakeholders in Onslow County.	Flooding, Hurricanes and Coastal Hazards	Medium	Planning & Development, Emergency Services	General Funds, Grants	2026-2031	NEW ACTION IN 2026

Holly Ridge Mitigation Action Plans

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
PREVENTION							
P4	Pursue State and Federal grant funds to assist in the hazard mitigation recommendations included in the plan.	All Hazards	Medium	Town Manager	UHMA Grants	2026-2031	Review available grants on an annual basis to determine if they apply. No grants were identified during the review period.
PROPERTY PROTECTION							
PP2	Meet with representatives from MCB - Camp Lejeune, NC Forestry Service, Onslow County Emergency Services, and local fire depts. to update response plans to wildfires on base property which may also affect Town boundaries.	Wildfire	High	Town Manager Town Clerk, Code Enforcement, Fire Department	Local	2026-2031	New. Updates to the response plans need to be made. Coordination with the Holly Ridge Fire Department and Onslow County Emergency Services will continue to take place.
PP3	Make use of the Holly Ridge flood plain, parcel data, and aerial photographs in digital format. The Onslow County GIS is capable of overlaying this coverage on its geographic information system (GIS) and furnishing the Town of Holly Ridge with this support.	Flooding	High	Code Enforcement, Planning	Local Staff Time and Labor	2026-2031	Deferred. Holly Ridge utilizes the Onslow County GIS and parcel data which continually updates the Holly Ridge area based on information received from Holly Ridge and FEMA.
EMERGENCY SERVICES							
ES3	Develop a registry for special needs residents in Town.	All Hazards	High	Town Manager, Town Clerk, Police Department	Local Staff Time and Labor	2026-2031	New. Holly Ridge has developed list for residents confined to their homes for them to be checked on. This list is continually being developed and updated on an annual basis or as more residents are identified.
ES4	Review and update the Holly Ridge Police Standard Operating Procedures.	All Hazards	Medium	Police Chief	Local	2026-2031	New. The Procedures are reviewed annually. Changes are made, as they are found necessary. Some changes were required during this period.
ES5	Review, update and test the Town's existing Disaster Response Plan	Flooding, Hurricanes and Coastal Hazards	High	Town Manger	Local Staff Time and Labor	2026-2031	New. The Disaster Response plan has been developed. Some updates are needed related to contacts as some are no longer with Holly Ridge. Additional updates are included as necessary.
PUBLIC INFORMATION							
PI2	Work with the County to ensure implementation of a viable public education and outreach program for	All Hazards	High	Town Manager	Local	2026-2031	Deferred. Holly Ridge will continue to work with Onslow County Emergency Services to ensure coordination throughout Holly Ridge.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	mitigation, preparedness, response, and recovery.						

Jacksonville Mitigation Action Plans

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
PREVENTION							
P4	Stay current with all Community Rating System reporting requirements to ensure continued program participation. Actively pursue activities that will lower our CRS rating.	Flooding	High	CRS Coordinator	Local	2026-2031	The City will be dropping from a 7 to an 8 or 9 based on Community Growth and currently does not have the abilities to do more than what we currently perform activity wise.
P5	Request courtesy review by the State NFIP Coordinator's office to identify areas where Jacksonville could acquire additional CRS credit points. Apply for CRS re-certification, if applicable.	Flooding	Low	CRS Coordinator	Local	2026-2031	A courtesy review was provided by the State Complete - NFIP Coordinator's office and identified areas where Jacksonville could acquire additional CRS credit points. The CRS Coordinator applies for re-certification when improvements are made. This action maintains the City's rating at the lowest possible number. Note: Since the inception of this Plan in 2004, the City's CRS rating has been reduced from a nine to a seven. It is the City's policy to reduce the rating further when possible and as budget considerations allow.
PROPERTY PROTECTION							
PP2	Acquire and maintain backup generators for lift stations and water wells and to supply electricity to critical City facilities during periods of power outage.	All Hazards	High	Public Services	Local	2026-2031	Deferred – Backup generators in place for most critical stations and portable generators for use with less critical stations. The City continually analyzes the need for permanent versus portable emergency power for infrastructure.
PP3	Electrical panels are to be positioned above the floodplain at three sewer pumping stations.	Flooding	High	Public Services	Local	2026-2031	Deferred – The city has all electrical panels in place that are positioned above the floodplain with the exception of 3 locations. These are currently being addressed through the capital improvement program.
PP6	Install backup generators with automatic transfer switches and/or transfer switches for mobile generators on all critical facilities and critical utilities.	All Hazards	medium	Emergency Services, Facilities Maintenance	UHMA	2026-2031	Deferred – Presently City Hall and all public safety related buildings (police and fire) are equipped with emergency backup generators. The City is in the process of outfitting Fire Station 3 with a more adequate emergency back-up power system. The City is presently analyzing all identified critical infrastructure to determine the need for additional emergency back-up power.
EMERGENCY SERVICES							

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
ES2	The City will develop an evacuation strategy for hazardous material response. This is a project of the Public Safety Department and is currently under development	Hazardous Substances	Medium	Public Safety	Local	2026-2031	Using lists of target hazards generated through fire code enforcement, pre-incident surveys, Tier II reporting, and the Onslow County Local Emergency Planning Committee, evacuation strategies will be developed and tested and reviewed annually with review of the Hazard Mitigation Plan.
ES3	The City will develop response scenarios for losses to water wells, water towers, wastewater pump stations, the land application site and other critical infrastructure as needed. This will be applied city-wide.	All Hazards	Medium	Public Services, Public Safety	Local	2026-2031	The City has emergency response plans in place for much of the critical infrastructure. These plans shall be reviewed and updated periodically. The City is currently working to identify and prepare emergency response plans for infrastructure that does not have response plans. The response plan for the lagoons at the land application site is currently under review. The chlorine response plan for the land application site was last reviewed in March 2014. The response plan for the City's Wastewater Main Pump Station and Force Main was last reviewed in 2012. Efforts are underway to create response plans for those facilities that are without such plans and all plans will be combined and located at City Hall and all Water/Wastewater administrative offices.

North Topsail Beach Mitigation Action Plans

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026) *Completed, Deleted, Carried Forward*
PREVENTIVE MEASURES (E.G., CODES)/ LOCAL PLANS AND REGULATIONS							
Preventive activities keep flood problems from getting worse. The use and development of flood prone areas is limited through planning, land acquisition, or regulation. They are usually administered by building, zoning, planning, and/or code enforcement offices.							
P1	**FLOODPLAIN MAPPING AND DATA:** complete a Community Self-Assessment to help evaluate your existing flood problems, identify potential future flood problems, and to identify appropriate measures to address them.	Flood	Medium	Planning Department	Local	2026	**NEW ACTION in 2026.** Use the results of the Community Self-Assessment to determine what additional data is needed of flood problem areas.
P2	**OPEN SPACE PRESERVATION:** regularly calculate and document the amount of flood-prone property preserved as open space.	Flood	Medium	Planning Department	Local	2026-2031	**NEW ACTION in 2026**. Roughly 21% of the community is zoned Conservation or CON-D deeming this acreage unbuildable.
P3	**FLOODPLAIN REGULATIONS:** continue regulatory standards that exceed the minimum requirements of the National Flood Insurance Program (NFIP).	Flood	Medium	Planning Department	Local	2026-2031	**CARRIED FORWARD**. The community's floodplain management higher regulatory standards are sufficient for current and fully developed land use.
P4	**EROSION SETBACKS:** continue to partner with NC DCM by enforcement of established erosion rate setbacks during plan review, permitting and inspections.	Flood Sea Level Rise	Medium	Planning Department	Local	2026-2031	**CARRIED FORWARD.** On Jan 8, 2025, the Town adopted higher standards to the Town's ordinances that govern development within the CAMA setbacks to address environmental concerns, beach erosion and public health and safety.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026) *Completed, Deleted, Carried Forward*
P5	**PLANNING AND ZONING:** establish a local transfer of development rights (TDR) program for risk in known hazard areas.	Multiple Hazards	Medium	Planning Department	Local	2026-2031	**NEW ACTION in 2026.**
P6	**STORMWATER MANAGEMENT:** improve Stormwater Management Planning. Conduct a stormwater drainage study for known problem areas.	Flood	Medium	Planning Department	NCDCM	2021-2023	**COMPLETED** Phase 1: Community Engagement and Risk/Vulnerability Assessment; Phase 2: Planning, Project Identification, and Prioritization; Phase 3: Engineering and Design. On February 24, 2023, at the Topsail Island Shoreline Protection Commission meeting in Surf City, WK Dickson & Co., Inc presented the pre-final documents for the Roadside Stormwater Infiltration Project.
P7-1	**DRAINAGE SYSTEM MAINTENANCE:** improve Stormwater Drainage System Capacity	Flood	Medium	Town Manager	NCEM	2024 –2027	**NEW ACTION in 2026.** Phase 4 Project Implementation: Island Drive at Gray Street & Richard Peters Park infiltration projects.
P7-2	**DRAINAGE SYSTEM MAINTENANCE:** maintain the drainage system and carrying out related procedures and responsibilities (Activity 540)	Flood	Medium	Town Manager	NCEM	2026-2031	**NEW ACTION in 2026.** Phase 4 Project Implementation: Island Drive at Gray Street & Richard Peters Park infiltration projects. Advise users on the flood protection website of Maintaining the drainage system and carrying out related procedures and responsibilities.
P8	**BUILDING CODES:** adopt and enforce Building Codes and Development Standards; Implement the 2024 North Carolina State Building Code ("2024 Code")	Earthquake Flooding Severe Wind Severe Winter Weather Storm Surge Tsunami	Medium	Inspections Department	Local, NCDOI	2026-2031	**NEW ACTION in 2026.** The 2024 codes will not become effective until after **April 1, 2026**.
PROPERTY PROTECTION (E.G., ELEVATION)/ STRUCTURE AND INFRASTRUCTURE PROJECTS							
Property protection activities are usually undertaken by property owners on a building-by-building or parcel basis.							

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026) *Completed, Deleted, Carried Forward*
PP1	**RELOCATION**: reduce future disaster losses by moving people and property out of harm's way by applying for Hazard Mitigation Grant Program (HMGP) relocation funding, when available after a major disaster has been declared by the President.	Flood	Medium	Planning Department	Local	2026-2031	**NEW ACTION in 2026.**
PP2	**ACQUISITION:** reduce future disaster losses by applying for Hazard Mitigation Grant Program (HMGP) acquisition funding, when available after a major disaster has been declared by the President.	Flood	Medium	Planning Department	Local	2026-2031	**NEW ACTION in 2026.** The Town will establish a land trust that will serve to secure undeveloped land through either acquisition or donation as open space easements in perpetuity. The Town will work with the Conservation Trust of North Carolina throughout this effort to ensure that all land secured is properly protected. (CAMA Land Use Plan I.17)
PP3	**BUILDING ELEVATION:** apply for Hazard Mitigation Grant Program (HMGP) elevation funding, when available after a major disaster has been declared by the President.	Flood	Medium	Planning Department	Local	2026-2031	**NEW ACTION in 2026.**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026) *Completed, Deleted, Carried Forward*
PP4	**RETROFITTING:** promote service and provide one-on-one advice about property protection (such as retrofitting techniques and drainage improvements).	Flood	Medium	Planning Department Inspections Department	Local	2026-2031	**NEW ACTION in 2026.** Property Protection Advice (PPA) service is promoted on the Town's website at https://www.northtopsailbeachnc.gov/planningzoning/page/property-protection-advise-meeting.
PP5	**SEWER BACKUP PROTECTION:** continue to promote and provide Property Protection Advice (PPA) service, one-on-one advice and/or assistance about property protection to all properties with known flooding, drainage, and sewer problems. Retrofitting techniques include elevation, dry and wet floodproofing, and protection from sewer backup.	Flood	Medium	Planning Department Inspections Department	Local	2026-2031	**NEW ACTION in 2026.** Property Protection Advice (PPA) service is promoted on the Town's website at https://www.northtopsailbeachnc.gov/planningzoning/page/property-protection-advise-meeting.
PP6-1	**INSURANCE:** 1. (**FIA**) Assess the community's current level of coverage and identify shortcomings. 2. (**CP**) Develop a Coverage improvement plan.	Flood	Medium	Planning Department Planning Board/PPI Committee	Local	2026-2031	**NEW ACTION in 2026.**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026) *Completed, Deleted, Carried Forward*
	3. (**CPI**) Implement of the coverage improvement plan.						
PP6-2	**INSURANCE:** maintain digital copies of maps, help the community target its program to promote the purchase of flood insurance by its residents. Structures for which insurance is required can be identified and, if first-floor information is available, estimates of the cost of flood insurance can be developed for the owners. If repetitive loss areas are included, then they can be targeted by additional outreach or prioritized within the program.	Flood	Medium	Planning Department	Local	2026-2031	**CARRIED FORWARD.** Continue Map Information Service.
NATURAL RESOURCE PROTECTION/NATURAL SYSTEMS PROTECTION							
Activities that preserve or restore natural areas or the natural functions of floodplain and watershed areas. They are implemented by a variety of agencies, primarily parks, recreation, or conservation agencies or organizations.							
NR1	**WETLANDS PROTECTION:** protect the natural and beneficial functions of the floodplain, by	Erosion, Flood, Storm Surge,	Medium	Planning Department	Local	2021-2025	**COMPLETED. On** October 4, 2023, the Town amended the UDO and adopted § 10.07.06 WETLAND PROTECTION

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026) *Completed, Deleted, Carried Forward*
	considering higher standards for wetland protection.	Rising Sea Level					
NR2	**EROSION AND SEDIMENT CONTROL**: implement Living Shoreline Project along a 195 ft. stretch of shoreline to protect from degradation and erosion and offer long-term resilience in the face of rising sea levels.	Erosion, Flood, Storm Surge, Rising Sea Level	Medium	Planning Department	Local	2021-2025	**COMPLETED 2022** in partnership with the North Carolina Coastal Federation (NCCF) and the Sandbar Oyster Company.
NR3	**EROSION AND SEDIMENT CONTROL**: consider adoption of higher development standards	Erosion, Flood, Storm Surge, Rising Sea Level	Medium	Planning Department	Local	2021-2025	**COMPLETED 2025**. Conducted a public hearing to consider types of development that should be permitted or prohibited seaward of the oceanfront setback requirements. adopted a resolution and proposed amendments to the Unified Development Ordinance and the Town's comprehensive plan (aka CAMA Land Use Plan)
NR5	**NATURAL AREA PRESERVATION:** review Comprehensive Plan and Unified Development Ordinance	Erosion, Flood, Storm Surge, Rising Sea Level	Medium	Planning Department	Local	2026-2031	**NEW ACTION in 2026.**
NR6	**NATURAL AREA RESTORATION** revitalize dunes and ecosystem by removing invasive Beach Vitex, restoring native plants, and	Erosion, Flood, Storm Surge, Rising Sea Level	Medium	Planning Department	NCDEQ WRC	2024-2026	**CARRIED FORWARD**. 2024, NCDEQ WRC awarded $690,060.50 grant to Topsail Beach, Surf City and North Topsail Beach. The first treatment season began in June of 2025. Treatments will follow monthly until December 2025. The second treatment season will follow the same schedule beginning in May of 2026 and ending in September 2026.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026) *Completed, Deleted, Carried Forward*
	enhancing habitats for wildlife						
NR7	**WATER QUALITY IMPROVEMENT:** develop plans to improve drainage, stormwater storage, or channel bank erosion.	Erosion, Flood	Medium	Planning Department	Local	2026-2031	**NEW ACTION in 2026.**
NR8-1	**COASTAL BARRIER PROTECTION:** develop and adopt a 30 Year Beach Plan to monitor and maintain engineered beach.	Erosion, Flood, Storm Surge, Rising Sea Level	High	Planning Department	Local, State	2026-2031	**CARRIED FORWARD.** NTB established Beach committee in 2022. Beach Plan development began 2024.
NR8-2	**COASTAL BARRIER PROTECTION:** dune restoration post-hurricane Florence mitigation	Erosion, Flood, Storm Surge, Rising Sea Level	High	Town Manager	75 % FEMA; 25% State	Spring 2021	**COMPLETED** FEMA Truck Dune Haul - Florence Mitigation
NR8-3	**COASTAL BARRIER PROTECTION:** dune restoration post-hurricane Florence mitigation	Erosion, Flood, Storm Surge, Rising Sea Level	High	Town Manager	75 % FEMA; 25% State	Winter 2021	**COMPLETED** FEMA Truck Dune Haul - Florence Mitigation
NR8-4	**COASTAL BARRIER PROTECTION:** dune restoration post-hurricane Dorian mitigation	Erosion, Flood, Storm Surge, Rising Sea Level	High	Town Manager	75 % FEMA; 25% State	Spring 2022	**COMPLETED** FEMA Truck Engineered Beach Haul - Dorian Mitigation

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026) *Completed, Deleted, Carried Forward*
NR8-5	**COASTAL BARRIER PROTECTION:** dune restoration post-hurricane Florence mitigation	Erosion, Flood, Storm Surge, Rising Sea Level	High	Town Manager	75 % FEMA; 25% State	2022-2024	**COMPLETED** FEMA Truck Engineered Beach Haul - Florence Mitigation
NR8-6	**COASTAL BARRIER PROTECTION:** truck haul dune restoration	Erosion, Flood, Storm Surge, Rising Sea Level	High	Town Manager	100% State	2023-2025	**COMPLETED**.
NR9	**ENVIRONMENTAL CORRIDORS:** Identify and map the Town's natural resources and propose guidelines for development considered compatible with Environmental Corridors.	Erosion, Flood, Storm Surge, Rising Sea Level	Medium	Planning Department Planning Board/PPI Committee	Local	2026-2031	**NEW ACTION in 2026.**
NR10	**NATURAL FUNCTIONS PROTECTION:** apply for state funding to remove invasive Beach Vitex.	Erosion, Flood, Storm Surge, Rising Sea Level	Medium	Planning Department	NCDEQ WRC	2024-2026	**CARRIED FORWARD**. 2024, NCDEQ WRC awarded $690,060.50 grant to Topsail Beach, Surf City and North Topsail Beach. The first treatment season began in June of 2025. Treatments will follow monthly until December 2025. The second treatment season will follow the same schedule beginning in May of 2026 and ending in September 2026.
EMERGENCY SERVICES							
Measures are taken during an emergency to minimize its impact. These measures are usually the responsibility of city or county emergency management staff and the owners or operators of major or critical facilities.							

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026) *Completed, Deleted, Carried Forward*
ES1	**HAZARD THREAT RECOGNITION:** conduct testing and training on new flood threat recognition system (FTR) and emergency alert system, *ReGroup*.	All	High	NCEM, Onslow County Emergency Operations Center, Town Manager/ Emergency Manager, IT Department	Local	2026-2031	**CARRIED FORWARD**. North Topsail Beach partners with Onslow County for hazard threat recognition and early alert system.
ES2	**HAZARD WARNING:** review hazard or flood warning and response detailed in the Emergency Operations Plan.	All	Medium	NCEM, Onslow County Emergency Operations Center, Town Manager/ Emergency Manager, IT Department	Local, FEMA Grant	2026-2031	**CARRIED FORWARD**. North Topsail Beach partners with Onslow County in coordination with the state hazard warning and early alert system.
ES3	**HAZARD RESPONSE OPERATIONS:** review hazard or flood response operations are detailed in the Emergency Operations Plan.	All	Medium	NCEM, Onslow County Emergency Operations Center, Town Manager/ Emergency Manager, IT Department	Local, FEMA Grant	2026-2031	**CARRIED FORWARD**. North Topsail Beach partners with Onslow County in coordination with the state in hazard response operations.
ES4	**CRITICAL FACILITIES PROTECTION:** review coordinating with critical facilities detailed in the Emergency Operations Plan.	All	Medium	NCEM, Onslow County Emergency Operations Center, Town Manager/ Emergency Manager, IT Department	Local, FEMA Grant	2026-2031	**CARRIED FORWARD**. North Topsail Beach partners with Onslow County for assessment coordinating with critical facilities.
ES5	**HEALTH AND SAFETY MAINTENANCE:** mitigation by completing proactive risk management; identifying hazards through regular inspections.	All	Medium	Fire Department	Local,	2026-2031	**CARRIED FORWARD**.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026) *Completed, Deleted, Carried Forward*
ES6-1	**POST-DISASTER MITIGATION ACTIONS**: apply for grants through programs like the Hazard Mitigation Grant Program (HMGP) to fund projects like property acquisition and infrastructure improvements.	All	Medium	Planning Department, Fire Department, Police Department	Local, FEMA Grant	2026-2031	**CARRIED FORWARD**. HMGP 4827 project scheduled for 2026-27.
ES6-2	**POST-DISASTER MITIGATION ACTIONS**: provide guidance on floodplain rules, permit requirements, and starting repairs.	Flood	Medium	Planning Department, Inspections Department, Disaster Assistance Response Teams (DARTs)	Local, FEMA's Public Assistance (PA) Program	2026-2031	**CARRIED FORWARD**.
ES6-3	**POST-DISASTER MITIGATION ACTIONS**: identify structures needing upgrades to current flood-resistant codes when repairs or improvements cost 50% or more of the building's pre-damage market value.	Flood	Medium	Planning Department, Inspections Department, Disaster Assistance Response Teams (DARTs)	Local. FEMA's Public Assistance (PA) Program	2026-2031	**CARRIED FORWARD**.
STRUCTURAL FLOOD CONTROL PROJECTS/STRUCTURE AND INFRASTRUCTURE PROJECTS							
Structural projects keep flood waters away from an area with a levee, reservoir, or other flood control measures. They are usually designed by engineers and managed or maintained by public works staff.							
S1	**DIVERSIONS:** install ridges of compacted soil (berms/dikes) or excavated depressions (swales) used to divert upslope runoff.	Flood	Medium	Town Manager	NCEM	2026-2031	**CARRIED FORWARD**. Phase 4 Project Implementation: Island Drive at Gray Street & Richard Peters Park infiltration projects.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026) *Completed, Deleted, Carried Forward*
S2	**CHANNEL MODIFICATIONS:** U.S. Army Corps of Engineers Intracoastal Waterway/Channel Dredging and Placement along Phase 1.	Flood	Medium	USACE	USACE	2022-2023	**COMPLETED**. The New River Inlet channel is a designated federal navigational channel that is federally maintained via periodic dredging. In 2023, the inlet dredging project place approximately 160,000 cy of sand in Phase 1.
S3	**STORM DRAIN IMPROVEMENTS:** continue to pursue funding for upgrades to infrastructure to handle excess stormwater, prevent street flooding, reduce property damage and improve water quality by managing runoff from paved areas.	Flood	Medium	Town Manager	Local	2026-2031	**CARRIED FORWARD**.
PUBLIC INFORMATION							
Activities that advise property owners, potential property owners, and visitors about the hazards, ways to protect people and property from the hazards, and the natural and beneficial functions of local floodplains. They are usually implemented by a public information office.							
PI1-1	**MAP INFORMATION:** maintain copies of the maps produced by the NFIP. Activity 320 (Map Information Service)	Flood	Medium	Planning Department	Local	2026-2031	**CARRIED FORWARD.** Continue to promote and provide Map Information Service.
PI1-2	**MAP INFORMATION:** provide map information and Flood Insurance Rate Map data.	Flood	Medium	Planning Department	Local	2026-2031	**CARRIED FORWARD.** Continue to promote and provide Map Information Service.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026) *Completed, Deleted, Carried Forward*
PI2-1	**OUTREACH PROJECTS:** review PPI and update outreach projects.	Flood	Medium	Planning Department, Planning Board/PPI Committee	Local	2026-2031	**NEW ACTION in 2026.**
PI2-2	**OUTREACH PROJECTS:** post or link real-time gage information so users can see current water levels and, where available, flood height predictions	Flood	Medium	Planning Department, Planning Board/PPI Committee/ IT Department	Local	2026-2031	**NEW ACTION in 2026.**
PI3	**REAL ESTATE DISCLOSURE:** assist local real estate agents with information handouts that will advise potential buyers to investigate the flood hazard for the property they are considering purchasing.	Flood	Medium	Planning Department	Local	2026-2031	**CARRIED FORWARD.** Continue to assist local real estate agents with information handouts that advise potential buyers to investigate the flood hazard for property they are considering purchasing.
PI4	**LIBRARY:** ensure nine Federal Emergency Management Agency publications on flood protection topics are maintained in the public library (LIB): In addition, ensure additional references on the community's flood problem or local or state floodplain management programs housed in the public library. (LPD)	Flood	Medium	Planning Department	Local	2026-2031	**CARRIED FORWARD.** Continue to maintain flood protection library and local pertinent documents at Sneads Ferry Library and on the Town's website at https://www.northtopsailbeachnc.gov/planningzoning/page/flood-protection-information

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026) *Completed, Deleted, Carried Forward*
PI5-1	**TECHNICAL ASSISTANCE:** on Town's website advise users of providing technical assistance on property protection (Activity 360)	Flood	Medium	Planning Department	Local	2026-2031	**CARRIED FORWARD.** Continue to promote and provide technical assistance on property protection.
PI5-2	**TECHNICAL ASSISTANCE:** on Town's website advise users of providing technical assistance on on flood insurance (Activity 370)	Flood	Medium	Planning Department	Local	2026-2031	**CARRIED FORWARD.** Continue to promote and provide technical assistance on flood insurance.
PI6	**ENVIRONMENTAL EDUCATION:** develop an Environmental Education Plan	Flood	Medium	Planning Department, Planning Board/PPI Committee	Local	2026-2031	**NEW ACTION in 2026.** The EE Plan should have the following components: 1. Risk Assessment & Awareness: 2. Mitigation Strategies: 3. Integration & Collaboration: 4. Education Delivery Methods: 5. Resilience & Sustainability:

Richlands Mitigation Action Plans

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
PREVENTION							
P1	Richlands will actively pursue State and Federal grant funds to assist in the hazard mitigation recommendations included in the plan.	All Hazards	Medium	All Departments	UHMA Grants	2026-2031	Deferred: No active grants are currently being pursued.
P2	Richlands will encourage projects undertaken by the Richlands Police Dept, Richlands VFD, the Richlands Public Works Dept and ONWASA that will lessen the vulnerability of the Town and its residents to natural hazards.	All Hazards	Medium	All Departments	Local Staff Time and Labor	2026-2031	Deferred: As ideas come forth through networking, etc., they are evaluated, and either the project is undertaken or funding is sought. MOA signed with all Onslow County Law Enforcement agencies for mutual aid.
P4	The Town will access the resources and data available at the Planning and Inspections Department of Onslow County relevant to the mitigation of natural hazards and meet with Onslow County annually to coordinate progress on Hazard Mitigation Plans.	All Hazards	Medium	Town Administrator	Local	2026-2031	Deferred: Currently in process of updating the Southeastern NC Regional Mitigation Plan
PROPERTY PROTECTION							
PP3	Richlands will ensure as new lift stations are installed the electrical panels will be located as required by the Town's Flood Damage Prevention Ordinance.	Flooding	High	Town Administrator	Local	2026-2031	Deferred: No new lift stations are currently proposed within the Town jurisdiction.
EMERGENCY SERVICES							
ES1	Review, update and maintain the Richlands Emergency Management Plan.	All Hazards	Medium	Town Administrator Board of Aldermen	Local	2026-2031	Deferred: The plan is reviewed annually. Changes are made as they are found necessary. No changes necessary during this period.
ES4	Richlands will develop an evacuation strategy for hazardous material response which will be applied Town wide.	Hazardous Substances	High	LEO, VFD, Onslow County EOC	Local	2026-2031	Deferred: To be established as part of the Town's Emergency Management Plan in coordination with Onslow County Emergency Management Services.
STRUCTURAL							
S1	Perform annual assessment town wide of ditches to ensure proper grading. Perform repairs or coordinate with NCDOT for repairs to NCDOT roads.	Flooding, Hurricanes and Coastal Hazards	High	Public Works	Local	2026-2031	Deferred: No ditches have required repair or grading during this period.

Swansboro Mitigation Action Plans

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
PREVENTION							
P1	Pursue state and Federal grant funds to assist in the hazard mitigation recommendations included in the plan	All Hazards	Medium	All Departments	Local	2026-2031	CARRY FORWARD: The Town plans day-to-day operations, and works to incorporate strategic long-range purchasing of equipment, but will continue to seek state & federal grant funds to assist in hazard mitigation recommendations included in the plan.
P2	The mitigation strategies will be reviewed yearly to evaluate progress and identify new strategies	All Hazards	Medium	All Departments	Local	2026-2031	CARRY FORWARD: Mitigation strategies are reviewed annually and during any applicable grant cycles to identify funding sources. Furthermore, projects that have been implemented are continuously evaluated for effectiveness or areas of improvement.
P3	The Town will consider applying for the FEMA Community Rating System and pursue credit points through the program which could result in a reduction in insurance rates for citizens.	Flooding	Medium	Planning Director	Local	2028	CARRY FORWARD: The Town will evaluate the current status and workload of staff and work towards completing tasks needed to achieve FEMA CRS points.
P4	The Town will enforce the requirements of the Flood Damage Prevention Ordinance.	Flooding	Medium	Planning Department	Local	2026-2031	CARRY FORWARD: Town staff evaluate and address any code enforcement issues, along with evaluating all new projects submitted in areas subject to Flood Damage or Flood Plain Requirements.
P5	Monitor all development sites to ensure storm water controls are in place and are maintained. Based on storm water permits.	Flooding, Geological Hazards (Sinkholes, Coastal Erosion)	Medium	Planning Director, Public Works Department	Local	2026-2031	CARRY FORWARD: All new construction, or construction/alterations that require stormwater controls, are reviewed by our Planning and Inspections Department or with our Public Works Department during Technical Review Committee meetings.
P6	Retrofit critical facilities and county owned facilities for improved resilience to all hazards with the use new technology. This could include but is not limited to: wind retrofits, low water consumption fixtures, leak detectors, backup generators, ignition-resistant materials, 320 or 361 compliant safe rooms, lightning protection, hail	All Hazards	Medium	Buildings and Inspections, Planning Department, Emergency Services	Local, State Grants, UHMA Grants, other federal grants	2027-2028	CARRY FORWARD: Land was just secured for a new Town Public Safety Complex/Emergency Operations Center. New construction techniques to improve resiliency will be incorporated into the design, with construction starting early 2026 and completion in mid-2027. The Fire Department has also researched temporary and portable flood control devices for deployment to critical infrastructure, with funding currently being sought. Other critical infrastructure

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	resistant roofing, anchoring fixed building equipment.						will be identified for such upgrades moving forward.
PROPERTY PROTECTION							
PP1	Swansboro will encourage projects undertaken by the Swansboro Public Safety Department, Public Works Department, Parks and Recreation Department, and ONWASA that will lessen the vulnerability of the Town and its residents to natural hazards	All Hazards	Medium	All Departments	Local	2026-2031	CARRY FORWARD: the Fire Department, along with other departments of the Town and outside agencies, has begun to assess risk as part of the CRA/SOC program through CPSE. Mitigation and prevention techniques/projects are undertaken through our Community Risk Reduction program, dependent on funding. Likewise, local, state, and federal funding is always sought to support program implementation. The Planning and Public Works Department has worked with an engineering firm to complete a master Stormwater plan, which has been uploaded to the Fire Department's GIS account for monitoring. Projects have been identified and prioritized to request budgeting or seek grants.
PP2	Swansboro will make use of floodplain, parcel data, and aerial photographs in digital format. The Town relies on Onslow County GIS, FEMA, and NC Emergency Management to furnish these data.	Flooding	Medium	Planning Department	Local	2026-2031	CARRY FORWARD: The Town of Swansboro utilizes Onslow County GIS, FEMA, and NC Emergency Management to furnish the data. However, the Fire Department has begun a Community Risk Assessment/Standard of Cover in pursuit of Accreditation through the Center of Public Safety Excellence (CPSE), and has acquired ArcGIS software to assist with risk assessment, hazard mitigation, and other planning functions.
PP3	Swansboro will ensure as new lift stations are installed the electrical panels are located above the base flood elevation.	Flooding	High	Planning Director, Building Inspector, ONWASA	Local	2026-2027 (Pending Completion)	CARRY FORWARD: ONWASA has begun and is nearing completion of new lift stations.
PP4	Swansboro will maintain tie-down requirements for LP tanks and above ground heating oil tanks that are in flood hazard areas.	Flooding	High	Building Inspector, Fire Department	Local	2026-2031	CARRY FORWARD: Building Inspections will continue to enforce this regulation, and follow-up inspections with the Fire Department will work to maintain compliance.
PP5	Swansboro will require the addition of tie-downs for all sheds, garages, carports, etc., that do not have walls	Flooding	High	Building Inspector, Fire Chief, Fire Inspector	Local	2026-2031	CARRY FORWARD: The Building Code official will continue to enforce all applicable codes & ordinances.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	secured to the floor in a manner meeting the NC Building Code.						
PP6	Install backup generators with automatic transfer switches and/or transfer switches for mobile generators on all critical facilities and critical utilities.	All Hazards	Medium	Emergency Services	UHMA	2028-2029	CARRY FORWARD: Town Hall and the Public Safety Facility are equipped with automatic transfer switches and diesel-fed generators. A service contract is being updated currently to ensure maintenance and operational readiness. A manual transfer switch was installed at Swansboro United Methodist, which serves as a backup EOC for the Town in the event of a storm greater than Category 1. A portable generator is required to sustain operations and power at the Church, with planning underway to permanently secure that equipment. However, a rental agreement is in place to obtain that equipment, if needed.
PP7	Amend UDO, specifically the Historic District Design Standards to include resiliency standards to protect the contributing homes vulnerable to natural disasters.	Flooding	Medium	Planning Department	Local	2027-2028	NEW ACTION IN 2026: Swansboro Historic Preservation Commission members and staff attended the Historic Resilience Workshop held by the NC School of Government back in December of 2023 and have been working to complete the steps provided in the book “A Handbook for Historic Resilience Community Planning”.
PP8	Develop a local burn ordinance.	Wildfire	Medium	Fire Department	Local	2026-2027	NEW ACTION IN 2026: New (2026) The Public Works Department removes yard waste and debris weekly for the Town's citizens. With this service available, the Fire Department will create a burn ordinance limiting fires to heating and cooking only within the Town's boundaries.
EMERGENCY SERVICES							
ES1	Swansboro will develop a Comprehensive Emergency Management Plan	All Hazards	High	Fire Department	Local	2026-2031	CARRY FORWARD: The Town, managed by the Fire Department, has created, maintains, and reviews an All-Hazards Emergency Operations Plan annually. A major overhaul of the document occurred in 2023, with revisions and additions added annually or as needed.
ES2	The Town will maintain a listing of streets that would serve as main evacuation routes in the event of a hurricane. This is a part of the Town’s	Hurricanes and Coastal Hazards	High	Public Safety	Local	Completed	COMPLETED: The streets are identified in the EOP and reviewed annually.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	Storm Preparedness Plan, which is updated annually.						
ES3	Swansboro will monitor the roads on private property within the town limits to ensure they can accommodate emergency vehicles through a routine inspection program.	All Hazards	High	Public Safety	Local	2026-2031	CARRY FORWARD: Roadways are monitored throughout the year, along with during any event. Ordinances are in place, along with NC Code adoption requiring any new construction to conform with a roadway width of 26', with a surface material that is maintainable in all weather conditions and can withstand at least 76,000 pounds of equipment.
ES4	Swansboro will develop an evacuation strategy for hazardous material response which will be applied Town wide.	Hazardous Substances	High	Public Safety	Local	Completed	COMPLETED: Evacuation plans are in current all-hazards plan (2023).
ES5	Develop a CIP for emergency management equipment or resources to be used for sustaining operations, reducing risk, or mitigating emergent hazards.	All Hazards	High	Public Safety	Local	2026	NEW ACTION IN 2026: Incorporate strategic long-range planning for resources that are identified for addressing all hazards, or sustainment of operations to improve resiliency. Seek Local/State/Federal funding.
ES6	Develop a Continuity of Operations Plan (COOP).	All Hazards	High	Fire Department	Local	2026-2027	NEW ACTION IN 2026
STRUCTURAL PROJECTS							
S1	Perform annual assessment town wide of ditches to ensure proper grading. Perform repairs or coordinate with NCDOT for repairs to NCDOT roads.	Flooding	High	Public Works	Local	2026-2031	CARRY FORWARD: Funding was secured, and a contract was awarded to Withers Ravenel, who conducted a town-wide survey of all easements and stormwater infrastructure. The Town has that information uploaded to our GIS account, and Public Works evaluates the status of all infrastructure through daily operations. The Public Works department prioritizes areas to improve based on need. They also maintain all ditches annually, recently acquiring a boom-arm mower to expedite the process.
PUBLIC INFORMATION							
PI1	Swansboro will provide assistance to citizens in obtaining documents about flood insurance, flood protection, floodplain management, and the natural and beneficial functions of	Flooding	Medium	Planning Department	Local	2026-2031	CARRY FORWARD: The Town Planner remains current with information and can help citizens, should it be required. The Fire Department, along with Planning staff, will work to incorporate the information through mass communication

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	floodplains. Many documents are available free of charge from the Federal Emergency Management Agency (FEMA).						channels, such as the Town's Constant Contact system and social media, as well as during public/large events.
PI2	Swansboro will send a flood information article once a year to all in-town property owners in Swansboro through the quarterly newsletter. The information article should include general identification of flood hazards, and include information on flood safety, flood insurance, property protection, etc.	Flooding	Medium	Planning Department	Local	2021-2026	CARRY FORWARD: the Town will work with the different departments to provide this information/education to the citizens through different community risk reduction programs and means of mass communication.
PI3	Swansboro will develop, enhance, and implement education programs aimed at mitigating natural hazards and reducing the risk to citizens, public agencies, private property owners, businesses, and schools	All Hazards	High	Planning Director, Fire Safety	Local	2026-2031	CARRY FORWARD: The Fire Department has increased the efforts of community risk reduction to include all-hazards and will continue to enhance these programs. Currently, efforts are underway for numerous risk areas, including but not limited to Wildland Urban Interface, Flood, and Stormwater management. Furthermore, it will continue to work with the Parks department to conduct youth programs related to all-hazards safety (Safety Town).
PI4	Swansboro will notify property owners within the newly created Coastal A/LIMWA zone of the implications and permitting requirements	Flooding	Medium	Planning Director	Local	2026-2031	CARRY FORWARD: Planning and Inspections staff will continue to help, educate, and notify of any changes that occur to properties within Coastal A/LIMWA zones. Staff will also ensure any areas of ordinances or administrative plans remain current with adopted changes or requirements, creating ordinances or alterations when needed.
PI5	Map and identify stormwater infrastructure that needs upsizing or replacement. Incorporate into CIP	Flooding	Medium	Public Works	Local	2026-2031	CARRY FORWARD: Through grant funding, Withers Ravenel has concluded its survey and mapping of all Stormwater Infrastructure. Efforts are underway to prioritize projects, assisting in Capital Planning for long-term replacement, upsizing, and maintenance.
PI6	Adopt an ordinance amendment to require critical infrastructure and major public facilities to be located outside of the 500-year floodplain	Flooding	Medium	Planning Director	Local	2027-2028	CARRY FORWARD: The Town will evaluate the 500-year area, though the new Public Safety Facility is outside of the designated area. A formal resolution or ordinance will be drafted for review and approval by our governing body.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
PI7	Adopt an ordinance amendment to require a 2-3 freeboard	Flooding	Medium	Planning Director, Chief Building Code Official	Local	2026	CARRY FORWARD: Staff will ensure that ordinances for 2-3 Freeboard are current and align with any adopted building code requirements or enhance the adopted codes.
PI8	Develop incentives for utilization of low impact development (LID) techniques	Flooding	Medium	Planning Director, Public Works, Finance	Local, State	2026-2027	CARRY FORWARD: Currently, the Town has an incentive for Stormwater impact reduction by waiving fees related to Stormwater Management. Staff will work to amplify this incentive to promote the utilization of low-impact development techniques.
PI9	Incorporate the identified Conservation Priority Areas into the zoning map and develop ordinance requirements to locate development outside of these areas	Flooding	Medium	Planning Director	Local	2027-2028	CARRY FORWARD: The Town will review and update the current Land Use plan, identifying Conservation Priority Areas to promote development outside of them.
PI10	Adopt an ordinance addressing Wildland Urban Interface/Code Recognition to increase defensible space requirements and other fire hazard reductions	Wildfire	Medium	Fire Chief	Local	2026-2028	NEW ACTION IN 2026: Introduce an ordinance that adopts the International Wildland Urban Interface Code, or similar requirements to promote improved defensible spaces and large loss reduction.

Pender County Mitigation Action Plans

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
PC1	In concert with the American Red Cross (ARC), maintain a continuously updated list of all dedicated shelter facilities.	All Hazards	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Emergency Management Municipal Administrations, American Red Cross, Pender County Schools	GF, NCDPS, ARC	2026-2031	Pender County: Completed and ongoing Atkinson: See update provided by County. Burgaw: Coordinates with Pender County Emergency Management and the American Red Cross to maintain awareness of designated shelter facilities and supports dissemination of shelter information to residents through municipal communication channels. St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC2	Maintain continuous contact/working relationship with electric service providers in the County to address the following (1) disaster preparedness techniques (e.g., tree trimming, vegetation planting requirements, pole replacement), (2) Identify critical electrical facilities needing retrofit or upgrade and map with elevation reference marks and, (3) communication with County officials during and immediately after a natural hazard event that results in loss of electrical power. Meet at least once per year with electric	Tornadoes/ Thunderstorms, Hurricanes and Coastal Hazards	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Emergency Management Electric Service Providers	GF, Electric Service Providers	2026-2031	Pender County: Completed and ongoing; in 2022 four new generators delivered; summer of 2026 completion of ATS/generator installation at C.F. Hope Elementary; Pender County Emergency Management meets with electric service providers at least twice a year. Atkinson: See update provided by County. Burgaw: Participates in county-led coordination with electric

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	service providers in preparation for hurricane season.							service providers by sharing local facility needs, reporting outages, and supporting preparedness discussions relevant to municipal infrastructure. St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC3	Expand availability and improve effectiveness of all secondary power sources at all County and Municipal critical facilities.	All Hazards	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Emergency Management Municipal Administrations	GF, NCDPS	2026-2031	Pender County: Partially completed; Secondary power sources expanded at law enforcement and facilities building; Health department has new generator; HR/Cooperative Extension building has new generator; New County buildings under construction (DHSS and law enforcement complex) have standalone generators; Long term plan is to have new generators on all new county buildings moving forward. Atkinson: See update provided by County. Burgaw: Identifies municipal critical facilities requiring secondary power sources and coordinates with Pender County to pursue funding opportunities and implementation when feasible.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC4	Support the establishment of conservation easements on all floodprone property and impose such easements on all properties acquired with public assistance funds. The county will assist municipalities in working through this process.	Flooding	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Planning Municipal Administrations	GF, PDM, HMGP, UHMA	2026-2031	Pender County: Completed and ongoing. Atkinson: See update provided by County. Burgaw: Implements floodplain conservation efforts through enforcement of local land use and flood damage prevention ordinances St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC5	Conduct an annual review of development restrictions in floodplain areas and maintain initiatives to ensure limited residential and commercial development in the floodplains and protection of critical facilities. This effort should include a review of county and municipal zoning, subdivision, and flood damage prevention regulations.	Flooding	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Planning Municipal Administrations	GF	2026-2031	Pender County: Completed and ongoing for the unincorporated areas of Pender County. Atkinson: See update provided by County. Burgaw: Conducts annual reviews of municipal development regulations within floodplain areas St. Helena: See update provided by County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								Topsail Beach: See update provided by County. Watha: See update provided by County.
PC6	Maintain all properties acquired through HMGP funding or other sources aimed at addressing natural hazard mitigation as open space in perpetuity.	Flooding	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Administration Municipal Administrations	GF	2026-2031	Pender County: Completed and ongoing for unincorporated areas of Pender County. Atkinson: See update provided by County. Burgaw: Maintains any municipally owned properties acquired for mitigation purposes as open space in perpetuity, consistent with grant requirements St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC7	Adopt and annually update capital improvements plans at the county and municipal level with an emphasis on mitigation for critical facilities including relocation and retrofitting.	All Hazards	Moderate	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Emergency Management Municipal Administrations	GF	2026-2031	Pender County: Completed and ongoing. The County has a Capital Improvements Plan that is regularly reviewed and updated to consider mitigation of vulnerable critical facilities. Atkinson: See update provided by County. Burgaw: Incorporates hazard mitigation considerations into municipal capital improvement planning with emphasis on

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								protection, retrofitting, or relocation of critical facilities when applicable St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC8	At the staff level, work with the NCDOT to identify and develop resolutions for local and regional drainage issues created by NCDOT facilities, including inspections of channels, retention basins, and, as needed, pursue debris removal.	Flooding	Moderate	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Planning Municipal Administrations NCDOT	GF, NCDOT	2026-2031	Pender County: Incomplete – lack of staff and resources; Carry forward. - The County's recently adopted comprehensive plan, Imagine Pender 2050, has policies and actions regarding working with NCDOT to establish a stormwater and ditch maintenance program. - Municipalities work with NCDOT for roads within their boundaries, as well. Atkinson: See update provided by County. Burgaw: The town of Burgaw's Public Works Department coordinates with NCDOT to identify drainage issues affecting municipal roadways and properties and supports inspection and debris removal efforts as resources allow. St. Helena: See update provided by County. Topsail Beach: See update provided by County.

