

ALBEMARLE
Regional Hazard Mitigation Plan







TABLE OF CONTENTS

1 INTRODUCTION 1

1.1 Background 1

1.2 Purpose and Authority 2

1.3 Scope 2

1.4 References 3

1.5 Plan Organization 4

2 PLANNING PROCESS 5

2.1 Purpose and Vision 5

2.2 What's Changed in the Plan 6

2.3 Preparing the Plan 7

2.3.1 Phase I – Planning Process 8

2.3.2 Phase II – Risk Assessment 9

2.3.3 Phase III – Mitigation Strategy 10

2.3.4 Phase IV – Plan Maintenance 10

2.4 Hazard Mitigation Planning Committee 10

2.5 Meetings and Workshops 14

2.6 Involving the Public 15

2.7 Outreach Efforts 16

2.8 Involving the Stakeholders 17

2.9 Documentation of Plan Progress 17

3 PLANNING AREA PROFILE 21

3.1 Geography and Environment 21

3.1.1 Wetlands 25

3.1.2 Parks, Preserve, and Conservation 26

3.1.3 Threatened and Endangered Species 27

3.1.4 Land Cover 27

3.2 Population and Demographics 33

3.3 Historic Properties 38

3.4 Housing 41

3.5 Infrastructure 42
3.5.1 Transportation 42
3.5.2 Utilities 43
3.6 Current and Future Land Use 43
3.7 Employment and Industry 63
3.7.1 Wages and Employment 63
4 RISK ASSESSMENT 67
4.1 Overview 67
4.2 Hazard Identification 68
4.3 Risk Assessment Methodology & Assumptions . 73
4.4 Asset Inventory 77
4.4.1 Population 77
4.4.2 Property 78
4.4.3 Critical Infrastructure & Key Resources and High Potential Loss Properties 79
4.4.4 Agriculture 89
4.5 Hazard Profiles, Analysis, and Vulnerability 90
4.5.1 Dam & Levee Failure 90
4.5.2 Drought 101
4.5.3 Earthquake 111
4.5.4 Excessive Heat 123
4.5.5 Flooding 133
4.5.6 Hurricanes and Coastal Hazards 163
4.5.7 Tornadoes & Thunderstorms 190
4.5.8 Severe Winter Weather 217
4.5.9 Wildfire 223
4.5.10 Radiological Incident 238
4.5.11 Infectious Disease 243
4.5.12 Hazardous Substances 252
4.5.13 Cyber Threat 268
4.6 Conclusions on Hazard Risk 272
5 CAPABILITY ASSESSMENT 274
5.1 Overview 274
5.2 Conducting the Capability Assessment 274
5.3 Capability Assessment Findings 275

5.3.1 Planning and Regulatory Capability 275
5.3.2 Administrative and Technical Capability 283
5.3.3 Fiscal Capability 285
5.3.4 Education and Outreach Capability 286
5.3.5 Mitigation Capability 287
5.3.6 Political Capability 287
5.3.7 Local Self-Assessment Rating 288

5.4 Conclusions on Local Capability 289

6 MITIGATION STRATEGY 290

6.1 Goals and Objectives 290
6.1.1 Coordination with Other Planning Efforts 290
6.1.2 Goal Setting 291
6.1.3 Resulting Goals and Objectives 291

6.2 Identification and Analysis of Mitigation Activities 292
6.2.1 Prioritization Process 292

7 MITIGATION ACTION PLANS 294

8 PLAN MAINTENANCE 320

8.1 Implementation 320
8.1.1 Mitigation Action Plan Implementation 320
8.1.2 Plan Integration 320

8.2 Monitoring, Evaluation, and Enhancement 322
8.2.1 Role of HMPC in Implementation, Monitoring and Maintenance 322
8.2.2 Maintenance Schedule 323
8.2.3 Maintenance Evaluation Process 323

8.3 Continued Public Involvement 325

9 PLAN ADOPTION 326

ANNEX A CAMDEN COUNTY 365

A.1 Asset Inventory 365

A.2 Risk Assessment 368
A.2.1 Flooding 368
A.2.2 Wildfire 372

A.3 Mitigation Strategy 377

ANNEX B CHOWAN COUNTY 381

B.1 Asset Inventory 381

B.2 Risk Assessment 388

B.2.1 Flooding 388

B.2.2 Wildfire 394

B.3 Mitigation Strategy 403

ANNEX C GATES COUNTY 407

C.1 Asset Inventory 407

C.2 Risk Assessment 415

C.2.1 Flooding 415

C.2.2 Wildfire 421

C.3 Mitigation Strategy 430

ANNEX D HERTFORD COUNTY 434

D.1 Asset Inventory 434

D.2 Risk Assessment 452

D.2.1 Flooding 452

D.2.2 Wildfire 469

D.3 Mitigation Strategy 488

ANNEX E PASQUOTANK COUNTY 493

E.1 Asset Inventory 493

E.2 Risk Assessment 499

E.2.1 Flooding 499

E.2.2 Wildfire 505

E.3 Mitigation Strategy 514

ANNEX F PERQUIMANS COUNTY 518

F.1 Asset Inventory 518

F.2 Risk Assessment 528

F.2.1 Flooding 528

F.2.2 Wildfire 538

Mitigation Strategy 548

APPENDIX B PLANNING PROCESS DOCUMENTATION B.1

B.1 Planning Step 1: Organize to Prepare the Plan .. B.1

B.2 Planning Step 2: Involve the Public B.20

B.3 Planning Step 3: Coordinate B.48

APPENDIX C MITIGATION ALTERNATIVES C.1

C.1 Categories of Mitigation Measures Considered C.1

C.2 Alternative Mitigation Measures per Category . C.1

C.2.1 Preventative and Regulatory Measures C.2

C.2.2 Property Protection Measures C.5

C.2.3 Natural Resource Protection C.9

C.2.4 Emergency Services Measures C.12

C.2.5 Structural Projects C.16

C.2.6 Public Information C.18

APPENDIX D REFERENCES D.1

1 INTRODUCTION

Section 1 provides a general introduction to hazard mitigation and an introduction to the Albemarle Regional Hazard Mitigation Plan. This section contains the following subsections:

1.1 Background
1.2 Purpose and Authority
1.3 Scope
1.4 References
1.5 Plan Organization

1.1 BACKGROUND

This document comprises a Hazard Mitigation Plan for the Albemarle Region of North Carolina.

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

Hazards are a natural part of the environment that will inevitably continue to occur, but there is much we can do to minimize their impacts on our communities and prevent them from resulting in disasters. Every community faces different hazards, has different resources to draw upon in combating problems, and has different interests that influence the solutions to those problems. Because there are many ways to deal with hazards and many agencies that can help, there is no one solution for managing or mitigating their effects. Planning is one of the best ways to develop a customized program that will mitigate the impacts of hazards while accounting for the unique character of a community.

A well-prepared hazard mitigation plan will ensure that all possible activities are reviewed and implemented so that the problem is addressed by the most appropriate and efficient solutions. It can also ensure that activities are coordinated with each other and with other goals and activities, preventing conflicts and reducing the costs of implementing each individual activity. This plan provides a framework for all interested parties to work together toward mitigation. It establishes the vision and guiding principles for reducing hazard risk and proposes specific mitigation actions to eliminate or reduce identified vulnerabilities.

In an effort to reduce the nation's mounting natural disaster losses, the U.S. Congress passed the Disaster Mitigation Act of 2000 (DMA 2000) to invoke new and revitalized approaches to mitigation planning. Section 322 of DMA 2000 emphasizes the need for state and local government entities to closely coordinate on mitigation planning activities and makes the development of a hazard mitigation plan a specific eligibility requirement for any local government applying for federal mitigation grant funds. These funds include the Hazard Mitigation Grant Program (HMGP), the Building Resilient Infrastructure & Communities (BRIC) program, and the Flood Mitigation Assistance (FMA) Program, all 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 pre-positioned and more apt to receive available mitigation funds before and after the next disaster strikes.

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

1.2 PURPOSE AND AUTHORITY

This plan was developed in a joint and cooperative manner by members of a Hazard Mitigation Planning Committee (HMPC) which included representatives of County, City, and Town departments, federal and state agencies, citizens, and other stakeholders. This plan will ensure all jurisdictions in the Albemarle Region remain eligible for federal disaster assistance including the FEMA HMGP, BRIC, and the FMA programs.

This plan has been prepared in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act or the Act), 42 U.S.C. 5165, enacted under Section 104 of the Disaster Mitigation Act of 2000, (DMA 2000) Public Law 106-390 of October 30, 2000, as implemented at CFR 201.6 and 201.7 dated October 2007.

This plan will be adopted by each participating jurisdiction in accordance with standard local procedures. Copies of adoption resolutions are provided in Section 9 Plan Adoption.

1.3 SCOPE

This document comprises a Regional Hazard Mitigation Plan for the Albemarle Region. The planning areas includes all incorporated municipalities and unincorporated areas in the region. All participating jurisdictions are listed in Table 1.1.

Table 1.1 – Participating Jurisdictions in the Albemarle Regional Hazard Mitigation Plan

Camden County	
Chowan County	
Edenton	
Gates County	
Gatesville	
Hertford County	
Ahoskie	Como
Harrellsville	Murfreesboro
Winton	Cofield
Pasquotank County	
Elizabeth City	
Perquimans County	
Hertford	Winfall

The Albemarle Region followed the planning process prescribed by FEMA, and this plan was developed under the guidance of a planning committee comprised of County and Town staff, citizens, and other stakeholders. The HMPC conducted a risk assessment that identified and profiled hazards that pose a risk to the planning area, assessed the planning area's vulnerability to these hazards, and examined each participating jurisdiction's capabilities in place to mitigate them. The plan evaluates and prioritizes hazards for the planning area using a Priority Risk Index, as determined through the risk and vulnerability

assessments. Hazards are categorized as “low,” “moderate,” or “high” priority, however, mitigation strategies are identified for all profiled hazards. The hazards profiled in this plan include:

- Dam & Levee Failure
- Drought
- Earthquake
- Excessive Heat
- Flooding
- Hurricane & Coastal Hazards
- Severe Winter Weather
- Tornadoes & Thunderstorms
- Wildfire
- Radiological Incident
- Infectious Disease
- Hazardous Substances
- Cyber Threat

1.4 REFERENCES

The following FEMA guides and reference documents were used to prepare this document:

- FEMA 386-1: Getting Started: Building Support for Mitigation Planning. September 2002.
- FEMA 386-2: Understanding Your Risks: Identifying Hazards and Estimating Losses. August 2001.
- FEMA 386-3: Developing the Mitigation Plan. April 2003.
- FEMA 386-4: Bringing the Plan to Life. August 2003.
- FEMA 386-5: Using Benefit-Cost Review in Mitigation Planning. May 2007.
- FEMA 386-6: Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning. May 2005.
- FEMA 386-7: Integrating Manmade Hazards into Mitigation Planning. September 2003.
- FEMA 386-8: Multijurisdictional Mitigation Planning. August 2006.
- FEMA 386-9: Using the Hazard Mitigation Plan to Prepare Successful Mitigation Projects. August 2008.
- FEMA National Fire Incident Reporting System 5.0: Complete Reference Guide. January, 2008.
- FEMA. Integrating Hazard Mitigation into Local Planning: Case Studies and Tools for Community Officials. March 1, 2013.
- FEMA. Mitigation Ideas. A Resource for Reducing Risk to Natural Hazards. January 2013.
- FEMA Hazard Mitigation Assistance Program and Policy Guide. July 30, 2024.
- FEMA. Local Mitigation Plan Review Guide. October 1, 2011.
- FEMA. FP 206-21-0002. Local Mitigation Planning Policy Guide. April 19, 2023.
- FEMA. Local Mitigation Planning Handbook. May 2023.

Additional sources used in the development of this plan, including data compiled for the Hazard Identification and Risk Assessment, are listed in Appendix D.

1.5 PLAN ORGANIZATION

The Albemarle Regional Hazard Mitigation Plan is organized into the following sections:

- Section 1: Introduction
- Section 2: Planning Process
- Section 3: Planning Area Profile
- Section 4: Risk Assessment
- Section 5: Capability Assessment
- Section 6: Mitigation Strategy
- Section 7: Mitigation Action Plans
- Section 8: Plan Maintenance
- Section 9: Plan Adoption
- Appendix A: Local Plan Review Tool
- Appendix B: Planning Process Documentation
- Appendix C: Mitigation Alternatives
- Appendix D: References

2 PLANNING PROCESS

Requirement §201.6(b): An open public involvement process is essential to the development of an effective plan. To develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:
1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
2) 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 nonprofit interests to be involved in the planning process; and
3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.
Requirement §201.6(c)(1): The plan shall include the following:
1) 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.

This section provides a review of the planning process followed for the development of the Albemarle Regional Hazard Mitigation Plan. It consists of the following sub-sections:

- 2.1 Purpose and Vision
- 2.2 What's Changed in the Plan
- 2.3 Preparing the Plan
- 2.4 Hazard Mitigation Planning Committee
- 2.5 Meetings and Workshops
- 2.6 Involving the Public
- 2.7 Outreach Efforts
- 2.8 Involving the Stakeholders
- 2.9 Documentation of Plan Progress

2.1 PURPOSE AND VISION

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

The purpose of the Albemarle Regional Hazard Mitigation Plan is to identify, assess, and mitigate hazard risk to better protect the people and property within the Region from the effects of natural and human-caused hazards. This plan documents progress on existing hazard mitigation planning efforts, updates the previous plan to reflect current conditions in the Region including relevant hazards and vulnerabilities, increases public education and awareness about the plan and planning process, maintains grant eligibility for participating jurisdictions, maintains compliance with state and federal requirements for local hazard mitigation plans, and identifies and outlines strategies the Region's participating jurisdictions will use to decrease vulnerability and increase resiliency.

During the development of the 2020 Albemarle Regional Hazard Mitigation Plan, the Hazard Mitigation Planning Committee (HMPC) developed a vision for the Region in terms of hazard mitigation planning by considering what the successful implementation of the plan would achieve, what outcomes the plan would generate, and what the Albemarle Region will look like in the future. This vision statement,

presented below, remains relevant to define and guide the planning process and the Region's approach to hazard mitigation.

Through a coordinated regional planning effort, create and implement an effective hazard mitigation plan that will identify and reduce risk to natural hazards to protect the health, safety, quality of life, environment, and economy of all participating jurisdictions throughout the Albemarle Region.

2.2 WHAT'S CHANGED IN THE PLAN

All participating jurisdictions in this plan update were participants in the 2020 Albemarle Regional Hazard Mitigation Plan, which was approved by FEMA on June 18, 2020.

This hazard mitigation plan update involved a comprehensive review and update of each section of the existing plan and an assessment of the success of the Counties and participating municipalities in evaluating, monitoring and implementing the mitigation strategy outlined in their existing plans. Only the information and data still valid from the existing plans was carried forward as applicable into this update. The following requirements were addressed during the development of this regional plan:

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

Section 4.2 provides a comparison of the hazards addressed in the 2023 State of North Carolina HMP and the 2020 Albemarle Regional plan and provides the final decision made by the HMPC as to which hazards should be included in the updated 2025 Albemarle Regional Plan.

In addition to the specific changes in hazard analyses identified in Section 4.2, the following items were also addressed in this 2025 plan update:

- GIS was used, to the extent data allowed, to analyze the priority hazards as part of the vulnerability assessment.
- Assets at risk to identified hazards were identified by property type and values of properties based on North Carolina Emergency Management's IRISK Database.
- An updated discussion on the effects of climate change and other future conditions was included in each hazard profile in the risk assessment.
- The discussion on growth and development trends was enhanced utilizing 2022 American Community Survey data and current land use plans.
- An effort was made to provide underserved communities and vulnerable populations with opportunities to participate in and contribute to the plan update process. Engagement opportunities were provided through the public survey, the plan website, and stakeholder coordination.

— Enhanced public outreach and agency coordination efforts were conducted throughout the plan update process in order to meet the more rigorous requirements of the 2017 CRS Coordinator's Manual, in addition to DMA requirements.

2.3 PREPARING THE PLAN

The planning process for preparing the Albemarle Regional Hazard Mitigation Plan was based on DMA planning requirements and FEMA's associated guidance. This guidance is structured around a four-phase process:

1. Planning Process
2. Risk Assessment
3. Mitigation Strategy
4. Plan Maintenance

Into this process, the planning consultant integrated a more detailed 10-step planning process used for FEMA's Community Rating System (CRS) and Flood Mitigation Assistance programs. Thus, the modified 10-step process used for this plan meets the requirements of six major programs: FEMA's Hazard Mitigation Grant Program; Pre-Disaster Mitigation Program; Community Rating System; Flood Mitigation Assistance Program; Severe Repetitive Loss Program; and new flood control projects authorized by the U.S. Army Corps of Engineers.

Table 2.1 shows how the 10-step CRS planning process aligns with the four phases of hazard mitigation planning pursuant to the Disaster Mitigation Act of 2000.

Table 2.1 – Mitigation Planning and CRS 10-Step Process Reference Table

DMA Process	CRS Process
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

In addition to meeting DMA and CRS requirements, this plan also meets the recommended steps for developing a Community Wildfire Protection Plan (CWPP). Table 2.2 below outlines the recommended CWPP process and the CRS step and sections of this plan that meet each step.

Table 2.2 – Community Wildfire Protection Plan Process Reference

CWPP Process	CRS Step	Fulfilling Plan Section
Convene decision makers	Step 1	Section 2 – HMPC
Involve Federal agencies	Step 3	Section 2 – Involving Stakeholders

CWPP Process	CRS Step	Fulfilling Plan Section
Engage interested parties (such as community representatives)	Step 1, 2, and 3	Section 2 – HMPC, Involving the Public, Involving Stakeholders
Establish a community base map	Step 4	Section 4 – Wildfire
Develop a community risk assessment, including fuel hazards, risk of wildfire occurrence, homes, business and essential infrastructure at risk, other community values at risk, local preparedness, and firefighting capability	Step 4 and 5	Section 4 – Wildfire Section 5 – Capability
Establish community hazard reduction priorities and recommendations to reduce structural ignitability	Step 6, 7, and 8	Section 6 – Mitigation Strategy Section 7 – Mitigation Action Plans
Develop an action plan and assessment strategy	Step 8 and 10	Section 7 – Mitigation Action Plans Section 8 – Plan Maintenance
Finalize the CWPP	Step 9	Section 9 – Plan Adoption

The process followed for the preparation of this plan, as outlined in Table 2.1 above, is as follows:

2.3.1 PHASE I – PLANNING PROCESS

Planning Step 1: Organize to Prepare the Plan

With the participating communities' commitment to participate in the DMA planning process, community officials worked to establish the framework and organization for development of the plan. An initial meeting was held with key community representatives to discuss the organizational aspects of the plan development process. The County Emergency Managers led each County's effort to reorganize and coordinate for the plan update. Consultants from WSP assisted by leading the region through the planning process and preparing the plan document.

Planning Step 2: Involve the Public

Public involvement in the development of the plan was sought using various methods, as detailed in Section 2.6.

Planning Step 3: Coordinate

The HMPC that was formed for the 2020 Albemarle Regional Hazard Mitigation Plan was reconvened for this plan update. Membership was updated where necessary to ensure each community had adequate representation from staff and stakeholders. More details on the HMPC are provided in Section 2.4. Stakeholder coordination was incorporated into the formation of the HMPC and was also sought through additional outreach methods. These efforts are detailed in Section 2.8 and documentation of additional stakeholder outreach is provided in Appendix B.

Coordination with Other Community Planning Efforts and Hazard Mitigation Activities

In addition to stakeholder involvement, coordination with other community planning efforts was also seen as paramount to the success of this plan. Mitigation planning involves identifying existing policies, tools, and actions that will reduce a community's risk and vulnerability to hazards. Communities in the Albemarle Region use a variety of planning mechanisms, such as comprehensive plans, subdivision regulations, building codes, and ordinances to guide growth and development. Integrating existing planning efforts, mitigation policies, and action strategies into this plan establishes a credible and comprehensive plan that ties into and supports other community programs. As detailed in Table 2.3, the

development of this plan incorporated information from existing plans, studies, reports, and initiatives as well as other relevant data from neighboring communities and other jurisdictions.

These and other documents were reviewed and considered, as appropriate, during the collection of data to support the planning process and plan development. Data from these sources was incorporated into the risk and vulnerability assessment, helped determine the capability of each jurisdiction to implement certain mitigation strategies, and informed the identification and update of new and continuing mitigation strategies.

Table 2.3 – Summary of Existing Studies and Plans Reviewed

Resource Referenced	Use in this Plan
Local Comprehensive Plans	Where available, each community's comprehensive plan was referenced to develop the Planning Area Profile in Section 3, with future land use maps and descriptions incorporated into community annexes. Local land use and comprehensive plans were also used to develop Mitigation Action Plans in Section 7 and were referenced in the Capability Assessment in Section 5.
Local Ordinances (Flood Damage Prevention Ordinances, Subdivision Ordinances, Zoning Ordinances, etc.)	Local ordinances were referenced in the Capability Assessment in Section 5 and where applicable for updates or enforcement in Mitigation Action Plans in Section 7.
Flood Insurance Study (FIS) Reports	FIS reports were referenced in the preparation of the flood hazard profile in Section 4.
Albemarle Regional Hazard Mitigation Plan, 2020	The previous plan served as the foundation for this plan update and was specifically referenced in compiling the Hazard Identification and Risk Assessment in Section 4, reporting on implementation of mitigation actions in Section 2, and developing the Mitigation Action Plans in Section 7.
Albemarle Regional Resilience Portfolio, 2022	This plan was referenced in the Capability Assessment in Section 5 and for development of the Mitigation Action Plans in Section 7.
North Carolina State Hazard Mitigation Plan, 2023	The state hazard mitigation plan was primarily referenced in compiling the Hazard Identification and Risk Assessment in Section 4.

2.3.2 PHASE II – RISK ASSESSMENT

Planning Steps 4 and 5: Identify/Assess the Hazard and Assess the Problem

The HMPC completed a comprehensive effort to identify, document, and profile all hazards that have, or could have, an impact on the planning area. Geographic information systems (GIS) were used to display, analyze, and quantify hazards and vulnerabilities. A draft of the risk and vulnerability assessment was made available on the plan website for the HMPC, stakeholders, and the public to review and comment.

The HMPC also conducted a capability assessment to review and document the planning area's current capabilities to mitigate risk from and vulnerability to hazards. By collecting information about existing government programs, policies, regulations, ordinances, and emergency plans, the HMPC could assess those activities and measures already in place that contribute to mitigating some of the risks and vulnerabilities identified. A more detailed description of the risk assessment process and the results are included in Section 4 Risk Assessment.

2.3.3 PHASE III – MITIGATION STRATEGY

Planning Steps 6 and 7: Set Goals and Review Possible Activities

WSP facilitated brainstorming and discussion sessions with the HMPC that described the purpose and process of developing a vision for the planning process and setting planning goals and objectives, a comprehensive range of mitigation alternatives, and a method of selecting and defending recommended mitigation actions using a series of selection criteria. This information is included in Section 6 Mitigation.

Planning Step 8: Draft an Action Plan

A complete first draft of the plan was prepared based on input from the HMPC regarding the draft risk assessment and the goals and activities identified in Planning Steps 6 and 7. This draft was shared for HMPC, stakeholder, and public review and comment via the plan website. HMPC, public, and stakeholder comments were integrated into the final draft for the NCEM and FEMA Region 4 to review and approve, contingent upon final adoption by all participating jurisdictions.

2.3.4 PHASE IV – PLAN MAINTENANCE

Planning Step 9: Adopt the Plan

To secure buy-in and officially implement the plan, the plan will be reviewed and adopted by all participating jurisdictions. Resolutions will be provided in Section 9 Plan Adoption.

Planning Step 10: Implement, Evaluate and Revise the Plan

Implementation and maintenance of the plan is critical to the overall success of hazard mitigation planning. Up to this point in the planning process, the HMPC's efforts have been directed at researching data, coordinating input from participating entities, and developing appropriate mitigation actions. Section 8 Plan Maintenance provides an overview of the overall strategy for plan implementation and maintenance and outlines the method and schedule for monitoring, updating, and evaluating the plan. The Section also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

2.4 HAZARD MITIGATION PLANNING COMMITTEE

This Hazard Mitigation Plan was developed under the guidance of a planning committee comprising representatives of County and Jurisdiction departments, federal and state agencies, citizens and other stakeholders.

To form the HMPC, the County Emergency Managers and Planning Directors coordinated with County and jurisdiction officials to designate representatives for each jurisdiction. Each community was asked to designate a primary and secondary contact for the HMPC. Communities were also asked to identify local stakeholder representatives to participate on the HMPC alongside the County and jurisdiction officials to improve the integration of stakeholder input into the plan.

lists the membership of the HMPC, the agencies and jurisdictions that members represented, and members' attendance at meetings. Many of these representatives were involved in the development of the 2020 Hazard Mitigation Plan and have since participated in regular plan reviews and maintenance. For this plan update, an effort was made to involve additional stakeholders who could represent or coordinate with underserved communities and vulnerable populations.

The formal HMPC meetings followed the 10 CRS Planning Steps. Agendas, minutes, and sign-in sheets for the HMPC meetings are provided in Appendix B. The meeting dates and topics discussed are summarized in Section 2.5 Meetings and Workshops. All HMPC meetings were open to the public.

The DMA planning regulations and guidance stress that each local government seeking FEMA approval of their mitigation plan must participate in the planning effort in the following ways:

- Participate in the process as part of the HMPC;
- Detail where within the planning area the risk differs from that facing the entire area;
- Identify potential mitigation actions; and
- Formally adopt the plan.

For the Albemarle Regional HMPC, "participation" meant the following:

- Providing facilities for meetings;
- Attending and participating in the HMPC meetings;
- Collecting and providing requested data (as available);
- Managing administrative details;
- Making decisions on plan process and content;
- Identifying mitigation actions for the plan;
- Reviewing and providing comments on plan drafts;
- Informing the public, local officials, and other interested parties about the planning process and providing opportunity for them to comment on the plan;
- Coordinating, and participating in the public input process; and
- Coordinating the formal adoption of the plan by local governing bodies.