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								Watha: See update provided by County.
PC9	Apply for all available funding from the Hazard Mitigation Grant Program (HMGP) and funds to assist with the mitigation of severe repetitive loss properties to relocate structures out of the floodplain.	Flooding	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Administration Municipal Administrations	GF, PDM, HMGP, UHMA	2026-2031	Pender County: Completed and ongoing for unincorporated areas of Pender County. Atkinson: See update provided by County. Burgaw: Identification of eligible repetitive loss properties within town limits and supporting grant application and property owner outreach efforts St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC10	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	Flooding	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Administration Pender County Planning Municipal Administrations	GF	2026-2031	Pender County: Completed for unincorporated Pender County - Municipalities may be doing this, but the County does not currently handle it for them Atkinson: See update provided by County. Burgaw: Requires submission of FEMA-approved elevation certificates for development within the Special Flood Hazard Area prior to issuance of certificates of occupancy

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC11	Continue to comply with NC State Coastal stormwater regulations.	Flooding	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Administration Pender County Planning Municipal Administrations	GF, NCDEQ	2026-2031	Pender County: Completed and ongoing for unincorporated areas of Pender County. - Municipalities may be doing this, but the County does not currently handle it for them Atkinson: See update provided by County. Burgaw: The town of Burgaw's Public Works Department continues to comply with applicable state stormwater regulations and is in the middle of a stormwater master plan for the town of Burgaw St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC12	Continuously maintain tax parcel information for all properties located throughout the county.	All Hazards	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County GIS	GF	2026-2031	Pender County: Completed and ongoing Atkinson: See update provided by County. Burgaw: Coordinates with Pender County to ensure

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								municipal parcel data remains current and accurate for planning, emergency management, and mitigation purposes. St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC13	Maintain a map information service involving the following: (1) Provide information relating to Flood Insurance Rate Maps (FIRMs) to all inquirers, including providing information on whether a given property is located within a flood hazard area, (2) Provide information regarding the flood insurance purchase requirement on the county's website, (3) Maintain historical and current FIRM's, (4) Locally advertise annually in the local newspaper, (5) Provide information to inquirers about local floodplain management requirements, (6) Include in the county's newsletter (all property owners) and on the county's website a letter on flood insurance, (7) Notify property owners within a floodprone area that they are subject to flooding.	Flooding	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Planning, Pender County Emergency Management Pender County Administration, Municipal Administrations	GF, FEMA	2026-2031	Pender County: Completed and ongoing Atkinson: See update provided by County. Burgaw: Provides flood map information, flood insurance guidance, and floodplain management information to residents upon request St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC14	Make information regarding hazards and development regulations within the floodplains available through the following: (1) The County Planning Director will ensure that the local library maintains information	Flooding	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Planning, Pender County Emergency Management Pender County Administration,	GF, FEMA	2026-2031	Pender County: Completed and ongoing Atkinson: See update provided by County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	relating to flooding and flood protection, (2) The County will provide a link on their website to FEMA resources addressing flooding and flood protection, and (3) materials will be made available at municipal administration buildings.				Municipal Administrations			Burgaw: Clearly communicates floodplain development information availability St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC15	Provide comprehensive services regarding planning and development activities within the defined SFHA. These services will include (1) Providing site specific flood and flood-related information on an as needed basis, (2) Building inspections department will maintain a list of contractors with experience in floodproofing and retrofit techniques, (3) Building inspections department will maintain materials providing an overview of how to select a qualified contractor, (4) Make site visits upon request to review occurrences of flooding, drainage, and sewer problems--if applicable, inspector should provide one-on-one advice to the property owner, (5) Provide advice and assistance regarding CRS Activity 530, (6) Advertise the availability of services annually within the local newspaper, and (7) Maintain a log of all individuals assisted through these services, including site visits.	Flooding	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Planning Pender County Administration Municipal Administrations	GF, FEMA	2026-2031	Pender County: Completed and ongoing for unincorporated areas of Pender County. - Municipalities may be doing this, but Pender County does not have jurisdiction over this within municipal boundaries Atkinson: See update provided by County. Burgaw: Provides site-specific floodplain information, development guidance, and coordinates with Developers The Town of Burgaw does not currently participate in the CRS program. St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC16	Work with local real estate agencies to ensure that agents are informing	Flooding	High	Pender County,	Pender County Planning Pender	GF	2026-2031	Pender County: Completed and ongoing – Resilience Planner

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	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.			Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	County Administration Municipal Administrations			sends out newsletter annually to local real estate agencies. Atkinson: See update provided by County. Burgaw: The Town of Burgaw do not actively communicate to realtors concerning to location of SFHA location St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC17	Coordinate with the Pender County School System Hazards Awareness Educational Programs to be presented by Public Safety personnel.	All Hazards	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Emergency Management	GF	2026-2031	Pender County: Delete – Pender County School System Hazards Awareness Educational Programs are no longer in existence. Atkinson: See update provided by County. Burgaw: Supports awareness Fire Marshal and Police public outreach. St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC18	Post educational information on the County's website addressing the	All Hazards	High	Pender County,	Pender County Emergency	GF	2026-2031	Pender County: Completed and ongoing

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	hazards associated with wildfires, hail, tsunamis, tornados, hurricanes, flooding, and storm surge, as well as other hazards outlined in Section 3 of this plan.			Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Management Municipal Administrations			Atkinson: See update provided by County. Burgaw: The Fire Marshal participates in Social Media outreach St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC19	Continue to rely on the Pender County Emergency Operations Plan (EOP) for effective disaster event communication. These efforts should include exercises to ensure that all municipalities are engaged and aware of their role in the emergency response process.	All Hazards	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Emergency Management Municipal Administrations	GF, NCDPS	2026-2031	Pender County: Completed and ongoing – EOP is getting a complete rewrite and will be done in 2026. Atkinson: See update provided by County. Burgaw: Operates in coordination with the Pender County Emergency Operations Plan and participates in emergency response exercises and communications when requested St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC20	Maintain a registry of special medical needs individuals who has been	All Hazards	High	Pender County,	Pender County Social Services	GF, NCDPS	2026-2031	Pender County: Completed and ongoing.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	coordinated with the Pender County Department of Social Services. This list will include: (1) Persons on life support systems, (2) Persons dependent on electricity for medical equipment, and (3) Persons with severe mental handicap or mental illness. Coordinate with current county system and local plans. Connect with county CTY (Call Back Program).			Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Municipal Administrations			Atkinson: See update provided by County. Burgaw: The Town of Burgaw's Fire Marshal Fire Department may have some local knowledge of special situations based on locale relationships, but this is officially handled through Pender County's 911 Dispatch. St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC21	Work on the five-year implementation of this plan. At the end of this five year period, the county will undertake efforts to update this plan including the following ten planning steps: (1) Organize to prepare the plan, (2) Involve the public, (3) Coordinate with other agencies, (4) Assess the hazard, (5) Assess the problem, (6) Set goals, (7) Review possible activities, (8) Draft an action plan, (9) Adopt the plan, and (10) Implement, evaluate, and revise.	All Hazards	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Administration Municipal Administrations	GF, PDM, HMGP	2026-2031	Pender County: Completed Atkinson: See update provided by County. Burgaw: Participates in the five-year implementation, evaluation, and update of the County Hazard Mitigation Plan by providing municipal input and data as requested St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
PC22	Continue to enforce the International Building Code, to include requiring that new structures or structures undergoing significant renovation (renovations or expansion exceeding 50% of fair market value) meet code requirements for coastal and noncoastal areas.	All Hazards	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Planning Municipal Administrations	GF	2026-2031	Pender County: Delete – State law to enforce the International Building Code. This action will be removed from future updates of this plan. Atkinson: See update provided by County. Burgaw: Enforces the North Carolina Building Code and applicable flood-resistant construction standards per the Town of Burgaw's Flood Preventions Ordinance. St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC23	Continue to support the NC Office of Dam Safety's efforts to monitor and inspect all dams throughout the state. The county will rely on this agency to ensure that all dam facilities, both public and private, are properly maintained and stable.	Flooding	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Administration Municipal Administrations	GF	2026-2031	Pender County: Incomplete – lack of staff Atkinson: See update provided by County. Burgaw: NA St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
PC24	Request Hazard Mitigation Assistance (HMA) funding for the elevation/floodproofing of repetitive loss properties.	Flooding	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Emergency Management Municipal Administrations	GF, PDM, HMGP, UHMA	2026-2031	Pender County: Completed and ongoing for unincorporated areas. Atkinson: See update provided by County. Burgaw: Coordinates with to identify opportunities for elevation or floodproofing of repetitive loss properties within municipal boundaries. St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC25	Request Hazard Mitigation Assistance (HMA) funding for windproofing of critical facilities.	Hurricanes and Coastal Hazards	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Emergency Management Municipal Administrations	GF, PDM, HMGP, UHMA	2026-2031	Pender County: New facilities are built to current NC wind code; No updates are currently being done to existing buildings; Carry forward as is. Atkinson: See update provided by County. Burgaw: Would pursue when applicable St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
PC26	Continue to maintain state approved water supply plans in municipalities operating central water service.	All Hazards	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Public Works Municipal Administrations	GF, NCDEQ	2026-2031	Pender County: Carry forward as-is Atkinson: See update provided by County. Burgaw: The town of Burgaw's Public Works Department maintains state-approved water supply plans in compliance with state law for municipal water services and coordinates with regulatory agencies to ensure compliance and system resilience. St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC27	Continue to enforce and adopt water shortage response plans and water shortage ordinances for municipalities operating central water service.	Drought	High	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Public Works Municipal Administrations	GF, NCDEQ	2026-2031	Pender County: Carry forward as-is Atkinson: See update provided by County. Burgaw: The town of Burgaw's Public Works Department implements and enforces municipal water shortage response plans St. Helena: See update provided by County. Topsail Beach: See update provided by County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
								Watha: See update provided by County.
PC28	Continue to seek funding sources for the elevation or retrofitting of existing sewer lift stations in an effort to reduce or eliminate the impacts from flooding.	Flooding	Moderate	Pender County, Atkinson, Burgaw, St. Helena, Topsail Beach, Watha	Pender County Administration Municipal Administrations	GF, PDM, HMGP, UHMA	2026-2031	Pender County: Carry forward as-is Atkinson: See update provided by County. Burgaw: The town of Burgaw's Public Works Department identifies vulnerable sewer lift stations St. Helena: See update provided by County. Topsail Beach: See update provided by County. Watha: See update provided by County.
PC29	Join and continue seeking classification improvements within the Community Rating System	Flooding	Moderate	Pender County	Pender County Planning	General Fund	2026-2031	Pender County: Completed and ongoing – Pender County has joined the CRS
PC30	Consider developing innovate approaches to floodplain management including density tradeoffs, cluster development regulations, and additional opportunities for land donation and dedication.	Flooding, Hurricanes and Coastal Hazards	High	Pender County	Pender County Planning	General Fund	Continuous, 2026-2031	Carry forward as-is. Pender County has completed a Preferred Development Guide that explores these topics. We are working on incorporating these concepts into regulations.
PC31	Continue to encourage, and where warranted require, National Incident Management System (NIMS) training for county personnel which includes ICS 100, ICS 200, ICS 300, ICS 400, IS 700, and IS 800.	All Hazards	High	Pender County	Pender County Planning	General Fund	Continuous, 2026-2031	Pender County: Ongoing; All County Staff are required to have ICS 100, ICS 200, IS 700, IS 800 in first year of employment; Emergency Management Staff are required to have ICS 300 and ICS 400.
PC32	Explore ways to create linkages between adopted plans, such as the Imagine Pender 2050	Flooding, Hurricanes and Coastal Hazards	High	Pender County	Pender County Planning and Pender County	General Fund	Continuous, 2026-2031	Pender County: Carry forward with updated language. - The County adopted a new

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	Comprehensive Land Use Plan, the Partners for Green Growth Preferred Development Guide, and the Resilient Coastal Communities Program plan, to support hazard mitigation.				Emergency Management			comprehensive land use plan in November, Imagine Pender 2050.
PC 33	Consider the data and recommendations outlined in this plan when preparing updates to Capital Improvements Plans. All recommendations regarding capital expenditures will focus on siting all infrastructure and public facilities outside of the Flood Hazard Area.	Flooding, Hurricanes and Coastal Hazards	High	Pender County	Facilities	General Fund	Ongoing through 2031	Pender County: Carry forward as is.
PC 34	Work to identify homes in flood prone areas for potential funding through CDBG programs for mitigation and disaster recovery.	Flooding	High	Pender County	Pender County	CDBG	Ongoing through 2031	Carry forward as-is
PC 35	Reduce wildfire risk in Pender County through proactive fuel management and strengthened interagency coordination. Continue working closely with state partners, including the NC Forest Service and NC Wildlife Resources Commission, to conduct ongoing hazard-reduction burning operations. These efforts will focus on lowering fuel loads along county borders shared with state lands, thereby reducing the likelihood and severity of large, uncontrolled wildfires, particularly in wildland-urban interface areas.	Wildfire	High	Pender County	Pender County Emergency Management, State of North Carolina	State of North Carolina, USDA	Ongoing through 2031	New Action for 2026 Update - Supported by Imagine Pender 2050 Comprehensive Land Use Plan Policy 7.7.C Minimize Potential Fire Damage
PC 36	Educate citizens regarding the dangers of extreme heat and the steps they can take to protect themselves when extreme temperatures occur.	Excessive Heat	High	Pender County	Pender County Emergency Management, Pender County Health & Human Services, Pender County Planning	NCDEQ, General Fund	Ongoing through 2031	New Action for 2026 Update

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
PC 37	Organize outreach to vulnerable populations, including establishing and promoting accessible cooling centers and warming centers in the community.	Excessive Heat	High	Pender County	Pender County Emergency Management, Pender County Health & Human Services, Pender County Planning	General Fund	Ongoing through 2031	New Action for 2026 Update
PC 38	Establish a green infrastructure program to link, manage, and expand existing parks, preserves, greenways, etc.	Excessive Heat, Flooding	High	Pender County	Pender County Planning	General Fund	Ongoing through 2031	New Action for 2026 Update - Establishing a green infrastructure plan is also a policy in the Imagine Pender 2050 Comprehensive Land Use Plan (Policy 2.6.A
PC 39	Encourage drought tolerant landscaping design through measures such as updating landscape ordinances to reduce dependence on irrigation, and updating ordinances to use permeable driveways and surfaces to reduce runoff and promote groundwater recharge.	Drought	Moderate	Pender County	Pender County Planning	General Fund	Ongoing through 2031	New action for the 2026 update.
PC 40	Consult Firewise guidance and encourage Firewise landscaping practices in the community. This can include sponsoring Firewise workshops for local officials, developers, civic groups, and neighborhood/homeowners' associations.	Wildfire	High	Pender County	Pender County Planning, Pender County Emergency Management, State of North Carolina	General Fund	Ongoing through 2031	New Action for 2026 Update - Supported by Imagine Pender 2050 Comprehensive Land Use Plan Policy 7.7.C Minimize Potential Fire Damage
PC 41	Explore opportunities to make long-term improvements to maintain and expand safe and reliable drinking water for residents as demand grows and drought becomes more frequent.	Drought	High	Pender County	Pender Water & Sewer	CDBG	Ongoing through 2031	New Action for 2026 Update - Supported by Imagine Pender 2050 Comprehensive Land Use Plan Policy 1.3 Water Supply Coordination
PC 42	Work with the Pender County Cooperative Extension office to educate the public and farmers on efficient water use to help protect	Drought	Moderate	Pender County	Pender County Cooperative Extension, Pender County Planning	USDA	Ongoing for 2031	New Action for 2026 Update

Action #	Description	Hazard(s) Addressed	Relative Priority	Applicable Jurisdictions	Lead Agency/Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
	limited resources and prevent severe shortages.							

Surf City Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Priority	Lead Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
Emergency Services							
ES1	Upgrade or replace legacy radio systems, add interoperable talkgroups, integrate NG911, and expand redundant communications pathways	All Hazards	High	Emergency Management	GF, Grant	2026	New Action for the 2026 Update
ES2	Improve Emergency Response Capabilities Through Specialized Equipment Acquisition	All Hazards	High	All	GF, Grant	2026	New Action for the 2026 Update
ES3	Create a Resource and Logistics Staging Plan	All Hazards	Med	Emergency Management	GF	2026	New Action for the 2026 Update
ES4	Develop a Municipal Evacuation Route Support Plan	All Hazards	Med	Emergency Management, Police	GF	2026	New Action for the 2026 Update
ES5	Harden Public Safety Communications Sites Against Wind and Flood Hazards	All Hazards	High	Emergency Management	GF, Grant	2026	New Action for the 2026 Update
ES6	Expand Emergency Responder Wellness and Resilience Programs	All Hazards	High	All	GF, Grant	2026	New Action for the 2026 Update
ES7	Maintain NIMS compliance	All Hazards	High	Emergency Management, HR	GF	2026	New Action for the 2026 Update
Prevention							
P1	Require that all capital projects undergo hazard screening (flood, wind, fire, cyber, etc.) before implementation to prevent future vulnerabilities	All Hazards	High	Administration	In House	2026	New Action for the 2026 Update
P2	Create a policy to document and track repetitive nuisance flooding, assess root causes, and prioritize engineering or enforcement interventions	All Hazards	Med	Emergency Management, Administration	GF	2026	New Action for the 2026 Update
P3	Establish or enhance ROW vegetation management schedules to reduce drainage obstructions and improve stormwater capture and treatment.	All Hazards	Med	Community Development, Administration, Utilities	GF	2026	New Action for the 2026 Update
P4	Town staff will review this plan at least yearly to evaluate performance and document any new capability gaps that may be identified	All Hazards	High	All	GF	2026	New Action for the 2026 Update

Action #	Description	Hazard(s) Addressed	Priority	Lead Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
Education and Awareness							
EA1	Create seasonal outreach (hurricane, winter weather, flooding, wildfire), using social media, print materials, SMS alerts, and community workshops to promote preparedness	All Hazards	High	Emergency Management, PIO	GF	2026	New Action for the 2026 Update
EA2	Develop web-based interactive maps (flood zones, storm surge, evacuation routes, shelters, wildfire risk, and repetitive loss areas) to help residents understand their risk	All Hazards	Med	Community Development, GIS	GF	2026	New Action for the 2026 Update
EA3	Investigate pathways to offer public training opportunities (CERT, Stop-the-Bleed, etc)	All Hazards	Med	Emergency Management, Police, Fire	GF, grant opportunities	2026	New Action for the 2026 Update
EA4	Update the "New Residents Packet" and make it more widely available	All Hazards	Med	Administration	GF	2026	New Action for the 2026 Update
EA5	Review the website and check for accuracy and ease of accessibility of content	All Hazards	High	All	GF	2026	New Action for the 2026 Update
EA6	Initiate campaigns to educate residents on mitigation measures the can take at the household level	All Hazards	High	Emergency Management, PIO	GF	2026	New Action for the 2026 Update
EA7	Develop new story maps for online GIS catalog using hazard mitigation planning area	All Hazards	Low	Commnity Development	In House	2026	New Action for the 2026 Update
Natural Resource Management							
NRM1	Implement and support the USACE beach nourishment project.	Hurricanes and Coastal Hazards	High	Administration	Special Revenue Fund	2026	New Action for the 2026 Update
NRM2	Research natural, green, and/or sustainable resilience projects to protect the natural environment (living shoreline, dune grass, etc)	Hurricanes and Coastal Hazards	High	Emergency Management, Utilities	GF, grant opportunities	2026	New Action for the 2026 Update
NRM3	Continue to support the eradication of beach vitex along dune/berm line	Hurricanes and Coastal Hazards	High	Administration	Special Revenue Fund	2026	New Action for the 2026 Update
NRM4	Work in colloborative effort with surrounding jurisdictions to investigate and implement natural resource protection programs	All	High	Administration	GF	2026	New Action for the 2026 Update
NRM5	Investigate new best practices for reduction to impacts high risk erosion areas	All	High	Community Development, Administration	In House	2026	New Action for the 2026 Update
Structural Projects							

Action #	Description	Hazard(s) Addressed	Priority	Lead Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2026)
S1	Investigate the installiation of flap gates, duckbill valves, tide gates, or inline check valves in outfalls that experience backflow during king tides, tropical systems, and storm surge.	Hurricanes and Coastal Hazards	Low	Utilities	EP	2026	New Action for the 2026 Update
S2	Research and utilize water/sewer infrastructure upgrades to harden equipment against future damage	All	Med	Utilities	EP	2026	New Action for the 2026 Update
S3	Maintain compliance will all North Carolina wellhead protection requirements	All	High	Utilities	EP	2026	New Action for the 2026 Update
S4	Create an critical infrastructure inventory and begin bi-annual inspection and tracking	All	High	All		2026	New Action for the 2026 Update
Property Protection							
PP1	Investigate applicability of entering the CRS program	Hurricanes and Coastal Hazards	Med	Community Development	GF	2026	New Action for the 2026 Update
PP2	Promote private property participation in living shoreline projects	Hurricanes and Coastal Hazards	High	Administration, Community Development	GF, Grant	2026	New Action for the 2026 Update
PP3	Investigate the creation of a residential Property Mitigation Mapping Tool	Hurricanes and Coastal Hazards	Med	Emergency Management, GIS	GF	2026	New Action for the 2026 Update

SECTION 10
PLAN MAINTENANCE PROCEDURES

44 CFR Requirement
44 CFR Part201.6(c)(4)(i): The plan shall include a plan maintenance process that includes a section describing the method and schedule of monitoring, evaluating and updating the mitigation plan within a five-year cycle. ***44 CFR Part 201.6(c)(4)(ii):*** The plan maintenance process shall include a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

This section discusses how the Southeastern NC Region Mitigation Strategy and Mitigation Action Plan will be implemented and how the Regional Hazard Mitigation Plan will be evaluated and enhanced over time. This section also discusses how the public will continue to be involved in a sustained hazard mitigation planning process. It consists of the following four subsections:

- 10.1 Implementation and Integration
- 10.2 Monitoring, Evaluation and Enhancement
- 10.3 Continued Public Involvement
- 10.4 Evaluation of Monitoring, Evaluation and Update Process

10.1 IMPLEMENTATION AND INTEGRATION

Each agency, department or other partner participating under the Southeastern NC Regional Hazard Mitigation Plan is responsible for implementing specific mitigation actions as prescribed in the Mitigation Action Plan. Every proposed action listed in the Mitigation Action Plan is assigned to a specific "lead" agency or department in order to assign responsibility and accountability and increase the likelihood of subsequent implementation.

In addition to the assignment of a local lead department or agency, an implementation time period or a specific implementation date has been assigned in order to assess whether actions are being implemented in a timely fashion. In most cases, the counties in the Southeastern NC Region will seek outside funding sources to implement mitigation projects in both the pre-disaster and post-disaster environments. When applicable, potential funding sources have been identified for proposed actions listed in the Mitigation Action Plan.

The participating jurisdictions will integrate this Hazard Mitigation Plan into relevant City and County government decision-making processes or mechanisms, where feasible. This includes integrating the requirements of the Hazard Mitigation Plan into other local planning documents, processes or

mechanisms, such as comprehensive or capital improvement plans, when appropriate. The members of the Southeastern NC Regional Mitigation Planning Committee will remain charged with ensuring that the goals and mitigation actions of new and updated local planning documents for their agencies or departments are consistent, or do not conflict with the goals and actions of the Hazard Mitigation Plan and will not contribute to increased hazard vulnerability in the Southeastern NC Region.

Since the initial plan was adopted in 2015 for Brunswick, New Hanover and Pender County, and since Onslow County last adopted their plan, each County and participating jurisdiction has worked to integrate the hazard mitigation plan into other planning mechanisms where applicable/feasible. Examples of how this integration has occurred have been documented in the Implementation Status discussion provided for each of the mitigation actions found in Section 9. Specific examples of how integration has occurred include:

- Integrating the mitigation plan into reviews and updates of floodplain management ordinances
- Integrating the mitigation plan into reviews and updates of County emergency operations plans
- Integrating the mitigation plan into review and updates of building codes
- Integrating the mitigation plan into the capital improvements plan through identification of mitigation actions that require local funding.

Opportunities to further integrate the requirements of this Plan into other local planning mechanisms shall continue to be identified through future meetings of the Regional Mitigation Planning Committee, individual county meetings, and the annual review process described herein. Although it is recognized that there are many possible benefits to integrating components of this Plan into other local planning mechanisms, the development and maintenance of this stand-alone Regional Hazard Mitigation Plan is deemed by the Southeastern NC Regional Mitigation Planning Committee to be the most effective and appropriate method to implement local hazard mitigation actions at this time.

10.2 MONITORING, EVALUATION, AND ENHANCEMENT

Periodic revisions and updates of the Hazard Mitigation Plan are required to ensure that the goals of the Plan are kept current, taking into account potential changes in hazard vulnerability and mitigation priorities. In addition, revisions may be necessary to ensure that the Plan is in full compliance with applicable federal and state regulations. Periodic evaluation of the Plan will also ensure that specific mitigation actions are being reviewed and carried out according to the Mitigation Action Plan.

When determined necessary, the Southeastern NC Regional Mitigation Planning Committee shall meet in March of every year to evaluate and monitor the progress attained and to revise, where needed, the activities set forth in the Plan. The findings and recommendations of the Regional Mitigation Planning Committee shall be documented in the form of a report that can be shared with interested Community and County Council members. The Regional Mitigation Planning Committee will also meet following any disaster events warranting a reexamination of the mitigation actions being implemented or proposed for future implementation. This will ensure that the Plan is continuously updated to reflect changing conditions and needs within the Southeastern NC Region. For future updates of the plan, each County's Emergency Management Departments will help coordinate the reconvening of the Regional Mitigation Planning Committee for these reviews.

Unless it is determined otherwise, the Emergency Management Director from Brunswick, New Hanover, Onslow and Pender Counties will maintain ultimate responsibility for their respective County's plan implementation and monitoring, evaluation and update.

Five (5) Year Plan Review

The Plan will be thoroughly reviewed by the Regional Mitigation Planning Committee every five years to determine whether there have been any significant changes in the Southeastern NC Region that may, in turn, necessitate changes in the types of mitigation actions proposed. In order to track progress and update the mitigation strategies identified in the plan, the Regional Mitigation Planning Committee anticipates they will revisit this plan on an annual basis and after a hazard event. 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 participating jurisdiction 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. North Carolina Emergency Management's Hazard Mitigation Planning section will help coordinate the reconvening of the Regional Mitigation Planning Committee and conducting the five-year review through coordination with each County's Emergency Management Departments.

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?

Following the five-year review, any revisions deemed necessary will be summarized and implemented according to the reporting procedures and plan amendment process outlined herein. Upon completion of the review and update/amendment process, the Southeastern NC Regional Hazard Mitigation Plan will be submitted to the State Hazard Mitigation Officer at the North Carolina Division of Emergency Management (NCEM) for final review and approval in coordination with the Federal Emergency Management Agency (FEMA).

Disaster Declaration

Following a disaster declaration, the Southeastern NC Regional Hazard Mitigation Plan will be revised as necessary to reflect lessons learned, or to address specific issues and circumstances arising from the event. Each county will be responsible for coordinating the reconvening of the Regional Hazard Mitigation Planning Committee in collaboration with its Emergency Management Department. Counties must review their plans, initiate any required revisions or updates, and ensure that appropriate stakeholders are invited to participate in the process following declared disaster events

Reporting Procedures

The results of the five-year review will be summarized by the Regional Mitigation Planning Committee in a report that will include an evaluation of the effectiveness of the Plan and any required or recommended changes or amendments. The report will also include an evaluation of implementation progress for each of the proposed mitigation actions, identifying reasons for delays or obstacles to their completion along with recommended strategies to overcome them.

Plan Amendment Process

Plan amendments are sometimes needed before the 5-year plan update takes place. Potential reasons why an update could be needed include the following:

- Errors, inaccuracies, or omissions in the current Plan to include missing or newly identified mitigation actions.
- New issues or needs not addressed in the Plan.
- Changes in data or assumptions used in the Plan.

When an amendment process is needed, the jurisdiction proposing the amendment will share details of the proposed changes with all relevant parties, including affected departments, residents (if needed), businesses (if needed), and North Carolina Emergency Management.

10.3 CONTINUED PUBLIC INVOLVEMENT

44 CFR Requirement
44 CFR Part 201.6(c)(4)(iii): The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process

Public participation is an integral component to the mitigation planning process and will continue to be essential as this Plan evolves over time. As described above, significant changes or amendments to the Plan shall require a public hearing prior to any adoption procedures.

Other efforts to involve the public in the maintenance, evaluation and revision process will be made as necessary. These efforts may include:

- Advertising meetings of the Regional Mitigation Planning Committee in local newspapers, public bulletin boards and/or County office buildings
- Designating willing and voluntary citizens and private sector representatives as official members of the Regional Mitigation Planning Committee
- Utilizing local media to update the public on any maintenance and/or periodic review activities taking place
- Utilizing the Brunswick, New Hanover, Onslow, and Pender County websites to advertise any maintenance and/or periodic review activities taking place, and
- Keeping copies of the Plan in public libraries.

10.4 EVALUATION OF PREVIOUS MONITORING, EVALUATION AND UPDATE PROCESS

Over the past five years, the participating jurisdictions have been independently implementing, monitoring and evaluating their own mitigation action plans. Progress made in implementing actions has been documented in Section 9: Mitigation Action Plan where each action contains a narrative about the implementation status of the action as of 2026. That said, the participating jurisdictions did waiver slightly from the monitoring and evaluation process defined in the original version of the plan but still made significant process in implementing their mitigation action plans. During the 2026 update of this plan, the Regional Mitigation Planning Committee determined that the procedures for the upcoming five-year monitoring and evaluation process will remain as defined above, with minor revisions as noted, and will be re-evaluated during the next plan update process.

The five-year comprehensive update process began when North Carolina Emergency Management made the decision to set aside HMGP funding for the update of the Southeastern NC Regional Hazard Mitigation Plan. To facilitate this effort, NCEM assigned the plan update to their pre-qualified hazard mitigation planning consultants ESP Associates. Representatives from ESP Associates first reached out to Brunswick, New Hanover, Onslow and Pender County representatives in May 2025 to initiate the plan update process. More details about the plan update process are provided in Section 2, Planning Process.

For the next update of this plan, NCEM's Hazard Mitigation Planning section will continue to take the lead on organizing and initiating the 5-year update of the plan.

Appendix A
Plan Adoption

44 CFR Requirement
44 CFR Part 201.6(c)(5): The plan shall include documentation that the plan has been formally adopted by the local governing body of the jurisdiction requesting approval of the plan.

This section of the Plan includes a copy of the local adoption resolutions passed by the participating jurisdictions in the Southeastern NC Region.

Appendix B
Planning Tools

This section of the Plan includes two (2) items:

1. A Blank Hazard Mitigation Public Survey
2. Scoring Criteria for the Capability Assessment

English-US

Southeastern NC Regional Hazard Mitigation Plan 2025 Survey

We need your help!

Brunswick, New Hanover, Onslow, and Pender Counties and their associated municipalities are working together to become less vulnerable to natural disasters, and your participation in the process is important to us!

The counties, along with local jurisdictions and other partners, are working to update the previous Southeastern NC Regional Hazard Mitigation Plan. This plan identifies and assesses the region's various hazard risks and identifies strategies that determine how to best minimize or manage those risks.

Plan Update Project Website: https://arcg.is/1S4PWG0

This survey is an opportunity for you to share your opinions and participate in the mitigation planning process. The information you provide will help us better understand your hazard concerns and can lead to mitigation activities designed to help lessen the impacts of future hazard events.

If you have any questions regarding this survey or would like to learn about more ways you can participate in the development in the Southeastern NC Regional Hazard Mitigation Plan, please contact us:

Nathan Slaughter, Project Manager
nslaughter@espassociates.com
ESP Associates

1. Where do you live?*

- Atkinson
- Bald Head Island
- Belville
- Boiling Spring Lakes
- Bolivia
- Burgaw
- Calabash
- Carolina Beach
- Carolina Shores
- Caswell Beach
- Holden Beach
- Holly Ridge
- Jacksonville
- Kure Beach
- Leland
- Navassa
- North Topsail Beach
- Northwest
- Oak Island
- Ocean Isle Beach
- Richlands
- Sandy Creek
- Shallotte
- Southport
- St. James
- Sunset Beach
- St. Helena
- Surf City
- Swansboro
- Topsail Beach
- Varnamtown
- Watha
- Wilmington
- Wrightsville Beach
- Unincorporated Brunswick County
- Unincorporated New Hanover County

- Unincorporated Pender County
- Unincorporated Onslow County

2. Have you ever experienced or been impacted by a disaster in Brunswick, New Hanover, Onslow, or Pender Counties?*

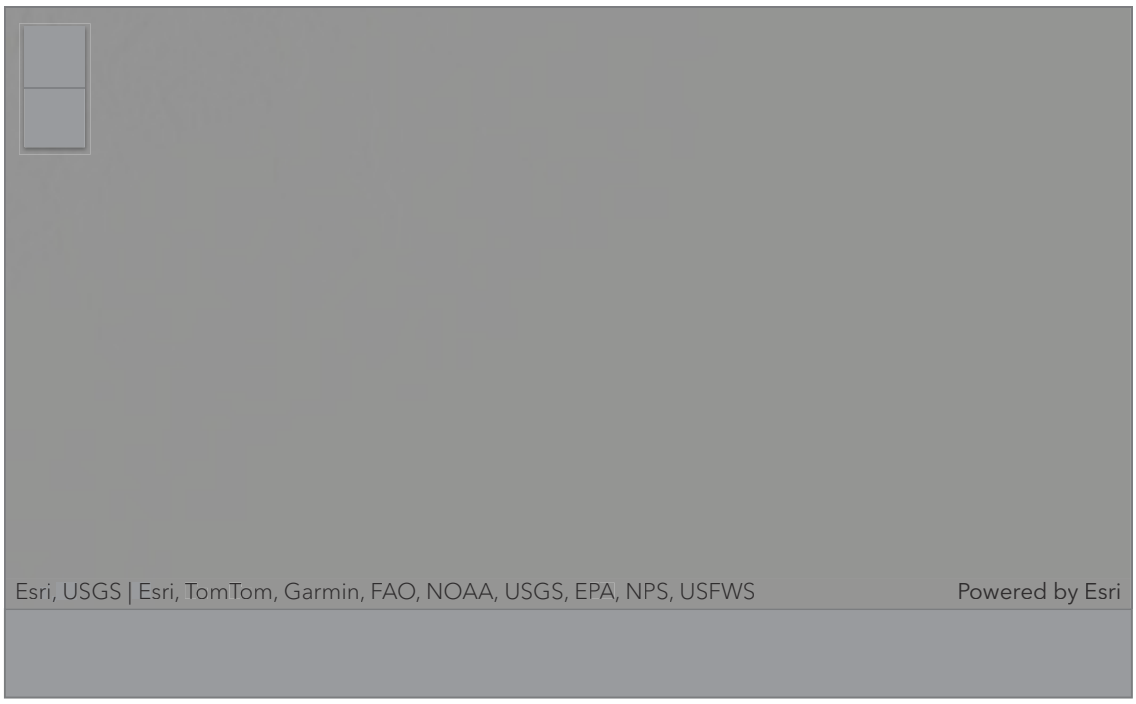
- Yes
- No

3. If "Yes," please explain below.

1000

4. If you responded "Yes" that you have been impacted by a disaster, please draw a polygon shape on the map below to indicate the approximate area/community.

- **Please also include any relevant descriptions of the hazards or areas** in Question 3 (directly above)!



5. How concerned are you about the possibility of your community being impacted by a disaster?*

- Extremely concerned
- Somewhat concerned
- Not concerned

6. Please select the one (1) hazard you think is the HIGHEST threat to your neighborhood:*

- Cyberattack
- Civil Disturbance
- Dam Failure
- Drought
- Earthquakes
- Electromagnetic Pulse (EMP)
- Erosion
- Excessive Heat
- Flooding
- Food Emergency
- Hazardous Substances
- Hurricane and Coastal Hazards
- Infectious Disease
- Landslides
- Lightning
- Radiological Emergency
- Severe Thunderstorms and High Winds
- Severe Winter Weather
- Terrorism
- Tornadoes
- Wildfire

7. Please select the one (1) hazard you think is the SECOND HIGHEST threat to your neighborhood:*

- [ ] Cyberattack
- [ ] Civil Disturbance
- [ ] Dam Failure
- [ ] Drought
- [ ] Earthquakes
- [ ] Electromagnetic Pulse (EMP)
- [ ] Erosion
- [ ] Excessive Heat
- [ ] Flooding
- [ ] Food Emergency
- [ ] Hazardous Substances
- [ ] Hurricane and Coastal Hazards
- [ ] Infectious Disease
- [ ] Landslides
- [ ] Lightning
- [ ] Radiological Emergency
- [ ] Severe Thunderstorms and High Winds
- [ ] Severe Winter Weather
- [ ] Terrorism
- [ ] Tornadoes
- [ ] Wildfire

8. Are there any other hazards that you feel pose a wide-scale or increasing threat to your community? If so, please explain:

1000

9. Is your home located in a floodplain?*

- [ ] Yes
- [ ] No
- [ ] I'm not sure

10. Do you have flood insurance?*

- [ ] Yes
- [ ] No
- [ ] I'm not sure

11. If you do not have flood insurance, why not?

- [ ] Not located in floodplain
- [ ] Too expensive
- [ ] Not necessary because it never floods
- [ ] Not necessary because I am elevated or otherwise protected
- [ ] Never really considered it
- [ ] Other

12. If "Other" for not having flood insurance, please explain below:

1000

13. Have you taken any steps to make your home or neighborhood more resistant to hazards?*

- [ ] Yes
- [ ] No

14. If "Yes," please explain below:

1000

15. Are you interested in making your home or neighborhood more resistant to hazards?*

- Yes
- No

16. Do you know what office to contact to find out more information about how to reduce your risks to hazards in your area?*

- Yes
- No

17. What is the most effective way for you to receive information about how to make your home and neighborhood more resistant to hazards?*

- Newspaper
- Television
- Radio
- Internet (including social media)
- Mail
- Public Workshops and Meetings
- School Meetings

18. Are there any other ways you prefer to receive information? If so, please explain:

1000

19. In your opinion, what are some steps your local government could take to reduce or eliminate the risk of future hazard damages in your neighborhood?

1000

20. Are there any other issues regarding the reduction of risk and loss associated with hazards or disasters in the community that you think are important? If so, please explain:

1000

21. Prevention - Rules that frame the way the community grows. This includes administrative or regulatory actions around land development and building. Examples of these types of rules include zoning, building codes, open space preservation or conservation and floodplain regulations.*

- Very important
- Somewhat important
- Not important

22. Property Protection - Changing existing buildings or removing buildings to prevent hazards from damaging them. Examples include buyouts, relocation, elevation (to protect from floods), making buildings stronger and adding things like storm shutters.*

Very important	Somewhat important	Not important

23. Natural Resource Protection - Preserving areas, or restoring areas to original habitat to perform natural functions. This can be done in addition to minimizing hazard losses. Examples include habitat preservation, slope stabilization and forest management.*

Very important	Somewhat important	Not important

24. Structural Projects - Projects that lessen the impact of a hazard by changing the natural progression of the hazard. Examples include dams, levees, retention ponds, retaining walls and storm sewers.*

Very important	Somewhat important	Not important

25. Emergency Services - Actions that protect people and/or protect property during and immediately after a hazard event. Examples include planning for evacuation, warning systems or protecting or reinforcing emergency facilities or systems.*

Very important	Somewhat important	Not important

26. Public Education and Awareness - Actions that inform people about hazards and how they can protect themselves, their family and their property. Examples include outreach/media campaigns, school education programs, written materials and special events.*

Very important	Somewhat important	Not important

27. Name?

28. Position/Organization?

29. Email?

Submit

Powered by ArcGIS Survey123

Points System for Capability Ranking

0-19 points = Limited overall capability
20-39 points = Moderate overall capability
40-68 points = High overall capability

I. Planning and Regulatory Capability
(Up to 43 points)

Yes = 3 points
Under Development = 1 point
Included under County plan/code/ordinance/program = 1 point
No = 0 points

- Hazard Mitigation Plan
- Comprehensive Land Use Plan
- Floodplain Management Plan
- National Flood Insurance Program
- NFIP Community Rating System

Yes = 2 points
Under Development = 1 point
Included under County plan/code/ordinance/program = 1 point
No = 0 points

- Open Space Management Plan / Parks & Recreation Plan
- Stormwater Management Plan
- Natural Resource Protection Plan
- Flood Response Plan
- Emergency Operations Plan
- Continuity of Operations Plan
- Evacuation Plan
- Disaster Recovery Plan
- Flood Damage Prevention Ordinance
- Post-disaster Redevelopment / Reconstruction Ordinance

Yes = 1 point
No = 0 points

- Capital Improvements Plan
- Economic Development Plan
- Historic Preservation Plan
- Zoning Ordinance
- Subdivision Ordinance
- Unified Development Ordinance
- Building Code
- Fire Code

II. Administrative and Technical Capability
(Up to 15 points)

Yes = 2 points
Service provided by County = 1 point
No = 0 points

- 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
- Emergency manager
- Floodplain manager

Yes = 1 point
No = 0 points

- 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 Geographical Information Systems (GIS) and/or Hazus
- Resource development staff or grant writers

III. Fiscal Capability
(Up to 10 points)

Yes = 1 point
No = 0 points

- Capital Improvement Programming
- Community Development Block Grants (CDBG)
- Special Purpose Taxes (or tax districts)
- Gas / Electric Utility Fees
- Water / Sewer Fees
- Stormwater Utility Fees
- Development Impact Fees
- General Obligation / Revenue / Special Tax Bonds
- Partnering arrangements or intergovernmental agreements
- Other

Appendix C
Local Mitigation Plan Review Tool

This section of the Plan includes a completed Local Mitigation Plan Review Tool.

Local Mitigation Plan Review Tool

Cover Page

The Local Mitigation Plan Review Tool (PRT) demonstrates how the local mitigation plan meets the regulation in 44 CFR § 201.6 and offers states and FEMA Mitigation Planners an opportunity to provide feedback to the local governments, including special districts.

1. The Multi-Jurisdictional Summary Sheet is a worksheet that is used to document how each jurisdiction met the requirements of the plan elements (Planning Process; Risk Assessment; Mitigation Strategy; Plan Maintenance; Plan Update; and Plan Adoption).
2. The Plan Review Checklist summarizes FEMA's evaluation of whether the plan has addressed all requirements.

For greater clarification of the elements in the Plan Review Checklist, please see Section 4 of this guide. Definitions of the terms and phrases used in the PRT can be found in Appendix E of this guide.

Plan Information	
Jurisdiction(s)	See Multi-Jurisdictional Summary Sheet
Title of Plan	Southeastern NC Regional Hazard Mitigation Plan
New Plan or Update	Update
Single- or Multi-Jurisdiction	Multi-jurisdiction
Date of Plan	2/5/2026
Local Point of Contact	
Title	Nathan Slaughter, Hazard Mitigation Department Manager, ESP Associates
Agency	ESP Associates
Address	2200 Gateway Centre Blvd, Suite 310, Morrisville NC 27560
Phone Number	919-264-9582
Email	nslaughter@espassociates.com

Additional Point of Contact	
Title	Click or tap here to enter text.
Agency	Click or tap here to enter text.
Address	Click or tap here to enter text.
Phone Number	Click or tap here to enter text.
Email	Click or tap here to enter text.