Detailed summaries of HMPC meetings are provided under Section 2.5 Meetings and Workshops, including meeting dates, locations, and topics discussed. During the planning process, the HMPC members communicated through face-to-face meetings, email, and telephone conversations. This continued communication ensured that coordination was ongoing throughout the entire planning process even though not all HMPC members could be present at every meeting. Additionally, draft documents were distributed via the plan website so that the HMPC members could easily access and review them and provide comments.

Table 2.4 – HMPC Members

Jurisdiction	Representative	Agency	Position/Title	HMPC Meeting Attendance			
				Mtg.1	Mtg.2	Mtg.3	Mtg.4
Camden County & Pasquotank County	Brian Parnell	Pasquotank-Camden Emergency Management	Emergency Mgmt Coordinator	✓		✓	✓
Camden County & Pasquotank County	Josh Wyse	Pasquotank-Camden Emergency Management	Asst. Emergency Mgmt Coordinator	✓	✓		
Chowan County	Cord Palmer	Chowan Co Emergency Mgmt	EM Director		✓	✓	
Chowan County	Kevin Howard	Chowan Co Administration	County Manager	✓	✓		
Edenton	Corey Gooden	Town of Edenton	Town Manager				
Edenton	Dewayne Whealton	Town of Edenton	Planning Director				
Edenton	Mark Powell	N/A	Citizen/Stakeholder*				
Edenton	Colleen Karl	N/A	Citizen/Stakeholder*				
Gates County	William M. Tutwiler	Gates County Emergency Management	Emergency Manager/Fire Marshal	✓			✓
Gates County	Lisa Cherry	Gates County Planning & Development	Planning & Development Director	✓	✓		
Gatesville	Elton Winslow	Town of Gatesville	Mayor				✓
Hertford County	Patrick H. Dilday	County Emergency Mgmt	Deputy Director/Fire Marshal		✓		
Hertford County	Pamela C. Carr	County Emergency Mgmt	EM Senior Administrative Assistant	✓	✓	✓	✓
Ahoskie	Christopher Smith	Ahoskie Public Works	Assistant Public Works Director	✓			
Ahoskie	Jennifer Bracy	Ahoskie Administration	Town Clerk/Interim Acting Town Manager	✓	✓	✓	
Cofield	June Wynn	Town of Cofield	Mayor	✓			
Como	Lorie Higbee	Town of Como	Mayor Pro Tem				✓
Harrellsville	Dina Harrell Askew	Town of Harrellsville	Clerk/Finance Officer	✓	✓	✓	✓
Murfreesboro	Carolyn Brown	Town of Murfreesboro	Town Administrator	✓	✓	✓	✓
Winton	James Pridgen	Town of Winton	Public Works Director		✓		
Elizabeth City	Amy Durden	Elizabeth City Public Utilities	GIS Coordinator	✓			
Elizabeth City	Dylan Lloyd	Elizabeth City Community Development Department	Planner II		✓		✓
Pasquotank County	Shelley Cox	Pasquotank County Planning	Planner	✓		✓	

Jurisdiction	Representative	Agency	Position/Title	HMPC Meeting Attendance			
				Mtg.1	Mtg.2	Mtg.3	Mtg.4
Perquimans County	Rhonda Repanshek	County Planning Department	County Planner	✓	✓	✓	✓
Perquimans County	Jonathan Nixon	County Emergency Services	Director		✓	✓	✓
Perquimans County	Julie Solesbee	County Emergency Services	Assistant Emergency Services Director		✓	✓	
Perquimans County	LuRee Sawyer	Center for Active Living	Center Coordinator*				
Perquimans County	Dina Hurdle	Open Door Food Pantry	Chair, Board of Directors*	✓			
Perquimans County	Ralph Hollowell	Albemarle Regional Health Services	Environmental Health Director*				
Hertford	Janice Cole	Town of Hertford	Town Manager	✓			
Meherrin Indian Tribe	Jonathan Caudill	Meherrin Indian Tribe	Chief*				
N/A	Chris Crew	NCEM	Mitigation Plans Manager*	✓			
N/A	Carl Baker	NCEM	Hazard Mitigation Planner*	✓		✓	✓
N/A	John Mello	NCEM	Hazard Mitigation Planner*			✓	✓
N/A	Chris Smith	NCEM	Area Coordinator*		✓		
N/A	Holly White	NCORR	Resilience Planner*	✓			
N/A	Helene Weatherington	NCORR	Resilient Communities Specialist*	✓			
N/A	Steve Porson	NCORR	STEM Policy Fellow*		✓		

*Asterisk indicates that the representative is a citizen or outside stakeholder not affiliated with the local government

Several of the jurisdictions elected to designate their respective county official to represent their jurisdiction on the HMPC, generally because they did not have the time or staff to be able to attend on their own. Although these members designated county officials to represent them at in-person meetings, each was still contacted throughout the planning process and participated by providing suggestions and comments on the plan and updates to mitigation actions and local capabilities via emails and phone conversations. These members are listed in Table 2.5 by jurisdiction.

Table 2.5 – Jurisdictions Designating County Representation on the HMPC

Jurisdiction	Representative	Agency/Position
Edenton	Corey Gooden	Town of Edenton, Town Manager
Winfall	Preston White	Town of Winfall, Mayor

The HMPC led the planning and decision-making efforts throughout the planning process; however, other staff from the participating communities were involved in an advisory role to provide input and local data, review plan drafts, update the status of their respective mitigation actions, and otherwise support the HMPC in this plan update. These were not members of the HMPC. Additional local staff that supported the HMPC are recognized in Table 2.6 below.

Table 2.6 – Additional Staff Supporting the Planning Process

Jurisdiction	Representative	Agency	Position/Title
Camden County	Amber Curling	Camden County Planning	Planning & Building Department Director
Chowan County	Brandon Shoaf	Chowan Co Planning Dept	Planning Director
Edenton	David Myers	Town of Edenton	Public Works Director
Gatesville	C.H. Carter, III	Town of Gatesville	Councilman
Ahoskie	Michele Garrett	Town of Ahoskie	Interim Town Manager
Ahoskie	Joleatha Chestnutt	Town of Ahoskie	Town Clerk
Cofield	Stephen Lassiter	Town of Cofield	Mayor Pro Tem
Como	Susan Kennington	Town of Como	Town Clerk
Harrellsville	Lisa Hunnicutt	Town of Harrellsville	Mayor Pro Tem
Murfreesboro	Eric Parker	Town of Murfreesboro	Director of Public Works
Winton	Willietta Edwards	Town of Winton	Town Clerk
Pasquotank County	John Shannon	County Manager's Office	Assistant County Manager
Perquimans County	Frank Heath	County Manager's Office	County Manager
Hertford	Gina Durante	Town of Hertford	Town Clerk
Winfall	Valerie Jackson	Town of Winfall	Town Clerk

2.5 MEETINGS AND WORKSHOPS

The preparation of this plan required a series of meetings and workshops for facilitating discussion, gaining consensus, and initiating data collection efforts with local government staff, community officials, and other identified stakeholders. More importantly, the meetings and workshops prompted continuous input and feedback from relevant participants throughout the drafting stages of the plan.

Table 2.7 summarizes the 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 such as updating the status of existing mitigation actions and identifying new actions. These meetings were informal and are not documented here.

Public meetings are summarized in subsection 2.6.

Table 2.7 – Summary of HMPC Meetings

Meeting Title	Meeting Topic	Meeting Date	Meeting Location
HMPC Mtg. #1 – Project Kick-Off	1) Introduction to DMA, CRS, and FMA requirements and the planning process 2) Review of HMPC responsibilities and the project schedule.	July 9, 2024	Pasquotank-Camden Emergency Management Center, 200 E. Colonial Ave, Elizabeth City, NC
HMPC Mtg. #2	1) Review Draft Hazard Identification & Risk Assessment (HIRA) 2) Solicit comments and feedback	October 31, 2024	Chowan County Government Center, 305 W. Freemason St, Edenton, NC
HMPC Mtg. #3	1) Review draft goals and objectives 2) Review mitigation alternatives and draft mitigation strategies 3) Discuss updates to local capabilities	December 12, 2024	Microsoft Teams
HMPC Mtg. #4	1) Review the Draft Hazard Mitigation Plan 2) Solicit comments and feedback	March 27, 2025	Microsoft Teams

2.6 INVOLVING THE PUBLIC

An important component of any mitigation planning process is public participation. Individual citizen and community-based input provides the entire planning team with a greater understanding of local concerns and increases the likelihood of successfully implementing mitigation actions by developing community "buy-in" from those directly affected by the decisions of public officials. As citizens become more involved in decisions that affect their safety, they are more likely to gain a greater appreciation 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 plan was sought using various methods including open public meetings, an interactive plan website, a public participation survey, and by making copies of draft plan documents available for public review online and at government offices. Additionally, all HMPC meetings were made open to the public.

All public meetings were advertised on the plan website, which was shared on local community websites, where possible. Copies of meeting announcements are provided in Appendix B. The public meetings held during the planning process are summarized in Table 2.8.

Table 2.8 – Summary of Public Meetings

Meeting Title	Meeting Topic	Meeting Date	Meeting Location
Public Meeting #1	1) Introduction to DMA, CRS, and FMA requirements and the planning process 2) Review of HMPC responsibilities and the project schedule.	September 4, 2024 6pm	Microsoft Teams
Public Meeting #2	1) Review "Draft" Hazard Mitigation Plan 2) Solicit comments and feedback	March 27, 2025 5pm	Microsoft Teams

2.7 OUTREACH EFFORTS

The HMPC agreed to employ a variety of public outreach methods including established public information mechanisms and resources within the community. The table below details public outreach efforts employed during the preparation of this plan.

Table 2.9 – Public Outreach Efforts

Location	Date	Event/Message
Plan website	Ongoing	Meeting announcements, meeting materials, project timeline, mitigation planning resources, and contact information provided to request additional information and/or provide comments
Community social media pages	August 2024, March 2025	Public Meeting announcements posted; Link to the plan website and public survey shared to expand reach; Requests for comments on the draft plan
Local community websites	August 2024, March 2025	Public Meeting announcements posted; Link to the plan website shared to expand reach; Requests for comments on the draft plan
Public survey	July 2024 – January 2025	Survey hosted online, made available via shareable link and shared on the plan website
Plan website – HIRA draft	October 2024	Draft HIRA made available for review and comment online
Plan website – Draft Plan	March 2025	Full draft plan made available for review and comment online

As detailed above, public involvement activities for this plan update included press releases, creation of a website for the plan, a public survey, and the collection of public and stakeholder comments on the draft plan. Documentation of these activities is provided in Appendix B.

A public outreach survey was made available in July 2024 and remained open for response until January 2025. The public survey requested public input into the Hazard Mitigation Plan planning process and the identification of mitigation activities to lessen the risk and impact of future hazard events. The survey is shown in Appendix B. The survey was available in hard copy at the first public meeting and online on the plan website. In total, 43 survey responses were received.

The following is a list of high-level summary results and analysis derived from survey responses:

- Most responses came from residents of Pasquotank and Camden Counties.
- 60% of respondents reported being impacted by prior hazard events, mostly related to hurricanes and flooding.
- There is moderate concern among respondents about future hazard impacts. On average, respondents rated their concern at 3.74 out of 5.
- Extreme heat, flood, hurricane, and severe weather were rated the most significant hazards. Earthquake, dam & levee failure, and radiological incident were rated the least significant hazards.
- About 40% of respondents reported having taken steps to mitigate risk at home; these efforts primarily include storm preparedness measures; therefore, it may be beneficial to promote prevention and property protection activities via public outreach. Some respondents reported safe building practices, retrofitting, and drainage alterations.
- Respondents recommended stormwater improvements and drainage maintenance but favored prevention and emergency services activities for mitigation.

Detailed survey results are provided in Appendix B.

2.8 INVOLVING THE STAKEHOLDERS

As noted above, in addition to representatives of each participating jurisdiction, the Hazard Mitigation Planning Committee included a variety of stakeholders so that the committee would involve a variety of perspectives. Some residents and stakeholders were able to represent underserved communities and vulnerable populations. Stakeholders on the HMPC included residents, representatives from local non-profits and agencies serving vulnerable populations and underserved communities, and a representative from the Meherrin Indian Tribe. Input from additional stakeholders, including neighboring communities, was solicited through an invitation to attend the public meetings and review the draft plan. Documentation and details of this effort are provided in Appendix B. Stakeholders could also participate in the public survey; however, whether or not stakeholders participated is unknown due to the anonymous nature of the survey.

2.9 DOCUMENTATION OF PLAN PROGRESS

Progress on the mitigation strategy developed in the previous plan is documented in this plan update. Table 2.10 below summarizes the status of mitigation actions from the previous plan. More details on carried forward actions are provided in Section 7: Mitigation Action Plans.

Table 2.10 – Status of Previous Mitigation Actions

Jurisdiction	Completed	Deleted	Carried Forward
Camden County	**0**	**1**	**22**
Chowan County	**0**	**0**	**19**
Town of Edenton	*0*	*0*	*19*
Gates County	**0**	**0**	**13**
Town of Gatesville	*0*	*0*	*13*
Hertford County	**0**	**0**	**21**
Town of Ahoskie	*0*	*0*	*21*
Town of Cofield	*0*	*0*	*21*
Town of Como	*0*	*0*	*21*
Town of Harrellsville	*0*	*0*	*21*
Town of Murfreesboro	*0*	*0*	*21*
Town of Winton	*0*	*0*	*21*
Pasquotank County	**2**	**0**	**16**
City of Elizabeth City	*2*	*0*	*16*
Perquimans County	**3**	**0**	**17**
Town of Hertford	*0*	*0*	*13 multi-jurisdictional, 3 individual*
Town of Winfall	*0*	*0*	*13 multi-jurisdictional, 4 individual*
Actions Total	**5**	**1**	**108**

Note: Most actions are multi-jurisdictional, with the counties taking the lead for implementation for their respective actions. Only the towns of Hertford and Winfall have separate local action plans.

Table 2.11 below details all completed and deleted actions from the 2020 plan.

It should be noted that although many communities have no completed actions removed from their mitigation action plans, this does not convey that mitigation has not been completed. Many actions that have been carried forward into this plan update reflect ongoing implementation and progress achieved. See Section 7: Mitigation Action Plans for status updates on carried forward mitigation actions.

Community capability continues to improve with the implementation of new plans, policies, and programs that help to promote hazard mitigation at the local level. The current state of local capabilities for the participating jurisdictions is captured in Section 5: Capability Assessment. The participating jurisdictions continue to demonstrate their commitment to hazard mitigation and have proven this by reconvening the HMPC to update this multi-jurisdictional plan and by continuing to involve the public in the hazard mitigation planning process.

Moving forward, information in this plan will be used to help guide and coordinate mitigation activities and decisions for local plans and policies in the future. Proactive mitigation planning will help reduce the cost of disaster response and recovery to communities and their residents by protecting critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruptions. This plan identifies activities that can be undertaken by both the public and the private sectors to reduce safety hazards, health hazards, and property damage.

Table 2.11 – Completed and Deleted Actions from the 2020 Albemarle Regional Hazard Mitigation Plan

2020 Action #	Jurisdictions	Description	2025 Status	2025 Status Comments/ Explanation
Camden County				
CAM13	Camden County	Minimize economic and property losses due to flooding through continued compliance with NFIP and participation in the Community Rating System (CRS).	Delete	Duplication of CAM2 and CAM3
Chowan County				
n/a	*n/a*	*n/a*	*n/a*	*Chowan County and Edenton do not have any completed or deleted actions from the 2020 plan.*
Gates County				
n/a	*n/a*	*n/a*	*n/a*	*Gates County and Gatesville do not have any completed or deleted actions from the 2020 plan.*
Hertford County				
n/a	*n/a*	*n/a*	*n/a*	*Hertford County and its incorporated communities do not have any completed or deleted actions from the 2020 plan.*
Pasquotank County				
PAS14	Pasquotank County, Elizabeth City	The NC Forestry Service representatives will be invited to attend the County's quarterly Public Safety Meeting in an effort to address risk associated with wildfire.	Completed	NC Forest Service personnel are invited and routinely participate in the quarterly Public Safety meetings.
PAS18	Pasquotank County, Elizabeth City	Install a detailed river gauge on the Pasquotank River (at South Mills).	Completed	USGS installed a gage in South Mills and it is up and running.
Perquimans County				
PER1	Perquimans County	Create a preferred foliage and wind resistant tree list for the County. Distribute the list to property owners in an effort to reduce the risk of trees and plants from breaking in high wind events.	Completed	The County opted to use information made available by the NC Cooperative Extension office to implement this strategy.

2020 Action #	Jurisdictions	Description	2025 Status	2025 Status Comments/ Explanation
PER9	Perquimans County	Minimize construction of additional impervious surfaces within floodplains in order to reduce stormwater runoff, including limiting construction of impervious surface parking lots in the areas near the rivers through amendments to the County Land Development Regulations.	Completed	The County has implemented this strategy via the Zoning Ordinance, specifically Section 1506, which permits a variety of permeable parking lot surfaces.
PER16	Perquimans County	Establish active river gauges at various points along the Perquimans River.	Completed	This strategy has been implemented with a river gauge located near Forman Bundy Road
PER19	Perquimans County	Support planning for improvements to the Perquimans County regional transportation systems to provide for safe traffic flow and evacuation. These efforts should include the identification of location for the use of electrical highways signs intended to provide warning regarding inclement weather and/or hazardous road conditions.	Completed	Implemented. No changes to implementation expected. The County will continue to work closely with NCDOT, as well as the Regional Transportation organization to carry out this strategy.
PER20	Perquimans County	Update/maintain the County's current Action Plan for Wildfire Response. These efforts will include a review of inter-agency and multijurisdictional efforts to identify, contain and extinguish wildfires. This effort will also involve an education effort focused on informing home and property owners about Wildland/Urban Interface fire safety.	Completed	Implemented. The County will continue to work with citizens in conjunction with the US Forest Service to carry out this strategy.

3 PLANNING AREA PROFILE

This section provides a general overview of the current conditions in the Albemarle Region and its participating municipalities. It consists of the following subsections:

3.1 Geography and Environment
3.2 Population and Demographics
3.3 Historic Properties
3.4 Housing
3.5 Infrastructure
3.6 Current and Future Land Use
3.7 Employment and Industry

3.1 GEOGRAPHY AND ENVIRONMENT

Camden, Chowan, Gates, Hertford, Pasquotank, and Perquimans Counties are located in the northeastern corner of North Carolina, as shown in Figure 3.1.

Although the Albemarle Region is a largely rural area, there is an abundance of attractions that draw visitors to the area. Regional attractions include the Roanoke River Lighthouse, the Great Dismal Swamp, Historic Edenton, Merchants Mill Pond State Park, and the Museum of the Albemarle.

The Albemarle Region comprises 1,617.2 square miles of land area, as detailed by participating jurisdiction in Table 3.1.

Table 3.1 – Albemarle Region Total Land Area

Jurisdiction	Total Land Area (Square Miles)
Camden County	**240.3**
Chowan County	**172.7**
Edenton	5.4
Gates County	**340.6**
Gatesville	0.4
Hertford County	**353.2**
Ahoskie	4.3
Cofield	3.1
Como	3.2
Harrellsville	0.3
Murfreesboro	2.3
Winton	0.8
Pasquotank County	**226.9**
Elizabeth City	11.7
Perquimans County	**247.2**
Hertford	2.7
Winfall	2.1

U.S. Census Bureau

Camden County is located in northeastern North Carolina and bordered to the north by the State of Virginia, Currituck County to the east, Pasquotank and Gates Counties to the west, and the Albemarle

Sound to the south. Although outside the state borders, Camden County's economy draws from the Hampton Roads region (Norfolk, Chesapeake, Virginia Beach). It is a short drive from the North Carolina Outer Banks, Downtown Norfolk, and Chesapeake, Virginia. No formally incorporated municipalities are located in Camden County. In 2006, the County approved an ordinance via referendum to create a unified government that incorporated the former townships of South Mills, Camden, and Shiloh into the County. These townships comprise the three core community areas: South Mills in the north, Camden in the center of the County, and Shiloh Village near the south end. The Great Dismal Swamp, the largest swamp in the nation, covers the northern portion of the County.

Chowan County is the smallest county in the State by land area. The County maintains one municipality, Edenton, which serves as the County seat. Chowan County is situated parallel to Bertie and Perquimans County and lies south of Hertford/Gates County. The County's western boundary is predominantly comprised of the Chowan River, which runs toward the Albemarle Sound bordering the County to the South. NC Highway 17 traverses through the County east to west, while NC Highway 32 runs north to south and provides immediate access to Tidewater Virginia through Gates County.

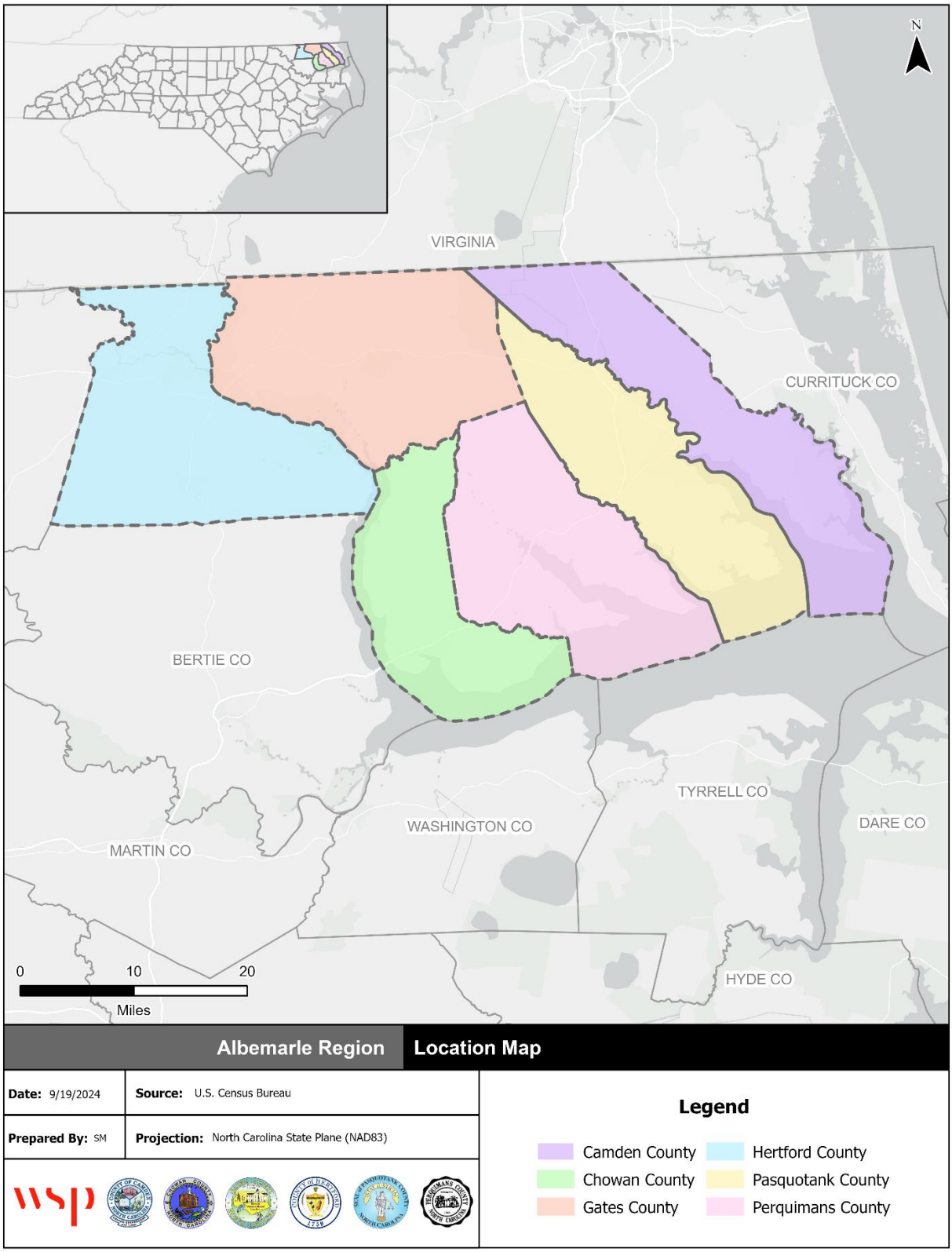
Gates County is located in the coastal plain of northeastern North Carolina and is bordered by Hertford County to the west and southwest, Chowan and Perquimans Counties to the south, Pasquotank and Camden counties to the east, and Suffolk County, Virginia to the north. The center of Gates County is located approximately 25 miles from Suffolk, Virginia; 48 miles from Norfolk, Virginia; 18 miles from Ahoskie, North Carolina; and 25 miles from Murfreesboro, North Carolina. The Town of Gatesville, the county's only incorporated municipality, is the county seat of Gates County. Gatesville has a total land area of less than one square mile and comprises less than 3 percent of the total county population.

Hertford County is located in the northeastern region of North Carolina, bounded on the north by the Virginia state line and to the east by Gates County. The County lies 55 miles southwest of Norfolk, 105 miles southeast of Richmond, and 120 miles northeast of the NC state capital of Raleigh. Major highways serving the County include US Routes 13, 158, and 258, and NC Highways 11, 42, 45, 305, 461, and 561. The County has six municipalities including the towns of Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, and Winton.

Pasquotank County is located in the northeastern section of North Carolina and is bordered by Camden County to the north and east, Gates County to the northwest, Perquimans County to the southwest, and the Albemarle Sound to the south. The County has always been known for its water passages. The Dismal Swamp canal now forms part of the Intracoastal Waterway which runs along the east coast of the United States. Elizabeth City is the county seat of Pasquotank County.

Perquimans County is located in northeastern North Carolina and is bounded to the north by Gates County, to the east by Pasquotank County, to the south by the Albemarle Sound, and to the west by Chowan County. Hertford is the County's largest town and is the County seat. Winfall is the County's other incorporated town. Perquimans County boasts a diverse and impressive natural environment. The Little River flows through the eastern part of the County while the Perquimans River flows through the center. The Yeopim River and the Albemarle Sound make up the southernmost boundaries of the County.