Review Information	
State Review	
State Reviewer(s) and Title	Click or tap here to enter text.
State Review Date	Click or tap to enter a date.
FEMA Review	
FEMA Reviewer(s) and Title	Click or tap here to enter text.
Date Received in FEMA Region	Click or tap to enter a date.
Plan Not Approved	Click or tap to enter a date.
Plan Approvable Pending Adoption	Click or tap to enter a date.
Plan Approved	Click or tap to enter a date.

Multi-Jurisdictional Summary Sheet

In the boxes for each element, mark if the element is met (Y) or not met (N).

#	Jurisdiction Name	A. Planning Process	B. Risk Assessment	C. Mitigation Strategy	D. Plan Maintenance	E. Plan Update	F. Plan Adoption	G. HHPD Requirements	H. State Requirements
1	**Brunswick County**								
2	Bald Head Island								
3	Belville								
4	Boiling Spring Lakes								
5	Calabash								
6	Carolina Shores								
7	Caswell Beach								
8	Holden Beach								
9	Leland								
10	Navassa								
11	Northwest								
12	Oak Island								
13	Ocean Isle Beach								
14	Sandy Creek								
15	Shallotte								
16	Southport								
17	St. James								
18	Sunset Beach								
19	Varnamtown								

#	Jurisdiction Name	A. Planning Process	B. Risk Assessment	C. Mitigation Strategy	D. Plan Maintenance	E. Plan Update	F. Plan Adoption	G. HHPD Requirements	H. State Requirements
20	**New Hanover County**								
21	Carolina Beach								
22	Kure Beach								
23	Wilmington								
24	Wrightsville Beach								
25	**Onslow County**								
26	Jacksonville								
27	Holly Ridge								
28	North Topsail Beach								
29	Richlands								
30	Swansboro								
31	**Pender County**								
32	Atkinson								
33	Burgaw								
34	Saint Helena								
35	Surf City								
36	Topsail Beach								
37	Watha								

Plan Review Checklist

The Plan Review Checklist is completed by FEMA. States and local governments are encouraged, but not required, to use the PRT as a checklist to ensure all requirements have been met prior to submitting the plan for review and approval. The purpose of the checklist is to identify the location of relevant or applicable content in the plan by element/sub-element and to determine if each requirement has been "met" or "not met." FEMA completes the "required revisions" summary at the bottom of each element to clearly explain the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is "not met." Sub-elements in each summary should be referenced using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each element and sub-element are described in detail in Section 4: Local Plan Requirements of this guide.

Plan updates must include information from the current planning process.

If some elements of the plan do not require an update, due to minimal or no changes between updates, the plan must document the reasons for that.

Multi-jurisdictional elements must cover information unique to all participating jurisdictions.

Element A: Planning Process

Element A Requirements	Location in Plan (section and/or page number)	Met / Not Met
A1. Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement 44 CFR § 201.6(c)(1))	**Section 2:** **2.3 Updating the Plan in 2026** **2.4 SENC Regional HMPC** **2.5 Community Meetings and Workshops** **2.6 Involving the Public** **2.7 Involving the Stakeholders** **Appendix D**	
A1-a. Does the plan document how the plan was prepared, including the schedule or time frame and activities that made up the plan's development, as well as who was involved?	Section 2: 2.3 Updating the Plan in 2026 2.4 SENC Regional HMPC 2.5 Community Meetings and Workshops 2.6 Involving the Public 2.7 Involving the Stakeholders	Choose an item.

Element A Requirements	Location in Plan (section and/or page number)	Met / Not Met
A1-b. Does the plan list the jurisdiction(s) participating in the plan that seek approval, and describe how they participated in the planning process?	Section 2: 2.2 History of Hazard Mitigation Planning in the SENC Region 2.3 Updating Developing the Plan in 2026 2.4 SENC Regional HMPC 2.5 Community Meetings and Workshops 2.6 Involving the Public 2.7 Involving the Stakeholders Appendix D	Choose an item.
A2. Does the plan document 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 private and non-profit interests to be involved in the planning process? (Requirement 44 CFR § 201.6(b)(2))	Section 2: 2.7 Involving the Stakeholders Appendix D	
A2-a. Does the plan identify all stakeholders involved or given an opportunity to be involved in the planning process, and how each stakeholder was presented with this opportunity?	Section 2: 2.7 Involving the Stakeholders Appendix D	Choose an item.
A3. Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval? (Requirement 44 CFR § 201.6(b)(1))	**2.5 Community Meetings and Workshops** 2.6 Involving the Public Appendix D	
A3-a. Does the plan document how the public was given the opportunity to be involved in the planning process and how their feedback was included in the plan?	2.6 Involving the Public Appendix D	Choose an item.

Element A Requirements	Location in Plan (section and/or page number)	Met / Not Met
A4. Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement 44 CFR § 201.6(b)(3))	7.2 Conducting the Capability Assessment and throughout Section 7	
A4-a. Does the plan document what existing plans, studies, reports and technical information were reviewed for the development of the plan, as well as how they were incorporated into the document?	7.2 Conducting the Capability Assessment and throughout Section 7.	Choose an item.
ELEMENT A REQUIRED REVISIONS		
Required Revision**:** Click or tap here to enter text.		

Element B: Risk Assessment

Element B Requirements	Location in Plan (section and/or page number)	Met / Not Met
B1. Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events? (Requirement 44 CFR § 201.6(c)(2)(i))	Sections 4 and 5 throughout	
B1-a. Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area?	Sections 4 and 5 throughout	Choose an item.
B1-b. Does the plan include information on the location of each identified hazard?	Section 5, Location subsection provided for each hazard	Choose an item.
B1-c. Does the plan describe the extent for each identified hazard?	Section 5, Extent subsection provided for each hazard	Choose an item.
B1-d. Does the plan include the history of previous hazard events for each identified hazard?	Section 5, Historical Occurrences subsection provided for each hazard	Choose an item.

Element B Requirements	Location in Plan (section and/or page number)	Met / Not Met
B1-e. Does the plan include the probability of future events for each identified hazard, including the type, location and range of anticipated intensities?	Section 5, Probability of Future Occurrences subsection provided for each hazard	Choose an item.
B1-f. For participating jurisdictions in a multi-jurisdictional plan, does the plan describe any hazards that are unique to and/or vary from those affecting the overall planning area?	Section 5, Hazard Summary by Jurisdiction provided for each hazard	Choose an item.
B2. Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP-insured structures that have been repetitively damaged by floods? (Requirement 44 CFR § 201.6(c)(2)(ii))	Section 5, Hazard Summary by Jurisdiction provided for each hazard. Repetitive Loss Analysis begins on page 5-68	
B2-a. Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards?	Section 5, Hazard Summary by Jurisdiction provided for each hazard	Choose an item.
B2-b. For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction?	Section 5, Hazard Summary by Jurisdiction provided for each hazard	Choose an item.
B2-c. Does the plan address NFIP-insured structures within each jurisdiction that have been repetitively damaged by floods?	Repetitive Loss Analysis begins on page 5-68	Choose an item.

ELEMENT B REQUIRED REVISIONS
Required Revision: Click or tap here to enter text.

Element C: Mitigation Strategy

Element C Requirements	Location in Plan (section and/or page number)	Met / Not Met
C1. Does the plan document each participant's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement 44 CFR § 201.6(c)(3))	Section 7: Capability Assessment – entire section	
C1-a. Does the plan describe how the existing capabilities of each participant are available to support the mitigation strategy? Does this include a discussion of the existing building codes and land use and development ordinances or regulations?	Section 7: Capability Assessment – entire section	Choose an item.
C1-b. Does the plan describe each participant's ability to expand and improve the identified capabilities to achieve mitigation?	Section 7: Capability Assessment – entire section	Choose an item.
C2. Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement 44 CFR § 201.6(c)(3)(ii))	Section 7: 7.3.4, pages 7:10-7:24; Table 7.2 NFIP Policy and Information	
C2-a. Does the plan contain a narrative description or a table/list of their participation activities?	Section 7: 7.3.1,3 pages 7:13-7:35; Table 7.2 NFIP Policy and Information and SDE Procedures begin on page 7:18	Choose an item.
C3. Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement 44 CFR § 201.6(c)(3)(i))	Section 8.2, page 8:3	
C3-a. Does the plan include goals to reduce the risk from the hazards identified in the plan?	Section 8.2, page 8:3	Choose an item.

Element C Requirements	Location in Plan (section and/or page number)	Met / Not Met
C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement 44 CFR § 201.6(c)(3)(ii))	Section 8 and 9 throughout.	
C4-a. Does the plan include an analysis of a comprehensive range of actions/projects that each jurisdiction considered to reduce the impacts of hazards identified in the risk assessment?	Section 8 and 9 throughout.	Choose an item.
C4-b. Does the plan include one or more action(s) per jurisdiction for each of the hazards as identified within the plan's risk assessment?	Section 9 throughout.	Choose an item.
C5. Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction? (Requirement 44 CFR § 201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	Section 8 and 9 throughout.	
C5-a. Does the plan describe the criteria used for prioritizing actions?	Section 8, Section 8.1.1 pages 8:2 and 8:3.	Choose an item.
C5-b. Does the plan provide the position, office, department or agency responsible for implementing/administrating the identified mitigation actions, as well as potential funding sources and expected time frame?	Section 9 throughout	Choose an item.

ELEMENT C REQUIRED REVISIONS
Required Revision**:** Click or tap here to enter text.

Element D: Plan Maintenance

Element D Requirements	Location in Plan (section and/or page number)	Met / Not Met
D1. Is there discussion of how each community will continue public participation in the plan maintenance process? (Requirement 44 CFR § 201.6(c)(4)(iii))	Section 10, 10.3 page 10:5	
D1-a. Does the plan describe how communities will continue to seek future public participation after the plan has been approved?	Section 10, 10.3 page 10:5	Choose an item.
D2. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a five-year cycle)? (Requirement 44 CFR § 201.6(c)(4)(i))	Section 10	
D2-a. Does the plan describe the process that will be followed to track the progress/status of the mitigation actions identified within the Mitigation Strategy, along with when this process will occur and who will be responsible for the process?	Section 10, 10.2, pages 10:2 through 10:4	Choose an item.
D2-b. Does the plan describe the process that will be followed to evaluate the plan for effectiveness? This process must identify the criteria that will be used to evaluate the information in the plan, along with when this process will occur and who will be responsible.	Section 10, 10.2, pages 10:2 through 10:4	Choose an item.
D2-c. Does the plan describe the process that will be followed to update the plan, along with when this process will occur and who will be responsible for the process?	Section 10, 10.2, pages 10:2 through 10:4	Choose an item.
D3. Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement 44 CFR § 201.6(c)(4)(ii))	Section 10.1	
D3-a. Does the plan describe the process the community will follow to integrate the ideas, information and strategy of the mitigation plan into other planning mechanisms?	Section 10.1	Choose an item.
D3-b. Does the plan identify the planning mechanisms for each plan participant into which the ideas, information and strategy from the mitigation plan may be integrated?	Section 10.1	Choose an item.

Element D Requirements	Location in Plan (section and/or page number)	Met / Not Met
D3-c. For multi-jurisdictional plans, does the plan describe each participant's individual process for integrating information from the mitigation strategy into their identified planning mechanisms?	Section 10.1	Choose an item.
ELEMENT D REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element E: Plan Update

Element E Requirements	Location in Plan (section and/or page number)	Met / Not Met
E1. Was the plan revised to reflect changes in development? (Requirement 44 CFR § 201.6(d)(3))		
E1-a. Does the plan describe the changes in development that have occurred in hazard-prone areas that have increased or decreased each community's vulnerability since the previous plan was approved?	Section 3.3.3, page 3:9 and 3:10, throughout section 6	Choose an item.
E2. Was the plan revised to reflect changes in priorities and progress in local mitigation efforts? (Requirement 44 CFR § 201.6(d)(3))		
E2-a. Does the plan describe how it was revised due to changes in community priorities?	Section 8.5, Section 9 throughout	Choose an item.
E2-b. Does the plan include a status update for all mitigation actions identified in the previous mitigation plan?	Section 9 throughout and Appendix E	Choose an item.
E2-c. Does the plan describe how jurisdictions integrated the mitigation plan, when appropriate, into other planning mechanisms?	Section 10.1, Section 9 throughout and Appendix E	Choose an item.
ELEMENT E REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element F: Plan Adoption

Element F Requirements	Location in Plan (section and/or page number)	Met / Not Met
F1. For single-jurisdictional plans, has the governing body of the jurisdiction formally adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))		
F1-a. Does the participant include documentation of adoption?	Click or tap here to enter text.	Choose an item.
F2. For multi-jurisdictional plans, has the governing body of each jurisdiction officially adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))		
F2-a. Did each participant adopt the plan and provide documentation of that adoption?	Click or tap here to enter text.	Choose an item.
ELEMENT F REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element G: High Hazard Potential Dams (Will be submitted later)

HHPD Requirements	Location in Plan (section and/or page number)	Met / Not Met
HHPD1. Did the plan describe the incorporation of existing plans, studies, reports and technical information for HHPDs?		
HHPD1-a. Does the plan describe how the local government worked with local dam owners and/or the state dam safety agency?	Click or tap here to enter text.	Choose an item.
HHPD1-b. Does the plan incorporate information shared by the state and/or local dam owners?	Click or tap here to enter text.	Choose an item.
HHPD2. Did the plan address HHPDs in the risk assessment?		
HHPD2-a. Does the plan describe the risks and vulnerabilities to and from HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD2-b. Does the plan document the limitations and describe how to address deficiencies?	Click or tap here to enter text.	Choose an item.

HHPD Requirements	Location in Plan (section and/or page number)	Met / Not Met
HHPD3. Did the plan include mitigation goals to reduce long-term vulnerabilities from HHPDs?		
HHPD3-a. Does the plan address how to reduce vulnerabilities to and from HHPDs as part of its own goals or with other long-term strategies?	Click or tap here to enter text.	Choose an item.
HHPD3-b. Does the plan link proposed actions to reducing long-term vulnerabilities that are consistent with its goals?	Click or tap here to enter text.	Choose an item.
HHPD4-a. Did the plan include actions that address HHPDs and prioritize mitigation actions to reduce vulnerabilities from HHPDs?		
HHPD4-a. Does the plan describe specific actions to address HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD4-b. Does the plan describe the criteria used to prioritize actions related to HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD4-c. Does the plan identify the position, office, department or agency responsible for implementing and administering the action to mitigate hazards to or from HHPDs?	Click or tap here to enter text.	Choose an item.

HHPD Required Revisions
Required Revision**:** Click or tap here to enter text.

Element H: Additional State Requirements (Optional)

Element H Requirements	Location in Plan (section and/or page number)	Met / Not Met
This space is for the State to include additional requirements.		
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.

Plan Assessment

These comments can be used to help guide your annual/regularly scheduled updates and the next plan update.

Element A. Planning Process

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element B. Risk Assessment

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element C. Mitigation Strategy

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element D. Plan Maintenance

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element E. Plan Update

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element G. HHPD Requirements (Optional)

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element H. Additional State Requirements (Optional)

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Meeting Participant Summary

NAME	ORGANIZATION/ROLE	6/19/25 Mtg	9/23/25 Mtg	11/20/25 Mtg	12/9/25 Mtg
Brunswick County					
Andrea, Ben	Planning & Inspection Direction, Town of Leland	X			
Boyett, Stephen	Development Services Administrator, Village of Bald Head Island	X	X	X	X
Brooks, Buddy	Emergency Management Deputy Director, Brunswick County		X		
Bunch, Helen	CZO & Planner, Brunswick County	X		X	X
Child, Sabra	Town Clerk, Town of Sandy Creek				X
Dycus, Keith	Development Services Director, Town of Ocean Isle Beach	X	X		
Evans, Timothy	Planning & Inspections Director, Town of Holden Beach	X		X	X
Fersinger, Kate	Community Development Planner, Town of Leland	X			
Galloway, Sylvia	Mayor Pro-Tem, Town of Varnamtown				X
Geise, Leslie	Emergency Management Planner, Brunswick County		X	X	X
Grimes, John	Emergency Management Chief, Town of Leland	X	X		
Hargrove, Gordon	City Manager, City of Boiling Spring Lakes	X			
Harrington, Adrienne	Smart Moves Consulting, Town of Belville	X			
Hewett, Timothy	Planning Director, Town of Holden Beach		X		
Hills, Diana	Health Services Preparedness Coordinator, Brunswick County			X	
Holland, Landin	Town Administrator/Planner, Town of Navassa	X	X	X	
Jackson, Kent	Assistant Town Manager, Town of Oak Island			X	
Kascak, Meagan	Communications Director, Brunswick County		X		
Kirkland, Matt	Development Services Director, Town of Oak Island	X			
McIntire, David	Emergency Management Director, Brunswick County	X	X	X	

MEETING PARTICIPANTS

NAME	ORGANIZATION/ROLE	6/19/25 Mtg	9/23/25 Mtg	11/20/25 Mtg	12/9/25 Mtg
Meehan, Maureen	Planning Director, City of Southport	X	X	X	
Merklinger, Amber	Communications Specialist, Brunswick County		X		
Meyer, Josh	Safety & Training Manager, Brunswick Regional Water & Sewer H2GO			X	
Morgan, Nicole	Assistant City Manager, City of Boiling Spring Lakes	X		X	X
Miller, Mel	Mayor, Town of Sandy Creek				X
Niemann, Sharon	Clerk, Town of Belville		X		
Pigott, Janna	Floodplain Manager, Town of Holden Beach		X		X
Price, Michael	Town Administrator, Town of Calabash	X			
Price, Suzanne	Planning/Zoning Administrator, City of Boiling Spring Lakes		X	X	X
Redwine, Carey	Fiscal Operations, Town of Holden Beach				X
Repp, Jeff	Town Manager, Town of St. James			X	
Satterfield, Ron	Director of Planning, Town of Sunset Beach	X			X
Smith, Kevin	Police Chief, City of Boiling Spring Lakes				X
Stachura, Jim	City Stormwater Engineer, City of Boiling Spring Lakes				X
Stanley, Leslie	Volunteer & Non-Profit Coordinator, Brunswick County		X	X	
Staradumsky, Chad	Planning Director, Town of Belville			X	
Taube, Steffan	Floodplain Administrator, Brunswick County				X
Thomas, Gracie	Code Administrator, Brunswick County				X
Walker, Bob	Executive Director, Brunswick Regional Water & Sewer H2GO		X		
Weber, Adrianna	Engineering Director, Brunswick Regional Water & Sewer H2GO		X		
Weigand, LeAnn	Executive Assistant/Clerk, Brunswick County		X		
Winters, Terri	REP Planner, Brunswick County		X		
New Hanover County					

MEETING PARTICIPANTS

NAME	ORGANIZATION/ROLE	6/19/25 Mtg	9/23/25 Mtg	11/20/25 Mtg	12/9/25 Mtg
Abbots, Gloria	Senior Planner, Town of Carolina Beach			X	
Anderson, Kelly	Recreation Assistant, City of Wilmington		X		
Fuller, Jason	Senior Emergency Management Specialist, New Hanover County	X			
Haley, Andrea	Planner, Town of Carolina Beach		X		
Harris, Craig	Emergency Management & Resiliency Coordinator, City of Wilmington	X	X	X	
Medlin, Terri	Emergency Management Assistant Director, New Hanover County	X	X	X	
Nagle, Debra	Administrative Specialist, New Hanover County		X		
Norris, Virginia	Long Range Planner, New Hanover Planner	X			
O'Quinn, Robert	Zoning Administration, Town of Wrightsville Beach	X			
Roth, Rebekah	Planning Director, New Hanover County			X	
Still, Steven	New Hanover County	X			
Vafier, Ken	Planning Manager, New Hanover County		X	X	
Wampler, Madelyn	Sustainability Manager, New Hanover County	X		X	
White, Bethany	Director of Development, Compliance, & Inspections, Town of Kure Beach		X		
Wilson, Tony	Planning & Inspections Director, Town of Wrightsville Beach		X	X	
Onslow County					
Ansell, Jennifer	Chief Zoning & Enforcement Officer, City of Jacksonville		X	X	
Brehmer, Rebecca	Planner, Town of Swansboro	X	X	X	
Derian, Alice	Town Manager, Town of North Topsail Beach	X	X		
Emory, Michelle	Floodplain Coordinator, Onslow County		X	X	
Fender, Alissa	Town Clerk, Town of Swansboro	X			
Hill, Deborah	Planning Director, Town of North Topsail Beach	X		X	
Howard, Franky	CEO, ONWASA			X	
Jones, Luther	Safety Officer, ONWASA		X		

MEETING PARTICIPANTS

NAME	ORGANIZATION/ROLE	6/19/25 Mtg	9/23/25 Mtg	11/20/25 Mtg	12/9/25 Mtg
Kinlaw, Bradley	Emergency Services Director, Onslow County		X		
King, Ryan	Planning Director, City of Jacksonville		X		
Kircher, Marsha-Gray	Community Development Administrator, Town of Holly Ridge	X	X		
Lawrence, Gregory	Floodplain Administrator, Town of Holly Ridge	X			
Massey, Ronald	Deputy City Manager, City of Jacksonville		X		
Miles, Stacie	Emergency Services Deputy Director, Onslow County	X	X		
Randall, Jacob	Fire Chief, Town of Swansboro	X	X	X	
Rhue, Nathan	Community Development Director, Town of Holly Ridge	X	X	X	
Skipper, Douglas	Building Inspector, Town of Holly Ridge	X		X	
Stryker, Aaron	Emergency Management Specialist, Onslow County			X	
Tallman, Edward	Fire Chief, City of Jacksonville	X	X	X	
Whitehead, Greg	Town Administrator, Town of Richlands	X	X	X	
Pender County					
Batson, Tommy	Emergency Management Director, Pender County	X	X	X	
Blake, Angela	Emergency Management Specialist, Pender County			X	
Dawson, Olivia,	Mayor, Town of Burgaw			X	
Duncan, Lee	Resilience Planner, Pender County	X	X	X	
Gantt, James	Town Manager, Town of Burgaw	X			
Horne, James	Emergency Management Director, Town of Surf City	X	X	X	
Jacobs, Shirley	Councilman, Saint Helena		X	X	
Meredith, Ron	Planning Director, Town of Burgaw	X	X	X	
Moore, Stephanie	Town Planner and Floodplain Manager, Town of Topsail Beach		X		
Norris, Virginia	Senior Planner, Pender County			X	
Smith, Jeremy	Community Development, Town of Surf City	X	X	X	
Waters, Marcy	Long Range Planner, Pender County		X		

MEETING PARTICIPANTS

NAME	ORGANIZATION/ROLE	6/19/25 Mtg	9/23/25 Mtg	11/20/25 Mtg	12/9/25 Mtg
Other Stakeholders					
Adams, Daniel	Local Government Services Director, Cape Fear COG			X	
Baker, Carl	Mitigation Plans Manager, NCEM	X	X	X	
Bartlett, Chip	Project Manager, Cape Fear COG			X	
DeLude, Hannah	Hazard Mitigation Planner, ESP Associates	X	X	X	
Flores, John	Hazard Mitigation Planner, ESP Associates	X	X	X	
Garrett, Steve	State NFIP Coordinator, NCEM		X		
Lorenzen, Robin	Area 5 Coordinator, NCEM	X		X	
Malone, Craig	Security & Emergency Manager, Cape Fear Public Utility Authority		X	X	
Mello, John	Hazard Mitigation Planner, NCEM	X	X		
Slaughter, Nathan	Department Manager, ESP Associates	X	X	X	X

Email Correspondence

Hi All,

I hope this message finds you well.

I am reaching out to inform you that Southeastern North Carolina Region is currently in the process of updating our regional hazard mitigation plan. As part of this important initiative, we would like to extend an invitation to neighboring jurisdictions to participate in the planning process.

We believe that collaboration is vital for effective hazard mitigation, and your insights and contributions would be invaluable to our efforts. Our team has created a project website, which you can access here: Southeastern NC Hazard Mitigation Plan Update.

This site contains important information about the project and ongoing updates, including the draft plan. There is a feedback loop located on the website under "Contact Us" where you can ask questions or provide input on the draft plan.

Thank you for considering this opportunity to collaborate on enhancing our regional resilience. We look forward to your participation and support.

Kind regards,

Nathan Slaughter, AICP, CFM

Outside Stakeholder Contacts

Agency	Name	Title	Email
Neighboring Jurisdictions			
Columbus County, NC	Kay Worley	Emergency Management Director	kworley@columbusco.org
Horry County, SC	Sam Hodge	Emergency Management Director	hcg.EmergencyManagement@horrycountysc.gov
Duplin County, NC	Matthew Barwick	Fire & Emergency Management Director	matthew.barwick@dupincountync.com
Jones County, NC	Timmy Pike	Emergency Management Director	tpike@jonescountync.gov
Carteret County, NC	Stephen Rea	Emergency Management Director	stephen.rea@carteretcountync.gov
Sampson County, NC	Ronald Bass	Emergency Management Director	ronaldbass@sampsonnc.com

SENC MEETING AGENDAS

Larger Stakeholder Meeting Kickoff
June 19th, 2025
Wilmington, NC

Welcome and Introductions

I. KICKOFF PROJECT
II. PROJECT TEAM INTRODUCTIONS
III. PLANNING TEAM INTRODUCTIONS
IV. MEETING OBJECTIVES

Mitigation Overview

I. MITIGATION DEFINITIONS
II. TYPES OF MITIGATION
III. MITIGATION TECHNIQUES

Purpose of Update

I. REFLECT ON CHANGING RISKS
II. INCREASE COMMUNITY RESILIENCE
III. ENSURE COMPLIANCE AND FUNDING
IV. INCREASE PREPAREDNESS

Plan Update Process

I. ORGANIZE RESOURCES
II. PERFORM RISK ASSESSMENT
III. DEVELOP MITIGATION PLAN
IV. ADOPTION AND IMPLEMENTATION

Next Steps

I. SHARE PUBLIC SURVEY ON MUNICIPAL SITES

Stakeholder Meeting
June 19th, 2025
Wilmington, NC
1:00pm – 2:10pm

Participants

Name	Organization/Role
Andrea, Ben	Planning & Inspection Direction, Town of Leland
Baker, Carl	Mitigation Plans Manager, NCEM
Batson, Tommy	Emergency Management Director, Pender County
Boyett, Stephen	Development Services Administrator, Village of Bald Head Island
Brehmer, Rebecca	Planner, Town of Swansboro
Bunch, Helen	CZO & Planner, Brunswick County
DeLude, Hannah	Hazard Mitigation Planner, ESP Associates
Derian, Alice	Town Manager, Town of North Topsail Beach
Duncan, Lee	Resilience Planner, Pender County
Dycus, Keith	Development Services Director, Town of Ocean Isle Beach
Evans, Timothy	Planning & Inspections Director, Town of Holden Beach
Fender, Alissa	Town Clerk, Town of Swansboro
Fersinger, Kate	Community Development Planner, Town of Leland
Flore, John	Hazard Mitigation Planner, ESP Associates
Fuller, Jason	Senior Emergency Management Specialist, New Hanover County
Gantt, James	Town Manager, Town of Burgaw
Geise, Leslie	Emergency Management Planner, Brunswick County
Grimes, John	Emergency Management Chief, Town of Leland
Hargrove, Gordon	City Manager, City of Boiling Spring Lakes
Harrington, Adrienne	Smart Moves Consulting, Town of Belville
Harris, Craig	Emergency Management & Resiliency Coordinator, City of Wilmington
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Kirkland, Matt	Development Services Director, Town of Oak Island
Lawrence, Gregory	Floodplain Administrator, Town of Holly Ridge
Lorenzen, Robin	Area 5 Coordinator, NCEM
McIntire, David	Emergency Management Director, Brunswick County
Medlin, Terri	Emergency Management Assistant Director, New Hanover County

Meehan, Maureen	Planning Director, City of Southport
Mello, John	Hazard Mitigation Planner, NCEM
Meredith, Ron	Planning Director, Town of Burgaw
Miles, Stacie	Emergency Services Deputy Director, Onslow County
Morgan, Nicole	Assistant City Manager, City of Boiling Spring Lakes
Norris, Virginia	Long Range Planner, New Hanover Planner
O'Quinn, Robert	Zoning Administration, Town of Wrightsville Beach
Price, Michael	Town Administrator, Town of Calabash
Price, Suzanne	Planning/Zoning Administrator, City of Boiling Spring Lakes
Randall, Jacob	Fire Chief, Town of Swansboro
Rhue, Nathan	Community Development Director, Town of Holly Ridge
Roth, Rebekah	Planning Director, New Hanover County
Skipper, Douglas	Building Inspector, Town of Holly Ridge
Slaughter, Nathan	Department Manager, ESP Associates
Smith, Jeremy	Community Development, Town of Surf City
Satterfield, Ron	Director of Planning, Town of Sunset Beach
Still, Steven	New Hanover County
Tallman, Tee	Fire Chief, City of Jacksonville
Wampler, Madelyn	Sustainability Manager, New Hanover County
Whitehead, Greg	Town Administrator, Town of Richlands

Introductions & Meeting Objectives

The Stakeholder Meeting for the Southeastern Regional Hazard Mitigation Plan Update 2025 was held in Wilmington at the Cape Fear Community College Natural Science Building with a virtual option to facilitate efficient collaboration. Nathan Slaughter, Project Manager, welcomed all participants to the meeting and gave a brief overview of the meeting agenda and objectives. Meeting objectives included (1) Review scope and planning process, (2) Identify and engage key stakeholders, and (3) Outline roles and responsibilities. Participants were asked to sign-in or enter their information in the Teams chat for documentation purposes.

Roles & Responsibilities

Carl Baker, Mitigation Plans Manager, was then introduced to touch on the roles and responsibilities of all parties as well as the plan review and approval process. NCEM oversees the plan review and approval process, including elements such as plan updates funded through HMGP, with the State covering the non-federal share. NCEM also supports jurisdictions throughout the update process by reviewing draft plans for accuracy and federal compliance, submitting them for FEMA approval, and coordinating adoptions before final submittal to FEMA.

Southeastern NC Regional Hazard Mitigation Plan Update
Stakeholder Kickoff Meeting

June 19, 2025
1:00 PM - 3:00 PM

Name	Agency	City	Phone Number	E-mail Address
Virginia Norris	New Hanover County Planning	Wilmington	910-798-7453	vnorris@nhcgov.com
Alissa Fender	Town of Swansboro	Swansboro	910-326-4428	afender@ci.swansboro.nc.us
Rebecca Brehmer	Town of Swansboro	Swansboro	910-326-4428	rbrehmer@ci.swansboro.nc.us
Rob Satterfield	Town of Sunset Beach	Sunset Beach	910-579-6297	rsatterfield@sunsetbeachnc.gov

Southeastern NC Regional Hazard Mitigation Plan Update
Stakeholder Kickoff Meeting

June 19, 2025
1:00 PM - 3:00 PM

Name	Agency	City	Phone Number	E-mail Address
Jason Fuller	NHC EM	Wilmington	704-794-8624	jfuller@nhcgov.com
Stacie Miles	Onslow EM	Jacksonville	910-347-4270	Stacie_miles@onslowcountync.gov
Madelyn Wampler	New Hanover County	Wilmington,	910-798-7175	mwampler@nhcgov.com
Lee Duncan	Pender Co.	Burgaw	910-514-0695	lduncan@pendercountync.gov
Helen Bunch	Brunswick Co.	Bolivia	910-253-2035	hbunch@brunswickcountync.gov
Rebekah Roth	NHC Planning	Wilmington	910-660-1917	rroth@nhcgov.com
Robert O'Quinn	Wrightsville Beach Planning	Wrightsville Beach	910-239-1749	ROquinn@TOWB.org
STEPHEN BOYETT	BALD HEAD ISLAND	BALD HEAD	910-457-9700	SBOYETT@VILLAGEBHI.ORG

1. Summary

Meeting title	Southeastern NC Regional Hazard Mitigation Plan Update - Stakeholder Kickoff
Attended participants	40
Start time	6/19/25, 12:18:52 PM
End time	6/19/25, 2:36:29 PM
Meeting duration	2h 17m 37s
Average attendance time	1h 2m 2s

2. Participants

Name	First Join	Last Leave	In-Meeting Duration	Email	Participant ID (UPN)	Role
Nathan Slaughter	6/19/25, 12:38:50 PM	6/19/25, 2:11:20 PM	1h 32m 30s	nslaughter@espassociates.com	nslaughter@espassociates.com	Organizer
Marsha-Gray Kircher (External)	6/19/25, 12:42:52 PM	6/19/25, 2:08:06 PM	1h 25m 13s	planningadmin@hollyridgenc.org	planningadmin@hollyridgenc.org	Presenter
Douglas Skipper (Unverified)	6/19/25, 12:44:34 PM	6/19/25, 2:08:17 PM	1h 23m 43s			Presenter
Baker, Carl (NCEM) (External)	6/19/25, 12:48:19 PM	6/19/25, 2:12:53 PM	1h 24m 34s	carl.baker@ncdps.gov	carl.baker@ncdps.gov	Presenter
Medlin, Terri (External)	6/19/25, 12:50:56 PM	6/19/25, 2:03:14 PM	1h 10m 35s	tmedlin@nhcgov.com	tmedlin@nhcgov.com	Presenter
Adrienne Harrington (External)	6/19/25, 12:52:47 PM	6/19/25, 1:58:56 PM	1h 6m 9s	adrienne@smartmovesconsulting.	adrienne@smartmovesconsulting.	Presenter
Tommy Batson (Unverified)	6/19/25, 12:53:46 PM	6/19/25, 1:19:46 PM	25m 59s			Presenter
Keith Dycus (External)	6/19/25, 12:55:49 PM	6/19/25, 2:07:56 PM	1h 12m 7s	keith@oibgov.com	keith@oibgov.com	Presenter
Still, Steven (External)	6/19/25, 12:56:15 PM	6/19/25, 1:43:44 PM	47m 29s	SStill@nhcgov.com	sstill@nhcgov.com	Presenter
Tee Tallman (Unverified)	6/19/25, 12:56:39 PM	6/19/25, 2:08:40 PM	1h 12m			Presenter
Mello, John (NCEM) (External)	6/19/25, 12:56:49 PM	6/19/25, 2:07:54 PM	1h 11m 5s	John.Mello@ncdps.gov	John.Mello@ncdps.gov	Presenter
Nathan Rhue (External)	6/19/25, 12:57:25 PM	6/19/25, 2:07:54 PM	1h 10m 28s	planner@hollyridgenc.org	planner@hollyridgenc.org	Presenter
Gregory Lawrence (External)	6/19/25, 12:57:28 PM	6/19/25, 2:09:42 PM	1h 12m 13s	codeadmin@hollyridgenc.org	codeadmin@hollyridgenc.org	Presenter
Jeremy Smith (External)	6/19/25, 12:57:37 PM	6/19/25, 2:08:38 PM	47m 4s	jsmith@surfcitync.gov	jsmith@surfcitync.gov	Presenter
Matt Kirkland (External)	6/19/25, 12:57:42 PM	6/19/25, 2:07:59 PM	1h 10m 16s	MKirkland@oakislandnc.gov	MKirkland@oakislandnc.gov	Presenter
Ron Meredith (External)	6/19/25, 12:57:44 PM	6/19/25, 2:09:56 PM	1h 12m 12s	rmeredith@burgawnc.gov	rmeredith@burgawnc.gov	Presenter
James Horne (External)	6/19/25, 12:58:00 PM	6/19/25, 2:07:41 PM	1h 9m 40s	jhorne@surfcitync.gov	jhorne@surfcitync.gov	Presenter
Craig Harris	6/19/25, 12:58:11 PM	6/19/25, 2:12:33 PM	1h 14m 21s	Craig.Harris@wilmingtonnc.gov	Craig.Harris@wilmingtonnc.gov	Presenter
John Grimes	6/19/25, 12:58:25 PM	6/19/25, 2:07:26 PM	1h 9m	jgrimes@townofleland.com	jgrimes@TOWNOFLELAND.COM	Presenter
Hannah Delude	6/19/25, 12:58:36 PM	6/19/25, 2:07:56 PM	1h 9m 20s	hdelude@espassociates.com	hdelude@espassociates.com	Presenter
Adrienne's Notetaker (Otter.ai) (Un	6/19/25, 12:59:20 PM	6/19/25, 1:41:54 PM	42m 33s			Presenter
Diana (Unverified)	6/19/25, 12:59:52 PM	6/19/25, 1:05:50 PM	5m 58s			Presenter
James Gantt (External)	6/19/25, 12:59:55 PM	6/19/25, 2:07:55 PM	1h 7m 59s	jgantt@burgawnc.gov	jgantt@burgawnc.gov	Presenter
Leslie Geise (External)	6/19/25, 1:00:48 PM	6/19/25, 2:07:51 PM	1h 7m 2s	leslie.geise@brunswickcountync.g	lestie.geise@brunswickcountync.g	Presenter
Maureen Meehan (External)	6/19/25, 1:01:00 PM	6/19/25, 2:08:00 PM	1h 7m	mmeehan@cityofsouthport.com	mmeehan@cityofsouthport.com	Presenter
Jacob Randall - Town of Swansborc	6/19/25, 1:01:15 PM	6/19/25, 2:09:41 PM	1h 8m 26s			Presenter
Ben Andrea	6/19/25, 1:01:16 PM	6/19/25, 1:57:20 PM	56m 4s	bandrea@TOWNOFLELAND.COM	bandrea@TOWNOFLELAND.COM	Presenter
Kate Fersinger	6/19/25, 1:01:16 PM	6/19/25, 2:06:36 PM	1h 5m 20s	kfersinger@townofleland.com	kfersinger@TOWNOFLELAND.CON	Presenter
Deb Hill	6/19/25, 1:01:16 PM	6/19/25, 2:08:22 PM	1h 7m 5s	dhill@northtopsailbeachnc.gov	dhill@NORTHTOPSAILBEACHNC.(	Presenter
Lorenzen, Robin (NCEM)	6/19/25, 1:01:16 PM	6/19/25, 2:08:18 PM	1h 7m 1s	robin.lorenzen@ncdps.gov	robin.lorenzen_ncdps.gov#EXT#@i	Presenter
Gregg Whitehead	6/19/25, 1:01:16 PM	6/19/25, 2:08:07 PM	1h 6m 50s	administrator@richlandsnc.gov	administrator@richlandsnc.gov	Presenter
Landin's Notetaker (Otter.ai) (Unve	6/19/25, 1:01:17 PM	6/19/25, 1:43:47 PM	42m 29s			Presenter
David McIntire (External)	6/19/25, 1:01:20 PM	6/19/25, 2:07:54 PM	1h 6m 34s	david.mcintire@brunswickcountyr	david.mcintire@brunswickcountyr	Presenter
Nicole Morgan (External)	6/19/25, 1:01:25 PM	6/19/25, 2:07:40 PM	1h 6m 15s	nmorgan@cityofbsl.org	nmorgan@cityofbsl.org	Presenter
Michael Price (External)	6/19/25, 1:03:37 PM	6/19/25, 2:07:11 PM	1h 3m 34s	mprice@townofcalabash.net	mprice@townofcalabash.net	Presenter
Alice Derian	6/19/25, 1:08:03 PM	6/19/25, 2:07:42 PM	59m 38s	aderian@northtopsailbeachnc.gov	aderian@NORTHTOPSAILBEACHN	Presenter
John Flores	6/19/25, 1:08:36 PM	6/19/25, 2:07:50 PM	59m 14s	jflores@espassociates.com	jflores@espassociates.com	Presenter

Tim Evans (External)	6/19/25, 1:19:40 PM	6/19/25, 2:08:22 PM	48m 41s	tevans@hbtownhall.com	tevans@hbtownhall.com	Presenter
Tommy Batson (Unverified)	6/19/25, 1:20:26 PM	6/19/25, 2:07:54 PM	47m 28s			Presenter
Lorenzen, Robin (NCEM) (External)	6/19/25, 2:08:24 PM	6/19/25, 2:08:32 PM	7s	robin.lorenzen@ncdps.gov	ROBIN.LORENZEN@ncdps.gov	Presenter

3. In-Meeting Activities

Name	Join Time	Leave Time	Duration	Email	Role
Nathan Slaughter	6/19/25, 12:38:50 PM	6/19/25, 2:11:20 PM	1h 32m 30s	nslaughter@espassociates.com	Organizer
Marsha-Gray Kircher (External)	6/19/25, 12:42:52 PM	6/19/25, 2:08:06 PM	1h 25m 13s	planningadmin@hollyridgenc.org	Presenter
Douglas Skipper (Unverified)	6/19/25, 12:44:34 PM	6/19/25, 2:08:17 PM	1h 23m 43s		Presenter
Baker, Carl (NCEM) (External)	6/19/25, 12:48:19 PM	6/19/25, 2:12:53 PM	1h 24m 34s	carl.baker@ncdps.gov	Presenter
Medlin, Terri (External)	6/19/25, 12:50:56 PM	6/19/25, 1:37:47 PM	46m 50s	tmedlin@nhcgov.com	Presenter
Medlin, Terri (External)	6/19/25, 1:39:29 PM	6/19/25, 2:03:14 PM	23m 45s	tmedlin@nhcgov.com	Presenter
Adrienne Harrington (External)	6/19/25, 12:52:47 PM	6/19/25, 1:58:56 PM	1h 6m 9s	adrienne@smartmovesconsulting.	Presenter
Tommy Batson (Unverified)	6/19/25, 12:53:46 PM	6/19/25, 1:19:46 PM	25m 59s		Presenter
Keith Dycus (External)	6/19/25, 12:55:49 PM	6/19/25, 2:07:56 PM	1h 12m 7s	keith@oibgov.com	Presenter
Still, Steven (External)	6/19/25, 12:56:15 PM	6/19/25, 1:43:44 PM	47m 29s	SStill@nhcgov.com	Presenter
Tee Tallman (Unverified)	6/19/25, 12:56:39 PM	6/19/25, 2:08:40 PM	1h 12m		Presenter
Mello, John (NCEM) (External)	6/19/25, 12:56:49 PM	6/19/25, 2:07:54 PM	1h 11m 5s	John.Mello@ncdps.gov	Presenter
Nathan Rhue (External)	6/19/25, 12:57:25 PM	6/19/25, 2:07:54 PM	1h 10m 28s	planner@hollyridgenc.org	Presenter
Gregory Lawrence (External)	6/19/25, 12:57:28 PM	6/19/25, 2:09:42 PM	1h 12m 13s	codeadmin@hollyridgenc.org	Presenter
Jeremy Smith (External)	6/19/25, 12:57:37 PM	6/19/25, 1:38:05 PM	40m 27s	jsmith@surfcitync.gov	Presenter
Jeremy Smith (External)	6/19/25, 2:02:01 PM	6/19/25, 2:08:38 PM	6m 37s	jsmith@surfcitync.gov	Presenter
Matt Kirkland (External)	6/19/25, 12:57:42 PM	6/19/25, 2:07:59 PM	1h 10m 16s	MKirkland@oakislandnc.gov	Presenter
Ron Meredith (External)	6/19/25, 12:57:44 PM	6/19/25, 2:09:56 PM	1h 12m 12s	rmeredith@burgawnc.gov	Presenter
James Horne (External)	6/19/25, 12:58:00 PM	6/19/25, 2:07:41 PM	1h 9m 40s	jhorne@surfcitync.gov	Presenter
Craig Harris	6/19/25, 12:58:11 PM	6/19/25, 2:12:33 PM	1h 14m 21s	Craig.Harris@wilmingtonnc.gov	Presenter
John Grimes	6/19/25, 12:58:25 PM	6/19/25, 2:07:26 PM	1h 9m	jgrimes@townofleland.com	Presenter
Hannah Delude	6/19/25, 12:58:36 PM	6/19/25, 2:07:56 PM	1h 9m 20s	hdelude@espassociates.com	Presenter
Adrienne's Notetaker (Otter.ai) (Un	6/19/25, 12:59:20 PM	6/19/25, 1:41:54 PM	42m 33s		Presenter
Diana (Unverified)	6/19/25, 12:59:52 PM	6/19/25, 1:05:50 PM	5m 58s		Presenter
James Gantt (External)	6/19/25, 12:59:55 PM	6/19/25, 2:07:55 PM	1h 7m 59s	jgantt@burgawnc.gov	Presenter
Leslie Geise (External)	6/19/25, 1:00:48 PM	6/19/25, 2:07:51 PM	1h 7m 2s	leslie.geise@brunswickcountync.g	Presenter
Maureen Meehan (External)	6/19/25, 1:01:00 PM	6/19/25, 2:08:00 PM	1h 7m	mmeehan@cityofsouthport.com	Presenter
Jacob Randall - Town of Swansbor	6/19/25, 1:01:15 PM	6/19/25, 2:09:41 PM	1h 8m 26s		Presenter
Ben Andrea	6/19/25, 1:01:16 PM	6/19/25, 1:57:20 PM	56m 4s	bandrea@TOWNOFLELAND.COM	Presenter
Kate Fersinger	6/19/25, 1:01:16 PM	6/19/25, 2:06:36 PM	1h 5m 20s	kfersinger@townofleland.com	Presenter
Deb Hill	6/19/25, 1:01:16 PM	6/19/25, 2:08:22 PM	1h 7m 5s	dhill@northtopsailbeachnc.gov	Presenter
Lorenzen, Robin (NCEM)	6/19/25, 1:01:16 PM	6/19/25, 2:08:18 PM	1h 7m 1s	robin.lorenzen@ncdps.gov	Presenter
Gregg Whitehead	6/19/25, 1:01:16 PM	6/19/25, 2:08:07 PM	1h 6m 50s	administrator@richlandsnc.gov	Presenter
Landin's Notetaker (Otter.ai) (Unve	6/19/25, 1:01:17 PM	6/19/25, 1:43:47 PM	42m 29s		Presenter
David McIntire (External)	6/19/25, 1:01:20 PM	6/19/25, 2:07:54 PM	1h 6m 34s	david.mcintire@brunswickcountyr	Presenter
Nicole Morgan (External)	6/19/25, 1:01:25 PM	6/19/25, 2:07:40 PM	1h 6m 15s	nmorgan@cityofbst.org	Presenter
Michael Price (External)	6/19/25, 1:03:37 PM	6/19/25, 2:07:11 PM	1h 3m 34s	mprice@townofcalabash.net	Presenter
Alice Derian	6/19/25, 1:08:03 PM	6/19/25, 2:07:42 PM	59m 38s	aderian@northtopsailbeachnc.gov	Presenter
John Flores	6/19/25, 1:08:36 PM	6/19/25, 2:07:50 PM	59m 14s	jflores@espassociates.com	Presenter
Tim Evans (External)	6/19/25, 1:19:40 PM	6/19/25, 2:08:22 PM	48m 41s	tevans@hbtownhall.com	Presenter
Tommy Batson (Unverified)	6/19/25, 1:20:26 PM	6/19/25, 2:07:54 PM	47m 28s		Presenter

The local jurisdictions' roles were outlined, emphasizing their responsibilities to invite stakeholders, participate in HMPC meetings, provide input (particularly on the Capability Assessment and Mitigation Action Strategy), and review draft plans. They also present the adoption notice for approval by local or county boards.