Figure 3.1 – Albemarle Region Location Map



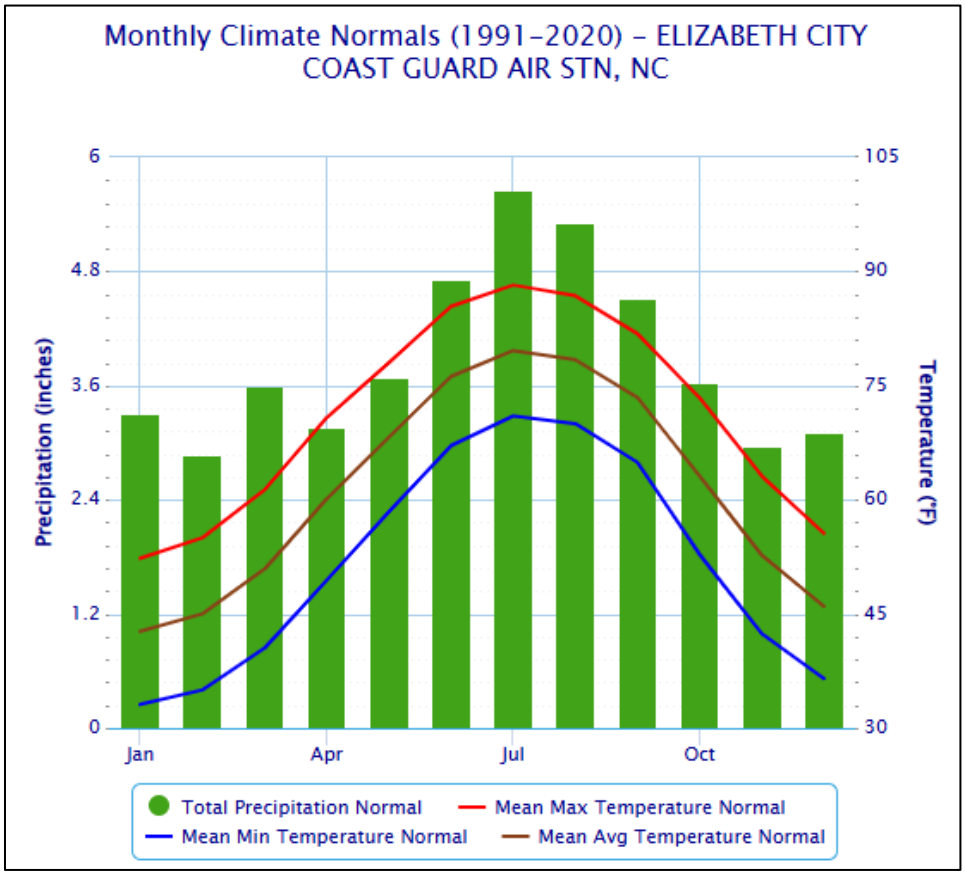
Source: U.S. Census Bureau

The Albemarle Region is hot and humid in summer, although cooling winds blow in from the abundance of open water lining southern portions of the region. Afternoon thunderstorms are the main form of precipitation during the summer, with most summer precipitation occurring in July and August. Precipitation is generally adequate for all crops, and the region benefits by a lengthy growing season.

The average annual maximum temperature is 70.2 degrees F., and the average minimum temperature is 49.7 degrees F. In winter, the average daily minimum temperature is 32.5 degrees F. In summer, the average daily maximum temperature is 86.3 degrees F. Rainfall is usually well distributed throughout the year, with an average annual precipitation of 48.07 inches. The average seasonal snowfall is about 2.6 inches.

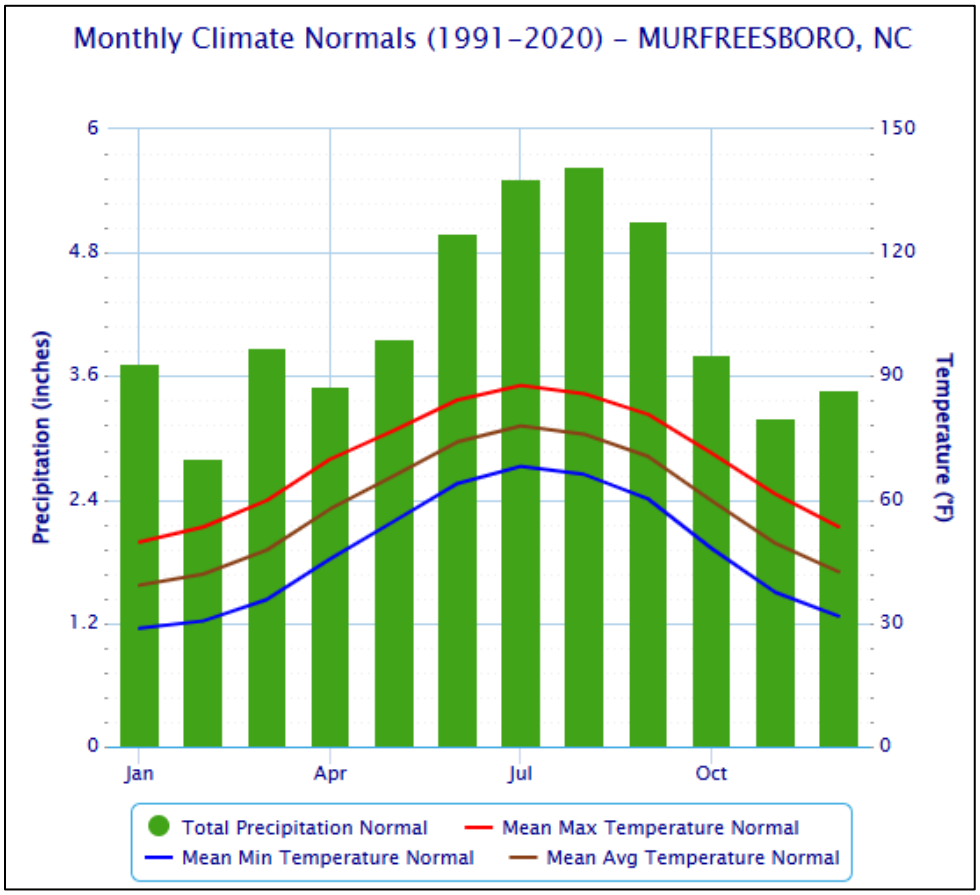
Figure 3.2 and Figure 3.3 show the average monthly temperature and precipitation for the Elizabeth City Coast Guard Air Station and the Murfreesboro weather station, respectively, which approximate temperature and precipitation of the Region.

Figure 3.2 – Average Monthly Precipitation, Elizabeth City Coast Guard Air Station



Source: NOAA, NOWData

Figure 3.3 – Average Monthly Precipitation, Murfreesboro, NC



Source: NOAA, NOWData

3.1.1 WETLANDS

According to data from the U.S. Fish and Wildlife Service's National Wetlands Inventory, there are approximately 289,243 acres of wetlands in the Region. Development within these areas is regulated by either the US Army Corps of Engineers, the NC Division of Coastal Management, or both. These entities have established regulations aimed at protecting fragile areas that are intended to work in concert with all other locally adopted land use regulations. Wetlands areas are shown by type in each county's annex. Table 3.2 provides a summary of wetland coverage within each County.

Table 3.2 – Albemarle Region Wetlands Acreage

County	Wetland Acreage	Total County Acreage	Wetland Area as % of Total County Acreage
Camden County	127,478.5	198,564.0	64.2%
Chowan County	59,696.1	149,534.3	39.9%
Gates County	64,923.1	221,275.3	29.3%
Hertford County	37,145.5	230,653.9	16.1%
Pasquotank County	76,839.3	185,170.7	41.5%
Perquimans County	80,908.5	210,515.2	38.4%
Total	**289,243.20**	**800,027.57**	**36.15%**

Source: U.S. Fish & Wildlife Service, National Wetlands Inventory

Natural and Beneficial Wetland Functions: The benefits of wetlands are hard to overestimate. They provide critical habitat for many plant and animal species that could not survive in other habitats. They are also critical for water management as they absorb and store vast quantities of storm water, helping reduce floods and recharge aquifers. Not only do wetlands store water like sponges, they also filter and clean water as well, absorbing toxins and other pollutants.

3.1.2 PARKS, PRESERVE, AND CONSERVATION

The Albemarle Region is home to many parks, preserves, and other natural areas. There are two state parks in the region, Merchants Millpond State Park in Gates County and Dismal Swamp State Park in Camden County. Several other natural areas can be found within the six-county region which are detailed in Table 3.3 below.

Table 3.3 – Parks and Natural Areas, Albemarle Region

County	Name
Camden	Camden Community Park
	Dismal Swamp State Park
	One Mill Park
	Treasure Point Park
	Senior Trail
Chowan	Bennett's Mill Pond
	Robert Hendrix Park & Cannon's Ferry Heritage Walk
	Cape Colony Park
	Chowan River Fishing Pier
	Morgan Park
	MLK Park
	Pembroke Creek Park
	Colonial Waterfront Park
	Chowan Game Land
	Queen Anne Park
Gates	Merchants Mill State Park
	Chowan Swamp State Natural Area
	Gatesville Creekside Park
Hertford	Chowan Swamp Game Land
	Ahoskie Creek Amphitheater
	Riverside Park
Pasquotank	Fun Junktion
	Sawmill Park
	Northeastern Park
	Fish Court Park
	Elizabeth Street Triangle Park
	Pool Street Park
	George Wood Park
	Veterans's Park
	Charles Creek Park
	Waterfront Park
Perquimans	Perquimans County Recreation Center
	Winfall Landing Park

County	Name
	Rotary Park
	White Hat Landing Dock
	Perquimans County Athletic Fields

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. The Albemarle Region has six species that are listed with the U.S. Fish and Wildlife Services. Table 3.4 below lists the species identified as threatened, endangered, or other classification.

Table 3.4 – Albemarle Region Threatened and Endangered Species

Group	Common Name	Scientific Name	Federal Status	Counties Identified
Birds	Red-cockaded woodpecker	*Dryobates borealis*	Threatened	Ca, G, H, Pa
Birds	Red knot	*Calidris canutus rufa*	Threatened	Ca, Ch, Pa, Pe
Mammals	Northern Long-Eared Bat	*Myotis septentrionalis*	Endangered	Ca, Ch, G, H, Pa, Pe
Mammals	Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered	Ca, Ch, G, H, Pa, Pe
Mammals	West Indian Manatee	*Trichechus manatus*	Threatened	Ca, Ch, Pa, Pe
Reptiles	American alligator	*Alligator mississippiensis*	Similarity of Appearance (Threatened)	Ca, G, H, Pa

Source: U.S. Fish & Wildlife Service

Note: Ca = Camden, Ch = Chowan, G = Gates, H = Hertford, Pa = Pasquotank, Pe = Perquimans

3.1.4 LAND COVER

The National Oceanographic and Atmospheric Administration's (NOAA) Coastal Change Analysis Program (C-CAP) tracks land cover change for the coastal regions of the United States. Understanding how land cover has changed and is continuing to change is important information for any hazard mitigation planning effort. The information below is meant to serve as a general overview of how the counties within the Albemarle Region have changed overtime.

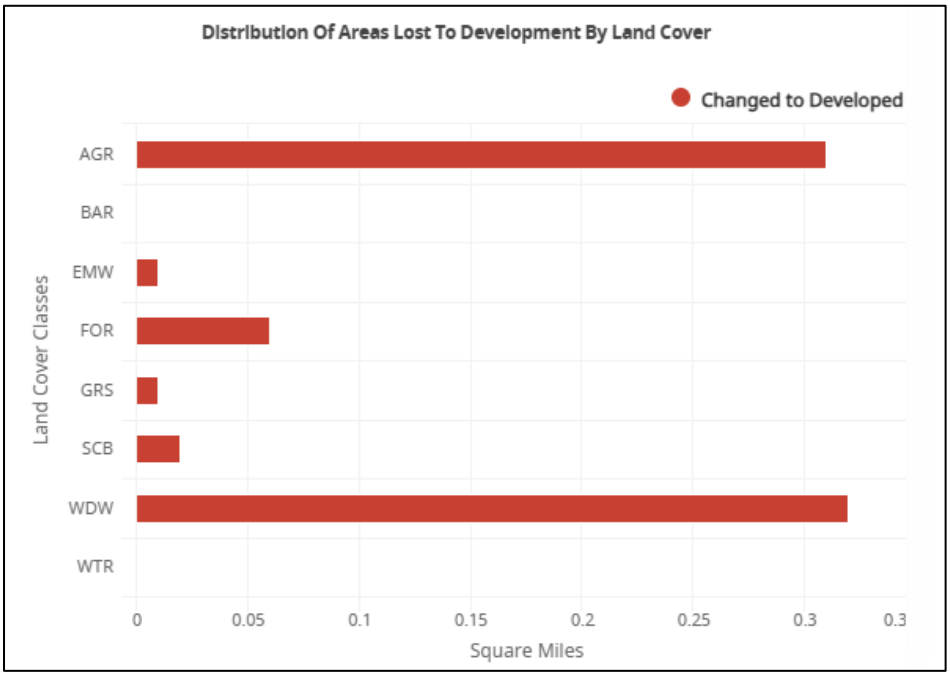
Table 3.5 shows the percent changes in land cover from one category to another during 1996 to 2016 for all counties located in the Albemarle Region. Figure 3.4 through Figure 3.9 illustrates the types of land that changed to developed during 1996 and 2016 for each county.

Table 3.5 – Land Cover Change between 1996 to 2016, Albemarle Region

County	Total % Area that Changed	% Net Increase of Developed Area	% Net Increase of Impervious Surface Area	% Net Decrease of Forested Area	% Net Decrease of Total Wetlands
Camden	7.67%	19.25%	26.51%	-12.30%	-0.90%
Chowan	8.65%	7.86%	8.75%	-7.94%	-2.50%
Gates	19.51%	17.16%	14.36%	-5.98%	-1.30%
Hertford	18.03%	14.48%	18.45%	-5.23%	-3.01%
Pasquotank	7.51%	31.50%	27.21%	-15.59%	-1.44%
Perquimans	7.43%	14.81%	14.69%	-10.62%	-3.17%

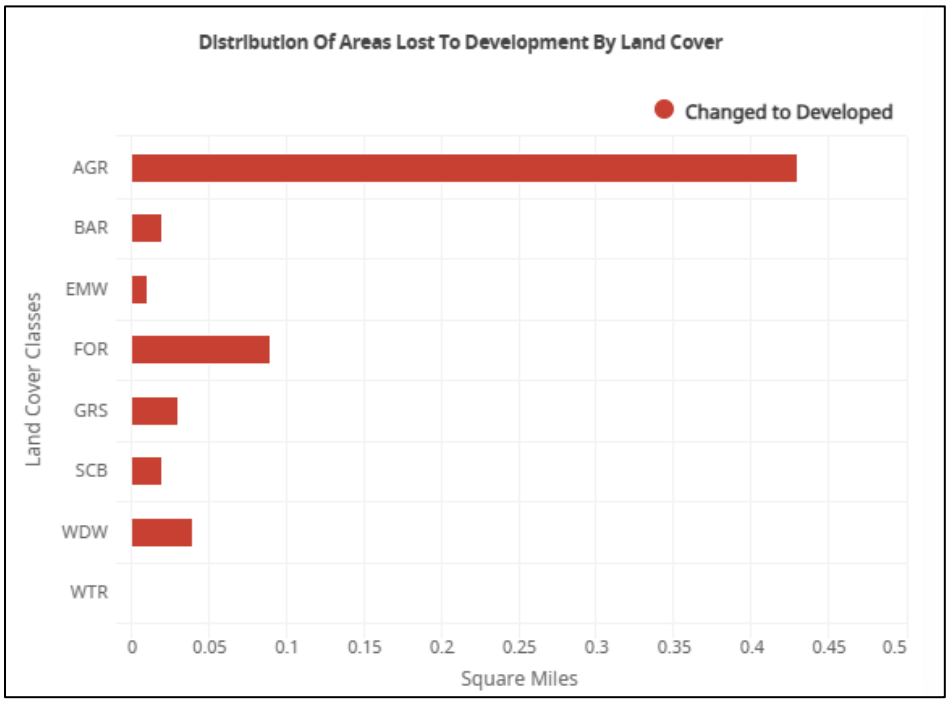
Source: NOAA C-CAP Atlas

Figure 3.4 – Land Type Lost to Development, Camden County



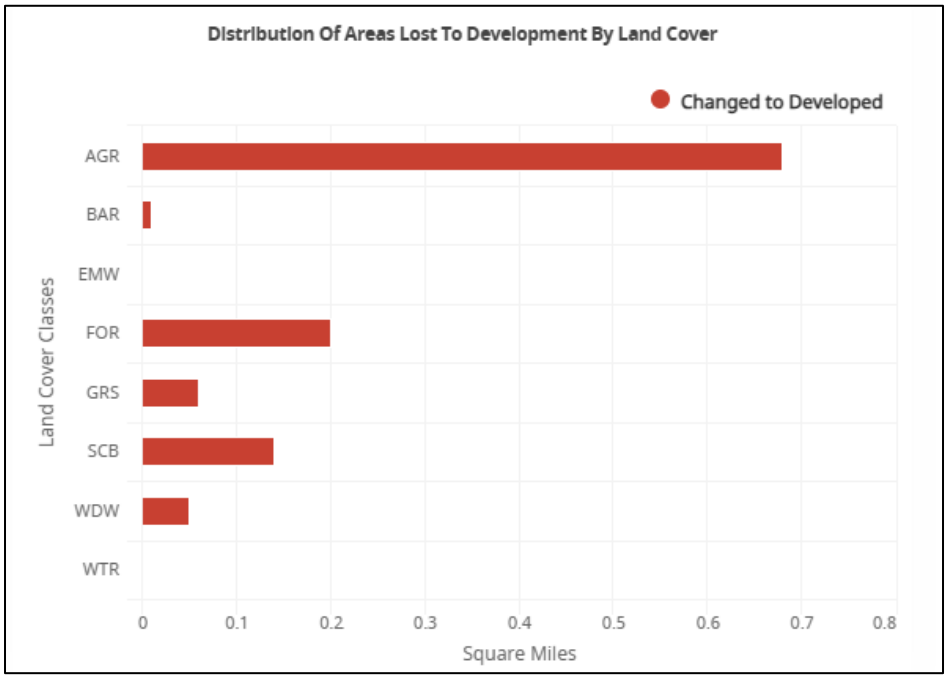
Source: NOAA C-CAP Atlas
Note: AGR = Agriculture; BAR = Bare Land; EMW = Emergent Wetlands; FOR = Forested; GRS = Grassland; SCB = Scrub/Shrub; WDW = Woody Wetland; WTR = Open Water

Figure 3.5 – Land Type Lost to Development, Chowan County



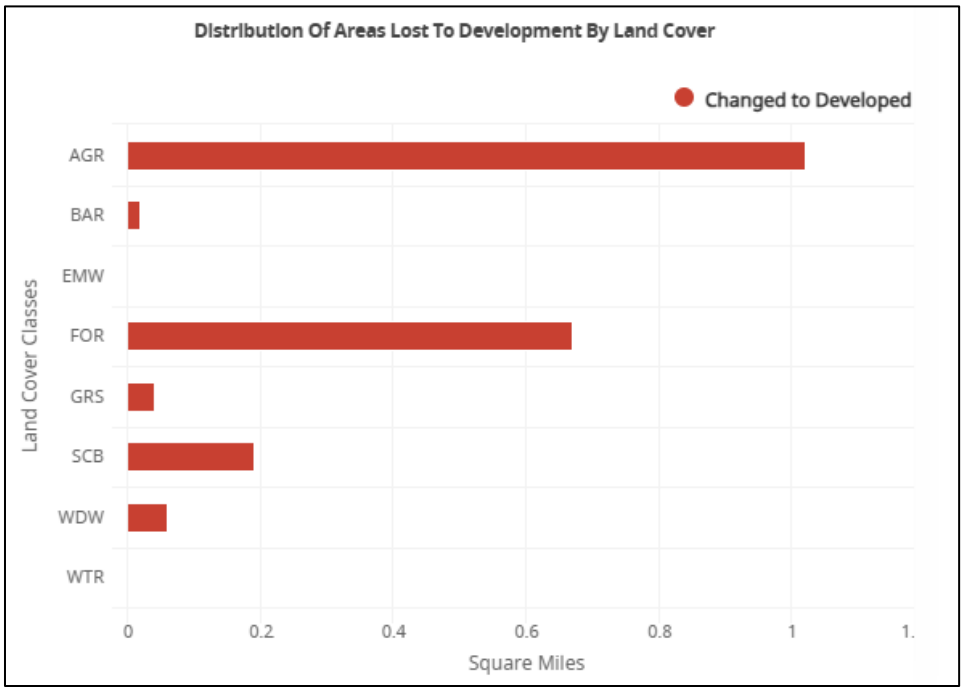
Source: NOAA C-CAP Atlas
Note: AGR = Agriculture; BAR = Bare Land; EMW = Emergent Wetlands; FOR = Forested; GRS = Grassland; SCB = Scrub/Shrub; WDW = Woody Wetland; WTR = Open Water

Figure 3.6 – Land Type Lost to Development, Gates County



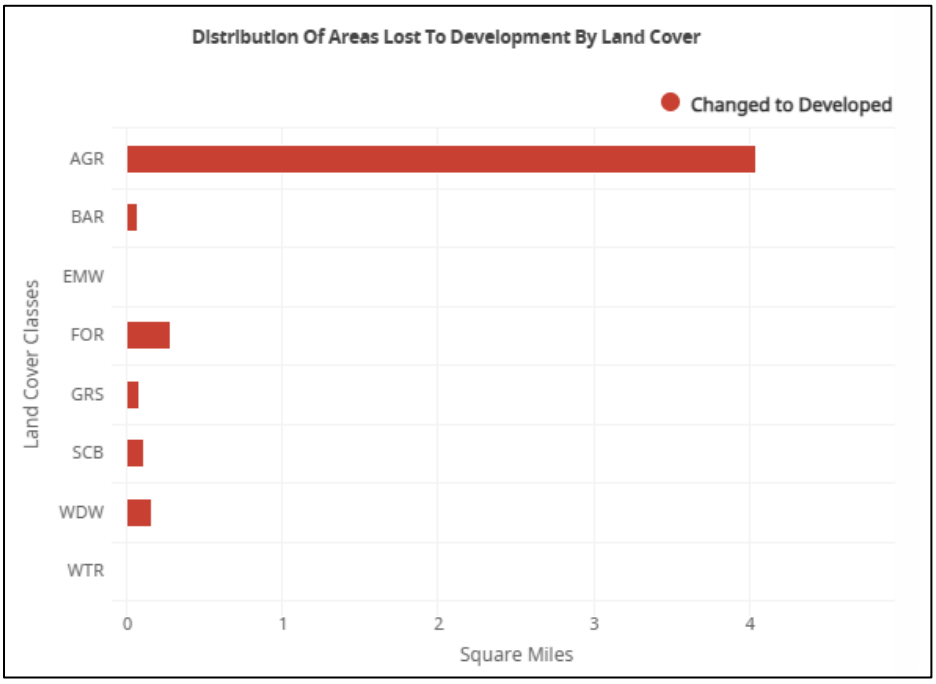
Source: NOAA C-CAP Atlas
Note: AGR = Agriculture; BAR = Bare Land; EMW = Emergent Wetlands; FOR = Forested; GRS = Grassland; SCB = Scrub/Shrub; WDW = Woody Wetland; WTR = Open Water

Figure 3.7 – Land Type Lost to Development, Hertford County



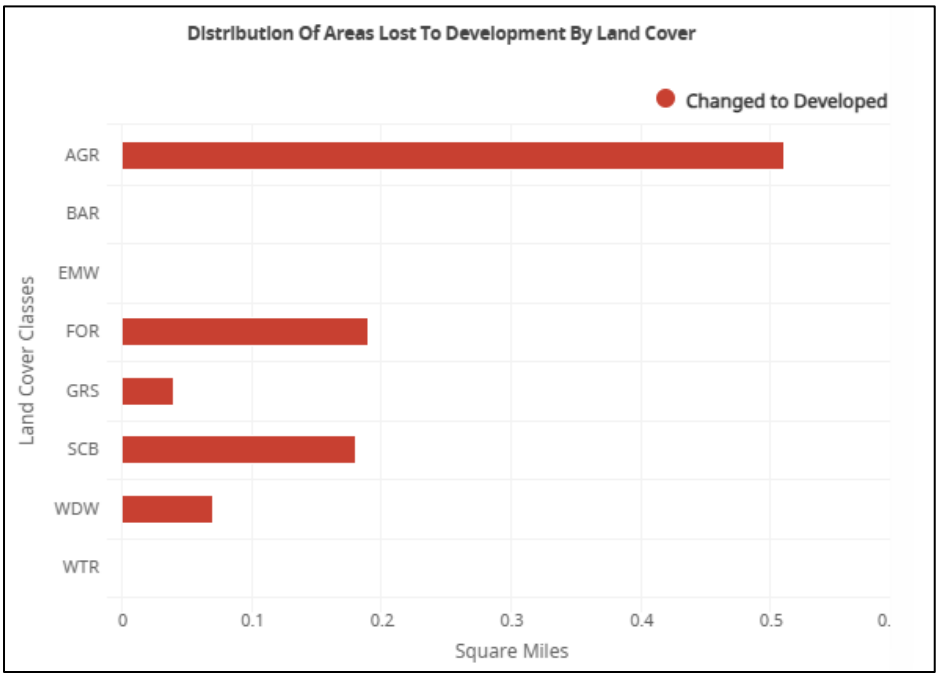
Source: NOAA C-CAP Atlas
Note: AGR = Agriculture; BAR = Bare Land; EMW = Emergent Wetlands; FOR = Forested; GRS = Grassland; SCB = Scrub/Shrub; WDW = Woody Wetland; WTR = Open Water

Figure 3.8 – Land Type Lost to Development, Pasquotank County



Source: NOAA C-CAP Atlas
Note: AGR = Agriculture; BAR = Bare Land; EMW = Emergent Wetlands; FOR = Forested; GRS = Grassland; SCB = Scrub/Shrub; WDW = Woody Wetland; WTR = Open Water