The contractor's role was described as facilitating HMPC meetings, researching and updating all sections of the HMP, coordinating input from the local HMPC, and submitting drafts for review. The contractor also manages the coordination of adoptions and submission of the final plan.

Plan review and approval process was reviewed, which involves NCEM's evaluation of 33 review elements, including mitigation actions that may require revisions. The process includes submitting draft plans to FEMA, initiating the adoption process, and awaiting FEMA's approval letter. Once fully adopted, the final plan is submitted to FEMA for official approval.

Brief Mitigation Overview

During the meeting, mitigation was reviewed, which refers to *proactive measures taken to reduce the impact of hazards before they occur*, with the goal of minimizing future risks and damages. It was noted that all mitigation actions are categorized into two major groups (existing development and future development) and fall under one of the six techniques summarized (prevention, preparedness, natural resource protection, emergency services, property protection, and education and awareness). It was noted that during an activity performed for the 2021 plan update, the HMPC voted for Prevention, Structural Projects, and Property Protection as the top 3 techniques

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Purpose of Update

The purpose of the plan update was discussed, and its importance was emphasized. The update is necessary to reflect changing risks, such as population increases, community growth, the emergence of new hazards and man-made threats, shifting conditions, and evolving development patterns. The plan aims to enhance community resilience across social, economic, and environmental dimensions, ensuring the community is better prepared to withstand and recover from disasters.

Furthermore, the update is essential for maintaining compliance with Federal and State requirements, including DMA 200, NC GS 166 A, and funding programs like HMGP and FMA, which are critical for securing ongoing support and funding. Participants asked about future FEMA funding. CRS elements were also highlighted at this time along with the key benefits of CRS participation. Recently, several communities' CRS rating were updated and they were able to use the HMP for substantial points under Section 510. Participants shared new information on CRS recertification letters and guidance that the planning team will look into. Finally, the plan

contributes to heightened preparedness by addressing both existing and emerging threats, with the goal of protecting lives and property, and ensuring the continuity of essential services during and following disasters.

Plan Update Process

The planning process was reviewed, which outlined four essential steps:

1. Organizing resources – The planning team has started working with participating counties and municipalities within this region and will conduct public outreach/stakeholder engagement for diverse perspectives.
2. Conducting a risk assessment – This will begin with hazard identification (*What can happen here*?) considering historical occurrence and emerging hazards. After hazards have been identified, the planning team will examine hazard impact (*What do these hazards do when they occur within the region*?), while considering capability to act.
3. Developing a mitigation plan – Existing actions from the previous update must be reviewed, including project implementation status updates (as required by FEMA). In addition to project status updates, new mitigation actions will be discussed during the Mitigation Strategy Meeting and integrated into the mitigation plan.
4. Final adoption and implementation – The final step is to adopt the plan and begin action implementation. The draft plan will be sent to the Planning Committee and then will go through its first round of review by NCEM. FEMA will provide the final review and approval of the plan.

SWOT Analysis

A Menti Poll was conducted to engage participants and gather feedback that will be used to guide the planning process. The questions are provided below:

1. What do you see as the most significant strengths your region has when it comes to hazard mitigation and resilience?
2. Has your recently community completed projects/implemented actions to address vulnerability? Please share & include your community's name!
3. What weaknesses, challenges, or barriers have hindered mitigation efforts in the past?
4. Can you identify opportunities (e.g. partnerships, funding sources, or new technologies) that we could leverage to enhance the planning process?
5. Are there any existing planning efforts/initiatives that we should integrate into the plan update to maximize efficiency and effectiveness?
6. Are there any non-governmental organizations that should be included in the planning process and/or CRS Steering Committee?

Results to this Menti activity are provided in a separate PDF.

Project Information/Resources

Participating counties and municipalities were asked to post relevant project information and updates to facilitate ongoing communication. The team highlighted that the project website and public survey were already accessible online and would be updated regularly throughout the planning process. The website provides key resources, including the project overview, meeting minutes and presentations, the public survey, the previous 2021 HMP, and relevant planning resources.

Additionally, the critical role of participating jurisdictions was reiterated, emphasizing that their input and expertise will be essential to enhance the plan and ensure it remains relevant and useful. The active involvement of local stakeholders was recognized as vital to the success of the update process. The primary role and key tasks assigned to local jurisdictions was also shared at this time to give a general overview.

Q&A Session

The floor was opened for participants to ask questions or voice concerns. No participants raised questions at this time.

Meeting Closeout

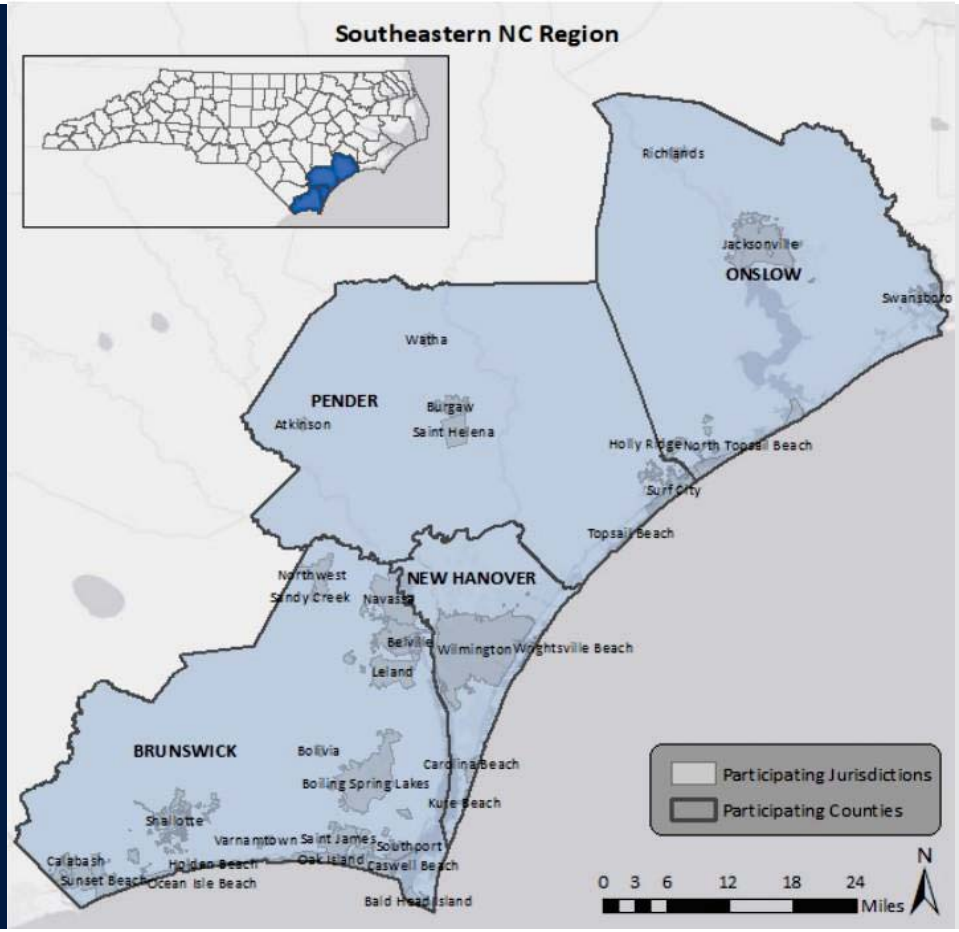
The meeting concluded with a call for collaborative updates among counties and municipalities. Contact information was shared at this time. Meeting minutes and the presentation will be shared with participants, as requested, and uploaded to the project website for documentation purposes. The meeting officially adjourned at 2:10pm.

Southeastern NC

Regional Hazard Mitigation Plan Update

Stakeholder Meeting

June 19th, 2025



Agenda

- Introductions & Meeting Objectives
- Roles & Responsibilities (NCEM)
- Brief Mitigation Overview
- Purpose of Update
- Plan Update Process
- SWOT Analysis
- Project Information/Resources
- Q&A

Meeting Kickoff

- Welcome & Introductions
- Reminder to Sign In!

Meeting Objectives



Review Scope and Planning Process



Identify & Engage Key Stakeholders



Outline Roles & Responsibilities

Project Roles and Approval Process

NCEM Facilitated

Carl Baker, Mitigation Plans Manager with NCEM, will be reviewing:

1. Project Team Roles & Responsibilities (NCEM, Local Jurisdictions, and Contractor)
2. Plan Review & Approval Process (Elements, Timeline, Issuance)

Hazard Mitigation Plan (HMP) Update Process

- NCEM Role
- Local Jurisdiction Role
- Contractor Role
- Plan Review and Approval Process
- NCEM Hazard Mitigation Plans (Use QR Code)

NCEM Role

- Plan updates are funded through the HMGP (State pays the non-fed share)
- Support jurisdictions throughout the plan update process
- Review draft plans for accuracy and compliance with Federal guidance
- Submit plans for FEMA approval
- Coordinate plan adoptions and submit final plan to FEMA

Local Jurisdiction Role

- Invite stakeholders and attend Hazard Mitigation Planning Committee (HMPC) meetings
- Provide input for plan update, particularly the Capability Assessment and Mitigation Action Strategy/Plan
- Review the draft plan
- Present adoption notice to local/county board for approval

Contractor Role

- Facilitate HMPC meetings
- Research and update all sections of the HMP
- Coordinate input from local HMPC into plan update (HIRA, Capability Assessment, Mitigation Actions, etc.)
- Submit draft plan to NCEM for review
- Coordinate adoptions and submit final plan

Plan Review and Approval Process

- NCEM reviews submitted draft plan
  - 33 review elements
  - Mitigation Actions, may require revisions such as category, status, etc. Must have one per hazard, or one all hazard action. Emergency Services actions do not count towards the minimum requirements.
- Submit draft plan to FEMA for review and approval
  - Begin adoption process
- FEMA issues approval letter
  - Once plan is fully adopted a final plan is submitted to FEMA

Background/ Overview

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

NOTE: During an activity performed for the 2021 plan update, the HMPC voted Prevention, Structural Projects, and Property Protection as the top 3 techniques

1. Prevention
2. Property Protection
3. Natural Resource Management
4. Structural Projects
5. Emergency Services
6. Education and Awareness

Purpose of Plan Update

Why is it Necessary?

- Reflect on Changing Risks
- Increase Community Resilience
- Ensure Compliance and Funding
- Heighten Preparedness

Addressing Changing and Emerging Risk

Population Increase and Community Growth	Greater Exposure to Hazard Risk Increased Exposure = More Damage
More Hazards (Man-Made)	Included in State Plan Ex. Technological, Civil Disturbance, Terrorism
Changing Conditions	Anticipated Increase in Frequency and Magnitude **Optional Inclusion/Reference to Climate Change
Development Patterns	Increased Impermeable Surfaces More Infrastructure and Assets at Risk

Increasing Community Resilience

Economic Resilience: Support the stability and recovery of local businesses and employment opportunities to ensure the community can withstand and bounce back from hazard impacts.

Social Resilience: Strengthen community networks, social services, and access to resources, ensuring all residents can effectively prepare for, respond to, and recover from hazards.



Environmental Resilience: Protect and restore natural ecosystems such as wetlands, forests, and floodplains to reduce hazard impacts, promote ecological health, and sustain natural buffers against disasters.

Ensuring 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**

Community Rating System (CRS)

There are twelve communities in the region that participate in the CRS.

Specific CRS elements will be integrated into the hazard mitigation planning process including:

1. Public and Targeted Outreach (Public Meetings Timing)
2. Hazard Mapping and Regulations
3. Flood Damage Reduction Activities (SDE Procedures)
4. CRS Steering Committee (50% NGO/Public)
5. Thorough Documentation of Process (Section 2)

CRS Key Benefits

Participation in the CRS offers economic benefits and supports hazard mitigation efforts:

1. **Financial Incentives** – Potential for reduced insurance premiums and access to mitigation grants
2. **Recognition and Credibility** – Demonstrates community's commitment to risk reduction and transparency
3. **Compliance and Stakeholder Engagement** – Encourages collaboration among agencies, insurers, and residents

Heightening Preparedness

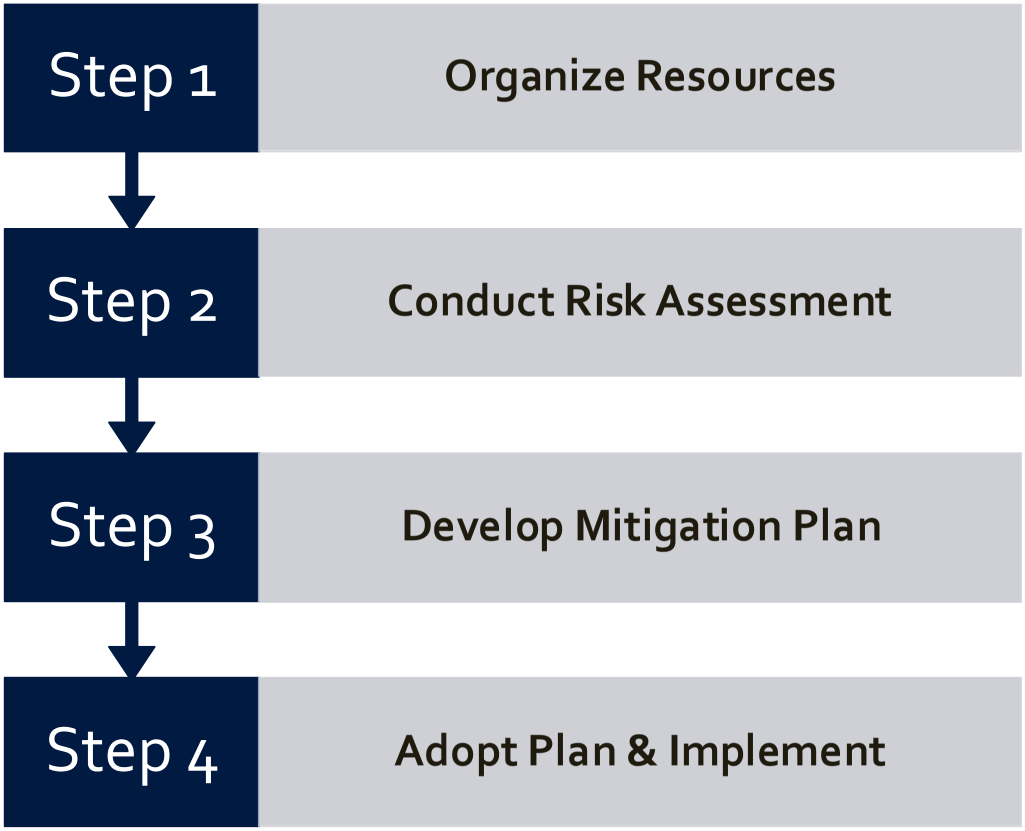
This plan update ensures that the participating jurisdictions are better prepared to:

1. Address existing and emerging hazards
2. Protect lives and property
3. Sustain continuity of essential services during and following an event



Planning Process

How will it be done?



Step 1: Organize Resources

Planning	Planning for Public Involvement
Coordinating	Coordinating with Departments and Agencies
Finalizing	Finalizing a List of Stakeholders for Involvement (HMPC)



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

What Can We Do About It?

- What Mitigation Actions are Feasible
- Where Gaps Exist

Step 2: Risk Assessment

Previously Identified Hazards (2021)

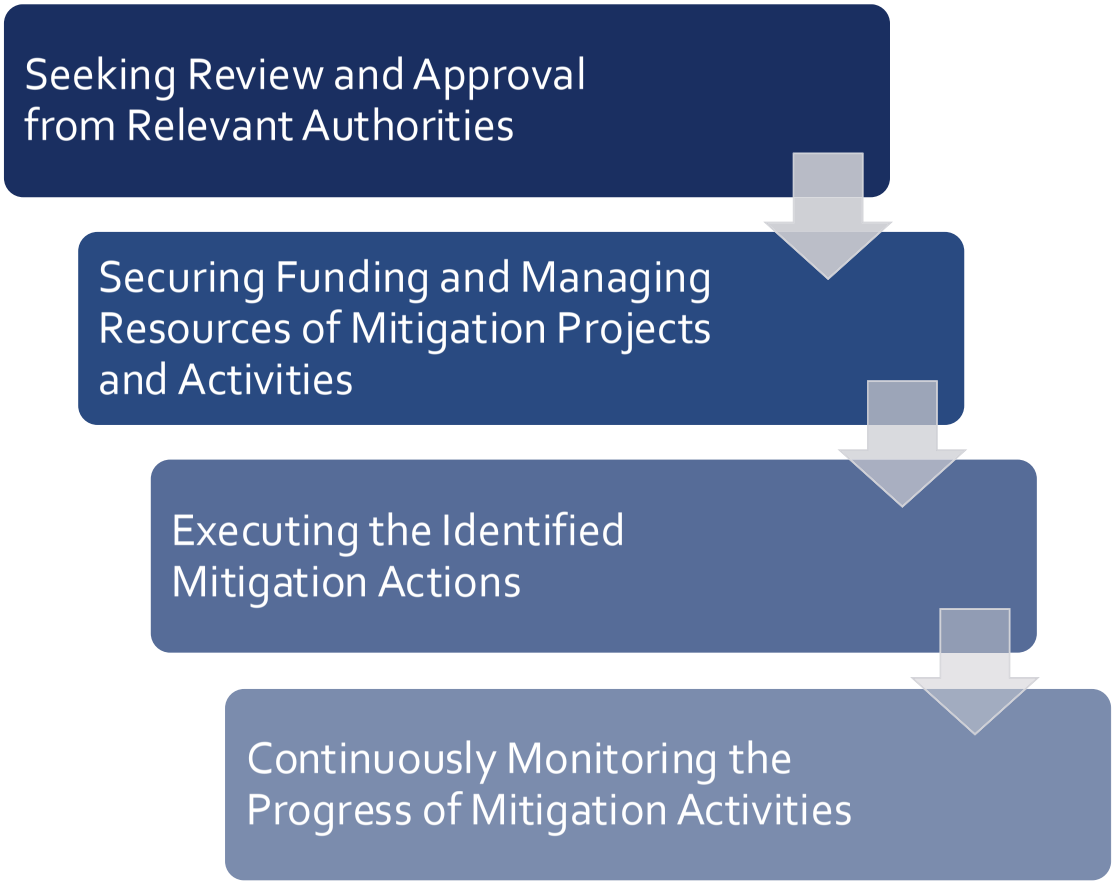
HIGH RISK	Flooding Hurricanes/Coastal Hazards Cyber Tornadoes/Thunderstorms
MODERATE RISK	Severe Winter Weather Radiological Emergency Infectious Disease Hazardous Substances Drought Terrorism Wildfire Geological Hazards (Sinkholes, Coastal Erosion) Rip Currents
LOW RISK	Tsunamis Excessive Heat Earthquake Dam Failure Electromagnetic Pulse

Step 3: Develop a Mitigation Plan

- **Setting Planning Goals**
- **Reviewing Mitigation Alternatives**
- **Drafting an Action Plan**



Step 4: Adopt Plan and Implement Actions



Integration Efforts

Leveraging existing efforts ensures a more robust and efficient hazard mitigation plan, supporting:

1. Comprehensive Risk Perspective
2. Resource Optimization
3. Regional Coordination
4. Plan Continuity and Alignment
5. Stakeholder Buy-In

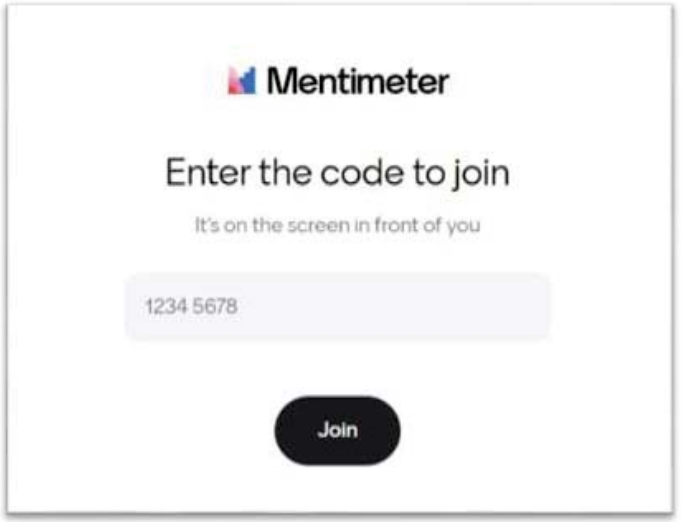
Interactive Session

SWOT Analysis

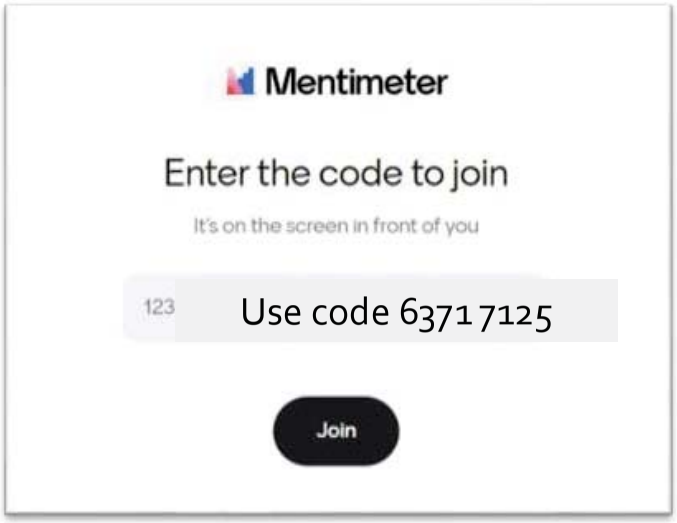
We'll be going through a series of open-ended questions that will be used to inform the plan update.

Your input matters!

Please open menti.com



Menti Poll

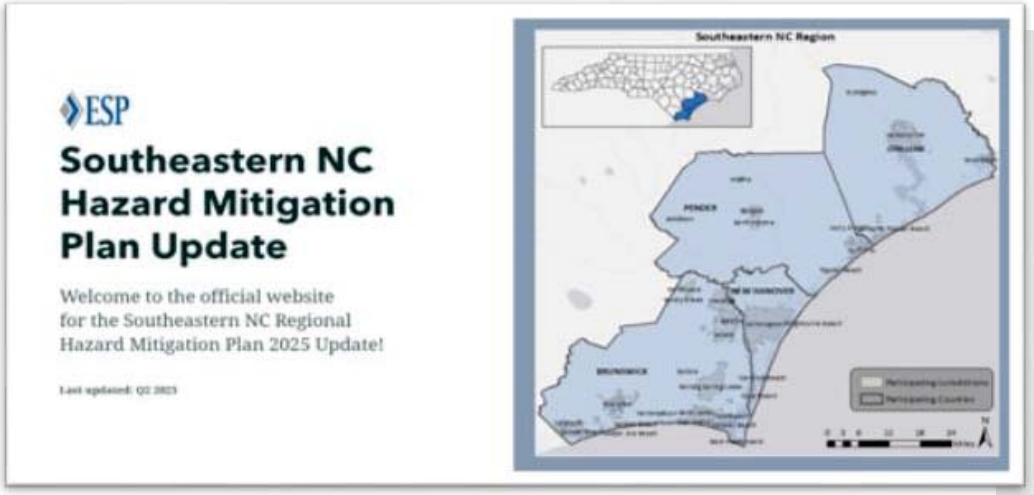

Mentimeter
Enter the code to join
It's on the screen in front of you
123
Use code 6371 7125
Join

Project Information

Where is information being shared?

- Project Team requests counties/municipalities post relevant project information and updates
- Can be used as a Tool for HMPC Coordination and Public Outreach
- Project Website & Public Survey are readily available online!

Visit and Share the Project Website



Project Website will be updated regularly throughout the planning process to provide access to:

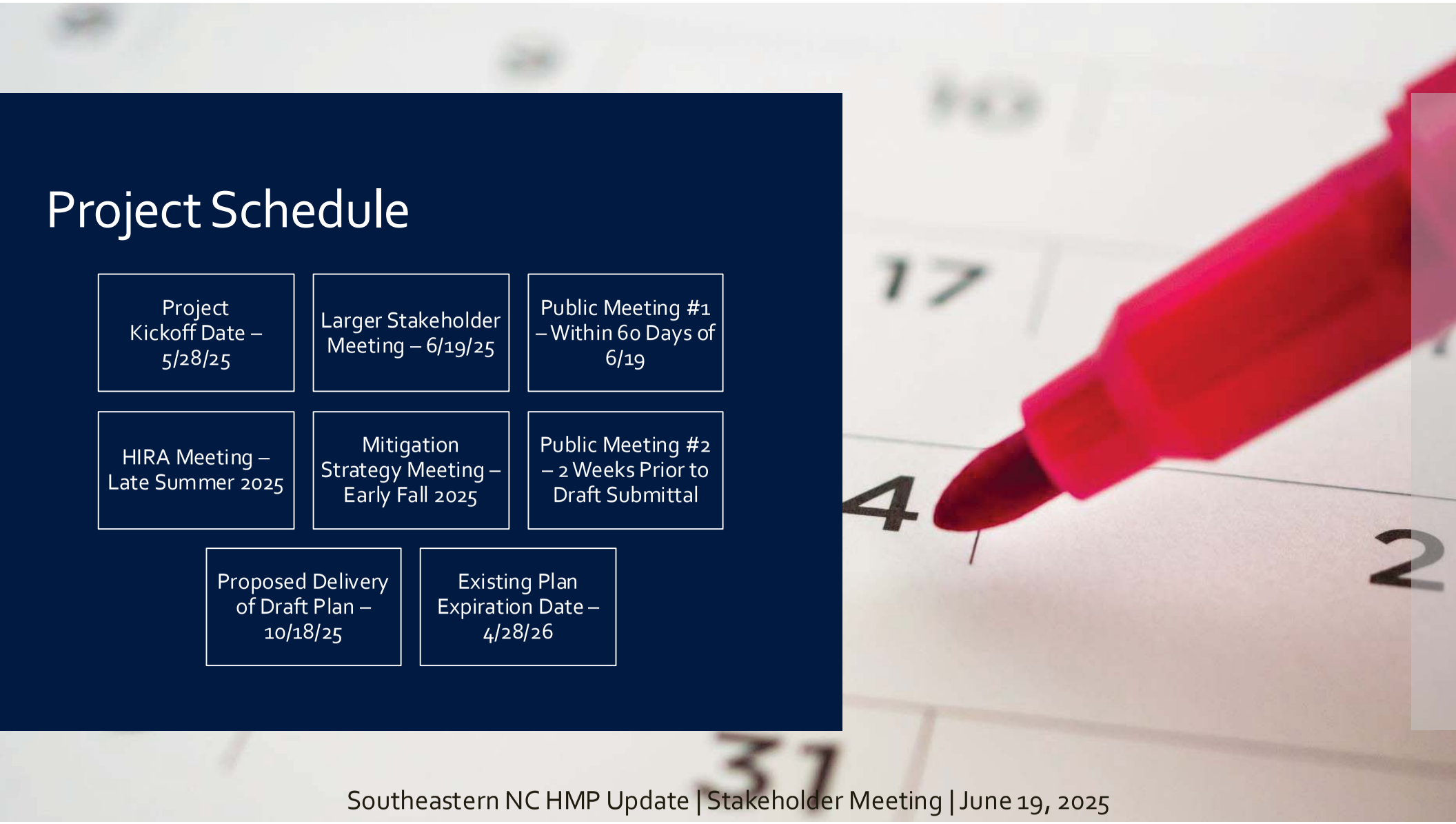
1. Project Overview
2. Meeting Information
3. Public Survey
4. Previous HMP (2021)
5. Relevant Planning Resources

Complete and Share the Public Survey!

Scan the QR Code for Access to the **Public Survey!**

Project Schedule

- Project Kickoff Date – 5/28/25
- Larger Stakeholder Meeting – 6/19/25
- Public Meeting #1 – Within 60 Days of 6/19
- HIRA Meeting – Late Summer 2025
- Mitigation Strategy Meeting – Early Fall 2025
- Public Meeting #2 – 2 Weeks Prior to Draft Submittal
- Proposed Delivery of Draft Plan – 10/18/25
- Existing Plan Expiration Date – 4/28/26



Your Role Moving Forward

Participating local jurisdictions play a critical role in the plan update and we wanted to reiterate that your input/expertise ensures plan relevance and usefulness:

1. **Tell us who should be involved in the process.** Have we missed anyone? This can include community groups, non-profits, businesses, etc.
2. **Share the project website to your county/municipal page.** We're actively updating this site, so sharing/promoting is all you need to do!
3. **Complete the survey and encourage others to do so**. Print copies and place them in community buildings. Let us know if translation is needed.
4. **Determine location, date, and times for meetings in a timely fashion.** Our aim is to send invites out with at least 2 weeks notice.

Your Role Moving Forward cont.

Participating local jurisdictions play a critical role in the plan update and we wanted to reiterate that your input/expertise ensures plan relevance and usefulness:

5. **Review your Capability Assessment.** Identify new capabilities or adjust existing capabilities. Efforts underway should be noted.
6. **Review your Mitigation Plan.** Provide a detailed status update on each action and brainstorm new actions that address existing gaps/weaknesses.
7. **Collaborate amongst other agencies/departments.** This update spans beyond EM and will benefit from the cross-sectoral collaboration/expertise.
8. **Reach out to smaller jurisdictions to ensure their participation.** Whether actively present or represented through the county, this will help expedite the update and adoption process.



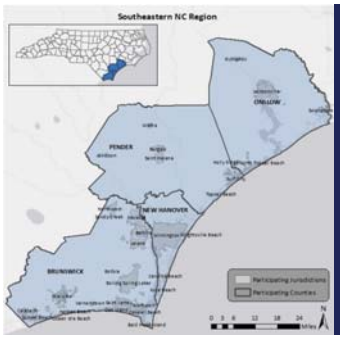
Questions

Questions/Comments/Concerns

Adjourn –
Thank you!

Contact Information:

- **Nathan Slaughter**, Project Manager - nslaughter@espassociates.com
- **Hannah DeLude**, Planner - hdelude@espassociates.com
- **John Flores**, Planner - jflores@espassociates.com



SOUTHEASTERN NC

REGIONAL HAZARD MITIGATION PLAN 2025 UPDATE

QR CODE TO PUBLIC SURVEY

Background

The Southeastern NC Regional Hazard Mitigation Plan aims to assess, reduce, and prepare for the impact of natural and man-made hazards in the region. The 2025 Plan Update involves the identification of vulnerabilities and prioritization of mitigation strategies to better prepare for, respond to, and recover from a hazardous event. Through collaboration and coordination, the Plan Update seeks to engage stakeholders, raise awareness, and facilitate measures to mitigate risk and build a safer, more resilient region for current and future generations.

What is Mitigation?

FEMA defines Hazard Mitigation as:
"Sustained action taken to reduce or eliminate long-term risk to human life and property from hazards."

1 *EXISTING*
Mitigate hazard impacts on existing development in our communities (i.e. houses, businesses, infrastructure, critical facilities)

2 *FUTURE*
Ensure future development is conducted in a manner that does not increase vulnerability (i.e. strategic planning, policy, and procedures)

Disaster Mitigation Act of 2000

The Disaster Mitigation Act (DMA) of 2000 represents a major shift from reactive response to proactive prevention requiring local communities to develop/maintain hazard mitigation plans.

- **Revitalized Federal Planning Requirements**
  - State and Local Hazard Mitigation Plans
- **Federal Grant Funding Eligibility**
  - Hazard Mitigation Grant Program (HMGP)
  - Flood Mitigation Assistance (FMA)

**Plans should be updated every 5 years to remain current.

Mitigation Techniques

1. Prevention – Planning and Zoning, Building Codes, Floodplain Regulations
2. Property Protection –Aquisition, Relocation, Elevation
3. Natural Resource Management – Floodplain Protection, Watershed Management, Riparian Buffers
4. Structural Projects – Reservoirs, Levees/Dams, Channel Modification
5. Emergency Services – Warning Systems, Evacuation Planning, Shelters
6. Public Education and Awareness – Outreach Projects, Real Estate Disclosures, Hazard Map Information

Task 1 Scope: Plan Development

Subtas	Status	Notes
Task 1.1: Planning Process	In Progress	Involves internal kickoff, planning team meetings (3 minimum), and public meetings (2 minimum).
Task 1.2: Risk Assessment	In Progress	Update previously developed risk assessment with latest data for hazard profiles and risk assessment techniques.
Task 1.3: Capability Assessment	In Progress	Project team to update previous capability assessment survey from last update. Communities to confirm changes and revise as needed.
Task 1.4: Mitigation Strategy	Not Started	Update status of existing mitigation actions from previous plan and propose new actions based on need.
Task 1.5: Plan Maintenance Procedures	Not Started	Includes analysis of previous methods/schedules of plan monitoring, evaluating, and updating.

Project Website





The project team has developed a Project Website where all information pertaining to the plan update will be hosted, including meeting minutes & presentations as well as the Public Survey!



Your Role in the Process

1. **Tell us who should be involved in the process.** Have we missed anyone? This can include community groups, non-profits, businesses, etc.
2. **Share the project website to your county/municipal page.** We're actively updating this site, so sharing/promoting is all you need to do!
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Thank you!

Thank you for your participation in the Southeastern NC Regional HMP 2025 Update!

Mentimeter

What do you see as the most significant strengths your region has when it comes to hazard mitigation and resilience?

- Community involvement
- Experienced staff
- Hurricane resiliency
- Limited development in flood areas
- Community wide buy-in
- Multi-agency coordination
  Community and stakeholder engagement
  Increase in local governing body support
- Hurricane upgraded EOC and Disaster Shelters
- Pre planning, and partnerships.

16

Mentimeter

What do you see as the most significant strengths your region has when it comes to hazard mitigation and resilience?

Work that has already been done & data compiled, existing partnerships

Experience with a variety of hazards and an extensive knowledge base across the local providers. There was, until recently, a good push for mitigation and resilience from the state and federal levels.

Extensive experience in hazard recovery and mitigation. Knowledge of what works and what does not is an advantage and taking advantage of that information is important.

Not really sure

Awareness. Talking about Hurricane/storm possibilities is easier.

Leland - resilient routes; StRAP

Swansboro - Community Risk Assessment program (FD), Stormwater mapping

RCCP : Town of Holly Ridge

16

Mentimeter

What do you see as the most significant strengths your region has when it comes to hazard mitigation and resilience?

Staff

16

Mentimeter

Has your community recently completed projects/implemented actions to address vulnerability? Please share & include your community's name!

Yes, several DRMG stormwater projects

Hurricane upgraded EOC and disaster shelters

I'm sure there are some, I'm not sure what they were.

Town of Holden Beach

2023 NHC Resiliency Study

We are in the process of developing a stormwater master plan for the Town of Calabash.

Drainage culvert upsizing at various locations City of Boiling Spring Lakes

Unsure.

3 21

Mentimeter

Has your community recently completed projects/implemented actions to address vulnerability? Please share & include your community's name!

2024 Western Bank Amendment to Comp Plan	Unsure	Drainage and culvert upgrades City of BSL	Leland - resilient routes; StRAP
Unsure	Ditch Maintenance Plan being developed City of Boiling Spring Lakes	Town of Wrightsville Beach. Beach nourishment was completed in January.	Yes, 2 stormwater projects

3 21

Mentimeter

Has your community recently completed projects/implemented actions to address vulnerability? Please share & include your community's name!

Preliminary Stormwater Management Plan Completed City of Boiling Spring Lakes

Yes. The nourishment projects mitigate good risks during storms.

Unsure Town of Holly Ridge

Stormwater Improvement Project Town of Richlands

Not really

Stormwater Projects and Dune Building OIB

We have completed two critical facility upgrades to get Sewer lift stations out of the Hazard and are in the process of complete in the Third and Last, just completed a stormwater master plan with f

North topsail beach, two in progress

3 21

Mentimeter

Has your community recently completed projects/implemented actions to address vulnerability? Please share & include your community's name!

Bio/chemical exposure plan in implementing CHEMPACKs BCEM

Stormwater projects in flood prone areas and grant to install flood gauges. Wilmington

Unsure

Support

Competitive grant processes, lack of grants for specific projects (modular, transient, portable), and the threat to future grant funding availability

3 21

Mentimeter

What weaknesses, challenges, or barriers have hindered mitigation efforts in the past?

Lack of funding	Funding	$$$	Wilmington-CF HBA
Funding	Uncertainty of funding	Funding, staff	BASE

15

Mentimeter

What weaknesses, challenges, or barriers have hindered mitigation efforts in the past?

- Funding
- Political pressures from people that don't understand mitigation.
- Compounding and competing needs
- Political Support for some projects
- Ability to coordinate given multi-disciplinary components
- Funding/Enviromental
- Wetland disturbance
- Lack of support at state level

15

Mentimeter

What weaknesses, challenges, or barriers have hindered mitigation efforts in the past?

Prioritization

Staff resources for grant management

Funding City of BSL

Lack of data

Mitigating stormwater issues in older communities where easements or encroachment agreements don't exist.

State regulations

Explosive growth

Limited regulatory authorization

15

Mentimeter

What weaknesses, challenges, or barriers have hindered mitigation efforts in the past?

Getting buy-in from other departments.

Too much to keep up with

State regulations at the state level that work in other areas of nc but. It on the coast

Not on the coast

historically reactive vs proactive

Drones

Finding ways to incorporate research into practical applications

15

Mentimeter

Can you identify opportunities (e.g. partnerships, funding sources, or new technologies) that we could leverage to enhance the planning process?

No	More regional coordination to establish partnerships to be more competitive for grant opportunities	RCCP	utilize data driven analytics to steer decision making process
Drones	Nonprofit organizations that participate in mitigation and hazard preparedness efforts	Flood Blueprint.	Grants

12

Mentimeter

Can you identify opportunities (e.g. partnerships, funding sources, or new technologies) that we could leverage to enhance the planning process?

It feels like we have a lot of plans but lacking in implementation

ARCGIS Surveys for specific community mapping

There is funding for partnership with engineering firms to identify Stormwater projects through DEQ

Tracking king tides

Plan tracking and coordination

Finding ways to integrate current research into practical application

ArcGIS platforms

12

Mentimeter

Are there any existing planning efforts/initiatives that we should integrate into the plan update to maximize efficiency and effectiveness?

local non-govt utility providers

1

Mentimeter

Are there any non-governmental organizations that should be included in the planning process and/or CRS Steering Committee?

North Carolina Coastal Federation

local non-govt utility providers

UNCW?

NC Sea Grant

Novant Health

5

SENC MEETING AGENDAS

Public Meeting #1
August 18th, 2025
Microsoft Teams

Meeting Objectives

I. ENGAGE THE COMMUNITY
II. GATHER INPUT
III. EDUCATE & INFORM
IV. ENHANCE PLAN RELEVANCE

Mitigation Overview

I. MITIGATION DEFINITIONS
II. TYPES OF MITIGATION
III. MITIGATION TECHNIQUES

Purpose of Update

V. REFLECT ON CHANGING RISKS
I. INCREASE COMMUNITY RESILIENCE
II. ENSURE COMPLIANCE AND FUNDING
III. INCREASE PREPAREDNESS

Plan Update Process

I. ORGANIZE RESOURCES
II. PERFORM RISK ASSESSMENT
III. DEVELOP MITIGATION PLAN
IV. ADOPTION AND IMPLEMENTATION

Project Resources

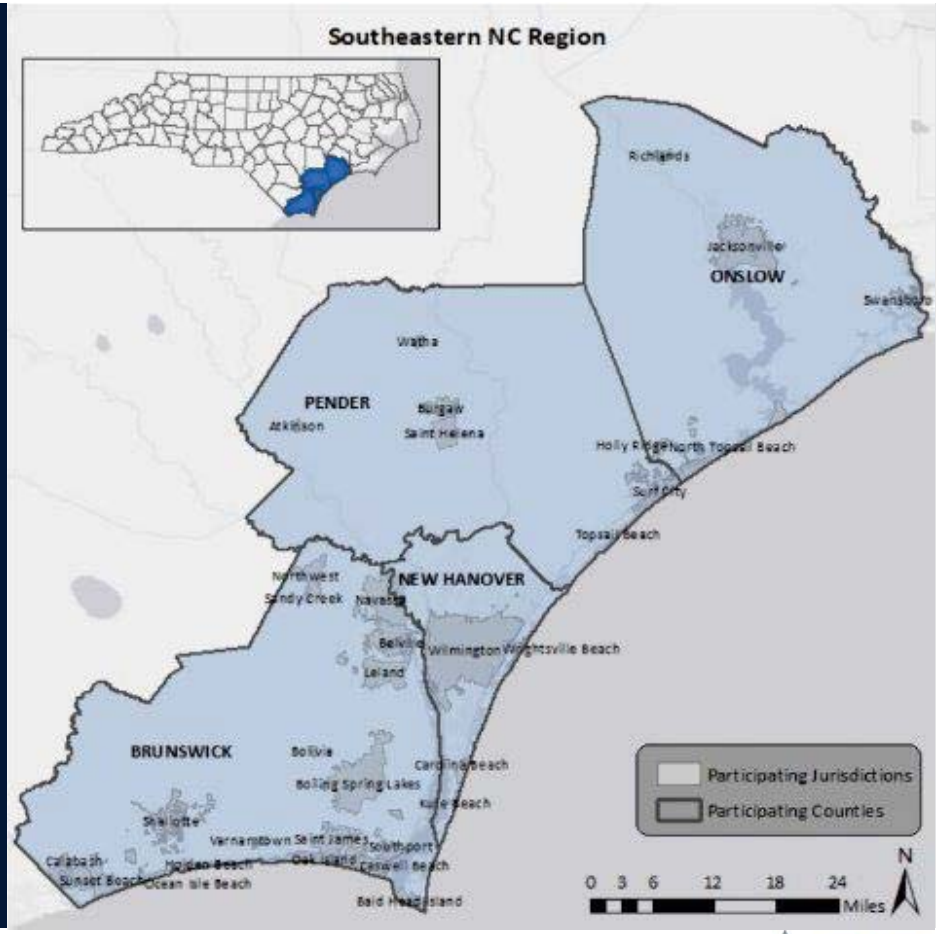
I. VISIT PROJECT WEBSITE
II. TAKE AND SHARE PUBLIC SURVEY

Southeastern NC

Hazard Mitigation Plan Update

Public Meeting #1

August 18, 2025



Agenda

- Welcome & Introductions
- Brief Mitigation Overview
- Purpose of Update
- Plan Update Process
- Regional Strengths & Barriers
- Project Schedule
- Project Information/Resources
- County Q&A Session

Meeting Kickoff



Welcome & Introductions



Reminder to Sign In!