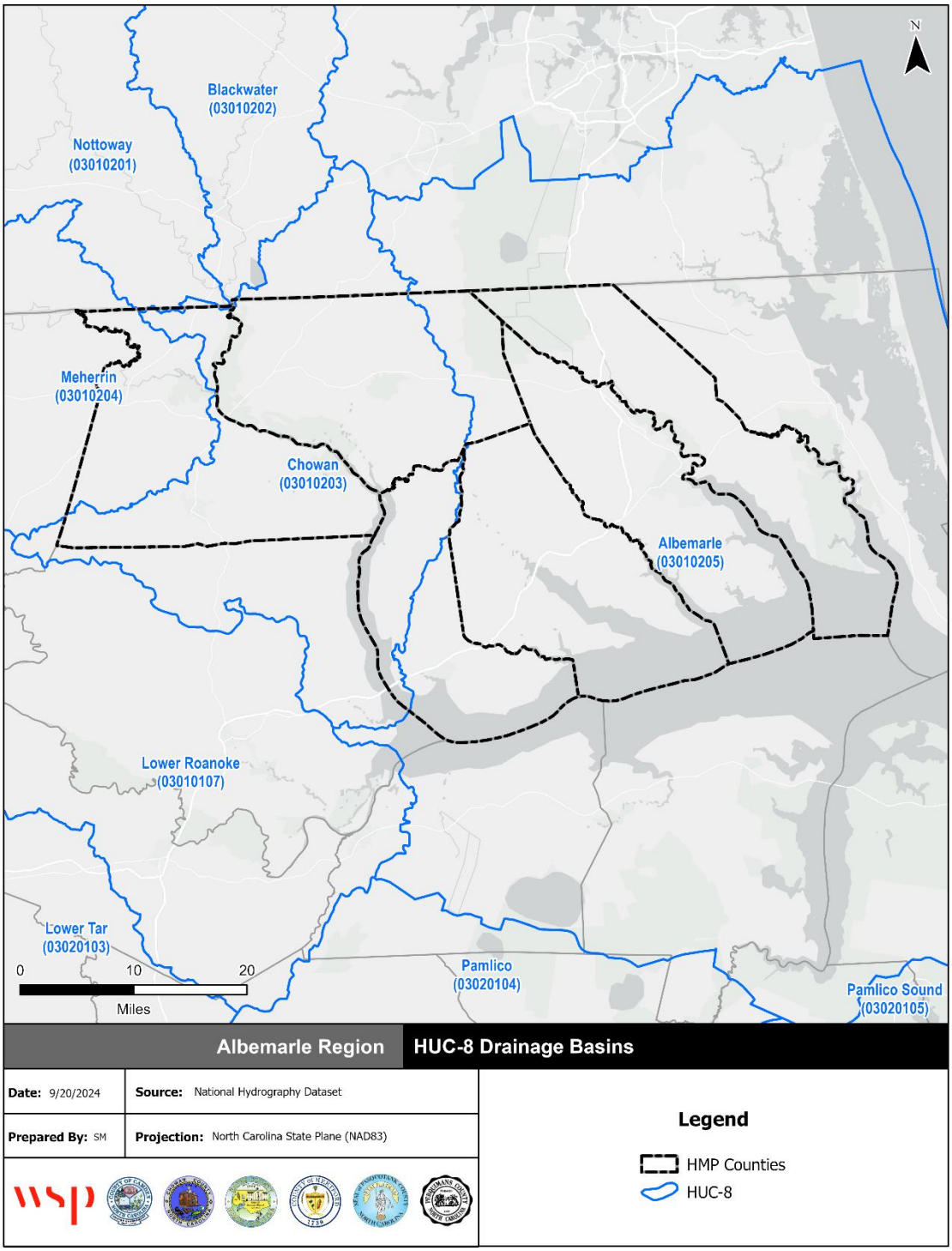
Figure 3.9 – Land Type Lost to Development, Perquimans County



Source: NOAA C-CAP Atlas
Note: AGR = Agriculture; BAR = Bare Land; EMW = Emergent Wetlands; FOR = Forested; GRS = Grassland; SCB = Scrub/Shrub; WDW = Woody Wetland; WTR = Open Water

As noted previously, wetlands are not only productive ecosystems, they play a vital role in protecting development and controlling erosion. While as of 2016, 32 percent of the Albemarle watershed basin was wetlands while 21.63 percent of the Chowan watershed basin was wetlands. Between 1996 to 2016, the Albemarle watershed experienced a percent net decrease of total wetlands by -0.99 percent and the Chowan watershed basin experienced a -2.73 percent decrease. Figure 3.10 below shows the location of the Albemarle and Chowan drainage basin boundaries.

Figure 3.10 – HUC-8 Drainage Basins, Albemarle Region



Source: USDA Natural Resources Conservation Service

3.2 POPULATION AND DEMOGRAPHICS

Participating jurisdictions in the Albemarle Region have experienced moderate population decline over the last several decades. From 2000 to 2022, the Region's total population declined by 22 percent, which equates to an average annual decline of about 1 percent.

Camden County is unique in that there are no incorporated jurisdictions within the County; thus, the population counts provided apply only to unincorporated areas. Additionally, Camden County is the only county within the Albemarle Region to experience a consistent population growth from 2000 to 2022. According to the US Census and the American Community Survey, the Camden County population has increased by approximately 53% since the year 2000. The majority of jurisdictions in the Region experienced a population increase between 2000 and 2010, followed by a population decrease between 2010 and 2022. During this same period Hertford County experienced the largest population decline of 36 percent followed by Chowan County at 30 percent.

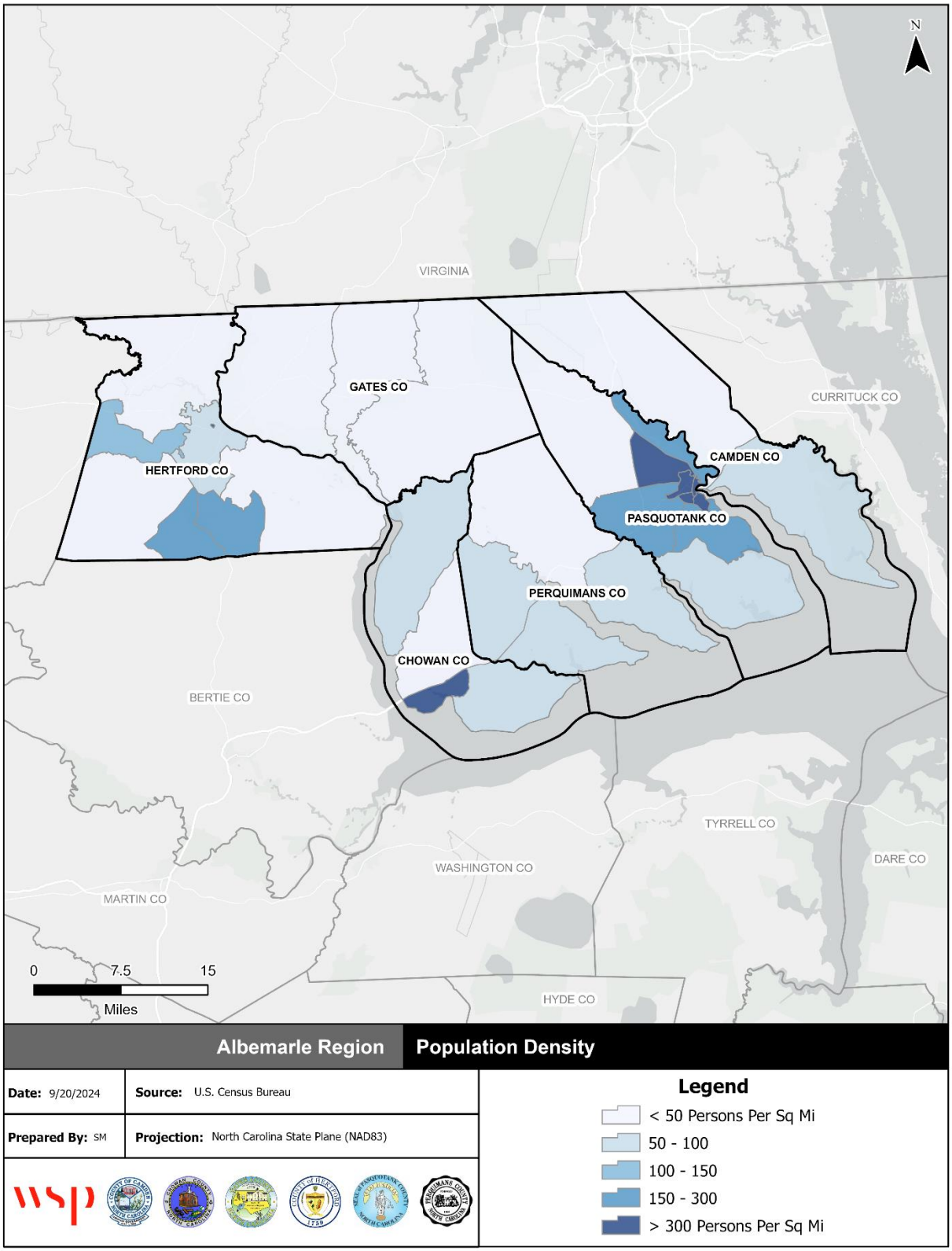
Table 3.6 provides population counts from 2000, 2010, and 2022 for each of the participating jurisdictions. Figure 3.11 on the following page shows 2022 population density by census tract in persons per square mile.

Table 3.6 – Albemarle Region Population Counts

Jurisdiction	2000 Census Population	2010 Census Population	2022 ACS Population Estimate	Total Change 2010-2022	% Change 2010-2022
Camden County	**6,885**	**9,980**	**10,547**	**567**	**5.6%**
Chowan County	**19,890**	**19,797**	**13,835**	**5,962**	**-30.1%**
Edenton	5,364	5,004	4,512	492	-9.8%
Gates County	**10,797**	**12,518**	**10,509**	**2,009**	**-16%**
Gatesville	281	321	277	44	-13.7%
Hertford County	**30,868**	**33,922**	**21,633**	**12,289**	**-36.2%**
Ahoskie	4,739	5,039	4,841	198	-3.9%
Cofield	347	413	384	29	-7%
Como	78	91	85	6	-6.5%
Harrellsville	102	106	208	102	96.2%
Murfreesboro	2,045	2,835	2,612	223	-7.8%
Winton	956	769	674	95	-12.3%
Pasquotank County	**34,897**	**40,661**	**40,454**	**207**	**-0.5%**
Elizabeth City	17,243	18,683	18,570	113	-0.6%
Perquimans County	**13,992**	**16,190**	**13,053**	**3,137**	**-19.3%**
Hertford	2,070	2,143	2,045	98	-4.5%
Winfall	554	594	900	306	51.5%
Region Total	**151,108**	**169,066**	**131,304**	**37,762**	**-22.3%**

Source: US Census Bureau Decennial Census 2000, Decennial Census 2010; American Community Survey 2022 Annual Estimates

Figure 3.11 – Population Density, Albemarle Region



Source: U.S. Census Bureau, 2022 ACS 5-year Estimates

According to 2022 American Community Survey 5-Year Estimates, the median age in the Outer Banks Region was 44.6, which is older than the median age of the State of North Carolina (39.1) and of the United States (38.5). Of the population aged 25 years and over, 88.2 percent have a high school degree or higher and 19.8 percent have a bachelor's degree or higher. Approximately 4.1 percent of the Region's residents speak a language other than English at home. This information is further detailed by county in Table 3.7. The racial characteristics of the participating jurisdictions are presented in Table 3.8. Generally, white persons make up the majority of the population in the region, accounting for approximately 51 percent of the population in the Albemarle Region overall.

Table 3.7 – Albemarle Region Demographic Summary, 2022

County	Camden	Chowan	Gates	Hertford	Pasquotank	Perquimans
Median Age	41.1	48.7	47.3	41.7	39.0	49.8
Educational Attainment						
High school graduate or higher[1]	92.3%	86.6%	90.5%	83.9%	89.7%	86.4%
Bachelor's degree or higher[1]	24.3%	24.2%	8.9%	16.0%	26.1%	19.6%
Language Spoken at Home						
Speak language other than English	2.8%	3.7%	4.5%	4.8%	5.0%	4.0%
Speak English less than "very well"[2]	0.9%	1.2%	1.0%	2.0%	2.0%	0.4%

Source: US Census Bureau, American Community Survey 2018-2022 5-Year Estimates
[1]Of the population aged 25 and older; [2]Of the population that speaks a language other than English at home