Meeting Objectives



Engage the Community



Gather Input



Educate and Inform



Enhance Plan Relevance

Background/ Overview

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

NOTE: During an activity performed for the 2021 plan update, the HMPC voted Prevention, Structural Projects, and Property Protection as the top 3 techniques

1. Prevention
2. Property Protection
3. Natural Resource Management
4. Structural Projects
5. Emergency Services
6. Education and Awareness

Mitigation Techniques – Examples

Prevention
Planning/Zoning
Building Codes
Open Space Preservation
Floodplain Regulations
Stormwater Mgmt.
Drainage Maintenance

Natural Resource Mgmt.
Floodplain Protection
Watershed Mgmt.
Riparian Buffers
Erosion/Sediment Control
Wetland Restoration
Habitat Preservation

Emergency Services
Warning Systems
Response Equipment
Shelter Operations
Evacuation Planning
Response Training
Sandbagging

Property Protection
Acquisition/Relocation
Building Elevation
Critical Facility Protection
Retrofitting
Safe Room/Shutters
Insurance

Structural Projects
Reservoirs
Dams, Levees, Dikes
Stormwater Diversions
Retention Basins
Channel Modification
Storm Sewers

Education/Awareness
Outreach Projects
Speaker Series
Hazard Map Info
Real Estate Disclosure
Library Materials
Hazard Expositions

Purpose of Plan Update

Why is it Necessary?

- Reflect on Changing Risks
- Increase Community Resilience
- Ensure Compliance and Funding
- Heighten Preparedness

Addressing Changing and Emerging Risk

Population Increase and Community Growth	Greater Exposure to Hazard Risk Increased Exposure = More Damage
More Hazards (Man-Made)	Included in State Plan Ex. Technological, Civil Disturbance, Terrorism
Changing Conditions	Anticipated Increase in Frequency and Magnitude
Development Patterns	Increased Impermeable Surfaces More Infrastructure and Assets at Risk

Increasing Community Resilience

Economic Resilience: Support the stability and recovery of local businesses and employment opportunities to ensure the community can withstand and bounce back from hazard impacts.

Social Resilience: Strengthen community networks, social services, and access to resources, ensuring all residents can effectively prepare for, respond to, and recover from hazards.



Environmental Resilience: Protect and restore natural ecosystems such as wetlands, forests, and floodplains to reduce hazard impacts, promote ecological health, and sustain natural buffers against disasters.

Ensuring 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

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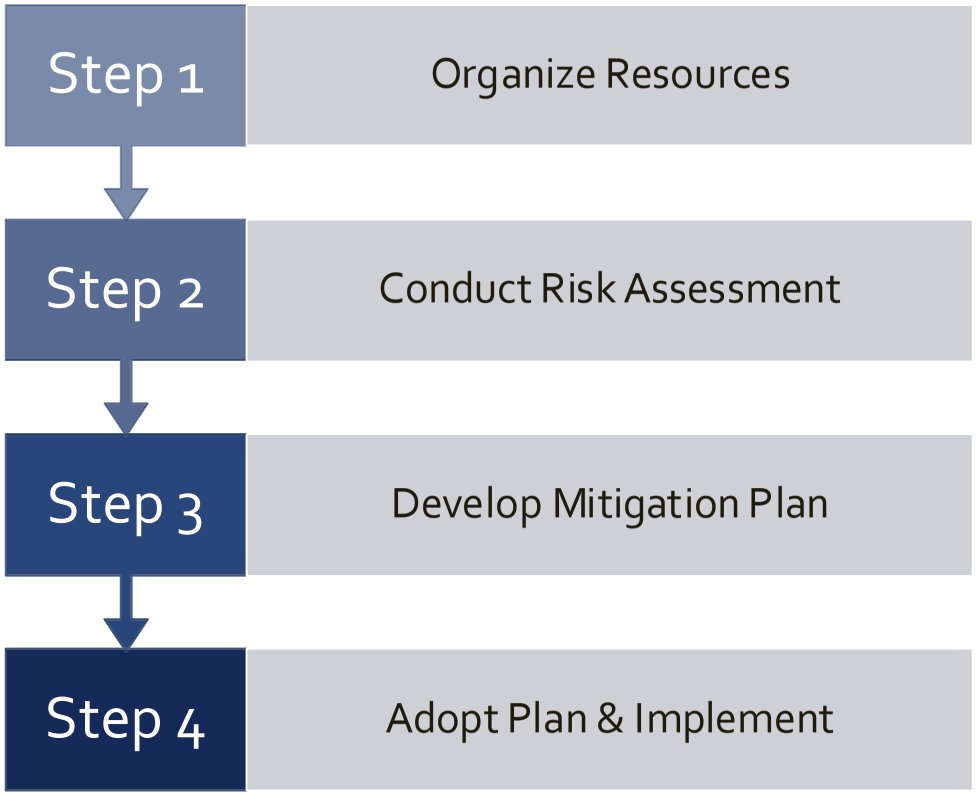
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What Will be Affected/Impacted?

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Capability Assessment

What Can We Do About It?

- Determine What Mitigation Actions are Feasible
- Identify Strengths & Gaps

Step 2: Risk Assessment

Previously Identified Hazards (2021)

HIGH RISK	Flooding Hurricanes/Coastal Hazards Cyber Tornadoes/Thunderstorms
MODERATE RISK	Severe Winter Weather Radiological Emergency Infectious Disease Hazardous Substances Drought Terrorism Wildfire Geological Hazards (Sinkholes, Coastal Erosion) Rip Currents
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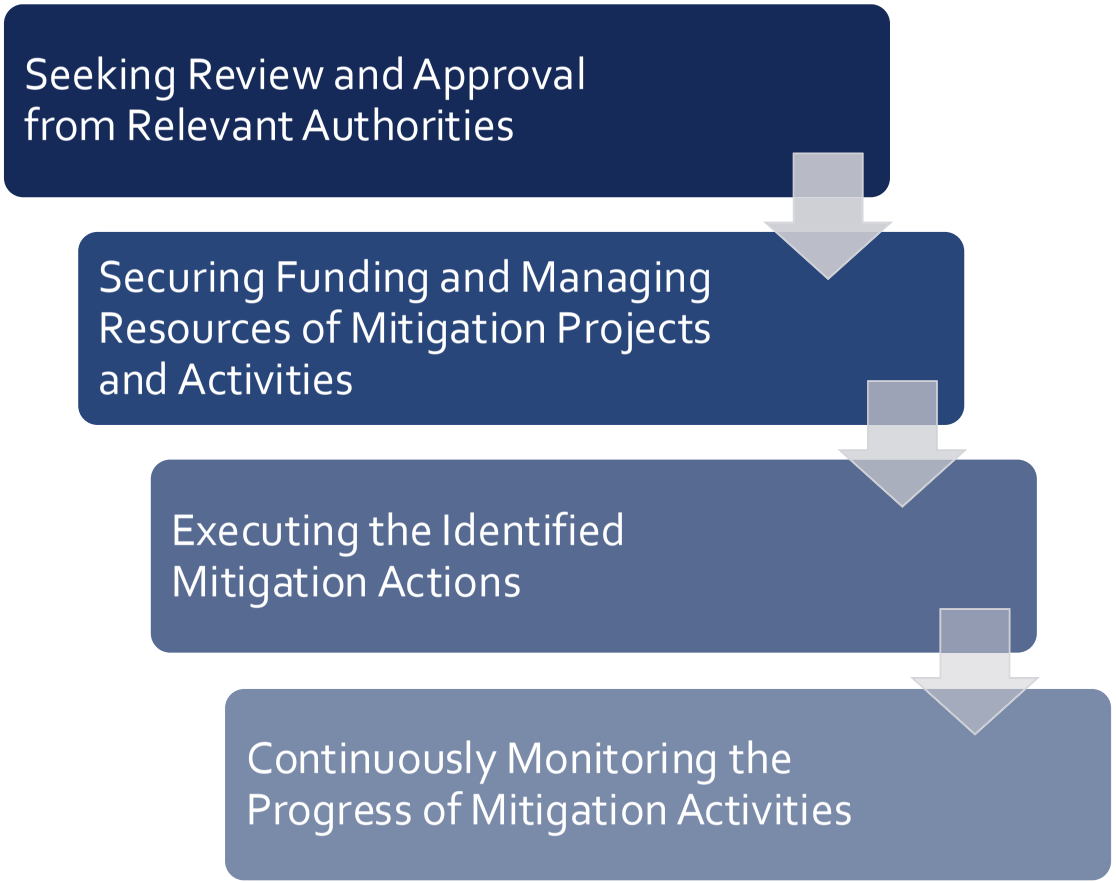
Step 3: Develop a Mitigation Plan

1. Setting Planning Goals
2. Reviewing Mitigation Alternatives
3. Drafting an Action Plan



Southeastern North Carolina
Regional Hazard Mitigation Plan

Step 4: Adopt Plan and Implement Actions



Regional Strengths & Weaknesses

What can we build upon & improve?

The HMPC completed a SWOT analysis at their first official meeting. Identified strengths and weaknesses are summarized below:

Strengths/Opportunities	Weaknesses/Threats
Extensive Experience	Funding Uncertainty
Existing Partnerships	Staffing/Capacity
Community Buy-In	Competing Needs
Knowledgeable Staff	Lack of Data
Education & Awareness	Political Pressures
Multi-Agency Coordination	Rapid Growth

Project Schedule

- Project Kickoff Date – 5/28/25
- Larger Stakeholder Meeting – 6/19/25
- Public Meeting #1 – 8/18/25
- Public Meeting 2#2 – TBD
- HIRA/Mitigation Meeting – Fall 2025
- Proposed Delivery of Draft – Late Fall 2025
- Existing Plan Expiration Date – 4/28/26



Valuable Project Resources

How will information be gathered & shared?

1. Creation of a Designated Project Website – This will remain accessible throughout the lifespan of the project & beyond
2. Creation & Distribution of a Public Survey – Intended to gather public input & ensure community needs and priorities are adequately addressed



Visit and Share the Project Website



This Project Website will be updated regularly throughout the planning process to provide access to:

1. Project Overview
2. Meeting Minutes & Presentations
3. Public Survey
4. Previous HMP (2020)
5. Relevant Planning Resources

Initial Public Survey Results

As of 8/18/25, there are a total of 1,393 survey responses. Key findings are summarized below:



21% of respondents reside in Wilmington, 8% in Ocean Isle Beach and 7% in St. James.



Hurricane and coastal hazards were identified as the #1 threat, followed by flooding.



56% of respondents have taken steps to make their home more resistant against hazards.



91% of respondents are interested in making their home more resistant to hazards.



79% of respondents do not know what office to contact to reduce their risk to hazards in their area.

Initial Public Survey Results

Respondents were asked to rank the 6 mitigation techniques. Key findings are summarized below:



Prevention - 91% of respondents ranked this technique as "Very Important."



Emergency Services – 89% of respondents ranked this technique as "Very Important."



Natural Resource Protection - 87% of respondents ranked this technique as "Very Important."



Public Education & Awareness - 73% of respondents ranked this technique as "Very Important."



Structural Projects - 70% of respondents ranked this technique as "Very Important."



Property Protection - 58% of respondents ranked this technique as "Very Important."

Complete and Share the Public Survey!

Scan the QR Code for Access to the Public Survey



Questions

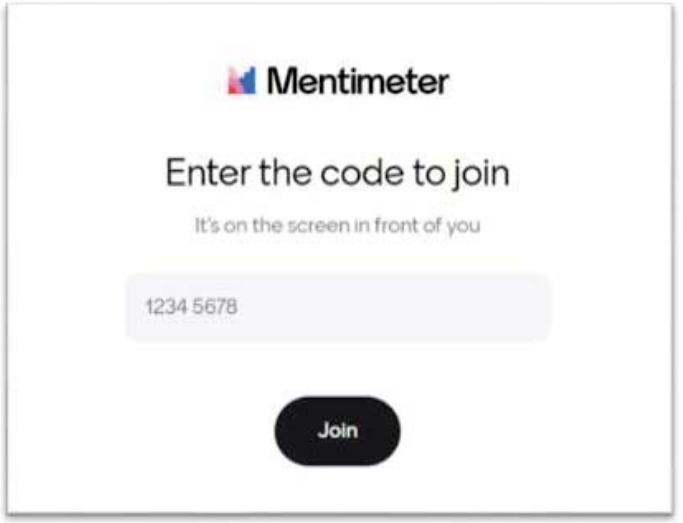
Questions/Comments/Concerns

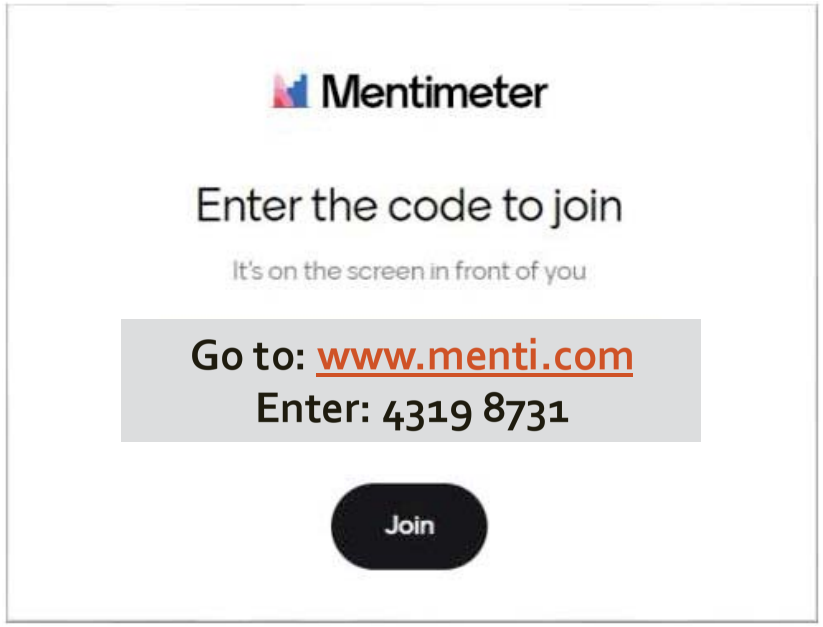
County Breakout Session

Menti Poll

We'll be going through a series of open-ended questions that will be used to inform the plan update.

Your input matters!



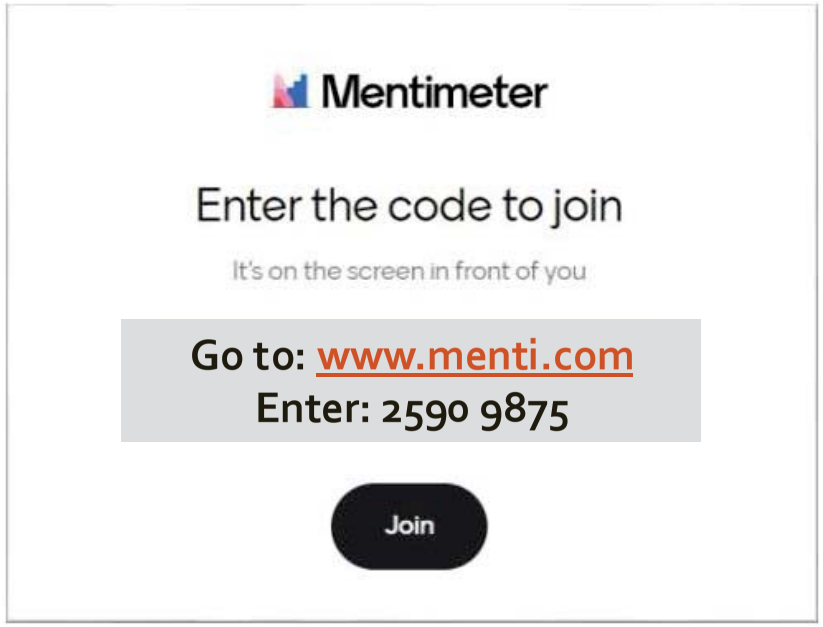


SCAN QR CODE



Brunswick County Poll

Southeastern NC HMP Update | Public Meeting #1 | August 18, 2025

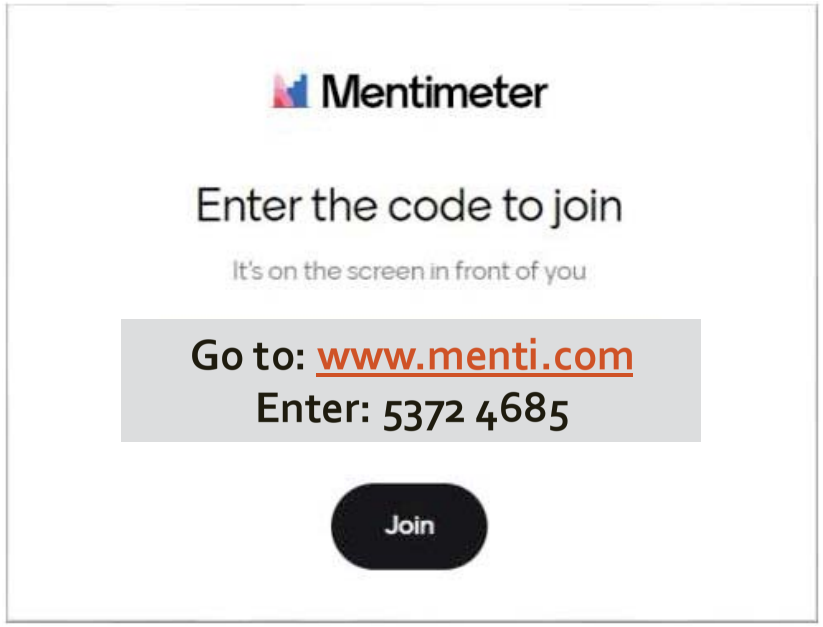


SCAN QR CODE



New Hanover County Poll

Southeastern NC HMP Update | Public Meeting #1 | August 18, 2025

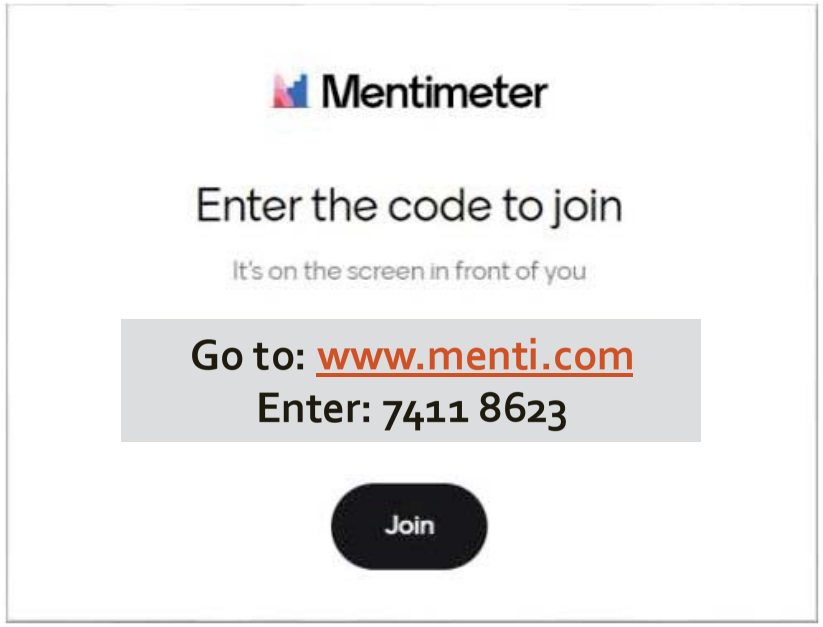


SCAN QR CODE



Pender County Poll

Southeastern NC HMP Update | Public Meeting #1 | August 18, 2025



SCAN QR CODE



Onslow County Poll

Southeastern NC HMP Update | Public Meeting #1 | August 18, 2025

Adjourn – Thank you!

Contractor Contact Information

Nathan Slaughter – nslaughter@espassociates.com

John Flores – jflores@espassociates.com

Hannah DeLude – hdelude@espassociates.com

Mentimeter

Brunswick County: What are key concerns or challenges you believe should be addressed in the hazard mitigation plan update?

Challenges include finding an effective way to educate the public about mitigation strategies

BUILDING HIGH RISE HOMES AROUND ME AND WHEN THEY DO THAT THEY BRING IN TRUCK LOADS OF DIRT AND I AM ALMOST IN A BOWL NOW AS A 1 STORY HOME OWNER

Coastal Resilience for Critical Facilities

The road infrastructure - several sources have recognized Brunswick NC as the fastest growing county in NC - the roads need to be repaired and improved to support the influx of residents

Stormwater and Erosion Comtrol

Evacuation Routes Getting information to the public - the effective education piece - there are gaps no matter what avenues are used

100 BLOCK OF NE 50TH ST, OAK ISLAND

How does increased residential and commercial development impact evacuation plans each year and does the county inform local municipalities of any updates.

1 10

Mentimeter

Brunswick County: What are key concerns or challenges you believe should be addressed in the hazard mitigation plan update?

Would like to see the state prioritize Hwy 31-Carolina Bays Parkway extension through Brunswick County to draw some traffic away from Hwy 17.

water displacement

115 NE 50TH ST, OAK ISLAND IS NOW A BOWL DUE TO TREES TORN DOWN AND HIGH RISES BUILT ALL AROUND ME

Stormwater quantity and quality issues

Zoning & development as it relates to stormwater management and capacity.

Flooding,, technological, and man made hazards

Flooding, nuclear, and man-made hazards

Coordination and planning for emergency shelter locations and capacity.

1 10

Mentimeter

Brunswick County: Are there any specific areas or infrastructure that you feel require additional consideration? Please list location detail.

Roadways and new development community roadways and pads are being developed at micrograd ient levels where stormwater capacity and detention is not functioning as intended.

1

Mentimeter

Brunswick County: Do you have any additional suggestions or feedback regarding the plan update that you would like to share at this time?

Mentimeter

New Hanover County: What are key concerns or challenges you believe should be addressed in the hazard mitigation plan update?

Flood mitigation

Flood mitigation

I live about 1 mile from Cape Fear River on Barnards Creek. I am concerned about all the trees that are being cut down all around me and all the concrete being built around me. Afraid we might flood.

About 25 or 30 years ago Army Corps of Engineers had a program where seniors could request dangerous tree assessment, and if approved, the trees would be removed at no cost. Great idea.

Changing the UDO to provide protection of wetlands/ bottomland hardwood swamps from development since it is known they prevent flooding

over development and street flooding (even from minor storms)

Require more permeable surfaces in projects that are greater than a single family residence

People with certain disabilities are dependent on technology can register with the functional needs registry - but how do we make sure that people who need to be on the list know about the list?

1 6

Mentimeter

New Hanover County: Are there any specific areas or infrastructure that you feel require additional consideration? Please list location detail.

Downtown on Water Street

16th/17th streets, Wrightsville ave. ,etc.

Drainage on College Road and other busy roads during tropical systems. Intersections like Racine and New Centre, Randall and Independence, etc. Parking lots — transition to pervious services.

3

Mentimeter

New Hanover County: Do you have any additional suggestions or feedback regarding the plan update that you would like to share at this time?

Where does cybersecurity get addressed as a hazard?

not yet

A big problem I had after Florence was knowing which agency to call about what recovery problem. and if you missed a call, you pretty much had to start over. with that agency.

3

Mentimeter

Onslow County: What are key concerns or challenges you believe should be addressed in the hazard mitigation plan update?

flooding, wind/hurricanes, tornado, technological (cyber, power, etc..), biological (pandemic, etc..), ice storms/winter storms, etc...

Stormwater management

infrastructure hardening, continuity of government, stormwater management, floodplain management/preservation

storm water, floodplain resources, community education on floodplains

Hurricane, coastal protection, population growth and (over)development, flooding of roadways

better developing resilience - recovery planning, stormwater management, transportation infrastructure, critical infrastructure hardening, etc

3

Mentimeter

Onslow County: Are there any specific areas or infrastructure that you feel require additional consideration? Please list location detail.

several government facilities, schools (for quicker recovery), transportation/roads that need elevated and drainage improved, stormwater management either through structural or green processes

1

Mentimeter

Onslow County: Do you have any additional suggestions or feedback regarding the plan update that you would like to share at this time?

stormwater

no

no

no

no

2

Mentimeter

Pender County: What are key concerns or challenges you believe should be addressed in the hazard mitigation plan update?

Cleaning up funding streams.

Public safety and education

I am concerned about potential for wildfires. What resources are available for a homeowner to evaluate their potential for wildfire damage? Also what can be done to improve wildfire resiliency?

Additional emphasis on improved home construction methods and resources to do it

The number of houses recently and currently being built that are in areas that flood. I don't believe the current and past planning will prevent serious flooding for these new developments.

The need for affordable wind/ hail and flood insurance. Many people can't afford to carry flood insurance, and others find it isn't available for their areas.

4

Mentimeter

Pender County: Are there any specific areas or infrastructure that you feel require additional consideration? Please list location detail.

Power grid issues, water/sewer system resiliency, COG planning.

Stormwater management and disconnecting pervious environments

I'm concerned that PFAS has not been adequately addressed in Pender County.

2

Mentimeter

Pender County: Do you have any additional suggestions or feedback regarding the plan update that you would like to share at this time?

HIRA Meeting
September 23rd, 2025
Bolivia, NC

Meeting Objectives

I. IDENTIFY HAZARD
II. ASSESS HAZARDS AND VULNERABILITY
III. DETERMINE POTENTIAL IMPACTS AND PRIORITIES
IV. DISCUSS FINDINGS
V. EDUCATE AND INFORM

HIRA Overview

I. IMPORTANCE OF HIRA
II. PROBLEM IDENTIFICATION
III. RISK ASSESSMENT METHODOLOGY

Initial Risk Assessment Findings

I. HAZARD IDENTIFICATION
II. HAZARD PROFILES
III. PRIORITY RISK INDEX (PRI)

Initial Public Survey Results

I. TOTAL RESPONSES TO DATE
II. KEY FINDINGS

Next Steps

I. REVIEW EXISTING MITIGATION PLAN/ACTIONS
II. SCHEDULE MITIGATION STRATEGY MEETING

Southeastern NC Regional Hazard Mitigation Plan Update
Hazard Identification and Risk Assessment Meeting

September 23, 2025

10:00 AM - Noon

Name	Title/Position	Agency	Phone Number	E-mail Address
STEPHEN BOYETT	DEV SERVICES DIR	BALD HEAD	910-457-9700	SBOYETT@VILLAGE BHI.ORG
Teron Winters	REP Planner	Brunswick Co. EM	843-333-9999	teron.winters@ Brunswickcounty nc.gov
David McIntire	BCEM Director	BrunswickCo EM	910-253-2577	David.mcintire@ Brunswickcountync.gov.
Craig Malone	Security & Emergency Mangr	Cape Fear Public Utility Authority	910-376-0527	craig.malone@cfpua.org
Leslie Gerse	BCEM Planner	Brunswick County	910-473-0969	Leslie.gerse@brunswickcounty nc.gov
Buddy Brooks	BCEM Deputy Director	Brunswick	919-558-7920	buddy.brooks222@gmail.com
Timothy D Evans	Planning Director	Town of Holden Beach	910-515-4501	TEVANS@HBTownHall.Com
Janna Pigott	Floodplain Manager	Town of Holden Beach	910-880-2628	janna@hbtownhall.com

1. Summary

Meeting title	Risk Assessment Meeting - Southeastern NC Regional Hazard Mitigation Plan Update
Attended participants	53
Start time	9/23/25, 9:34:53 AM
End time	9/23/25, 12:07:17 PM
Meeting duration	2h 32m 24s
Average attendance time	1h 8m 17s

2. Participants

Name	First Join	Last Leave	In-Meeting Duration	Email	Participant ID (UPN)	Role
Nathan Slaughter	9/23/25, 9:34:56 AM	9/23/25, 11:16:15 AM	1h 41m 18s	nslaughter@espassociates.com	nslaughter@espassociates.com	Organizer
Leslie Geise (External)	9/23/25, 9:36:27 AM	9/23/25, 9:36:51 AM	23s	leslie.geise@brunswickcountync.gov	leslie.geise@brunswickcountync.gov	Presenter
Bethany White (External)	9/23/25, 9:46:00 AM	9/23/25, 11:12:26 AM	1h 26m 26s	b.white@townofkurebeach.org	b.white@townofkurebeach.org	Presenter
Tony Wilson (External)	9/23/25, 9:46:39 AM	9/23/25, 11:11:50 AM	1h 25m 10s	twilson@towb.org	twilson@towb.org	Presenter
Marsha-Gray Kircher (External)	9/23/25, 9:47:16 AM	9/23/25, 11:12:46 AM	1h 25m 30s	planningadmin@hollyridgenc.org	planningadmin@hollyridgenc.org	Presenter
Luther Jones (External)	9/23/25, 9:48:05 AM	9/23/25, 11:11:29 AM	1h 23m 24s	LJones@onwasa.com	ljones@onwasa.com	Presenter
Sharon Niemann (External)	9/23/25, 9:49:56 AM	9/23/25, 11:13:53 AM	1h 23m 56s	sniemann@townofbelville.com	sniemann@townofbelville.com	Presenter
James Horne (External)	9/23/25, 9:50:31 AM	9/23/25, 11:11:21 AM	1h 20m 50s	jhorne@surfcitync.gov	jhorne@surfcitync.gov	Presenter
Baker, Carl (NCEM) (External)	9/23/25, 9:53:45 AM	9/23/25, 11:11:21 AM	1h 17m 35s	carl.baker@ncdps.gov	carl.baker@ncdps.gov	Presenter
Jeremy Smith (External)	9/23/25, 9:55:32 AM	9/23/25, 11:11:22 AM	1h 15m 50s	jsmith@surfcitync.gov	jsmith@surfcitync.gov	Presenter
Stephanie Moore (External)	9/23/25, 9:55:45 AM	9/23/25, 11:41:50 AM	1h 17m 16s	smoore@topsailbeachnc.gov	smoore@topsailbeachnc.gov	Presenter
Landin Holland (External)	9/23/25, 9:56:04 AM	9/23/25, 10:41:25 AM	42m 55s	lholland@townofnavassa.org	lholland@townofnavassa.org	Presenter
Craig Harris	9/23/25, 9:56:13 AM	9/23/25, 11:11:17 AM	1h 15m 4s	Craig.Harris@wilmingtonnc.gov	Craig.Harris@wilmingtonnc.gov	Presenter
John Grimes	9/23/25, 9:56:40 AM	9/23/25, 12:07:17 PM	2h 10m 36s	jgrimes@townofleland.com	jgrimes@TOWNOFLELAND.COM	Presenter
Keith Dycus (External)	9/23/25, 9:57:08 AM	9/23/25, 10:59:54 AM	1h 2m 46s	keith@oibgov.com	keith@oibgov.com	Presenter
Garrett, Steve (NCEM) (External)	9/23/25, 9:57:17 AM	9/23/25, 11:11:20 AM	1h 14m 2s	Steve.Garrett@ncdps.gov	Steve.Garrett@ncdps.gov	Presenter
Nagle, Debra (External)	9/23/25, 9:57:30 AM	9/23/25, 11:11:17 AM	1h 13m 46s	dnagle@nhcgov.com	dnagle@nhcgov.com	Presenter
Mello, John (NCEM) (External)	9/23/25, 9:57:31 AM	9/23/25, 11:11:33 AM	1h 14m 2s	John.Mello@ncdps.gov	John.Mello@ncdps.gov	Presenter
Nathan Rhue (External)	9/23/25, 9:57:37 AM	9/23/25, 11:11:17 AM	1h 13m 40s	planner@hollyridgenc.org	planner@hollyridgenc.org	Presenter
Kelly Anderson	9/23/25, 9:57:41 AM	9/23/25, 11:11:21 AM	1h 13m 40s	K.Anderson@wilmingtonnc.gov	K.Anderson@wilmingtonnc.gov	Presenter
Bob Walker (External)	9/23/25, 9:57:43 AM	9/23/25, 11:11:41 AM	1h 13m 57s	bob.walker@h2gonc.gov	bob.walker@h2gonc.gov	Presenter
Haley Anderson (External)	9/23/25, 9:58:07 AM	9/23/25, 11:11:28 AM	1h 13m 21s	haley.anderson@carolinabeach.org	haley.anderson@carolinabeach.org	Presenter
Michelle Emery (External)	9/23/25, 9:59:06 AM	9/23/25, 11:12:31 AM	1h 13m 25s	Michelle_Emery@onslowcountync.gov	michelle_emery@onslowcountync.gov	Presenter
Gregg Whitehead	9/23/25, 10:00:19 AM	9/23/25, 11:11:21 AM	1h 11m 1s	administrator@richlandsnc.gov	administrator@richlandsnc.gov	Presenter
read.ai meeting notes (Unverified)	9/23/25, 10:00:20 AM	9/23/25, 11:06:14 AM	1h 5m 54s			Presenter
Adrienne's Notetaker (Otter.ai) (Unveri	9/23/25, 10:00:21 AM	9/23/25, 10:44:38 AM	44m 16s			Presenter
Landin's Notetaker (Otter.ai) (Unverifie	9/23/25, 10:00:33 AM	9/23/25, 10:43:50 AM	43m 16s			Presenter
Hannah Delude	9/23/25, 10:01:06 AM	9/23/25, 11:11:18 AM	1h 10m 12s	hdelude@espassociates.com	hdelude@espassociates.com	Presenter
Medlin, Terri (External)	9/23/25, 10:01:15 AM	9/23/25, 11:11:21 AM	1h 10m 5s	tmedlin@nhcgov.com	tmedlin@nhcgov.com	Presenter
Meagan Kascsak (External)	9/23/25, 10:01:19 AM	9/23/25, 11:11:23 AM	1h 10m 4s	meagan.kascsak@brunswickcountync	meagan.kascsak@brunswickcountync	Presenter
Ron Meredith (External)	9/23/25, 10:01:25 AM	9/23/25, 11:13:38 AM	1h 12m 13s	rmeredith@burgawnc.gov	rmeredith@burgawnc.gov	Presenter
Craig Malone (External)	9/23/25, 10:01:34 AM	9/23/25, 11:11:21 AM	1h 9m 46s	Craig.Malone@cfpua.org	Craig.Malone@cfpua.org	Presenter
Rebecca Brehmer	9/23/25, 10:01:47 AM	9/23/25, 11:11:24 AM	1h 9m 37s	rbrehmer@ci.swansboro.nc.us	rbrehmer@ci.swansboro.nc.us	Presenter
Maureen Meehan (External)	9/23/25, 10:01:50 AM	9/23/25, 11:11:23 AM	1h 9m 33s	mmeehan@cityofsouthport.com	mmeehan@cityofsouthport.com	Presenter
Ryan King (External)	9/23/25, 10:02:19 AM	9/23/25, 11:53:55 AM	1h 51m 36s	rking@jacksonvillenc.gov	rking@jacksonvillenc.gov	Presenter
Alice Derian	9/23/25, 10:02:28 AM	9/23/25, 11:11:24 AM	1h 8m 56s	aderian@northtopsailbeachnc.gov	aderian@NORTHTOPSAILBEACHNC.G	Presenter
John Flores	9/23/25, 10:03:16 AM	9/23/25, 11:14:49 AM	1h 9m 46s	jflores@espassociates.com	jflores@espassociates.com	Presenter
Amber Merklinger (External)	9/23/25, 10:04:45 AM	9/23/25, 11:11:21 AM	1h 6m 35s	amber.merklinger@brunswickcountyn	amber.merklinger@brunswickcountyn	Presenter
Vafier, Ken (External)	9/23/25, 10:05:42 AM	9/23/25, 11:11:29 AM	1h 5m 46s	kvafier@nhcgov.com	kvafier@nhcgov.com	Presenter
Lowe, Timothy (External)	9/23/25, 10:05:51 AM	9/23/25, 11:11:18 AM	1h 5m 26s	tlowe@nhcgov.com	tlowe@nhcgov.com	Presenter
Jacob Randall	9/23/25, 10:07:13 AM	9/23/25, 11:11:19 AM	1h 4m 5s	jrandall@ci.swansboro.nc.us	jrandall@ci.swansboro.nc.us	Presenter
Shirley Jacobs (Unverified)	9/23/25, 10:09:34 AM	9/23/25, 11:11:20 AM	1h 1m 46s			Presenter
Stacie Miles (External)	9/23/25, 10:09:45 AM	9/23/25, 11:11:33 AM	1h 1m 48s	Stacie_Miles@onslowcountync.gov	Stacie_Miles@onslowcountync.gov	Presenter

Bradley Kinlaw (External)	9/23/25, 10:09:52 AM	9/23/25, 10:30:47 AM	20m 55s	Bradley_Kinlaw@onslowcountync.gov	Bradley_Kinlaw@onslowcountync.gov Presenter
Ronald Massey (External)	9/23/25, 10:10:53 AM	9/23/25, 11:11:18 AM	59m 24s	rmassey@jacksonvillenc.gov	rmassey@jacksonvillenc.gov Presenter
Jennifer Ansell (External)	9/23/25, 10:18:41 AM	9/23/25, 11:11:23 AM	52m 42s	jansell@jacksonvillenc.gov	jansell@jacksonvillenc.gov Presenter
Leslie Stanley (External)	9/23/25, 10:21:01 AM	9/23/25, 11:11:21 AM	50m 20s	leslie.stanley@brunswickcountync.gov	leslie.stanley@brunswickcountync.gov Presenter
Adrianna Weber (External)	9/23/25, 10:34:16 AM	9/23/25, 11:11:20 AM	37m 3s	adrianna.weber@h2gonc.gov	adrianna.weber@h2gonc.gov Presenter
LeAnn Weigand (External)	9/23/25, 10:34:33 AM	9/23/25, 12:00:56 PM	1h 26m 22s	leann.weigand@brunswickcountync.g	leann.weigand@brunswickcountync.g Presenter
Edward Tallman (External)	9/23/25, 10:36:51 AM	9/23/25, 11:11:31 AM	34m 39s	etallman@jacksonvillenc.gov	etallman@jacksonvillenc.gov Presenter
Tommy Batson (External)				tbatson@pendercountync.gov	tbatson@pendercountync.gov Presenter
Lee Duncan (External)				lduncan@pendercountync.gov	lduncan@pendercountync.gov Presenter
Marcy Waters (External)				mwaters@pendercountync.gov	mwaters@pendercountync.gov Presenter

3. In-Meeting Activities

Name	Join Time	Leave Time	Duration	Email	Role
Nathan Slaughter	9/23/25, 9:34:56 AM	9/23/25, 11:16:15 AM	1h 41m 18s	nslaughter@espassociates.com	Organizer
Leslie Geise (External)	9/23/25, 9:36:27 AM	9/23/25, 9:36:51 AM	23s	leslie.geise@brunswickcountync.gov	Presenter
Bethany White (External)	9/23/25, 9:46:00 AM	9/23/25, 11:12:26 AM	1h 26m 26s	b.white@townofkurebeach.org	Presenter
Tony Wilson (External)	9/23/25, 9:46:39 AM	9/23/25, 11:11:50 AM	1h 25m 10s	twilson@towb.org	Presenter
Marsha-Gray Kircher (External)	9/23/25, 9:47:16 AM	9/23/25, 11:12:46 AM	1h 25m 30s	planningadmin@hollyridgenc.org	Presenter
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Sharon Niemann (External)	9/23/25, 9:49:56 AM	9/23/25, 11:13:53 AM	1h 23m 56s	sniemann@townofbelville.com	Presenter
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Stephanie Moore (External)	9/23/25, 9:55:45 AM	9/23/25, 11:12:41 AM	1h 16m 55s	smoore@topsailbeachnc.gov	Presenter
Stephanie Moore (External)	9/23/25, 11:13:58 AM	9/23/25, 11:14:10 AM	12s	smoore@topsailbeachnc.gov	Presenter
Stephanie Moore (External)	9/23/25, 11:41:41 AM	9/23/25, 11:41:50 AM	9s	smoore@topsailbeachnc.gov	Presenter
Landin Holland (External)	9/23/25, 9:56:04 AM	9/23/25, 10:16:41 AM	20m 36s	lholland@townofnavassa.org	Presenter
Landin Holland (External)	9/23/25, 10:19:06 AM	9/23/25, 10:41:25 AM	22m 19s	lholland@townofnavassa.org	Presenter
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Nagle, Debra (External)	9/23/25, 9:57:30 AM	9/23/25, 11:11:17 AM	1h 13m 46s	dnagle@nhcgov.com	Presenter
Mello, John (NCEM) (External)	9/23/25, 9:57:31 AM	9/23/25, 11:11:33 AM	1h 14m 2s	John.Mello@ncdps.gov	Presenter
Nathan Rhue (External)	9/23/25, 9:57:37 AM	9/23/25, 11:11:17 AM	1h 13m 40s	planner@hollyridgenc.org	Presenter
Kelly Anderson	9/23/25, 9:57:41 AM	9/23/25, 11:11:21 AM	1h 13m 40s	K.Anderson@wilmingtonnc.gov	Presenter
Bob Walker (External)	9/23/25, 9:57:43 AM	9/23/25, 11:11:41 AM	1h 13m 57s	bob.walker@h2gonc.gov	Presenter
Haley Anderson (External)	9/23/25, 9:58:07 AM	9/23/25, 11:11:28 AM	1h 13m 21s	haley.anderson@carolinabeach.org	Presenter
Michelle Emery (External)	9/23/25, 9:59:06 AM	9/23/25, 11:12:31 AM	1h 13m 25s	Michelle_Emery@onslowcountync.gov	Presenter
Gregg Whitehead	9/23/25, 10:00:19 AM	9/23/25, 11:11:21 AM	1h 11m 1s	administrator@richlandsnc.gov	Presenter
read.ai meeting notes (Unverified)	9/23/25, 10:00:20 AM	9/23/25, 11:06:14 AM	1h 5m 54s		Presenter
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Hannah Delude	9/23/25, 10:01:06 AM	9/23/25, 11:11:18 AM	1h 10m 12s	hdelude@espassociates.com	Presenter
Medlin, Terri (External)	9/23/25, 10:01:15 AM	9/23/25, 11:11:21 AM	1h 10m 5s	tmedlin@nhcgov.com	Presenter
Meagan Kascsak (External)	9/23/25, 10:01:19 AM	9/23/25, 11:11:23 AM	1h 10m 4s	meagan.kascsak@brunswickcountync	Presenter
Ron Meredith (External)	9/23/25, 10:01:25 AM	9/23/25, 11:13:38 AM	1h 12m 13s	rmeredith@burgawnc.gov	Presenter
Craig Malone (External)	9/23/25, 10:01:34 AM	9/23/25, 11:11:21 AM	1h 9m 46s	Craig.Malone@cfpua.org	Presenter
Rebecca Brehmer	9/23/25, 10:01:47 AM	9/23/25, 11:11:24 AM	1h 9m 37s	rbrehmer@ci.swansboro.nc.us	Presenter
Maureen Meehan (External)	9/23/25, 10:01:50 AM	9/23/25, 11:11:23 AM	1h 9m 33s	mmeehan@cityofsouthport.com	Presenter
Ryan King (External)	9/23/25, 10:02:19 AM	9/23/25, 11:53:55 AM	1h 51m 36s	rking@jacksonvillenc.gov	Presenter
Alice Derian	9/23/25, 10:02:28 AM	9/23/25, 11:11:24 AM	1h 8m 56s	aderian@northtopsailbeachnc.gov	Presenter
John Flores	9/23/25, 10:03:16 AM	9/23/25, 10:04:15 AM	59s	jflores@espassociates.com	Presenter

John Flores	9/23/25, 10:06:02 AM	9/23/25, 11:14:49 AM	1h 8m 47s	jflores@espassociates.com	Presenter
Amber Merklinger (External)	9/23/25, 10:04:45 AM	9/23/25, 11:11:21 AM	1h 6m 35s	amber.merklinger@brunswickcountyn	Presenter
Vafier, Ken (External)	9/23/25, 10:05:42 AM	9/23/25, 11:11:29 AM	1h 5m 46s	kvafier@nhcgov.com	Presenter
Lowe, Timothy (External)	9/23/25, 10:05:51 AM	9/23/25, 11:11:18 AM	1h 5m 26s	tlowe@nhcgov.com	Presenter
Jacob Randall	9/23/25, 10:07:13 AM	9/23/25, 11:11:19 AM	1h 4m 5s	jrandall@ci.swansboro.nc.us	Presenter
Shirley Jacobs (Unverified)	9/23/25, 10:09:34 AM	9/23/25, 11:11:20 AM	1h 1m 46s		Presenter
Stacie Miles (External)	9/23/25, 10:09:45 AM	9/23/25, 11:11:33 AM	1h 1m 48s	Stacie_Miles@onslowcountync.gov	Presenter
Bradley Kinlaw (External)	9/23/25, 10:09:52 AM	9/23/25, 10:30:47 AM	20m 55s	Bradley_Kinlaw@onslowcountync.gov	Presenter
Ronald Massey (External)	9/23/25, 10:10:53 AM	9/23/25, 10:12:10 AM	1m 17s	rmassey@jacksonvillenc.gov	Presenter
Ronald Massey (External)	9/23/25, 10:13:10 AM	9/23/25, 11:11:18 AM	58m 7s	rmassey@jacksonvillenc.gov	Presenter
Jennifer Ansell (External)	9/23/25, 10:18:41 AM	9/23/25, 11:11:23 AM	52m 42s	jansell@jacksonvillenc.gov	Presenter
Leslie Stanley (External)	9/23/25, 10:21:01 AM	9/23/25, 11:11:21 AM	50m 20s	leslie.stanley@brunswickcountync.go	Presenter
Adrianna Weber (External)	9/23/25, 10:34:16 AM	9/23/25, 11:11:20 AM	37m 3s	adrianna.weber@h2gonc.gov	Presenter
LeAnn Weigand (External)	9/23/25, 10:34:33 AM	9/23/25, 12:00:56 PM	1h 26m 22s	leann.weigand@brunswickcountync.g	Presenter
Edward Tallman (External)	9/23/25, 10:36:51 AM	9/23/25, 11:11:31 AM	34m 39s	etallman@jacksonvillenc.gov	Presenter

HIRA Meeting
September 24, 2025
Bolivia, NC
10:00am – 11:05am

Participants

Name	Organization/Role
Anderson, Kelly	Recreation Assistant, City of Wilmington
Ansell, Jennifer	Chief Zoning & Enforcement Officer, City of Jacksonville
Baker, Carl	Mitigation Plans Manager, NCEM
Batson, Tommy	Emergency Management Director, Pender County
Boyett, Stephen	Development Services Administrator, Village of Bald Head Island
Brehmer, Rebecca	Planner, Town of Swansboro
Brooks, Buddy	Emergency Management Deputy Director, Brunswick County
DeLude, Hannah	Hazard Mitigation Planner, ESP Associates
Derian, Alice	Town Manager, Town of North Topsail Beach
Duncan, Lee	Resilience Planner, Pender County
Dycus, Keith	Development Services Director, Town of Ocean Isle Beach
Emory, Michelle	Floodplain Coordinator, Onslow County
Flores, John	Hazard Mitigation Planner, ESP Associates
Garrett, Steve	State NFIP Coordinator, NCEM
Geise, Leslie	Emergency Management Planner, Brunswick County
Grimes, John	Emergency Management Chief, Town of Leland
Haley, Andrea	Planner, Town of Carolina Beach
Harris, Craig	Emergency Management & Resiliency Coordinator, City of Wilmington
Hewett, Timothy	Planning Director, Town of Holden Beach
Holland, Landin	Town Administrator/Planner, Town of Navassa
Horne, James	Emergency Management Director, Town of Surf City
Jacobs, Shirley	
Jones, Luther	Safety Officer, ONWASA
Kascak, Meagan	Communications Director, Brunswick County
Kinlaw, Bradley	Emergency Services Director, Onslow County
King, Ryan	Director of Planning, City of Jacksonville
Kircher, Marsha-Gray	Community Development Administrator, Town of Holly Ridge
Lowe, Timothy	Engineer, New Hanover County
Malone, Craig	Security & Emergency Manager, Cape Fear Public Utility Authority
Massey, Ronald	Deputy City Manager, City of Jacksonville
McIntire, David	Emergency Management Director, Brunswick County

Medlin, Terri	Emergency Management Assistant Director, New Hanover County
Meehan, Maureen	Planning Director, City of Southport
Merklinger, Amber	Communications Specialist, Brunswick County
Mello, John	Hazard Mitigation Planner, NCEM
Meredith, Ron	Planning Director, Town of Burgaw
Miles, Stacie	Emergency Services Deputy Director, Onslow County
Moore, Stephanie	Planner/Code Enforcement Officer, Town of Topsail Beach
Nagle, Debra	Administrative Specialist, New Hanover County
Niemann, Sharon	Clerk, Town of Belville
Pigott, Janna	Floodplain Manager, Town of Holden Beach
Randall, Jacob	Fire Chief, Town of Swansboro
Rhue, Nathan	Community Development Director, Town of Holly Ridge
Slaughter, Nathan	Department Manager, ESP Associates
Smith, Jeremy	Community Development, Town of Surf City
Stanley, Leslie	Volunteer & Non-Profit Coordinator, Brunswick County
Tallman, Edward	Fire Chief, City of Jacksonville
Vafier, Ken	Planning Manager, New Hanover County
Walker, Bob	Executive Director, Brunswick Regional Water & Sewer H2GO
Waters, Marcy	Long Range Planner, Pender County
Weber, Adrianna	Engineering Director, Brunswick Regional Water & Sewer H2GO
Weigand, LeAnn	Executive Assistant/Clerk, Brunswick County
White, Bethany	Director of Development, Compliance, & Inspections, Town of Kure Beach
Whitehead, Greg	Town Administrator, Town of Richlands
Wilson, Tony	Planning & Inspections Director, Town of Wrightsville Beach
Winters, Terri	REP Planner, Brunswick County

Introductions & Meeting Objectives

Nathan Slaughter, Project Manager with ESP Associates, welcomed all participants to the meeting and gave a brief overview of the meeting agenda and objectives. Meeting objectives included (1) HIRA Purpose in Mitigation, (2) Build Consensus, (3) Confirm PRI, and (4) Link Mitigation. This meeting was focused on sharing initial findings (quantitative analysis) and collecting targeted feedback from the HMPC (qualitative analysis/ground truthing).

Brief HIRA Overview

To provide context at the front end of the meeting, the role of HIRA in mitigation was reviewed in great depth. HIRA, which stands for Hazard Identification and Risk Assessment, serves as the foundation for developing effective mitigation plans. It is essential not only for state and federal compliance, but also guides the entire planning process. By understanding the risks associated with various hazards and having an HMP in place, communities can better position themselves for important funding sources, such as the Hazard Mitigation Grant Program (HMGP) and the Flood Mitigation Assistance (FMA) program.

Essential steps in the HIRA process were summarized. The HIRA process begins with the identification of hazards that may impact communities, using data and information from various sources, including existing plans and the North Carolina Hazard Mitigation Plan. Using best available data, hazard impacts and the susceptibility of local assets and infrastructure are then assessed to estimate the associated risks to property, people, and infrastructure. The Priority Risk Index (PRI) is developed to help prioritize risks, using a scoring matrix, to inform mitigation efforts.

In addition to assessing hazards and their impacts, community capability is considered. This involves identifying existing gaps, conflicts, and opportunities within current systems, while also highlighting past achievements in mitigation. Documentation is an essential component of the plan update as FEMA emphasizes the need to maintain a clear record of the findings, methodologies, and processes involved.

Risk Assessment Findings

The initial assessment findings for the plan update were shared with a focus on the high-risk hazards and the risk assessment methodology. The process began with a review of past disaster declarations to understand the historical context of hazards affecting the county. Each significant hazard was profiled in line with FEMA requirements and summarized during the meeting. The presentation focused on four (4) profiles of high-risk hazards (based on the priority risk index) which included:

1. Flooding – NOAA NCEI reports 423+ flood events with potentially 1,000 non-mitigated repetitive loss (RL) properties
2. Hurricane and Coastal Hazards – NOAA NCEI reports 127+ hurricane, tropical storm, or tropical depression events within 75 miles of the region since 1850
3. Cyber – This is an evolving hazard of concern for all jurisdictions with the increasing technological dependence
4. Tornadoes and Thunderstorms – This is a highly likely hazard in the form of rainfall, lightning, hail, wind, etc.

This included a definition/description of each hazard, the number of events recorded (using best available data) including damages, the impact of climate change on hazard frequency and/or intensity, and any notable vulnerabilities. In addition to hazard profiles, an asset inventory was completed, which includes physical assets (improved property and critical facilities) and social

assets (vulnerable populations e.g. elderly or children). Based off this information, loss estimates are calculated to illustrate the number/type of buildings and populations at risk.

If available, localized data can be used for risk assessment to improve accuracy. Onslow County's ongoing collaboration with NCDOT was highlighted as well as the new model for the river basin, which shows different flood results than what is illustrated in the broader models covering Cape Fear/White Oak Basin.

Initial PRI Findings

The Priority Risk Index (PRI) is a base scoring matrix that includes five (5) weighted factors (probability, impact, spatial extent, warning time, and duration). Changes/modifications to any of the five factors would change the PRI score, but ensures the final score reflects regional/local priorities. The initial scores are presented below:

HIGH RISK	Flooding Hurricanes/Coastal Hazards Cyber Tornadoes/Thunderstorms
MODERATE RISK	Severe Winter Weather Radiological Emergency Infectious Disease Hazardous Substances Drought Terrorism Wildfire Geological Hazards (Sinkholes, Coastal Erosion) Rip Currents Food emergency
LOW RISK	Tsunamis Excessive Heat Earthquake Dam Failure Electromagnetic Pulse Civil Disturbance

The initial priority risk index (PRI) scores were reviewed, noting that input received from the HMPC would be used to adjust the scoring. The following feedback was provided by stakeholders on the initial PRI:

- It was noted that wildfire is a high-risk hazard (at least in Brunswick and Pender counties).
- Rip currents was identified as a high-risk hazard for the region, specifically for oceanfront municipalities. This is included as a sub-hazard to hurricanes and coastal hazards, which was scored high-risk for the 2026 Plan Update.
- Extreme heat should, at minimum, be moved up to moderate risk, noting that severe winter weather was listed as moderate risk. There are urban heat challenges in developed areas.

Public Involvement Tools

Thus far, the project team has launched a project website, held a large virtual public meeting, and conducted an online survey that received a record-breaking 1,400 responses. The level of engagement was higher than ever before, showing how much residents across the region care about reducing risk from hazards.

Based on survey responses, people stated they are most concerned about rapid growth and development, loss of wetlands and trees, and transportation challenges during evacuations. Many also raised concerns about water quality in the Cape Fear River and the risks of being close to military and nuclear facilities. Hurricanes, coastal hazards, and flooding were identified as the top hazards, echoing initial risk assessment findings. Encouragingly, more than half of respondents said they've already taken steps to protect their homes, and over 90 percent want to do more.

To better understand all of the open-ended survey comments, ESP used artificial intelligence (AI) to scan for common themes and locations mentioned by residents. This helped to quickly identify patterns in hundreds of responses to ensure community voices directly inform the plan.

Informing Mitigation Actions

The mitigation strategy was then explained, which is a portion of the plan focused on solutions to reduce long-term risk from hazards. Mitigation actions fall into six categories: prevention, natural resource protection, emergency services, property protection, structural projects, and public education/awareness. These categories together provided a comprehensive framework, covering everything from development policies and resource preservation to stormwater improvements and public outreach.

Participants were reminded that every county and municipality already had an existing mitigation action plan developed during previous updates. As part of the current planning cycle, each jurisdiction is required to review those actions, report on their implementation status (completed,

in progress, or not yet started), and update the record accordingly. This step helps maintain accountability, track progress, and ensure that past commitments continue to align with regional priorities.

Updating the mitigation action plan also offers an opportunity to create new mitigation actions to address evolving conditions and emerging risks. Using the most recent hazard data, survey findings, and stakeholder input, communities are encouraged to propose new actions that address issues such as rapid development, flooding hot spots, and cyber threats.

Project Schedule

The project schedule was reviewed. One additional stakeholder meeting is planned for late fall 2025 to focus on the mitigation strategy, after which a draft plan will be prepared. The regional plan will expire on April 28, 2026, so the draft will be submitted to NCEM and FEMA early 2026. Jurisdictions were reminded to begin reviewing their mitigation actions, update their implementation status, and prepare adoption resolutions early to avoid delays. It was also noted that county or municipal-level meetings could be scheduled if needed to dive deeper into risk assessment and mitigation strategies.

Meeting Closeout

The meeting concluded with a call for collaborative updates among counties and municipalities. Contact information was shared at this time. Meeting minutes and the presentation will be shared with participants and uploaded to the project website for documentation purposes. The meeting officially adjourned at 11:05am.

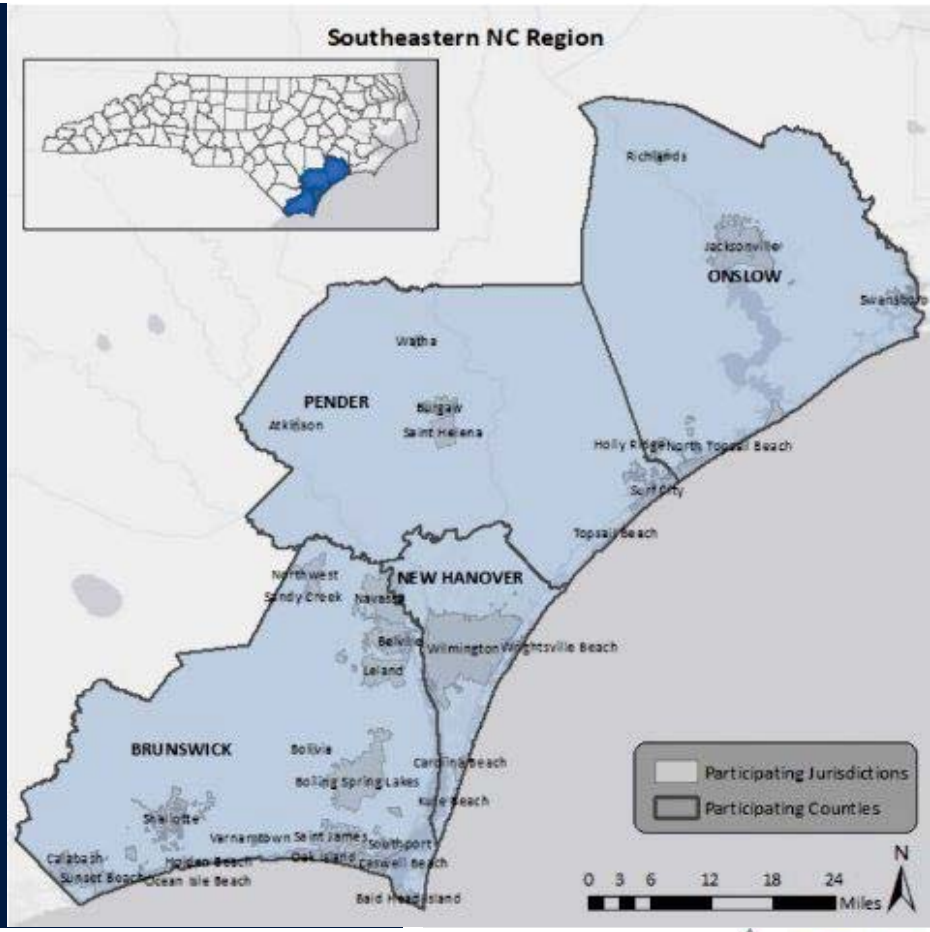
Southeastern NC

Hazard Mitigation Plan Update

HIRA Meeting

September 23rd, 2025

Bolivia, NC



Agenda

- Welcome & Introductions
- Meeting Objectives
- HIRA Overview
- Risk Assessment Findings
- Public Survey Findings
- Project Schedule & Next Steps
- Q&A Session

Introductions

Welcome!

In-Person Attendees: Reminder to Sign-In

Virtual Attendees: Enter Name, Role, Organization in Chat

Meeting Objectives



Explain Purpose



Build Consensus



Confirm PRI



Link Mitigation

Importance of HIRA

What is HIRA?

- HIRA: Hazard Identification and Risk Assessment
- A systematic process for communities to identify hazards and evaluate risks

Importance of HIRA in Mitigation Planning

1. Foundation for Mitigation Plans – HIRA is a core component required by FEMA and State regulations
2. Guides Decision-Making – Helps communities prioritize actions and allocate resources effectively
3. Enhances Resilience – Aids in developing strategies to reduce risk and improve community capacity

Foundation for Mitigation Plans

State and Federal Compliance

- FEMA Compliance – Mandated by FEMA as part of the hazard mitigation planning process to qualify for federal assistance
- State Regulations – Many states, including North Carolina, have adopted similar requirements to align with FEMA guidelines

Best Practices and Standards

- Inclusive Stakeholder Engagement – Ensures various community voices, needs, and experiences are represented
- Incorporates Climate Change – Supports relevant and effective mitigation plans that address emerging risks

Guides Decision-Making



Data-Driven Insights

Comprehensive Hazard Analysis

- Identifies and evaluates all potential hazards
- Utilizes historical data and predictive modeling to assess future risk

Quantitative Risk Assessment

- Measures the likelihood of hazards occurring and potential impacts
- Provides numerical data that supports discussions and planning



Understanding Local Risks

Community-Specific Information

- Tailor assessment to reflect community characteristics (geography, demographics, etc.)
- Highlights unique vulnerabilities based on characteristics

Stakeholder Involvement

- Engages residents, business owners, and organizations
- Encourages sharing of local knowledge and experiences

Enhances Resilience



Proactive Risk Management

Promotes a culture of preparedness and resilience within communities, reducing the impact of disasters



Transparent Process

Fosters transparency by sharing data/findings with stakeholders to build trust and encourage community input



Long-Term Sustainability

Contributes to the long-term sustainability and safety of communities, minimizing future losses and/or damages



Shared Responsibility

Promotes a collaborative approach to hazard mitigation involving multiple stakeholders in the development and implementation of mitigation strategies

Problem Identification

The HIRA focuses on *problem identification*, which will then be used to develop solutions (mitigation actions).

Qualitative and quantitative analyses were conducted for problem identification:

1. Qualitative – Initial public survey results were used to identify general concerns and key hazard areas
2. Quantitative – Risk assessment findings were used to identify hazards and evaluate risk

Risk Assessment

The **risk assessment methodology** described in the FEMA publication *Understanding Your Risks – Identifying Hazards and Estimating Losses* was referenced throughout this update, which breaks the assessment down to a simple four-step process.



Caveat: Using Best Available Data

The 2026 Plan Update reflects the current **best available data.** Key resources used/referenced throughout the update process include, but are not limited to:

- NOAA/NCEI Storm Events
- NCEM RMT
- NCEM IRISK
- 2023 NC State HMP
- 2021 SENC RHMP



Step 1: Identify Significant Hazards

Significant hazard identification was completed using FEMA's Disaster Declaration Summary (as of 2025), the NC State HMP (2023), the previous iteration of the SENC RHMP (2021), in addition to stakeholder input.

Year	Disaster Number	Description	Brunswick County	Onslow County	Pender County	New Hanover County
1984	724	HURRICANE DIANA	X		X	X
1989	844	HURRICANE HUGO	X			
1996	1127	HURRICANE BERTHA	X	X	X	X
1996	1134	HURRICANE FRAN	X	X	X	X
1998	1240	HURRICANE BONNIE	X	X	X	X
1999	1292	HURRICANE FLOYD	X	X	X	X
2003	1490	HURRICANE ISABEL	X	X	X	X
2005	1608	HURRICANE OPHELIA	X	X	X	X
2008	1801	TROPICAL STORM HANNA	X			X
2010	1942	SEVERE STORMS, FLOODING, AND STRAIGHT-LINE WINDS	X	X	X	X
2011	1969	SEVERE STORMS, FLOODING, TORNADOES		X		
2011	4019	HURRICANE IRENE	X	X	X	X
2016	4285	HURRICANE MATTHEW	X	X	X	X
2018	4393	HURRICANE FLORENCE	X	X	X	X
2019	4412	TROPICAL STORM MICHAEL	X			
2019	4465	HURRICANE DORIAN	X	X	X	X
2020	4487	COVID-19 PANDEMIC	X	X	X	X
2020	4543	SEVERE STORMS, TORNADOES, AND FLOODING			X	
2020	4568	HURRICANE ISAIAS	X	X	X	X
2024	4837	POTENTIAL TROPICAL CYCLONE EIGHT	X	X		X

Source: FEMA Disaster Declarations Summary, August 2025



Step 1: Identify Significant Hazards

Reviewing the NC State HMP aims to ensure regional priorities align with statewide strategies to strengthen consistency, support funding eligibility, and promote coordinate risk.

Hazard	Identified in 2023 State HMP	Identified in 2021 SENC HMP	Identified in 2026 SENC HMP
Flooding	X	X	X
Hurricanes and Coastal Hazards	X	X	X
Severe Winter Weather	X	X	X
Excessive Heat	X	X	X
Earthquakes	X	X	X
Wildfire	X	X	X
Dam Failure	X	X	X
Drought	X	X	X
Tornadoes/Thunderstorms	X	X	X
Landslide	X	--	--
Sinkholes	X	X	X
Hazardous Substances	X	X	X
Radiological Emergency	X	X	X
Terrorism	X	X	X
Infectious Disease	X	X	X
Cyber Threat	X	X	X
Electromagnetic Pulse	X	X	X
Civil Disturbance	X	--	X
Food Emergency	X	--	--
Coastal Erosion	--	X	X
Tsunami	--	X	X

Source: NC SHMP (2023); SENC Regional HMP (2021)



Step 2: Profile Hazard Events

44 CFR Requirement

44 CFR Part 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 must include information on previous occurrences of hazard events and on the probability of future hazard events.

Hazard profiles were created for significant hazards for further evaluation, which considers the following factors:

1. Background
2. Location
3. Extent
4. Historical Occurrence
5. Probability of Future Occurrence
6. Changing Future Conditions
7. Summaries by Jurisdiction
8. Vulnerability Assessment

***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.*



Step 2: Profile Hazard Events

The hazard profiles summarized on subsequent slides pose the greatest threat (high risk) to the region and include:

1. Flooding
2. Hurricane/Coastal Hazards
3. Cyber
4. Tornadoes/Thunderstorms

***Hazard risk was quantified using the Priority Risk Index (PRI), which will be discussed in-depth before presenting initial HIRA findings. Information gathered for the hazard profiles was used to complete the PRI scoring matrix.*

Flooding

Probability	Impact	Spatial Extent	Warning Time	Duration
Highly Likely	Critical	Moderate	6 to 12 hours	< 1 Week

Definition – The rising and overflowing of water onto normally dry land; a general and temporary condition of partial or complete inundation of 2 or more acres/properties

Recorded Events – The NCEI records 423 flood events (riverine, coastal, and urban) throughout the SENC Region between 1950-2025, totaling $21.6M in property damage

Climate Change – The NC Climate Science Report indicates annual precipitation is likely to increase and extreme precipitation frequency/intensity is very likely to increase

Key Vulnerabilities – There are 1,045 non-mitigated repetitive loss properties in the SENC Region, most of which are single-family residential

Location	Number of Occurrences	Property Damages	Crop Damages
Brunswick County	122	$5,512,000	$0
New Hanover County	161	$7,514,000	$0
Onslow County	54	$2,230,000	$6,000,000
Pender County	86	$6,430,000	$0
REGION TOTAL	**423**	**$21,686,000**	**$6,000,000**

Summary of Flood Occurrences in SENC Region (1950-2025)
Source: NCEI

Hurricane & Coastal Hazards

Probability	Impact	Spatial Extent	Warning Time	Duration
Likely	Critical	Large	> 24 hours	< 1 Week

Definition – Any closed circulation developing around a low-pressure where the winds rotate counter-clockwise in the N. Hemisphere with an avg. diameter 10-30 miles across

Recorded Events – The NCEI records 127 tracks of hurricanes, tropical storms, or tropical depressions within 75 mi of the SENC Region since 1850

Climate Change – Models project that hurricane-associated intensity and rainfall rates will increase despite annual variability in the number of landfalling hurricanes in NC

Key Vulnerabilities – NC has the fourth greatest number of landfalling hurricanes to any state in the 20th century (trailing Florida, Texas, and Louisiana)

Name	Date	Category	Damages
Isabel	Sept. 6-19, 2003	Category 2 @ Outer Banks (fringe SENC)	Minimal SENC; scattered trees, roof damage, beach erosion @ Bald Head Island
Ophelia	Sept. 6-17, 2005	Category 1 brushing SENC	$6M (Pender + New Hanover), $2.3 (Brunswick), mostly debris cleanup
Irene	August 26-27, 2011	Category 1 @ Cape Lookout	$209M property/crop, $420M surge damages, $4.35M property in SENC
Matthew	Oct. 8, 2016	Category 1 @ NC landfall	$967M + statewide losses, 88k homes damages, 4,4232 homes destroyed
Florence	Sept. 14-17, 2018	Category 1 @ Wrightsville Beach	$2.8-5B in damage

Brief description of storms post-2000 that have had a significant impact on the SENC Region

Cyber

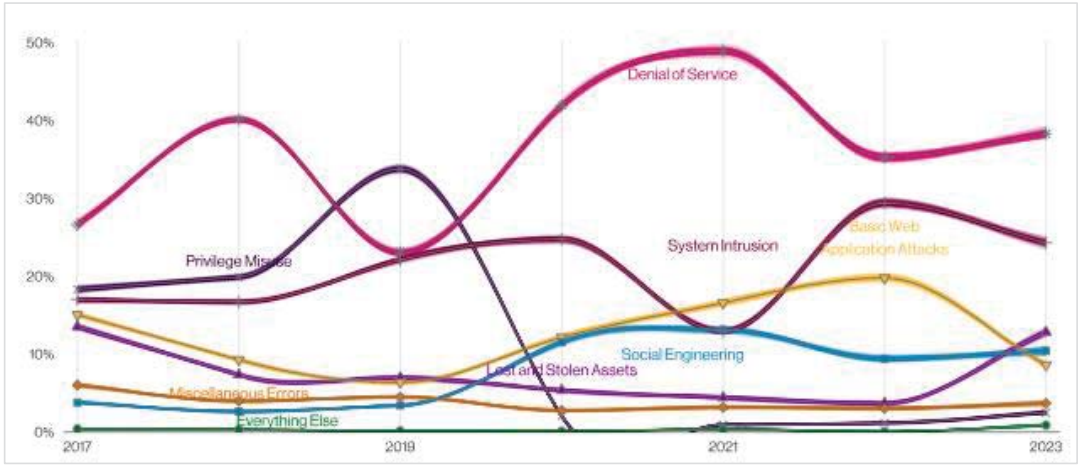
Probability	Impact	Spatial Extent	Warning Time	Duration
Possible	Critical	Large	< 6 hours	< 1 Week

Definition – Deliberate attacks on information technology systems in an attempt to gain illegal access to a computer, or purposely cause damage

Recorded Events – Based on best available data, there has not been severe past occurrences in the region

Climate Change – Unlike other hazards discussed in the plan, climate chang is unlikely to affect the occurrence/frequency of future cyberattack incidents

Key Vulnerabilities – As dependency on technology grows, the possibility of experiencing cyberattacks does as well



2023 Verizon Data Breach Investigations Report

Tornadoes / Thunderstorms

Probability	Impact	Spatial Extent	Warning Time	Duration
Highly Likely	Limited	Moderate	6-12 hours	< 6 hours

Definition – tornado is a violent windstorm characterized by twisting, funnel-shaped cloud extending to the ground, often generated by thunderstorm activity

Recorded Events – The NCEI records 569 hailstorm events, 88 lightning events, and 717 thunderstorm/high wind events, and 169 tornado events between 1950-2025

Climate Change – Changing weather patterns related to climate change may result in more frequent and more severe storms in the SENC Region

Key Vulnerabilities – Tornadoes have resulted in nearly $27M in property damage in the region, in addition to 9 deaths and 109 injuries

Location	Number of Occurrences	Deaths/Injuries	Property Damages ($)
Brunswick County	44	3/11	$4,184,000
New Hanover County	32	0/8	$2,401,000
Onslow County	48	3/59	$15,421,250
Pender County	45	3/31	$4,945,000
REGION TOTAL	**169**	**9/109**	**$26,951,250**

Summary of Tornado Occurrences in the SENC Region
Source: NCEI



Step 3: Inventory Assets

The **asset inventory** identified and quantified key assets as part of the risk assessment and reviewed:

1. Population (Total County, Elderly, and Children)
2. Properties (Building Counts and Values)
3. Critical Infrastructure and Key Resources (Key Resources by Type, Critical Facilities, High Potential Loss Properties, and Agriculture)

***Only hazards with a specific geographic boundary, modeling tool, or sufficient historical data allow for further analysis. This included Flooding, Hurricane/Coastal Hazards, Tornadoes/Thunderstorms, Earthquake, Sinkholes, Coastal Erosion, Wildfires, and Hazardous Substances.*



Step 3: Inventory Assets

Physical assets in the inventory consist of:

1. Improved Property: Includes all improved properties in the SENC Region according to local parcel data provided by the counties. This information is expressed in terms of number of parcels and total assessed value of improvements (buildings) that may be exposed to the identified hazards.

Location	Number of Parcels	Total Assessed Value of Parcels	Estimated Number of Buildings	Total Assessed Value of Improvements
Brunswick County	151,754	$9,914,013,665	83,090	$14,979,238,057
New Hanover County	114,384	$11,393,561,127	82,043	$19,275,321,477
Onslow County	94,444	$4,796,243,010	60,982	$8,000,111,546
Pender County	54,352	$4,243,758,251	30,234	$3,946,369,985
REGION TOTAL	**414,934**	**$30,347,576,053**	**256,349**	**$46,201,041,065**

Source: Local Governments



Step 3: Inventory Assets

Physical assets in the inventory consist of:

2. Critical Facilities: Vary per jurisdiction; Identified critical facilities include fire stations, police stations, medical care facilities, schools, government facilities, emergency operation centers, and other building deemed important:

Location	Fire/EMS Stations	Police Stations	Medical Care Facilities	Schools
Brunswick County	63	14	37	20
New Hanover County	46	19	136	44
Onslow County	49	9	72	43
Pender County	27	5	29	16
REGION TOTAL	**185**	**46**	**274**	**123**

Source: Local Governments



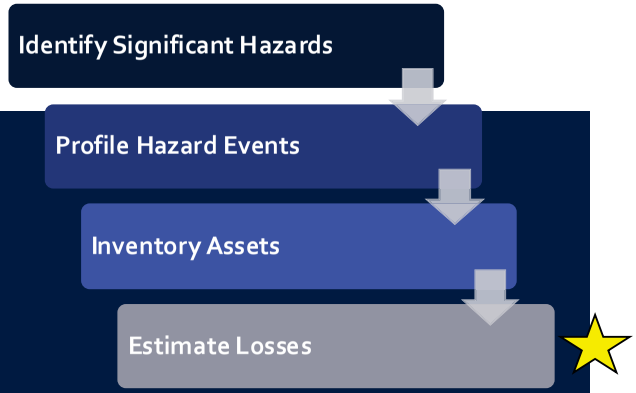
Step 3: Inventory Assets

Social assets are included as part of the vulnerability assessment:

Social assets are addressed to determine population at risk to the identified hazards. Key factors, such as age, may provide additional insights regarding socially vulnerable populations.

Location	Population at Risk to 100-Year Floodplain		Population at Risk to Hurricane Winds in 100-Year Frequency		Population Vulnerable to F2 Tornado	
	Elderly	Children	Elderly	Children	Elderly	Children
Brunswick County	1,242	316	22,709	5,748	22,940	5,807
New Hanover County	1,546	646	28,034	11,698	28,092	11,724
Onslow County	215	275	13,196	16,908	13,238	16,962
Pender County	560	221	7,876	3,078	7,892	3,085
REGION TOTAL	**3,563**	**1,458**	**71,815**	**37,432**	**72,162**	**37,578**

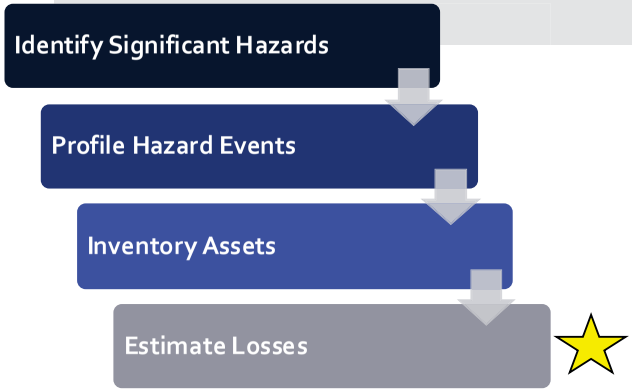
Source: NCEM Risk Management Tool



Step 4: Estimate Losses

A **vulnerability assessment** was conducted for each hazard to **estimate losses** based on its potential to cause significant human and/or monetary losses. Data used to support this assessment include:

1. Foundational GIS datasets (critical facilities, building footprints, topography, transportation layers)
2. Hazard-specific GIS datasets (state and federal agencies)
3. Existing and relevant plans (description of inventory and risks)
4. Exposure and vulnerability estimates (NCEM RMT/IRISK)
5. Risk and loss estimates (FEMA NRI)



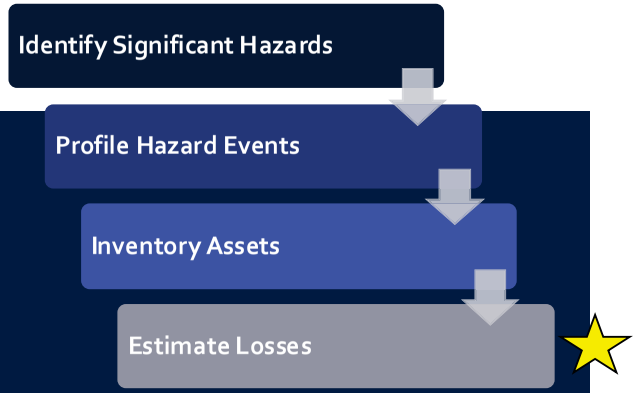
This data illustrates the estimated number of buildings and potential damages across residential, commercial, and public sectors for hazards, helping to quantify potential impacts.

Hazard	Residential Buildings at Risk in Region		Commercial Buildings at Risk in Region		Public Buildings at Risk in Region		Total Buildings at Risk in Region	
	Number	Damages	Number	Damages	Number	Damages	Number	Damages
Flooding	13,555	$359,725,184	620	$31,555,942	93	$5,677,428	14,268	$396,958,547
Hurricane / Coastal	232,167	$4,627,151,213	15,733	$857,592,726	6,584	$502,979,439	254,484	$5,987.723,381
Tornado / Thunderstorm	235,118	$37,002,626,166	15,250	$11,248,711,722	6,754	$5,445,683,117	257,122	$53,697,021,050
REGION TOTAL	**480,840**	**$41,989,502,563**	**31,603**	**$12,137,860,390**	**13,431**	**$5,954,339,984**	**525,874**	**$60,081,702,978**

Source: NCEM Risk Management Tool

Step 4: Estimate Losses

SENC HMP Update | HIRA Meeting | September 23rd, 2025



Step 4: Estimate Losses

Additionally, **potential annualized loss estimates** for each hazard were calculated. This was determined through the damage reported through historical occurrences at the county level and/or through modeling.

Hazard	Brunswick County	New Hanover County	Onslow County	Pender County	REGION TOTAL
Hurricane / Coastal Hazards	$53,436,605	$167,594,285	$90,454,925	$19,447,689	**$330,933,504**
Tornadoes / Thunderstorms	$1,284,177	Negligible	$18,982	$416,457	**$1,719,616**
Flooding	$791,848	$2,319,798	$216,407	$233,189	**$3,561,242**
Cyber	Negligible	Negligible	Negligible	Negligible	**Negligible**

Source: NCEM Risk Management Tool

Priority Risk Index (PRI)

The Priority Risk Index (PRI) Overview:

1. **Objective Scoring System** – Quantifies the level of risk for various hazards (scored low, moderate, and high)
2. **Key Factors Considered** – Probability of occurrence, impact severity, warning time, and duration of hazard event
3. **Prioritizes Hazards** – Helps identify which hazards pose the greatest threat
4. **Informs Mitigation Strategies** – Guides resource allocation to address the most significant risks

PRI Scoring Matrix

PRI Category	Degree of Risk			Assigned Weighting Factor
	Level	Criteria	Index Value	
Probability	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	
Impact	Minor	• Very few injuries, if any. • Only minor property damage and minimal disruption on quality of life. • Temporary shutdown of critical facilities.	1	30%
	Limited	• Minor injuries only. • More than 10% of property in affected area damaged or destroyed. • Complete shutdown of critical facilities for more than one day.	2	
	Critical	• Multiple deaths/injuries possible. • More than 25% of property in affected area damaged or destroyed. • Complete shutdown of critical facilities for more than one week.	3	
	Catastrophic	• High number of deaths/injuries possible. • More than 50% of property in affected area damaged or destroyed. • Complete shutdown of critical facilities for 30 days or more.	4	
Spatial Extent	Negligible	Less than 1% of area affected	1	20%
	Small	Between 1 and 10% of area affected	2	
	Moderate	Between 10 and 50% of area affected	3	
	Large	Between 50 and 100% of area affected	4	
Warning Time	More than 24 hours	Self-explanatory	1	10%
	12 to 24 hours	Self-explanatory	2	
	6 to 12 hours	Self-explanatory	3	
	Less than 6 hours	Self-explanatory	4	
Duration	Less than 6 hours	Self-explanatory	1	10%
	Less than 24 hours	Self-explanatory	2	
	Less than one week	Self-explanatory	3	
	More than one week	Self-explanatory	4	

Initial PRI Findings

HIGH RISK	Flooding Hurricanes/Coastal Hazards Cyber Tornadoes/Thunderstorms
MODERATE RISK	Severe Winter Weather Radiological Emergency Infectious Disease Hazardous Substances Drought Terrorism Wildfire Geological Hazards (Sinkholes, Coastal Erosion) Rip Currents Food emergency
LOW RISK	Tsunamis Excessive Heat Earthquake Dam Failure Electromagnetic Pulse Civil Disturbance

High Risk – Widespread potential impact, high threat to the general population and/or built environment, and potential for damage is widespread.

Moderate Risk – Moderate potential impact, moderate threat level to the general population and/or built environment, and potential damage is more isolated and less costly than a more widespread disaster.

Low Risk – Minimal potential impact, minimal occurrence, and minimal potential cost of damage to life and property (not a priority hazard).

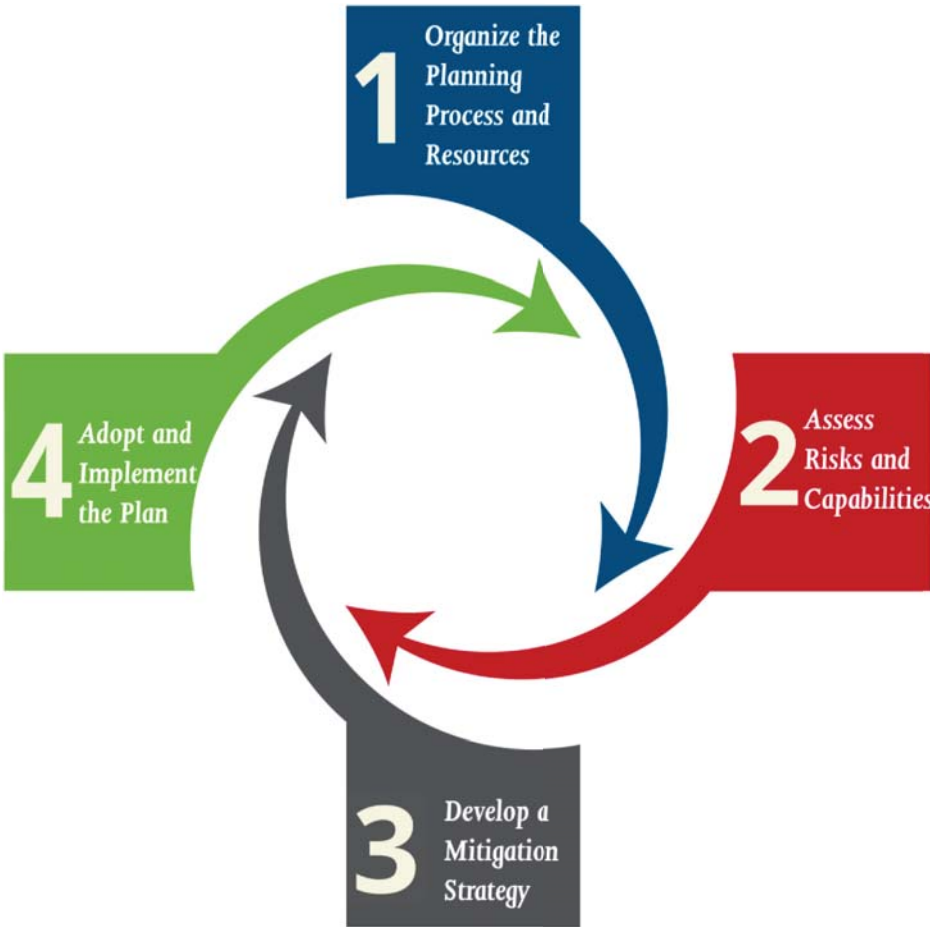
PRI Breakdown

Summary of PRI Results for High-Risk Hazards (4):

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Flooding	Highly Likely	Critical	Moderate	6-12 hours	Less than 1 week	**3.3**
Hurricanes / Coastal Hazards	Likely	Critical	Large	More than 24 hours	Less than 1 week	**3**
Cyber	Possible	Critical	Large	Less than 24 hours	Less than 1 week	**3**
Tornadoes / Thunderstorms	Highly Likely	Limited	Moderate	6 to 12 hours	Less than 6 hours	**2.8**

***Adjustments to any of the criteria listed will alter the overall PRI score and will be reflected in the final plan. This scoring was completed for all identified hazards, but we're highlighting hazards that ranked high-risk.*

Linking to Mitigation Strategy



Informing Mitigation Actions

Findings from the HIRA provide a strong foundation for the action mitigation plan, helping communities develop informed, effective, and practical mitigation strategies.

- Ensures mitigation actions are based on comprehensive data and analysis
- Combines knowledge of hazards, risks, and existing capabilities to form a robust yet feasible strategy
- Focuses efforts on the most significant vulnerabilities and improves overall preparedness
- Informs ongoing updates and refinements to the mitigation strategy as new data and insights emerge

Mitigation Techniques – Examples

Prevention
Planning/Zoning
Building Codes
Open Space Preservation
Floodplain Regulations
Stormwater Mgmt.
Drainage Maintenance

Natural Resource Mgmt.
Floodplain Protection
Watershed Mgmt.
Riparian Buffers
Erosion/Sediment Control
Wetland Restoration
Habitat Preservation

Emergency Services
Warning Systems
Response Equipment
Shelter Operations
Evacuation Planning
Response Training
Sandbagging

Property Protection
Acquisition/Relocation
Building Elevation
Critical Facility Protection
Retrofitting
Safe Room/Shutters
Insurance

Structural Projects
Reservoirs
Dams, Levees, Dikes
Stormwater Diversions
Retention Basins
Channel Modification
Storm Sewers

Education/Awareness
Outreach Projects
Speaker Series
Hazard Map Info
Real Estate Disclosure
Library Materials
Hazard Expositions

Valuable Project Resources

How will information be gathered & shared?

1. Creation of a Designated Project Website – This will remain accessible throughout the lifespan of the project & beyond
2. Creation & Distribution of a Public Survey – Intended to gather public input & ensure community needs and priorities are adequately addressed



Visit and Share the Project Website

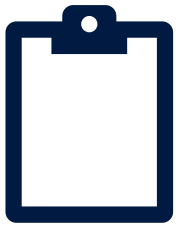


This Project Website will be updated regularly throughout the planning process to provide access to:

1. Project Overview
2. Meeting Minutes & Presentations
3. Public Survey
4. Previous HMP (2020)
5. Relevant Planning Resources

Public Survey Results

Public survey results were assessed to identify other common concerns and locate hazard areas. This qualitative approach was used to obtain local knowledge, lived experiences, and supplement quantitative data.



Common Concerns/Issues



Identified Hazard Areas

Common Concerns / Issues



Rapid Development/Growth



Deforestation/Wetland Infringement



Transportation/Evacuation



Insufficient Infrastructure



Water Quality (Cape Fear)



Proximity to Military and Nuclear Facilities

Identified Hazard Areas

Transportation/Evacuation

Major highways mentioned: NC 24, NC 133, NC 87, NC 211, NC 906, US 17, US 74, US 76, US 258,

Rapid Development/Growth

Areas mentioned: Leland, 211 corridor, Castle Hayne, Mayfaire/NE Wilmington, north end of Carolina Beach, Oak Island

Deforestation/Wetland Infringement

Areas mentioned: Palmetto Creek, 211 corridor, Gum Branch Area, Pleasure Island, Oak Island

Proximity to Military and Nuclear Facilities

Specific facilities mentioned: Camp Lejeune, MCAS New River, Sunny Point, Brunswick Nuclear Generation Station, GE Aerospace Plant

Public Survey Results

Key findings are summarized below:



22% of respondents reside in Wilmington and 8% reside in Ocean Isle Beach.



Hurricane and coastal hazards were identified as the #1 threat, followed by flooding.



56% of respondents have taken steps to make their home more resistant against hazards.



91% of respondents are interested in making their home more resistant to hazards.



79% of respondents do not know what office to contact to reduce their risk to hazards in their area.

Public Survey Results

Key findings are summarized below:



Prevention - 91% of respondents ranked this technique as "Very Important."



Emergency Services – 89% of respondents ranked this technique as "Very Important."



Natural Resource Protection - 87% of respondents ranked this technique as "Very Important."



Public Education & Awareness - 73% of respondents ranked this technique as "Very Important."



Structural Projects - 70% of respondents ranked this technique as "Very Important."



Property Protection - 58% of respondents ranked this technique as "Very Important."

Next Steps

1. **Review: Follow-Up Meeting Materials**
   - HIRA and Public Survey Findings
2. **Review: Existing Mitigation Action Plan** (2021 HMP)
   - Review Status Updates for Each Action
3. **Brainstorm: New Mitigation Strategies** (2026 HMP)
   - Consider Evolving Needs and Conditions
   - Address Existing Gaps/Weaknesses

Project Schedule

Project Kickoff Date – 5/28/25	Larger Stakeholder Meeting – 6/19/25	Public Meeting #1 – 8/18/25
Public Meeting 2#2 – TBD	HIRA Meeting – 9/22/25	Mitigation Strategy Meeting – Late Fall 2025
	Existing Plan Expiration Date – 4/28/26	





Questions

Questions/Comments/Concerns

Adjourn – Thank you!

Contractor Contact Information:

Nathan Slaugher – nslaughter@espassociates.com

Hannah DeLude – hdelude@espassociates.com

John Flores – jflores@espassociates.com

Fabiha Rahman – frahman@espassociates.com

SENC MEETING AGENDAS

Mitigation Strategy Meeting
November 20th, 2025
Burgaw, NC

Meeting Objectives

I. REVISIT MITIGATION
II. REVIEW HIRA FINDINGS
III. BRAINSTORM NEW MITIGATION ACTIONS

Mitigation Overview

I. MITIGATION STRATEGY COMPONENTS
II. PURPOSE OF MITIGATION
III. TYPES OF MITIGATION
IV. MITIGATION CATEGORIES

HIRA Summary

I. GENERAL CONCERNS
II. IDENTIFIED PROBLEM AREAS
III. PRI REVISIONS

Mitigation Strategy

I. MITIGATION GOALS
II. INFORMING MITIGATION STRATEGY
III. ACTION PLAN DEVELOPMENT
IV. MITIGATION ACTION EXAMPLES

Next Steps

I. SUBMIT UPDATED AND NEW MITIGATION ACTIONS
II. SUBMIT DRAFT PLAN – EARLY 2026

1. Summary

Meeting title	Southeastern NC Regional Hazard Mitigation Plan - Mitigation Strategy Meeting
Attended participants	44
Start time	11/20/25, 12:21:48 PM
End time	11/21/25, 8:44:15 AM
Meeting duration	20h 22m 26s
Average attendance time	1h 35m 15s

2. Participants

Name	First Join	Last Leave	In-Meeting Duration	Email	Participant ID (UPN)	Role
Nathan Slaughter	11/20/25, 12:26:37 PM	11/20/25, 2:23:12 PM	1h 56m 35s	nslaughter@espassociates.com	nslaughter@espassociates.com	Organizer
Edward Tallman (External)	11/20/25, 12:50:50 PM	11/21/25, 8:44:15 AM	19h 53m 25s	etallman@jacksonvillenc.gov	etallman@jacksonvillenc.gov	Presenter
Chip Bartlett (External)	11/20/25, 12:56:35 PM	11/20/25, 2:15:36 PM	1h 19m 1s	cbartlett@capefearcog.org	cbartlett@capefearcog.org	Presenter
Vafier, Ken (External)	11/20/25, 12:56:38 PM	11/20/25, 2:15:44 PM	1h 19m 5s	kvafier@nhcgov.com	kvafier@nhcgov.com	Presenter
Lorenzen, Robin (NCEM) (External)	11/20/25, 12:56:54 PM	11/20/25, 1:48:06 PM	51m 11s	robin.lorenzen@ncdps.gov	ROBIN.LORENZEN@ncdps.gov	Presenter
Jeremy Smith (External)	11/20/25, 12:57:08 PM	11/20/25, 2:15:43 PM	1h 18m 34s	jsmith@surfcitync.gov	jsmith@surfcitync.gov	Presenter
Keith Dycus (External)	11/20/25, 12:57:20 PM	11/20/25, 2:15:34 PM	1h 18m 14s	keith@oibgov.com	keith@oibgov.com	Presenter
James Horne (External)	11/20/25, 12:57:39 PM	11/20/25, 2:40:47 PM	1h 43m 7s	jhorne@surfcitync.gov	jhorne@surfcitync.gov	Presenter
Jeff Repp (External)	11/20/25, 12:57:53 PM	11/20/25, 2:15:05 PM	1h 17m 12s	jrepp@stjames.town	jrepp@stjames.town	Presenter
Baker, Carl (NCEM) (External)	11/20/25, 12:57:59 PM	11/20/25, 2:27:53 PM	1h 18m 35s	carl.baker@ncdps.gov	carl.baker@ncdps.gov	Presenter
Stephen Boyett (External)	11/20/25, 12:58:12 PM	11/20/25, 2:15:36 PM	1h 17m 24s	sboyett@villagebhi.org	sboyett@villagebhi.org	Presenter
Maureen Meehan (External)	11/20/25, 12:58:42 PM	11/20/25, 2:15:45 PM	1h 17m 3s	mmeehan@cityofsouthport.com	mmeehan@cityofsouthport.com	Presenter
Wampler, Madelyn (External)	11/20/25, 12:58:42 PM	11/20/25, 2:15:50 PM	1h 17m 8s	mwampler@nhcgov.com	mwampler@nhcgov.com	Presenter
Landin's Notetaker (Otter.ai) (Unverified)	11/20/25, 12:59:03 PM	11/20/25, 1:31:09 PM	32m 5s			Presenter
Robert's Notetaker (Otter.ai) (Unverified)	11/20/25, 12:59:03 PM	11/20/25, 1:31:09 PM	32m 6s			Presenter
Adrienne's Notetaker (Otter.ai) (Unverifie	11/20/25, 12:59:03 PM	11/20/25, 1:31:10 PM	32m 6s			Presenter
Craig Malone (External)	11/20/25, 12:59:17 PM	11/20/25, 2:15:15 PM	1h 15m 58s	Craig.Malone@cfpua.org	Craig.Malone@cfpua.org	Presenter
Rebecca Brehmer	11/20/25, 12:59:29 PM	11/20/25, 2:15:45 PM	1h 16m 15s	rbrehmer@ci.swansboro.nc.us	rbrehmer@ci.swansboro.nc.us	Presenter
Ron Satterfield (External)	11/20/25, 12:59:40 PM	11/20/25, 2:15:50 PM	1h 16m 9s	ron@anchorpointplanning.com	ron@anchorpointplanning.com	Presenter
Craig Harris	11/20/25, 12:59:46 PM	11/20/25, 2:16:20 PM	1h 16m 33s	Craig.Harris@wilmingtonnc.gov	Craig.Harris@wilmingtonnc.gov	Presenter
read.ai meeting notes (Unverified)	11/20/25, 12:59:47 PM	11/20/25, 2:06:09 PM	1h 6m 22s			Presenter
Gloria Abbotts (External)	11/20/25, 12:59:55 PM	11/20/25, 2:15:36 PM	1h 15m 41s	gloria.abbotts@carolinabeach.org	gloria.abbotts@carolinabeach.org	Presenter
John Grimes	11/20/25, 1:00:11 PM	11/20/25, 2:15:42 PM	1h 15m 30s	jgrimes@townofleland.com	jgrimes@TOWNOFLELAND.COM	Presenter
Deb Hill	11/20/25, 1:00:11 PM	11/20/25, 2:15:32 PM	1h 15m 20s	dhill@northtopsailbeachnc.gov	dhill@NORTHTOPSAILBEACHNC.GOV	Presenter
Fabiha Rahman	11/20/25, 1:00:28 PM	11/20/25, 2:28:47 PM	1h 17m 3s	frahman@espassociates.com	frahman@espassociates.com	Presenter
Gregg Whitehead (Unverified)	11/20/25, 1:01:23 PM	11/20/25, 2:15:36 PM	1h 14m 12s			Presenter
Hannah Delude	11/20/25, 1:01:24 PM	11/20/25, 2:28:41 PM	1h 15m 50s	hdelude@espassociates.com	hdelude@espassociates.com	Presenter
Medlin, Terri (External)	11/20/25, 1:01:46 PM	11/20/25, 2:14:59 PM	1h 13m 12s	tmedlin@nhcgov.com	tmedlin@nhcgov.com	Presenter
Ron Meredith (External)	11/20/25, 1:01:52 PM	11/20/25, 3:04:18 PM	1h 50m 19s	rmeredith@burgawnc.gov	rmeredith@burgawnc.gov	Presenter
Kent Jackson (External)	11/20/25, 1:02:19 PM	11/20/25, 2:15:40 PM	1h 13m 21s	kjackson@oakislandnc.gov	kjackson@oakislandnc.gov	Presenter
Landin Holland (External)	11/20/25, 1:02:54 PM	11/20/25, 2:10:55 PM	1h 8m	lholland@townofnavassa.org	lholland@townofnavassa.org	Presenter
Jennifer Ansell (External)	11/20/25, 1:03:17 PM	11/20/25, 2:04:09 PM	1h 51s	jansell@jacksonvillenc.gov	jansell@jacksonvillenc.gov	Presenter
Luther Jones (External)	11/20/25, 1:04:49 PM	11/20/25, 2:16:56 PM	1h 12m 7s	LJones@onwasa.com	ljones@onwasa.com	Presenter
Franky Howard (External)	11/20/25, 1:05:05 PM	11/20/25, 1:09:36 PM	4m 31s	FHoward@onwasa.com	fhoward@onwasa.com	Presenter
Tim Holden Beach	11/20/25, 1:05:19 PM	11/20/25, 2:15:38 PM	1h 10m 19s			Presenter
John Flores	11/20/25, 1:06:10 PM	11/20/25, 2:15:44 PM	1h 9m 33s	jflores@espassociates.com	jflores@espassociates.com	Presenter
Michael Price (External)	11/20/25, 1:10:17 PM	11/20/25, 2:16:08 PM	1h 5m 50s	mprice@townofcalabash.net	mprice@townofcalabash.net	Presenter
Doug Skipper (External)	11/20/25, 1:12:16 PM	11/20/25, 2:15:49 PM	1h 3m 32s	inspections@hollyridgenc.org	inspections@hollyridgenc.org	Presenter
Nathan Rhue (External)	11/20/25, 1:22:13 PM	11/20/25, 2:28:24 PM	54m 52s	planner@hollyridgenc.org	planner@hollyridgenc.org	Presenter
Jacob Randall	11/20/25, 1:30:44 PM	11/20/25, 2:15:39 PM	44m 55s	jrandall@ci.swansboro.nc.us	jrandall@ci.swansboro.nc.us	Presenter
Daniel Adams (External)	11/20/25, 1:40:58 PM	11/20/25, 2:15:02 PM	28m 23s	dadams@capefearcog.org	dadams@capefearcog.org	Presenter
County Manager (External)				cmo@pendercountync.gov	cmo@pendercountync.gov	Presenter
Virginia Norris (External)				vnorris@pendercountync.gov	vnorris@pendercountync.gov	Presenter
Marcy Waters (External)				mwaters@pendercountync.gov	mwaters@pendercountync.gov	Presenter

3. In-Meeting Activities

Name	Join Time	Leave Time	Duration	Email	Role
Nathan Slaughter	11/20/25, 12:26:37 PM	11/20/25, 2:23:12 PM	1h 56m 35s	nslaughter@espassociates.com	Organizer
Edward Tallman (External)	11/20/25, 12:50:50 PM	11/21/25, 8:44:15 AM	19h 53m 25s	etallman@jacksonvillenc.gov	Presenter
Chip Bartlett (External)	11/20/25, 12:56:35 PM	11/20/25, 2:15:36 PM	1h 19m 1s	cbartlett@capefearcog.org	Presenter
Vafier, Ken (External)	11/20/25, 12:56:38 PM	11/20/25, 2:15:44 PM	1h 19m 5s	kvafier@nhcgov.com	Presenter
Lorenzen, Robin (NCEM) (External)	11/20/25, 12:56:54 PM	11/20/25, 1:48:06 PM	51m 11s	robin.lorenzen@ncdps.gov	Presenter
Jeremy Smith (External)	11/20/25, 12:57:08 PM	11/20/25, 2:15:43 PM	1h 18m 34s	jsmith@surfcitync.gov	Presenter
Keith Dycus (External)	11/20/25, 12:57:20 PM	11/20/25, 2:15:34 PM	1h 18m 14s	keith@oibgov.com	Presenter
James Horne (External)	11/20/25, 12:57:39 PM	11/20/25, 2:40:47 PM	1h 43m 7s	jhorne@surfcitync.gov	Presenter
Jeff Repp (External)	11/20/25, 12:57:53 PM	11/20/25, 2:15:05 PM	1h 17m 12s	jrepp@stjames.town	Presenter
Baker, Carl (NCEM) (External)	11/20/25, 12:57:59 PM	11/20/25, 2:15:45 PM	1h 17m 45s	carl.baker@ncdps.gov	Presenter
Baker, Carl (NCEM) (External)	11/20/25, 2:27:02 PM	11/20/25, 2:27:53 PM	50s	carl.baker@ncdps.gov	Presenter
Stephen Boyett (External)	11/20/25, 12:58:12 PM	11/20/25, 2:15:36 PM	1h 17m 24s	sboyett@villagebhi.org	Presenter
Maureen Meehan (External)	11/20/25, 12:58:42 PM	11/20/25, 2:15:45 PM	1h 17m 3s	mmeehan@cityofsouthport.com	Presenter
Wampler, Madelyn (External)	11/20/25, 12:58:42 PM	11/20/25, 2:15:50 PM	1h 17m 8s	mwampler@nhcgov.com	Presenter
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Robert's Notetaker (Otter.ai) (Unverified)	11/20/25, 12:59:03 PM	11/20/25, 1:31:09 PM	32m 6s		Presenter
Adrienne's Notetaker (Otter.ai) (Unverifie	11/20/25, 12:59:03 PM	11/20/25, 1:31:10 PM	32m 6s		Presenter
Craig Malone (External)	11/20/25, 12:59:17 PM	11/20/25, 2:15:15 PM	1h 15m 58s	Craig.Malone@cfpua.org	Presenter
Rebecca Brehmer	11/20/25, 12:59:29 PM	11/20/25, 2:15:45 PM	1h 16m 15s	rbrehmer@ci.swansboro.nc.us	Presenter
Ron Satterfield (External)	11/20/25, 12:59:40 PM	11/20/25, 2:15:50 PM	1h 16m 9s	ron@anchorpointplanning.com	Presenter
Craig Harris	11/20/25, 12:59:46 PM	11/20/25, 2:16:20 PM	1h 16m 33s	Craig.Harris@wilmingtonnc.gov	Presenter
read.ai meeting notes (Unverified)	11/20/25, 12:59:47 PM	11/20/25, 2:06:09 PM	1h 6m 22s		Presenter
Gloria Abbotts (External)	11/20/25, 12:59:55 PM	11/20/25, 2:15:36 PM	1h 15m 41s	gloria.abbotts@carolinabeach.org	Presenter
John Grimes	11/20/25, 1:00:11 PM	11/20/25, 2:15:42 PM	1h 15m 30s	jgrimes@townofleland.com	Presenter
Deb Hill	11/20/25, 1:00:11 PM	11/20/25, 2:15:32 PM	1h 15m 20s	dhill@northtopsailbeachnc.gov	Presenter
Fabiha Rahman	11/20/25, 1:00:28 PM	11/20/25, 2:15:46 PM	1h 15m 18s	frahman@espassociates.com	Presenter
Fabiha Rahman	11/20/25, 2:27:01 PM	11/20/25, 2:28:47 PM	1m 45s	frahman@espassociates.com	Presenter
Gregg Whitehead (Unverified)	11/20/25, 1:01:23 PM	11/20/25, 2:15:36 PM	1h 14m 12s		Presenter
Hannah Delude	11/20/25, 1:01:24 PM	11/20/25, 2:15:37 PM	1h 14m 13s	hdelude@espassociates.com	Presenter
Hannah Delude	11/20/25, 2:27:04 PM	11/20/25, 2:28:41 PM	1m 37s	hdelude@espassociates.com	Presenter
Medlin, Terri (External)	11/20/25, 1:01:46 PM	11/20/25, 2:14:59 PM	1h 13m 12s	tmedlin@nhcgov.com	Presenter
Ron Meredith (External)	11/20/25, 1:01:52 PM	11/20/25, 1:02:52 PM	59s	rmeredith@burgawnc.gov	Presenter
Ron Meredith (External)	11/20/25, 1:06:02 PM	11/20/25, 2:18:10 PM	1h 12m 8s	rmeredith@burgawnc.gov	Presenter
Ron Meredith (External)	11/20/25, 2:27:06 PM	11/20/25, 3:04:18 PM	37m 12s	rmeredith@burgawnc.gov	Presenter
Kent Jackson (External)	11/20/25, 1:02:19 PM	11/20/25, 2:15:40 PM	1h 13m 21s	kjackson@oakislandnc.gov	Presenter
Landin Holland (External)	11/20/25, 1:02:54 PM	11/20/25, 2:10:55 PM	1h 8m	lholland@townofnavassa.org	Presenter
Jennifer Ansell (External)	11/20/25, 1:03:17 PM	11/20/25, 2:04:09 PM	1h 51s	jansell@jacksonvillenc.gov	Presenter
Luther Jones (External)	11/20/25, 1:04:49 PM	11/20/25, 2:16:56 PM	1h 12m 7s	LJones@onwasa.com	Presenter
Franky Howard (External)	11/20/25, 1:05:05 PM	11/20/25, 1:09:36 PM	4m 31s	FHoward@onwasa.com	Presenter
Tim Holden Beach	11/20/25, 1:05:19 PM	11/20/25, 2:15:38 PM	1h 10m 19s		Presenter
John Flores	11/20/25, 1:06:10 PM	11/20/25, 2:15:44 PM	1h 9m 33s	jflores@espassociates.com	Presenter
Michael Price (External)	11/20/25, 1:10:17 PM	11/20/25, 2:16:08 PM	1h 5m 50s	mprice@townofcalabash.net	Presenter
Doug Skipper (External)	11/20/25, 1:12:16 PM	11/20/25, 2:15:49 PM	1h 3m 32s	inspections@hollyridgenc.org	Presenter
Nathan Rhue (External)	11/20/25, 1:22:13 PM	11/20/25, 2:15:41 PM	53m 27s	planner@hollyridgenc.org	Presenter
Nathan Rhue (External)	11/20/25, 2:26:58 PM	11/20/25, 2:28:24 PM	1m 25s	planner@hollyridgenc.org	Presenter
Jacob Randall	11/20/25, 1:30:44 PM	11/20/25, 2:15:39 PM	44m 55s	jrandall@ci.swansboro.nc.us	Presenter
Daniel Adams (External)	11/20/25, 1:40:58 PM	11/20/25, 2:03:01 PM	22m 3s	dadams@capefearcog.org	Presenter
Daniel Adams (External)	11/20/25, 2:08:41 PM	11/20/25, 2:15:02 PM	6m 20s	dadams@capefearcog.org	Presenter

Southeastern NC Regional Hazard Mitigation Plan Update
Mitigation Strategy Meeting

November 20, 2025

1-3 PM

Name	Title/Position	Agency	Phone Number	E-mail Address
David McIntire	EM Director	Brunswick Co.	910-253-2577	david.mcintire@brunswickcountync.gov
Angela Blake	EM Specialist	Pender Co	910-259-1210	ablake@pendercountync.gov
Tommy Batson	EM Director	Pender Co	910 259-1210	tbatson@pendercountync.gov
Helen Bunch	Planner III	Brunswick Co. Planning	910-253-2035	helen.bunch@brunswickcountync.gov
Michelle Emory	Floodplain Coordinator	Onslow County	910 455 3462	michelle.emory@onslowcountync.gov
SHIRLEY JACOBS	COUNCILWOMAN	ST. HELENA	518-322-6969	CHARLEYIN FLA @YAHOO.COM
Tony Wilson	Planning & Zoning	Town of Whiteville	9105247701	twilson@tcnb.org
Josh MEYER	SAFETY/EM	BLWS H2GO	910-859-9607	JOSH.MEYER(AT)H2GOME.GOV

Southeastern NC Regional Hazard Mitigation Plan Update
Mitigation Strategy Meeting

November 20, 2025

1-3 PM

Name	Title/Position	Agency	Phone Number	E-mail Address
Virginia Norris	Senior Planner	Pender County Planning	910-259-1274	vnorris@pendercountync.gov
Lee Duncay	Resilience Planner	Pender Co.	910-519-0695	lduncay@pendercountync.gov
Maray Waters	Long Range Planner	Pender County	910-259-1734	mwaters@pendercountync.gov
Leslie Geise	EM Planner	Brunswick County	910-473-0969	~~Lrg~~ Leslie.geise@brunswickcountync.gov
Ard Stradinsky	Planning Director	TOf Belville	910-233-7549	planning@townofbelville.com

Southeastern NC Regional Hazard Mitigation Plan Update
Mitigation Strategy Meeting

November 20, 2025

1-3 PM

Name	Title/Position	Agency	Phone Number	E-mail Address
Aaron Stryker	EM Specialist	Onslow County	252-558-7661	Aaron_Stryker@onslowcountync.gov
Diana Hills	BC PHEP Coordinator	Brunswick County Health Service	910-253-2385	Diana.hills@brunswickcountync.gov
Leslie Stanley	Recovery Planner	Brunswick Co. EM	910-253-2589	leslie.stanley@brunswickcountync.gov
Nicole Morgan	Assist. City Manager	City of Boiling Spring Lakes	910 363 0035	nmorgan@cityofBSL.org
Suzanne Price	Zoning Tech	City of BSL	910 363 0096	Sprice@cityofBSL.org
Olivia Dawson	Burgaw Mayor	Town of Burgaw	9106633490	odawson@burgawnc.gov

Mitigation Strategy Meeting
November 20th, 2025
Burgaw, NC
1:00pm – 2:30pm

Participants

Name	Organization/Role
Abbots, Gloria	Senior Planner, Town of Carolina Beach
Adams, Daniel	Local Government Services Director, Cape Fear COG
Ansell, Jennifer	Chief Zoning & Enforcement Officer, City of Jacksonville
Baker, Carl	Mitigation Plans Manager, NCEM
Bartlett, Chip	Project Manager, Cape Fear COG
Batson, Tommy	Emergency Management Director, Pender County
Blake, Angela	Emergency Management Specialist, Pender County
Boyett, Stephen	Development Services Administrator, Village of Bald Head Island
Brehmer, Rebecca	Planner, Town of Swansboro
Bunch, Helen	Planner III, Brunswick County
Dawson, Olivia	Mayor, Town of Burgaw
DeLude, Hannah	Hazard Mitigation Planner, ESP Associates
Duncan, Lee	Resilience Planner, Pender County
Dycus, Keith	Development Services Director, Town of Ocean Isle Beach
Emory, Michelle	Floodplain Coordinator, Onslow County
Evans, Tim	Planning & Inspections Director, Town of Holden Beach
Flores, John	Hazard Mitigation Planner, ESP Associates
Geise, Leslie	Emergency Management Planner, Brunswick County
Grimes, John	Emergency Management Chief, Town of Leland
Harris, Craig	Emergency Management & Resiliency Coordinator, City of Wilmington
Hill, Deb	Planning Director & Zoning Administrator, Town of North Topsail Beach
Hills, Diana	Health Services Preparedness Coordinator, Brunswick County
Holland, Landin	Town Administrator/Planner, Town of Navassa
Horne, James	Emergency Management Director, Town of Surf City
Howard, Franky	CEO, ONWASA
Jacobs, Shirley	
Jones, Luther	Safety Officer, ONWASA
Jackson, Kent	Assistant Town Manager, Town of Oak Island
Lorenzen, Robin	Area Coordinator, NCEM

Malone, Craig	Security & Emergency Manager, Cape Fear Public Utility Authority
McIntire, David	Emergency Management Director, Brunswick County
Medlin, Terri	Emergency Management Assistant Director, New Hanover County
Meehan, Maureen	Planning Director, City of Southport
Meredith, Ron	Planning Director, Town of Burgaw
Meyer, Josh	Safety & Training Manager, H2GO
Morgan, Nicole	Assistant City Manager, City of Boiling Spring Lakes
Norris, Virginia	Senior Planner, Pender County
Price, Michael	Town Administrator, Town of Calabash
Price, Suzanne	Zoning Tech, City of Boiling Spring Lakes
Randall, Jacob	Fire Chief, Town of Swansboro
Repp, Jeff	Town Manager, Town of St. James
Rhue, Nathan	Community Development Director, Town of Holly Ridge
Satterfield, Ron	Director of Planning, Anchorpoint Planning
Skipper, Doug	Code Enforcement Officer, Town of Holly Ridge
Slaughter, Nathan	Department Manager, ESP Associates
Smith, Jeremy	Community Development, Town of Surf City
Stanley, Leslie	Volunteer & Non-Profit Coordinator, Brunswick County
Staradumsky, Chad	Planning Director, Town of Belville
Stryker, Aaron	EM Specialist, Onslow County
Tallman, Edward	Fire Chief, City of Jacksonville
Vafier, Ken	Planning Manager, New Hanover County
Wampler, Madelyn	Sustainability Manager, New Hanover County
Waters, Marcy	Long Range Planner, Pender County
Whitehead, Greg	Town Administrator, Town of Richlands
Wilson, Tony	Planning & Inspections Director, Town of Wrightsville Beach

Introduction

The Mitigation Strategy Meeting for the SENC Regional Hazard Mitigation Plan was held on November 20th, 2025 in Burgaw, NC at the Pender County Board of Commissioners Meeting Room with a virtual option to facilitate efficient collaboration. Nathan Slaughter, Project Manager with ESP Associates, gave a brief overview of the meeting agenda and objectives. Meeting objectives included (1) Revisit mitigation , (2) Review key HIRA findings, and (3) Brainstorm new and/or potential mitigation actions. The discussion centered on the importance of mitigation actions to reduce future hazards based on priority risks, identified problems, and evolving needs.

To begin, participants, online and in-person, were asked to introduce themselves, their role, and their organization/agency.

Mitigation Overview

During the meeting, the participants discussed the concept of mitigation, which refers to *proactive measures taken to reduce the impact of hazards before they occur*, with the goal of minimizing future risks and damages. Several key components of effective mitigation were outlined, including solution identification, maintaining eligibility for funding, and the continuous revision of mitigation actions based on stakeholder feedback. The project team explained the importance of updating the Mitigation Action Plan, which prioritizes and implements specific actions to reduce hazard risks.

It was noted that all mitigation actions are categorized into two major groups (existing development and future development) and fall under one of the six techniques summarized (prevention, preparedness, natural resource protection, emergency services, property protection, and education and awareness). The evolution of the Hazard Mitigation Plan (HMP) was reviewed, which previously operated at the county level and now operates at the regional level. The plan is required to be updated every five years, although some communities revise it more frequently in response to emerging risks.

Mitigation Goals

The project team sought feedback on existing mitigation goals. Mitigation goals should align with long-term vision of the region. The conversation highlighted the necessity of revising these goals based on community input and ensuring that future planning reduces vulnerability in local communities.

Existing mitigation goals were found to be aligned with current priorities with minor revisions needed. One key revision is the inclusion/addition of a mitigation goal specifically addressing vulnerable populations, which was requested by a stakeholder. The existing mitigation goals from the 2021 RHMP are shown here:

	GOAL
Goal #1	Work to improve existing local government policies and codes to reduce impacts of natural hazards.
Goal #2	Design and implement specific mitigation measures to protect vulnerable public and private properties.
Goal #3	Increase the protection of critical facilities and infrastructure from hazard threats through retrofit projects for existing facilities and innovative design standards for new facilities.
Goal #4	Enhance public education programs to promote community awareness of natural hazards and the hazard mitigation techniques available to reduce their impact.
Goal #5	Improve stormwater management through enhanced local government programs, policies, and practices.
Goal #6	Enhance each county's storm evacuation procedures through increased intergovernmental coordination between the Counties, the participating municipalities, and the State of North Carolina.
Goal #7	Increase the County's emergency management capabilities through sustained system and technology improvements.
Goal #8	Promote volunteer involvement in emergency preparedness and response through increased citizen awareness and training activities.

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Key HIRA Findings

HIGH RISK	Flooding Cyber Excessive Heat Tornadoes/Thunderstorms Hurricane and Coastal Hazards Wildfire Infectious Disease
MODERATE RISK	Radiological Emergency Geological Hazards Severe Winter Weather Food Emergency Dam Failure Hazardous Substances Terrorism Civil Disturbance Drought
LOW RISK	Electromagnetic Pulse Tsunamis Earthquakes

Key findings from the Hazard Identification and Risk Assessment (HIRA) were reviewed, sharing revisions or notable adjustments based on input received during the previous meeting. This included additional general concerns and hazard areas added to the Story Maps as well as changes in the Priority Risk Index (PRI) scoring criteria. The updated PRI scores, based on HMPC feedback, is shown here.

Significant/requested changes included:

1. Increased wildfire to high risk
2. Explicitly identified rip currents as high risk
3. Increased extreme heat to high risk
4. Increased infectious disease to high risk

Mitigation Action Plan Development

This portion of the plan will translate the findings of the HIRA into specific, actionable measures for reducing regional risk. The team outlined three key objectives guiding the strategy:

1. Reduce vulnerability to natural and technological hazards.
2. Prioritize and allocate resources effectively among jurisdictions.
3. Promote regional collaboration and long-term capacity building.

Each participating jurisdiction has an existing mitigation plan, which contains actions. The implementation status of each action must be reviewed and updated to ensure compliance with FEMA requirements. Additionally, there is an opportunity to incorporate new projects as part of the mitigation action plan. Mitigation action ideas for all identified high risk hazards were shared at this time in addition to valuable State and Federal resources that can be used to draft new actions. The existing mitigation action plan will be shared in the meeting follow-up communication.

Discussions highlighted the need to differentiate between mitigation and capability projects, acknowledging that some initiatives may not directly lead to mitigation outcomes. Enforcement of these actions was also a focal point.

Project Schedule & Next Steps

The tentative project schedule was then reviewed, which is summarized below:

- Kickoff Meeting – 5/28/25
- Stakeholder Meeting – 6/19/25
- Public Meeting #1 – 8/18/25
- HIRA Meeting – 9/22/25
- Mitigation Strategy Meeting – 11/20/25
- Public Meeting #2 – 11/20/25
- Draft Plan Delivery – End of 2025 / Early 2026
- Plan Expiration – 4/28/2026

Jurisdictions were reminded that local adoption of the plan by board or council resolution is necessary. The first jurisdictions to adopt will trigger FEMA's plan approval letter, after which remaining jurisdictions will have one year to adopt the plan. If adoption occurs beyond that window, FEMA requires a letter verifying no significant change in risk conditions.

Next steps include:

- ESP will distribute jurisdiction-specific mitigation action spreadsheets for review and update (due by mid-December 2025)
- A follow-up email will include resource links, planning tools, and FEMA reference materials
- The regional website will be updated regularly with project materials, public survey results, and meeting summaries

Meeting Closeout

The meeting adjourned with appreciation extended to all attendees for their continued engagement and collaboration in advancing regional resilience and hazard preparedness across the SENC Region. The meeting officially adjourned at 2:30pm.

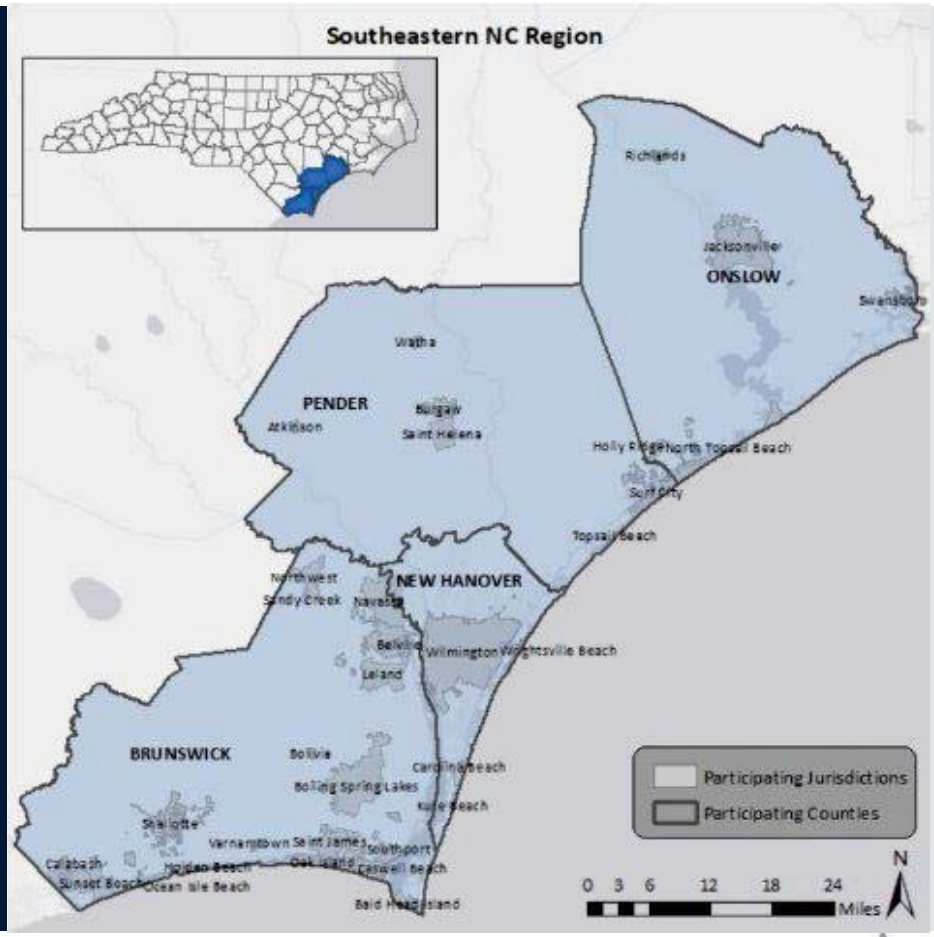
Southeastern NC

2026 Hazard Mitigation Plan Update

Mitigation Strategy Meeting

November 20th, 2025

Burgaw, NC



Meeting Agenda

- Welcome & Introductions
- Meeting Objectives
- Mitigation Overview
- Review of Key Findings
- Mitigation Goals
- Action Plan Development
- Q&A Session
- Next Steps

Introductions

Welcome! Project Team Introductions

Please Enter in Chat: Name, Role, and Organization

Meeting Objectives



Revisit Mitigation and Mitigation Strategy

Explain what mitigation is and how the Mitigation Action Strategy is laid out



Review HIRA Findings and Revisions

Go over key HIRA findings and adjustments made based on stakeholder input



Brainstorm New Mitigation Actions

Determine what new actions are necessary to fill gaps address key risks

Mitigation Overview

What is Mitigation?

- Mitigation is ***an action that reduces the impact of natural, technological, and human-caused hazards on property and life***
- The HIRA Meeting focused on problem identification whereas this Mitigation Strategy Meeting will focus on problem solutions

Benefits of Mitigation:

1. Support Prevention and Protection Activities
2. Ease Response and Speed Recovery
3. Create More Resilient Communities

Mitigation Strategy

The Mitigation Strategy has **3 primary requirements**:



Mitigation Goals

What long-term goals does the Region want to achieve?



Mitigation Actions

What specific actions are needed to reduce risk?



Mitigation Action Plan

How will the actions be prioritized and implemented?

Mitigation Strategy (cont.)

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. Emergency Services
2. Prevention
3. Education and Awareness
4. Natural Resource Management
5. Structural Projects
6. Property Protection

Mitigation Techniques – Examples

Prevention
Planning/Zoning
Building Codes
Open Space Preservation
Floodplain Regulations
Stormwater Mgmt.
Drainage Maintenance

Natural Resource Mgmt.
Floodplain Protection
Watershed Mgmt.
Riparian Buffers
Erosion/Sediment Control
Wetland Restoration
Habitat Preservation

Emergency Services
Warning Systems
Response Equipment
Shelter Operations
Evacuation Planning
Response Training
Sandbagging

Property Protection
Acquisition/Relocation
Building Elevation
Critical Facility Protection
Retrofitting
Safe Room/Shutters
Insurance

Structural Projects
Reservoirs
Dams, Levees, Dikes
Stormwater Diversions
Retention Basins
Channel Modification
Storm Sewers

Education/Awareness
Outreach Projects
Speaker Series
Hazard Map Info
Real Estate Disclosure
Library Materials
Hazard Expositions

Key HIRA Findings

Findings from the HIRA provide a strong foundation for the Mitigation Action Plan, helping communities develop informed, effective, and practical mitigation strategies

- Ensures mitigation actions are based on comprehensive data and analysis
- Combines knowledge of hazards, risks, and existing capabilities to form a robust yet feasible strategy
- Focuses efforts on the most significant vulnerabilities and improves overall preparedness
- Informs updates to the mitigation strategy as new data and insights emerge

General Concerns



Rapid Development/Growth



Deforestation/Wetland Infringement



Transportation/Evacuation



Insufficient Infrastructure



Water Quality (Cape Fear)



Proximity to Military and Nuclear Facilities

Key Hazard Areas

Some **key hazard areas** were identified through the public survey/GIS analysis and geographically captured in ArcGIS StoryMaps. Additional areas may be added based on feedback.

Transportation / Evacuation
NC 24, NC 133, NC 87, NC 211, NC 906, US 17, US 74, US 76, US 258
Rapid Development / Growth
Leland, 211 corridor, Castle Hayne, Mayfaire/NE Wilmington, north end of Carolina Beach, Oak Island
Deforestation / Wetland Infringement
Palmetto Creek, 211 corridor, Gum Branch Area, Pleasure Island, Oak Island
Proximity to Military and Nuclear Facilities
Camp Lejeune, MCAS New River, Sunny Point, Brunswick Nuclear Generation Station, GE Aerospace Plant

Priority Risk Index

Initial findings from PRI were shared/adjusted during the HIRA Meeting:

- Wildfire identified as high-risk
- Rip currents identified as high-risk hazard for the region Sub-hazard to hurricanes and coastal hazards
- Extreme heat identified as, at minimum, moderate risk

Infectious disease was also revised / increased to a high-risk hazard for the region

HIGH RISK	Flooding Cyber Excessive Heat Tornadoes/Thunderstorms Hurricane and Coastal Hazards Wildfire Infectious Disease
MODERATE RISK	Radiological Emergency Geological Hazards Severe Winter Weather Food Emergency Dam Failure Hazardous Substances Terrorism Civil Disturbance Drought
LOW RISK	Electromagnetic Pulse Tsunamis Earthquakes

Priority Risk Index (cont.)

Hazard	Subhazard(s) Assessed	Category/Degree of Risk					
		Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Natural Hazards							
Excessive Heat		Likely	Critical	Large	More than 24 hours	More than 1 week	**3.1**
Hurricane and Coastal Hazards	Rip Currents, Storm Surge, Severe Weather	Likely	Critical	Large	More than 24 hours	Less than 1 week	**3.0**
Tornadoes/ Thunderstorms	High/Strong Wind, Hail, Lightning	Highly Likely	Critical	Moderate	6 to 12 hours	Less than 6 hours	**3.1**
Flooding		Highly Likely	Critical	Moderate	6 to 12 hours	Less than 1 week	**3.3**
Wildfires		Likely	Critical	Moderate	12 to 24 hours	More than 1 week	**3.0**
Infectious Disease	Foreign Animal Disease	Possible	Critical	Moderate	Less than 6 hours	More than 1 week	**2.9**
Technological Hazards							
Cyber	Mass power/utility disruption	Likely	Critical	Large	Less than 6 hours	Less than 1 week	**3.3**

Interactive Session:

Regional Mitigation Goals

	GOAL
Goal #1	Work to improve existing local government policies and codes to reduce impacts of natural hazards.
Goal #2	Design and implement specific mitigation measures to protect vulnerable public and private properties.
Goal #3	Increase the protection of critical facilities and infrastructure from hazard threats through retrofit projects for existing facilities and innovative design standards for new facilities.
Goal #4	Enhance public education programs to promote community awareness of natural hazards and the hazard mitigation techniques available to reduce their impact.
Goal #5	Improve stormwater management through enhanced local government programs, policies, and practices.
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Goal #7	Increase the County's emergency management capabilities through sustained system and technology improvements.
Goal #8	Promote volunteer involvement in emergency preparedness and response through increased citizen awareness and training activities.

Mitigation Goal #1



Work to improve existing local government policies and codes to reduce impacts of natural hazards.

Mitigation Goal #2



Design and implement specific mitigation measures to protect vulnerable public and private properties.

Mitigation Goal #3



Increase the protection of critical facilities and infrastructure from hazard threats through retrofit projects for existing facilities and innovative design standards for new facilities.

Mitigation Goal #4



Enhance public education programs to promote community awareness of natural hazards and the hazard mitigation techniques available to reduce their impact.

Mitigation Goal #5



Improve stormwater management through enhanced local government programs, policies, and practices.

Mitigation Goal #6



Enhance each county's storm evacuation procedures through increased intergovernmental coordination between the Counties, the participating municipalities, and the State of North Carolina.

Mitigation Goal #7



Increase the County's emergency management capabilities through sustained system and technology improvements.

Mitigation Goal #8



Promote volunteer involvement in emergency preparedness and response through increased citizen awareness and training activities.

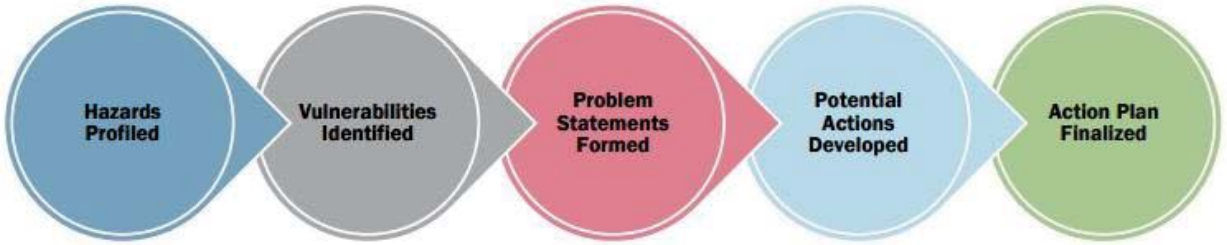
Regional Considerations

1. **Are there specific vulnerabilities that are becoming harder to manage at the local level that may benefit from regional strategies?**
2. **Which mitigation actions feel most urgent from a regional perspective?**
3. **What opportunities exist for cross-county collaboration that could strengthen regional resilience?**
4. **Are there mitigation actions that individual communities have implemented successfully that could be scale or replicated county or region-wide? (SHARE SUCCESS STORIES!)**
5. **What barriers limit your community's ability to implement mitigation actions and how could regional partnerships help address them?**

Informing the Mitigation Strategy

Each step in the plan's development builds upon the others. As such:

1. The **risk assessment informs the actions** chosen for the mitigation strategy
2. Any significant hazard profiled in the plan must have **at least 1 mitigation action** associated with it



Informing the Mitigation Strategy (cont.)

Each step in the plan's development builds upon the others. As such:

1. The mitigation strategy **needs to align with the existing capabilities** identified
2. Communities should also look at the ability to expand on or improve existing procedures/tools
3. Gaps in capabilities can be addressed with mitigation actions
4. Existing routine capabilities already in place are **NOT** mitigation actions (e.g. ongoing maintenance programs)

	Low Vulnerability	Moderate Vulnerability	High Vulnerability
High Capability	(Best Case Scenario)		
Moderate Capability			
Low Capability			(Worst Case Scenario)

Action Plan Development

44 CFR Requirement
44 CFR Part 201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effect of each hazard, with particular emphasis on new and existing buildings and infrastructure.

Updating the mitigation action plan will involve **two key components**:

1. Review **existing mitigation actions** to determine action status
2. Identify, refine, and integrate **new mitigation actions** to address evolving needs and challenges

All participating jurisdictions have an existing mitigation action plan from the previous plan update (2021):

Oak Island Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2021)
OKI-1	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 also outline sound techniques for floodplain development and floodproofing of existing structures. The County will also maintain staff educated on these issues to work with prospective builders.	Flood	High	Oak Island Development Services, Oak Island Emergency Services, Oak Island Administrations	General Funds	Completed: A Library of materials that focuses on educating citizens, builders, realtors and developers about the dangers associated with floodplain development has been created.	To monitor and continuously update and maintain a library of materials focused on educating citizens, builders, realtors and developers about the dangers associated with floodplain development.
OKI-2	When possible, ensure that no public and/or critical facilities are proposed for flood hazard areas. Additionally, when siting new public/critical facilities, the information and data outlined in this plan will be factored into the decision-making process.	Flood	High	Oak Island Development Services, Oak Island Emergency Services, Oak Island Administrations	General Funds	Ongoing: Development Services reviews all proposed lacation for public and /or critical facilities to assure placement are outside of flood hazard areas or are engineered to minimize flood damage.	Continue to review and prevent the placement of public and\or critical facilities within flood hazard areas and to use the information and data outlined in this plan into the decision-making process.
OKI-3	In conjunction with annual EOP updates, determine if access to all critical facilities is readily available in the event of a natural hazard event. Careful consideration should be given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified, establish a plan for alternative transportation.	All	High	Oak Island Development Services, Oak Island Emergency Services, Oak Island Administrations	General Funds	Ongoing: Oak Island has created a map of all its critical facilities and is reviewing temporary locations to move during a natural hazard event if needed.	Continually update flood prone area map and look at alternative transportation and temporary relocation of critical facilities in the event of a natural hazard event.
OKI-4	Maintain Town Stormwater Ordinances in conjunction with land use ordinances for compatibility of EPA Phase II NPDES requirements. These efforts should also include analysis of stormwater hotspots and potential remedies for these issues.	Flood	High	Oak Island Development Services, Oak Island Public Works, Oak Island Administrations	General Funds, NCDEQ	Ongoing: Oak Island continually maintains and updates it Stormwater Ordinance. Oak Island has identified and mapped low	To complete repairs to Oak Island's existing stormwater system and to continue to look at alternative stormwater designs that are compatible with Oak Island's Phase II NPDES permit.

Existing Action Plans

Existing Mitigation Actions

Review the previous plan to determine the status of **existing mitigation actions:**

- **Status update** required by FEMA
- **Designate each action** as: *Completed, Deleted, or Carried Forward (MUST include details)*
- **Identify** existing gaps and weaknesses

New Mitigation Actions

Brainstorm and discuss a full range of potential **new mitigation actions** and successful mitigation techniques, ensuring they:

- **Align** with mitigation goals and other community objectives
- **Reflect** hazard risk and local capability
- **Address** existing gaps or weaknesses

Cyber Mitigation Action Examples

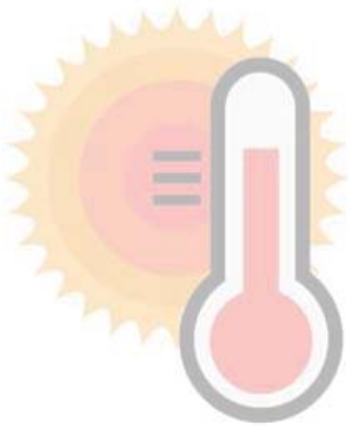
Potential Actions to **Mitigate Cyber Threats/Issues**:

1. Conduct comprehensive cybersecurity assessments
2. Implement cybersecurity training programs
3. Establish a regional cybersecurity task force
4. Enhance incident response plans
5. Invest in advanced cybersecurity technologies

Extreme Heat Mitigation Action Examples

Potential Actions to **Mitigate Extreme Heat**:

1. Implement public awareness campaigns
2. Enhance green space/urban green space
3. Create and regularly update heat action plans
4. Establish/open cooling centers
5. Identify and support vulnerable populations



Thunderstorm / Tornado Mitigation Action Examples

Potential Actions to Mitigate Thunderstorms/Tornadoes:

1. Enhance early warning systems
2. Harden critical facilities & shelters
3. Bury or reinforce power lines & communication infrastructure
4. Require/designate safe rooms in certain types of buildings

Hurricane / Coastal Hazards Mitigation Action Examples

Potential Actions to **Hurricanes / Coastal Hazards**:

1. Strengthen and elevate critical infrastructure in coastal flood-prone areas
2. Implement coastal erosion and natural shoreline protection projects
3. Enhance regional evacuation route resilience and redundancy
4. Expand flood insurance, hurricane preparedness, and public outreach programs

Wildfire Mitigation Action Examples

Potential Actions to Mitigate Wildfire:

1. Develop/update community wildfire protection plans (CWPPs)
2. Restrict development in WUI
3. Adopt wildfire-resistant building and Roofing Codes
4. Implement fuel reduction & prescribed burns
5. Support Firewise USA & defensible space programs

Flooding Mitigation Action Examples

Potential Actions to Mitigate Flooding:

1. Identify and prioritize RL or substantially damaged properties
2. Retrofit bridges, culverts, and road crossings
3. Develop regional stormwater management plans
4. Expand CRS and flood awareness programs

Infectious Disease Mitigation Action Examples

Potential Actions to Mitigate Infectious Disease:

1. Strengthen regional public health coordination
2. Develop/update continuity of operations plan
3. Conduct public health education campaigns
4. Develop emergency medical supply stockpiles

Action	Description	Hazard(s) Addressed	Priority	Lead Agency	Potential Funding Sources	Implementation Schedule	Implementation Status
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flood	Medium	Emergency Management	Local	2025	No policy has been developed as of 2020. This is to be completed in 2025 pending funding, staff resources and political will.

Mitigation Action Example

Leverage Guides & Resources

Use available resources to aid in strategy development:

- FEMA Local Mitigation Planning Handbook
- FEMA Mitigation Ideas
- FEMA Economic Development Strategy and Hazard Mitigation Plan Alignment
- NCORR North Carolina Resilience Exchange
- NCORR North Carolina Resilient Communities Planning Guide

Visit the Project Website



This Project Website will be updated regularly throughout the planning process to provide access to:

1. Project Overview
2. Meeting Minutes & Presentations
3. Public Survey
4. Previous HMP (2021)
5. Relevant Planning Resources

Project Schedule

Project Kickoff Date – 5/28/25	Larger Stakeholder Meeting – 6/19/25	Public Meeting #1 – 8/18/25
HIRA Meeting – 9/22/25	**Mitigation Strategy Meeting – 11/20/25**	Public Meeting #2 – 11/20/25
	Existing Plan Expiration Date – 4/28/26	





Questions?

Questions/Comments/Concerns

Next Steps

1. Use and Reference Project Resources
   - Previous 2020 Plan
   - Meeting follow-up materials
   - FEMA/NC Planning Resources (also on **Project Website**)
2. Review Existing Mitigation Action Plan from 2021 HMP
   - Provide Status Updates for Each Action
3. Brainstorm New Mitigation Strategies for 2026 HMP
   - Consider Evolving Needs
4. Draft Plan Delivery

Adjourn – Thank you!

Contact Information

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Hannah DeLude – Planner
hdelude@espassociates.com

John Flores – Planner
jflores@espassociates.com

Public Meeting #2
November 20th, 2025
Burgaw, NC

Meeting Objectives

I. ENGAGE THE COMMUNTIY
II. GATHER INPUT
III. EDUCATE & INFORM
IV. ENHANCE PLAN RELEVANCE

Mitigation Overview

I. PURPOSE OF MITIGATION
II. TYPES OF MITIGATION
III. MITIGATION CATEGORIES

HIRA Summary

I. GENERAL CONCERNS
II. IDENTIFIED PROBLEM AREAS
III. PRI REVISIONS

Mitigation Strategy

I. MITIGATION GOALS
II. INFORMING MITIGATION STRATEGY
III. ACTION PLAN DEVELOPMENT
IV. MITIGATION ACTION EXAMPLES

Project Resources

I. PUBLIC SURVEY RESULTS
II. PROJECT WEBSITE UPDATES

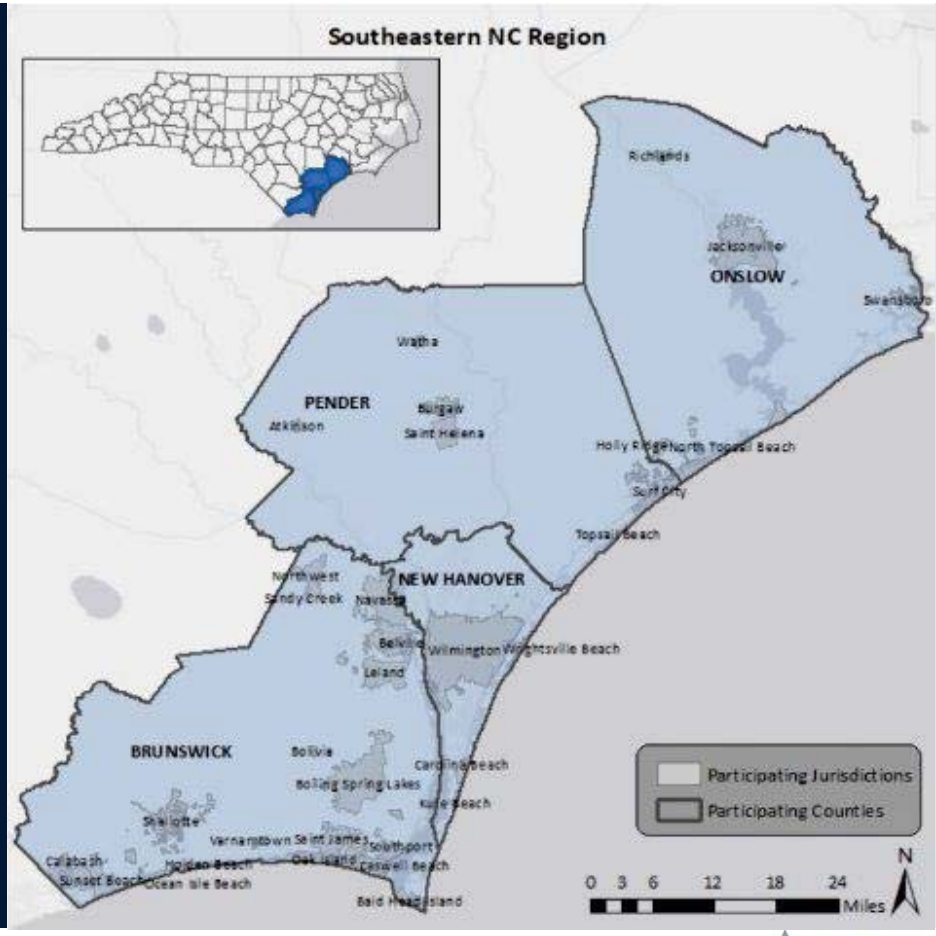
Southeastern NC

Hazard Mitigation Plan 2026 Update

Public Meeting #2

November 20th, 2025

Burgaw, NC



Agenda

- Welcome & Introductions
- Brief Mitigation Overview
- Purpose of Update
- Plan Update Process – *Where are we in the process?*
  - HIRA Findings
  - Develop Mitigation Strategy
- Project Information/Resources
- Public Survey Results
- Q&A Session

Meeting Kickoff



Welcome & Introductions



Reminder to Sign In!

Meeting Objectives



Engage the Community



Gather Input



Educate and Inform



Enhance Plan Relevance

Background/ Overview

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

Mitigation Techniques – Examples

Prevention
Planning/Zoning
Building Codes
Open Space Preservation
Floodplain Regulations
Stormwater Mgmt.
Drainage Maintenance

Natural Resource Mgmt.
Floodplain Protection
Watershed Mgmt.
Riparian Buffers
Erosion/Sediment Control
Wetland Restoration
Habitat Preservation

Emergency Services
Warning Systems
Response Equipment
Shelter Operations
Evacuation Planning
Response Training
Sandbagging

Property Protection
Acquisition/Relocation
Building Elevation
Critical Facility Protection
Retrofitting
Safe Room/Shutters
Insurance

Structural Projects
Reservoirs
Dams, Levees, Dikes
Stormwater Diversions
Retention Basins
Channel Modification
Storm Sewers

Education/Awareness
Outreach Projects
Speaker Series
Hazard Map Info
Real Estate Disclosure
Library Materials
Hazard Expositions

Purpose of Plan Update

Why is it Necessary?

- Reflect on Changing Risks
- Increase Community Resilience
- Ensure Compliance and Funding
- Heighten Preparedness

Planning Process

Where are we in the process?



Key HIRA Findings

Findings from the HIRA provide a strong foundation for the Mitigation Action Plan, helping communities develop informed, effective, and practical mitigation strategies

- Ensures mitigation actions are based on comprehensive data and analysis
- Combines knowledge of hazards, risks, and existing capabilities to form a robust yet feasible strategy
- Focuses efforts on the most significant vulnerabilities and improves overall preparedness
- Informs updates to the mitigation strategy as new data and insights emerge

General Concerns



Rapid Development/Growth



Deforestation/Wetland Infringement



Transportation/Evacuation



Insufficient Infrastructure



Water Quality (Cape Fear)



Proximity to Military and Nuclear Facilities

Key Hazard Areas

Some **key hazard areas** were identified through the public survey/GIS analysis and geographically captured in ArcGIS StoryMaps. Additional areas may be added based on feedback.

Transportation / Evacuation
NC 24, NC 133, NC 87, NC 211, NC 906, US 17, US 74, US 76, US 258
Rapid Development / Growth
Leland, 211 corridor, Castle Hayne, Mayfaire/NE Wilmington, north end of Carolina Beach, Oak Island
Deforestation / Wetland Infringement
Palmetto Creek, 211 corridor, Gum Branch Area, Pleasure Island, Oak Island
Proximity to Military and Nuclear Facilities
Camp Lejeune, MCAS New River, Sunny Point, Brunswick Nuclear Generation Station, GE Aerospace Plant

Priority Risk Index

Initial findings from PRI were shared/adjusted during the HIRA Meeting:

- Wildfire identified as high-risk
- Rip currents identified as high-risk hazard for the region Sub-hazard to hurricanes and coastal hazards
- Extreme heat identified as, at minimum, moderate risk

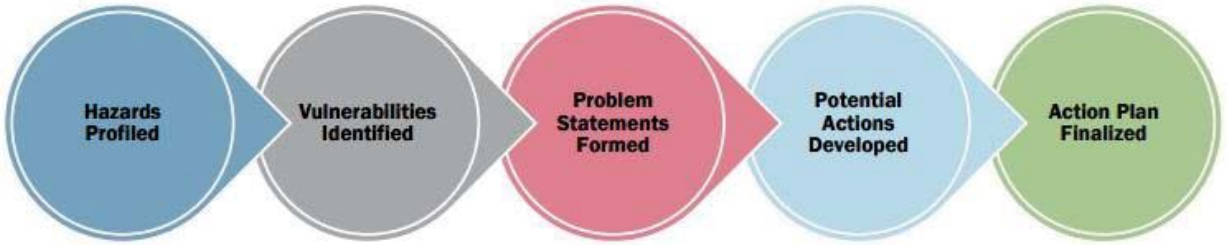
Infectious disease was also revised / increased to a high-risk hazard for the region

HIGH RISK	Flooding Cyber Excessive Heat Tornadoes/Thunderstorms Hurricane and Coastal Hazards Wildfire Infectious Disease
MODERATE RISK	Radiological Emergency Geological Hazards Severe Winter Weather Food Emergency Dam Failure Hazardous Substances Terrorism Civil Disturbance Drought
LOW RISK	Electromagnetic Pulse Tsunamis Earthquakes

Informing the Mitigation Strategy

Each step in the plan's development builds upon the others. As such:

1. The **risk assessment informs the actions** chosen for the mitigation strategy
2. Any significant hazard profiled in the plan must have **at least 1 mitigation action** associated with it



Developing a Mitigation Plan

1. Setting Planning Goals
2. Reviewing Mitigation Alternatives
3. Drafting an Action Plan



Southeastern North Carolina
Regional Hazard Mitigation Plan

Mitigation Strategy

The Mitigation Strategy has **3 primary requirements**:



Mitigation Goals

What long-term goals does the Region want to achieve?



Mitigation Actions

What specific actions are needed to reduce risk?



Mitigation Action Plan

How will the actions be prioritized and implemented?

Mitigation Goals

	GOAL
Goal #1	Work to improve existing local government policies and codes to reduce impacts of natural hazards.
Goal #2	Design and implement specific mitigation measures to protect vulnerable public and private properties.
Goal #3	Increase the protection of critical facilities and infrastructure from hazard threats through retrofit projects for existing facilities and innovative design standards for new facilities.
Goal #4	Enhance public education programs to promote community awareness of natural hazards and the hazard mitigation techniques available to reduce their impact.
Goal #5	Improve stormwater management through enhanced local government programs, policies, and practices.
Goal #6	Enhance each county's storm evacuation procedures through increased intergovernmental coordination between the Counties, the participating municipalities, and the State of North Carolina.
Goal #7	Increase the County's emergency management capabilities through sustained system and technology improvements.
Goal #8	Promote volunteer involvement in emergency preparedness and response through increased citizen awareness and training activities.

All participating jurisdictions have an existing mitigation action plan from the previous plan update (2021):

Oak Island Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2021)
OKI-1	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 also outline sound techniques for floodplain development and floodproofing of existing structures. The County will also maintain staff educated on these issues to work with prospective builders.	Flood	High	Oak Island Development Services, Oak Island Emergency Services, Oak Island Administrations	General Funds	Completed: A Library of materials that focuses on educating citizens, builders, realtors and developers about the dangers associated with floodplain development has been created.	To monitor and continuously update and maintain a library of materials focused on educating citizens, builders, realtors and developers about the dangers associated with floodplain development.
OKI-2	When possible, ensure that no public and/or critical facilities are proposed for flood hazard areas. Additionally, when siting new public/critical facilities, the information and data outlined in this plan will be factored into the decision-making process.	Flood	High	Oak Island Development Services, Oak Island Emergency Services, Oak Island Administrations	General Funds	Ongoing: Development Services reviews all proposed location for public and /or critical facilities to assure placement are outside of flood hazard areas or are engineered to minimize flood damage.	Continue to review and prevent the placement of public and\or critical facilities within flood hazard areas and to use the information and data outlined in this plan into the decision-making process.
OKI-3	In conjunction with annual EOP updates, determine if access to all critical facilities is readily available in the event of a natural hazard event. Careful consideration should be given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified, establish a plan for alternative transportation.	All	High	Oak Island Development Services, Oak Island Emergency Services, Oak Island Administrations	General Funds	Ongoing: Oak Island has created a map of all its critical facilities and is reviewing temporary locations to move during a natural hazard event if needed.	Continually update flood prone area map and look at alternative transportation and temporary relocation of critical facilities in the event of a natural hazard event.
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Existing Action Plans

Action Plan Development

44 CFR Requirement
44 CFR Part 201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effect of each hazard, with particular emphasis on new and existing buildings and infrastructure.

Updating the mitigation action plan will involve **two key components**:

1. Review **existing mitigation actions** to determine action status
2. Identify, refine, and integrate **new mitigation actions** to address evolving needs and challenges

Action	Description	Hazard(s) Addressed	Priority	Lead Agency	Potential Funding Sources	Implementation Schedule	Implementation Status
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flood	Medium	Emergency Management	Local	2025	No policy has been developed as of 2020. This is to be completed in 2025 pending funding, staff resources and political will.

Mitigation Action Example

Project Schedule

- Project Kickoff Date – 5/28/25
- Larger Stakeholder Meeting – 6/19/25
- Public Meeting #1 – 8/18/25
- HIRA Meeting – 9/22/25
- Mitigation Strategy Meeting – 11/20/25
- **Public Meeting #2 – 11/20/25**
- Existing Plan Expiration Date – 4/28/26



Visit the Project Website



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1. Project Overview
2. Meeting Minutes & Presentations
3. Public Survey
4. Previous HMP (2021)
5. Relevant Planning Resources

Public Survey Results

As of 11/20/25, there are a total of 1,470 survey responses. Key findings are summarized below:



22% of respondents reside in Wilmington, 7% in Ocean Isle Beach and 6% in St. James.



Hurricane & coastal hazards were identified as the #1 threat, followed by flooding then severe thunderstorms & strong winds



56% of respondents have taken steps to make their home more resistant against hazards.



91% of respondents are interested in making their home more resistant to hazards.



79% of respondents do not know what office to contact to reduce their risk to hazards in their area.

Public Survey Results (cont.)

Respondents were asked to rank the 6 mitigation techniques. Key findings are summarized below:



- Prevention - 91% of respondents ranked this technique as "Very Important."
- Emergency Services – 89% of respondents ranked this technique as "Very Important."
- Natural Resource Protection - 87% of respondents ranked this technique as "Very Important."
- Public Education & Awareness - 73% of respondents ranked this technique as "Very Important."
- Structural Projects - 70% of respondents ranked this technique as "Very Important."
- Property Protection - 58% of respondents ranked this technique as "Very Important."



Questions

Questions/Comments/Concerns

Adjourn – Thank you!

Contractor Contact Information
Nathan Slaughter – nslaughter@espassociates.com
John Flores – jflores@espassociates.com
Hannah DeLude – hdelude@espassociates.com
Fabiha Rahman – frahman@espassociates.com

SENC MEETING AGENDAS

Brunswick County Briefing
December 9th, 2025
Bolivia, NC

Meeting Objectives

I. REVISIT MITIGATION
II. REVIEW HIRA FINDINGS
III. BRAINSTORM NEW MITIGATION ACTIONS

Mitigation Overview

V. MITIGATION STRATEGY COMPONENTS
VI. PURPOSE OF MITIGATION
VII. TYPES OF MITIGATION
VIII. MITIGATION CATEGORIES

Mitigation Strategy

V. MITIGATION GOALS
VI. INFORMING MITIGATION STRATEGY
VII. ACTION PLAN DEVELOPMENT
VIII. MITIGATION ACTION EXAMPLES
IX. MITIGATIONA ACTION RECOMMENDATIONS

Next Steps

III. SUBMIT UPDATED AND NEW MITIGATION ACTIONS
IV. SUBMIT DRAFT PLAN – EARLY 2026

Southeast Regional Hazard Mitigation Plan
Municipal Coordination Meeting – Agenda
Date: Tuesday, December 9, 2025
Location: Brunswick County Emergency Management EOC
Participants: Municipal Representatives, County Planning, Emergency Management, and State Contractor (Nathan Slaughter

1. Welcome & Introductions

- Opening remarks – Brunswick County Emergency Management
- Introductions of municipal partners
- Introduction of Nathan Slaughter-State Contractor

2. Purpose of the Meeting

- Overview of the 5-year update cycle for the Southeast NC Regional Hazard Mitigation Plan
- Importance of accurate updates for grant eligibility
- Review of expectations from each municipality and upcoming deadlines

3. Review of Municipal Mitigation Action Spreadsheets (Nathan Slaughter)

- Explanation of the four required status options:
    - **Completed** – documentation required
    - **Delete** – justification required
    - **Deferred** – rationale and obstacles
    - **In Progress** – current status and anticipated timeline

4. Submitting New Mitigation Actions for the 2026–2031 Cycle

- Guidance on developing strong, FEMA-compliant actions
- How new actions support project eligibility
- Walkthrough of the "New Action" section of spreadsheets
- Examples of acceptable mitigation projects

5. Questions, Discussion, & Contractor Support

- Open Q&A with Nathan
- Clarifications on documentation, timelines, and regional coordination

6. Next Steps & Deadlines

- Final submissions due **January 9, 2026**
- Option to submit updates to Brunswick County for consolidated submission
- Review process of new submissions
- Upcoming check-ins and contractor availability
- Contact information for assistance

BRUNSWICK COUNTY MITIGATION ACTION PLAN

Date	Organization	Print Name	E-mail	Signature
12/09/2025	Town of Sandy Creek	Mel Miller	melmiller352@yahoo.com	Mel Miller
	Town of Sandy Creek	Sabra Child	info@townofsandycreek.com	Sabra Child
	City of BSL	Suzanne Price	sprice@cityofbsl.org	SPrice
	CITY OF BSL	Jim STACHURA	JStachura@cityofbsl.org	JStachura
	City of BSL	Nicole Morgan	nmorgan@cityofbsl.org	N. Morgan
	City of BSC	Kevin Smith	ksmith@cityofbsl.org	
	City of Southport	Maureen Meehan	mmeehan@cityofsouthport.com	Mmeehan

BRUNSWICK COUNTY MITIGATION ACTION PLAN

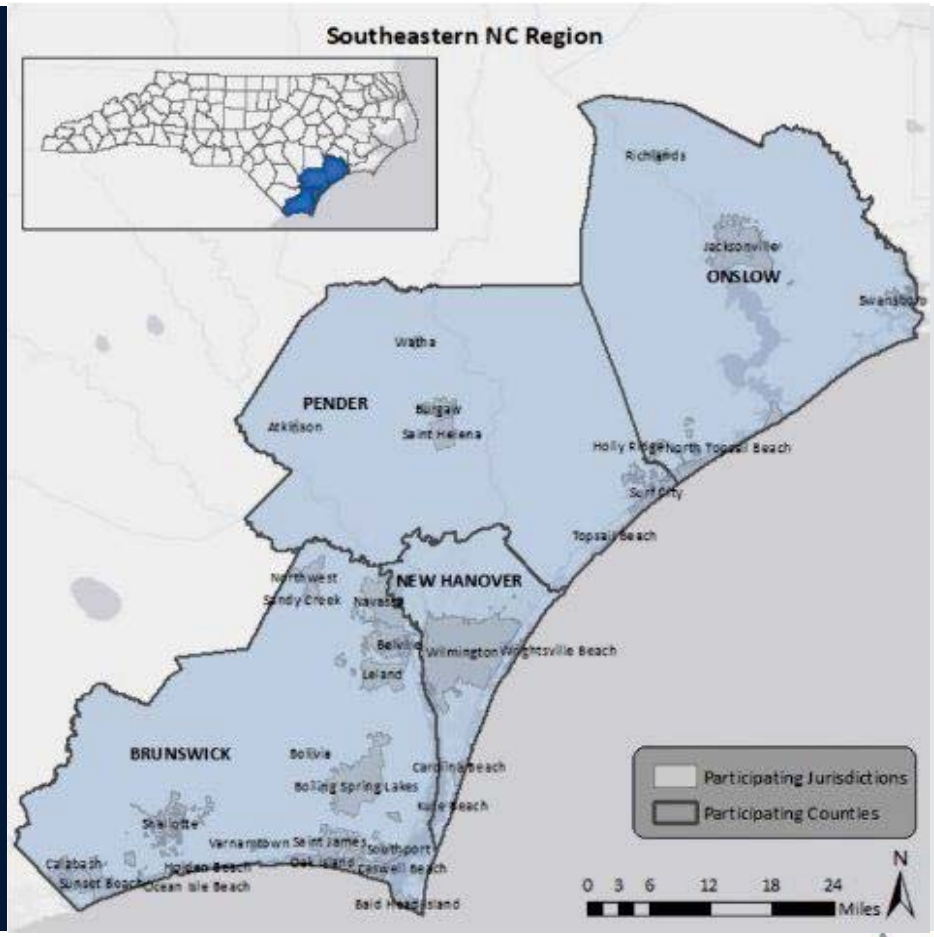
Date	Organization	Print Name	E-mail	Signature
12/09/2025	Varnamtown	Sylvia Galloway	ronv.galloway@gmail.com	Sylvia Galloway
	Brunswick Co. Code Adm.	Gracie Thomas	gracie.thomas@brunswickcountync.gov	
	Sunset Beach	Ron Satterfield	rsatterfield@sunsetbeachnc.gov	
	Bald Head Is	STEPHEN BOYETT	SBOYETT@VILLAGEBHI.ORG	
	Holden Beach	Carey Redwine	Credwine@hbtownhall.com	
	Town of Holden Beach	Timothy M Owens	TOWNS@HBTownHall.com	
	Town of Holden Beach	Janna Pigott	janna@hbtownhall.com	
	Brunswick County Code Admin	STEFFAN TAUBE	STEFFAN.TAUBE@BRUNSWICKCOUNTYNC.GOV	

Southeastern NC

2026 Hazard Mitigation Plan Update

Brunswick County Briefing

December 9th, 2025



Mitigation Overview

What is Mitigation?

- Mitigation is ***an action that reduces the impact of natural, technological, and human-caused hazards on property and life***
- The HIRA Meeting focused on problem identification whereas this Mitigation Strategy Meeting will focus on problem solutions

Benefits of Mitigation:

1. Support Prevention and Protection Activities
2. Ease Response and Speed Recovery
3. Create More Resilient Communities

Mitigation Strategy

The Mitigation Strategy has **3 primary requirements**:



Mitigation Goals

What long-term goals does the Region want to achieve?



Mitigation Actions

What specific actions are needed to reduce risk?



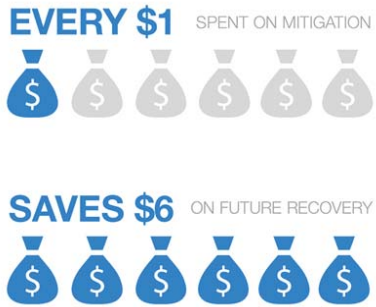
Mitigation Action Plan

How will the actions be prioritized and implemented?

Mitigation Strategy (cont.)

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. Emergency Services
2. Prevention
3. Education and Awareness
4. Natural Resource Management
5. Structural Projects
6. Property Protection

Mitigation Techniques – Examples

Prevention
Planning/Zoning
Building Codes
Open Space Preservation
Floodplain Regulations
Stormwater Mgmt.
Drainage Maintenance

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Floodplain Protection
Watershed Mgmt.
Riparian Buffers
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Response Training
Sandbagging

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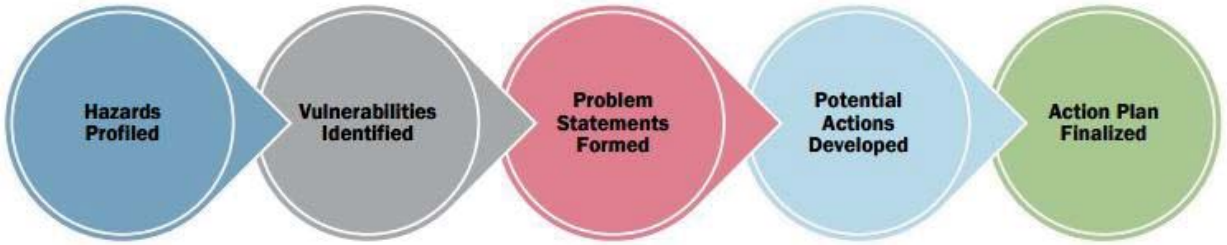
Education/Awareness
Outreach Projects
Speaker Series
Hazard Map Info
Real Estate Disclosure
Library Materials
Hazard Expositions

ESP

Informing the Mitigation Strategy

Each step in the plan's development builds upon the others. As such:

1. The **risk assessment informs the actions** chosen for the mitigation strategy
2. Any significant hazard profiled in the plan must have **at least 1 mitigation action** associated with it



General Concerns



Rapid Development/Growth



Deforestation/Wetland Infringement



Transportation/Evacuation



Insufficient Infrastructure



Water Quality (Cape Fear)



Proximity to Military and Nuclear Facilities

Key Hazard Areas

Some **key hazard areas** were identified through the public survey/GIS analysis and geographically captured in ArcGIS StoryMaps. Additional areas may be added based on feedback.

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Priority Risk Index

Initial findings from PRI were shared/adjusted during the HIRA Meeting:

- Wildfire identified as high-risk
- Rip currents identified as high-risk hazard for the region Sub-hazard to hurricanes and coastal hazards
- Extreme heat identified as, at minimum, moderate risk

Infectious disease was also revised / increased to a high-risk hazard for the region

HIGH RISK	Flooding Cyber Excessive Heat Tornadoes/Thunderstorms Hurricane and Coastal Hazards Wildfire Infectious Disease
MODERATE RISK	Radiological Emergency Geological Hazards Severe Winter Weather Food Emergency Dam Failure Hazardous Substances Terrorism Civil Disturbance Drought
LOW RISK	Electromagnetic Pulse Tsunamis Earthquakes

Regional Mitigation Goals

	GOAL
Goal #1	Work to improve existing local government policies and codes to reduce impacts of natural hazards.
Goal #2	Design and implement specific mitigation measures to protect vulnerable public and private properties.
Goal #3	Increase the protection of critical facilities and infrastructure from hazard threats through retrofit projects for existing facilities and innovative design standards for new facilities.
Goal #4	Enhance public education programs to promote community awareness of natural hazards and the hazard mitigation techniques available to reduce their impact.
Goal #5	Improve stormwater management through enhanced local government programs, policies, and practices.
Goal #6	Enhance each county's storm evacuation procedures through increased intergovernmental coordination between the Counties, the participating municipalities, and the State of North Carolina.
Goal #7	Increase the County's emergency management capabilities through sustained system and technology improvements.
Goal #8	Promote volunteer involvement in emergency preparedness and response through increased citizen awareness and training activities.

Informing the Mitigation Strategy (cont.)

Each step in the plan's development builds upon the others. As such:

1. The mitigation strategy **needs to align with the existing capabilities** identified
2. Communities should also look at the ability to expand on or improve existing procedures/tools
3. Gaps in capabilities can be addressed with mitigation actions
4. Existing routine capabilities already in place are **NOT** mitigation actions (e.g. ongoing maintenance programs)

	Low Vulnerability	Moderate Vulnerability	High Vulnerability
High Capability	(Best Case Scenario)		
Moderate Capability			
Low Capability			(Worst Case Scenario)

Action Plan Development

44 CFR Requirement
44 CFR Part 201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effect of each hazard, with particular emphasis on new and existing buildings and infrastructure.

Updating the mitigation action plan will involve **two key components**:

1. Review **existing mitigation actions** to determine action status
2. Identify, refine, and integrate **new mitigation actions** to address evolving needs and challenges

Answer this Key Question:

What are the solutions for the problems that hazards pose for our community?

All participating jurisdictions have an existing mitigation action plan from the previous plan update (2021):

Oak Island Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2021)
OKI-1	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 also outline sound techniques for floodplain development and floodproofing of existing structures. The County will also maintain staff educated on these issues to work with prospective builders.	Flood	High	Oak Island Development Services, Oak Island Emergency Services, Oak Island Administrations	General Funds	Completed: A Library of materials that focuses on educating citizens, builders, realtors and developers about the dangers associated with floodplain development has been created.	To monitor and continuously update and maintain a library of materials focused on educating citizens, builders, realtors and developers about the dangers associated with floodplain development.
OKI-2	When possible, ensure that no public and/or critical facilities are proposed for flood hazard areas. Additionally, when siting new public/critical facilities, the information and data outlined in this plan will be factored into the decision-making process.	Flood	High	Oak Island Development Services, Oak Island Emergency Services, Oak Island Administrations	General Funds	Ongoing: Development Services reviews all proposed location for public and /or critical facilities to assure placement are outside of flood hazard areas or are engineered to minimize flood damage.	Continue to review and prevent the placement of public and\or critical facilities within flood hazard areas and to use the information and data outlined in this plan into the decision-making process.
OKI-3	In conjunction with annual EOP updates, determine if access to all critical facilities is readily available in the event of a natural hazard event. Careful consideration should be given to localized flooding issues that may restrict access along limited access thoroughfares. Where access issues are identified, establish a plan for alternative transportation.	All	High	Oak Island Development Services, Oak Island Emergency Services, Oak Island Administrations	General Funds	Ongoing: Oak Island has created a map of all its critical facilities and is reviewing temporary locations to move during a natural hazard event if needed.	Continually update flood prone area map and look at alternative transportation and temporary relocation of critical facilities in the event of a natural hazard event.
OKI-4	Maintain Town Stormwater Ordinances in conjunction with land use ordinances for compatibility of EPA Phase II NPDES requirements. These efforts should also include analysis of stormwater hotspots and potential remedies for these issues.	Flood	High	Oak Island Development Services, Oak Island Public Works, Oak Island Administrations	General Funds, NCDEQ	Ongoing: Oak Island continually maintains and updates it Stormwater Ordinance. Oak Island has identified and mapped low	To complete repairs to Oak Island's existing stormwater system and to continue to look at alternative stormwater designs that are compatible with Oak Island's Phase II NPDES permit.

Existing Action Plans

Existing Mitigation Actions

Review the previous plan to determine the status of **existing mitigation actions:**

- **Status update** required by FEMA
- **Designate each action** as: *Completed, Deleted, or Carried Forward (MUST include details)*
- **Identify** existing gaps and weaknesses

New Mitigation Actions

Brainstorm and discuss a full range of potential **new mitigation actions** and successful mitigation techniques, ensuring they:

- **Align** with mitigation goals and other community objectives
- **Reflect** hazard risk and local capability
- **Address** existing gaps or weaknesses

Recommend adding

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 the application. Projects may include, but are not limited to: **acquisition, elevation, mitigation reconstruction, and wet/dry flood proofing to commercial and/or residential structures as applicable; redundant power to critical facilities, storm shelters and other activities** that reduce the loss of life and property as a result of impacts from natural hazards.

Action	Description	Hazard(s) Addressed	Priority	Lead Agency	Potential Funding Sources	Implementation Schedule	Implementation Status
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flood	Medium	Emergency Management	Local	2025	No policy has been developed as of 2020. This is to be completed in 2025 pending funding, staff resources and political will.

Mitigation Action Example

Leverage Guides & Resources

Use available resources to aid in strategy development:

- FEMA Local Mitigation Planning Handbook
- FEMA Mitigation Ideas
- FEMA Economic Development Strategy and Hazard Mitigation Plan Alignment
- NCORR North Carolina Resilience Exchange
- NCORR North Carolina Resilient Communities Planning Guide

Visit the Project Website

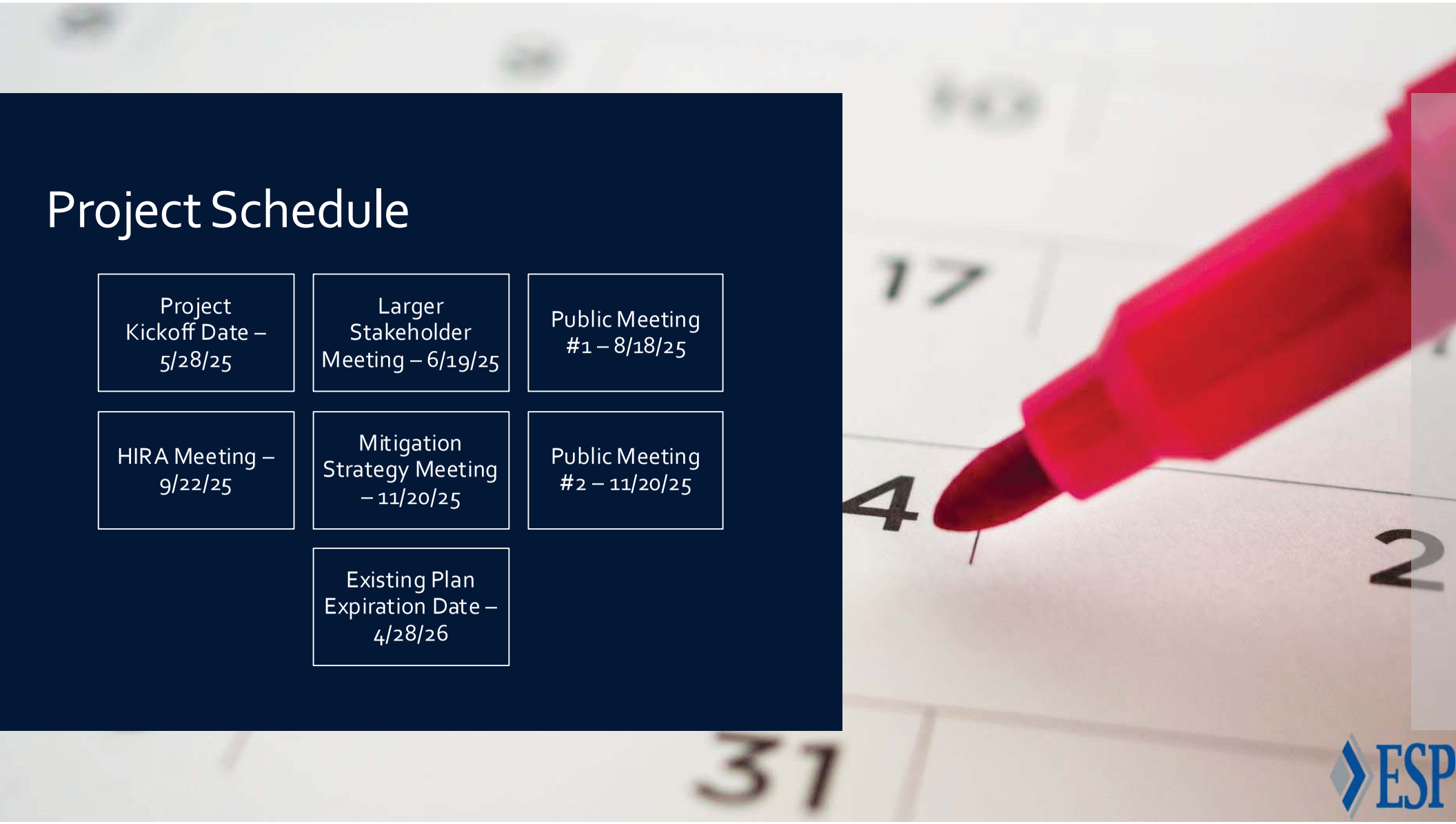


This Project Website will be updated regularly throughout the planning process to provide access to:

1. Project Overview
2. Meeting Minutes & Presentations
3. Public Survey
4. Previous HMP (2021)
5. Relevant Planning Resources

Project Schedule

- Project Kickoff Date – 5/28/25
- Larger Stakeholder Meeting – 6/19/25
- Public Meeting #1 – 8/18/25
- HIRA Meeting – 9/22/25
- Mitigation Strategy Meeting – 11/20/25
- Public Meeting #2 – 11/20/25
- Existing Plan Expiration Date – 4/28/26





Questions?

Questions/Comments/Concerns

Next Steps

1. Use and Reference Project Resources
   - Previous 2020 Plan
   - Meeting Follow-up Materials
   - FEMA/NC Planning Resources (also on **Project Website**)
2. Review Existing Mitigation Action Plan from 2021 HMP
   - Provide Status Updates for Each Action
3. Brainstorm New Mitigation Strategies for 2026 HMP
   - Consider Evolving Needs
4. Draft Plan Delivery

Adjourn – Thank you!

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Public Survey Results

As part of the planning process, the Southeastern North Carolina Regional Hazard Mitigation Plan (SENC RHMP) included a public survey to gather community input on local hazards, impacts, and mitigation priorities. The survey received a total of **1,470 responses**, providing valuable insight into regional risk perception and community needs.

For the sake of brevity, detailed survey results were not included directly in this plan. However, the full survey results are available upon request. Please contact **nslaughter@espassociates.com** to obtain a copy of the complete survey findings