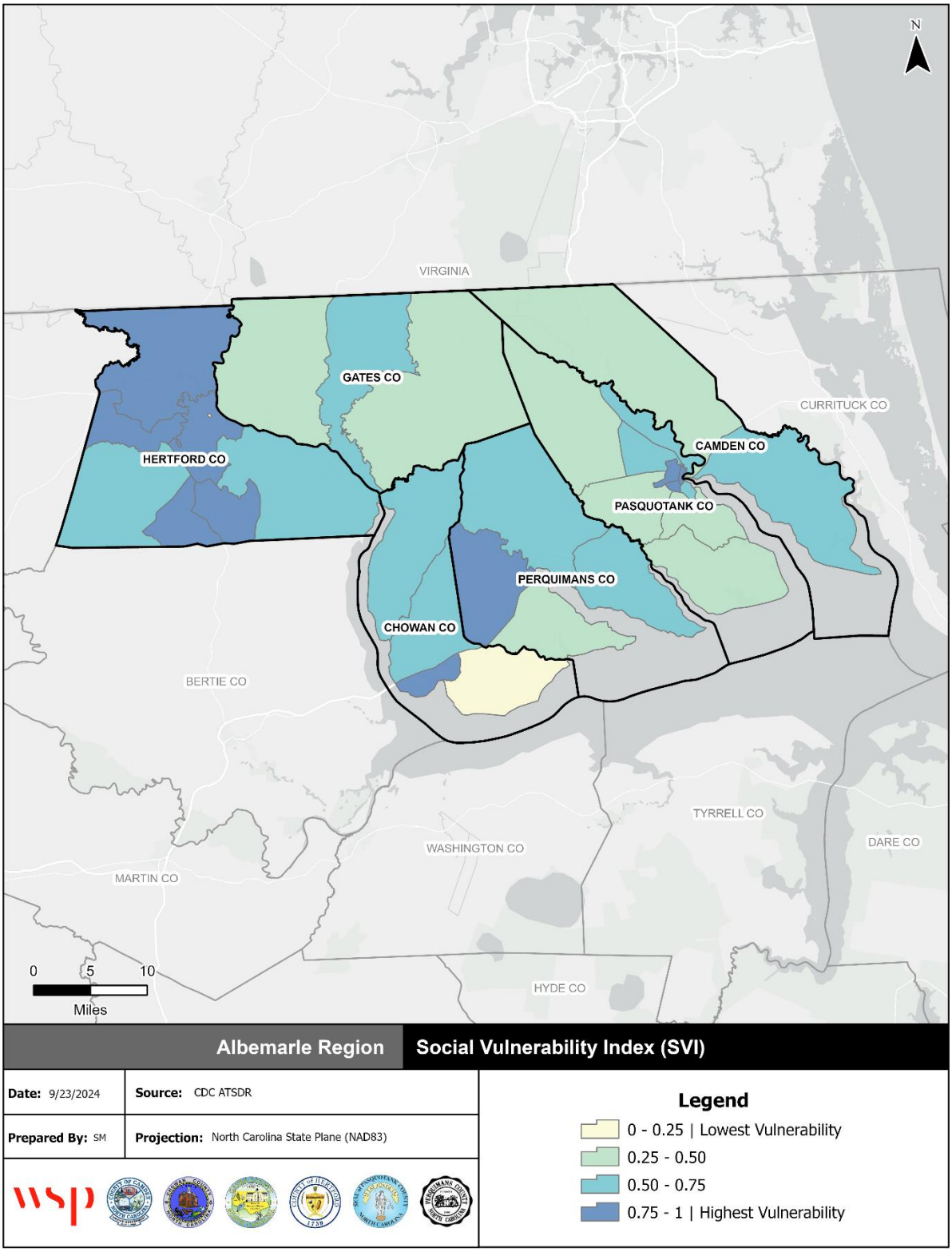
Table 3.8 – Racial Demographics of Albemarle Region Jurisdictions, 2022

Jurisdiction	White, %	Black, %	Asian, %	Other Race, %	Two or More Races, %	Persons of Hispanic or Latino Origin*, %
Camden County	**81.1%**	**8.1%**	**1.4%**	**0.9%**	**8.0%**	**3.7%**
Chowan County	**60.4%**	**33.5%**	**0.1%**	**2.8%**	**2.5%**	**3.7%**
Edenton	42.0%	57.7%	0.0%	0.0%	0.2%	0.2%
Gates County	**63.2%**	**31.5%**	**0.1%**	**1.1%**	**3.5%**	**3.2%**
Gatesville	87.4%	3.2%	2.2%	0.0%	7.2%	7.2%
Hertford County	**33.9%**	**58.3%**	**1.1%**	**1.4%**	**3.3%**	**4.6%**
Ahoskie	27.6%	60.4%	3.2%	1.8%	4.9%	5.5%
Cofield	9.6%	81.8%	0. 3%	4.7%	0.3%	5.5%
Como	89.4%	8.2%	0.0%	2.4%	0.0%	0.0%
Harrellsville	49.0%	41.8%	0.0%	0.0%	9.1%	9.1%
Murfreesboro	37.7%	56.2%	0.2%	1.6%	3.9%	1.9%
Winton	30.4%	54.3%	0.0%	11.9%	1.3%	12.0%
Pasquotank County	**56.5%**	**35.5%**	**1.3%**	**1.3%**	**4.9%**	**6.2%**
Elizabeth City	39.9%	49.4%	1.4%	2.3%	6.5%	8.5%
Perquimans County	**71.8%**	**22.8%**	**0.4%**	**1.6%**	**3.3%**	**3.2%**
Hertford	46.9%	48.9%	0.0%	2.7%	1.4%	3.1%
Winfall	53.7%	39.7%	0.0%	0.0%	6.7%	2.2%
Region Total	**51.7%**	**40.6%**	**0.7%**	**2.1%**	**3.9%**	**4.6%**

Source: US Census Bureau, American Community Survey 2018-2022 5-Year Estimates
*Persons of Hispanic origin may be of any race, so also are included in applicable race categories

Figure 3.12 displays social vulnerability information for the Albemarle Region by census tract according to 2022 data and analysis by the Centers for Disease Control and Prevention (CDC). The CDC's Social Vulnerability Index (SVI) indicates the relative vulnerability within census tracts based on 15 social factors: poverty, unemployment, income, education, age, disability, household composition, minority status, language, housing type, and transportation access. Higher social vulnerability is an indicator that a community may be limited in its ability to respond to and recover from hazard events. Therefore, using this SVI information can help the Region and jurisdictions to prioritize pre-disaster aid, allocate emergency preparedness and response resources, and plan for the provision of recovery support.

Figure 3.12 – Social Vulnerability Index by Census Tract, Albemarle Region



Source: Centers for Disease Control and Prevention (CDC) / Agency for Toxic Substances and Disease Registry (ATSDR) / Geospatial Research, Analysis, and Services Program (GRASP).

3.3 HISTORIC PROPERTIES

As of November 13, 2024, Camden County had 9 listings on the National Register of Historic Places, Chowan County had 27, Gates County had 10, Hertford County had 35, Pasquotank County had 14, and Perquimans County had 18 which are detailed in Table 3.9. Of the 113 total listings in the region, 14 listings are Historic Districts. Listing on the National Register signifies that these structures and districts have been determined to be worthy of preservation for their historical or cultural values. In addition to these properties, there are three National Historic Landmarks in the Region; all three are located in Chowan County.

Table 3.9 – National Register of Historic Places Listings in the Albemarle Region

Reference #	Property Name	Listed Date	Category	City
Camden County				
78001936	Abbott, William Riley, House	8/11/1978	Building	South Mills
100002799	C.S.S. BLACK WARRIOR (two masted schooner)	8/24/2018	Structure	Elizabeth City
72000928	Camden County Courthouse	2/1/1972	Building	Camden
84001950	Camden County Jail	5/3/1984	Building	Camden
88000528	Dismal Swamp Canal	6/6/1988	District	South Mills
82003439	Grandy, Caleb, House	4/29/1982	Building	Belcross
80002805	Lamb-Ferebee House	9/22/1980	Building	Camden
72000929	Milford	3/16/1972	Building	Camden
100002800	SCUPPERNONG (two masted schooner)	8/24/2018	Structure	Shawboro
Chowan County				
76001313	Albania	5/13/1976	Building	Edenton
80002808	Athol	5/22/1980	Building	Edenton
72000931	Barker House	3/24/1972	Building	Edenton
70000447	Chowan County Courthouse	4/15/1970	Building	Edenton
82003442	Cullins-Baker House	4/29/1982	Building	Smalls Crossroads
70000889	Cupola House	4/15/1970	Building	Edenton
99000089	Edenton Cotton Mill Historic District	2/5/1999	District	Edenton
73001316	Edenton Historic District	7/16/1973	District	Edenton
07001010	Edenton Historic District (Boundary Increase II)	9/28/2007	District	Edenton
01001075	Edenton Historic District (Boundary Increase)	10/5/2001	District	Edenton
79003328	Edenton Peanut Factory	9/20/1979	Building	Edenton
02000961	Edenton Station, United States Fish and Fisheries Commission	9/14/2002	District	Edenton
100009229	Frinks, Golden Asro and Ruth Holley, House	8/8/2023	Building	Edenton
76001316	Greenfield Plantation	5/6/1976	Building	Somer
74001341	Hayes Plantation	11/7/1973	Building	Edenton
95001050	Hicks Field	9/13/1995	District	Edenton
70000449	Iredell, James, House	2/26/1970	Building	Edenton
06000340	Jones, Cullen and Elizabeth, House	5/3/2006	Building	Edenton
05000436	Moore, Susan J. Armistead, House	5/18/2005	Building	Edenton
76001314	Mulberry Hill	5/13/1976	Building	Edenton
76001315	Pembroke Hall	11/7/1976	Building	Edenton
85000875	Sandy Point	4/25/1985	Building	Edenton
74001342	Shelton Plantation House	10/29/1974	Building	Edenton

Reference #	Property Name	Listed Date	Category	City
80002809	Speight House and Cotton Gin	9/22/1980	Building	Edenton
75001248	St. Paul's Episcopal Church and Churchyard	5/29/1975	Building	Edenton
80002810	Strawberry Hill	5/22/1980	Building	Edenton
73001317	Wessington House	3/20/1973	Building	Edenton
Gates County				
86000407	Buckland	3/5/1986	Building	Buckland
72000963	Elmwood Plantation	2/1/1972	Building	Gatesville
06000868	Eure-Roberts House	9/20/2006	Building	Gatesville
82003454	Freeman House	9/23/1982	Building	Gates
99001333	Freeman, Joseph, Farm	11/12/1999	District	Gates
76001325	Gates County Courthouse	10/22/1976	Building	Gatesville
11000621	Reid's Grove School	8/30/2011	Building	Gatesville
84002310	Roberts-Carter House	3/1/1984	Building	Gatesville
00000881	Rountree Family Farm	8/2/2000	Building	Gatesville
09000332	Sunbury High School	5/12/2009	Building	Sunbury
Hertford County				
85000906	Ahoskie Downtown Historic District	4/25/1985	District	Ahoskie
12000237	Ahoskie Historic District	4/24/2012	District	Ahoskie
05000960	Ahoskie School	9/7/2005	Building	Ahoskie
14000333	Barnes, David A., House	6/13/2014	Building	Murfreesboro
100003298	Bethlehem Baptist Church	1/10/2019	Building	Bethlehem
85001657	Brown, C. S., School Auditorium	7/29/1985	District	Winton
07000073	Brown, Wiley and Jane Vann, House	2/13/2007	Building	Union
83001890	Cedars, The	9/22/1983	Building	Murfreesboro
71000590	Columns, The	2/18/1971	Building	Murfreesboro
91001908	Cowper-Thompson House	1/9/1992	Building	Murfreesboro
82003468	Deane House	4/15/1982	Building	Cofield
07001497	East End Historic District	1/31/2008	District	Ahoskie
71000591	Freeman House	2/18/1971	Building	Murfreesboro
82003470	Gray Gables	6/1/1982	Building	Winton
71000588	Hare Plantation House	2/18/1971	Building	Como
95001398	Harrellsville Historic District	11/29/1995	District	Harrellsville
01000123	Jernigan, Roberts H., House	2/16/2001	Building	Ahoskie
82001299	King-Casper-Ward-Bazemore House	11/26/1982	Building	Ahoskie
71000592	Melrose	3/31/1971	Building	Murfreesboro
15000957	Mill Neck School	1/5/2016	Building	Como
72000965	Mitchell, William, House	12/4/1972	Building	Ahoskie
80002848	Mulberry Grove	11/25/1980	Building	Ashoskie
71000593	Murfreesboro Historic District	8/26/1971	District	Murfreesboro
71000594	Myrick House	3/31/1971	Building	Murfreesboro
83001891	Myrick-Yeates-Vaughan House	3/17/1983	Building	Murfreesboro
84000803	Newsome, James, House	12/28/1984	Building	Ahoskie
02001663	Parker, King, House	12/31/2002	Building	Winton
16000288	Pleasant Plains School	5/17/2016	Building	Pleasant Plains
70000457	Rea, William, Store	9/15/1970	Building	Murfreesboro
71000589	Riddick House	2/18/1971	Building	Como
71000595	Roberts-Vaughan House	2/18/1971	Building	Murfreesboro

Reference #	Property Name	Listed Date	Category	City
07000884	Thomas, Dr. Roscius P. and Mary Mitchell, House and Outbuildings	8/28/2007	Building	Bethlehem
82003469	Vernon Place	4/29/1982	Building	Como
71000596	Wheeler, John, House	3/31/1971	Building	Murfreesboro
100005976	Winton Historic District	12/21/2020	District	Winton
Pasquotank County				
77001007	Elizabeth City Historic District (Additional Documentation)	10/18/1977	District	Elizabeth City
100007276	Elizabeth City Historic District (Boundary Increase II)	12/22/2021	District	Elizabeth City
94000163	Elizabeth City Historic District (Boundary Increase)	3/7/1994	District	Elizabeth City
100006461	Elizabeth City Industrial Historic District	4/30/2021	District	Elizabeth City
94000083	Elizabeth City State Teachers College Historic District	2/28/1994	District	Elizabeth City
94000082	Elizabeth City Water Plant	3/4/1994	Building	Elizabeth City
94000386	Episcopal Cemetery	4/21/1994	District	Elizabeth City
72000984	Morgan House	2/1/1972	Building	South Mills
83001901	Newland Road Site	4/14/1983	Site	Morgan's Corner
94000080	Norfolk Southern Passenger Station	2/25/1994	Building	Elizabeth City
94000081	Northside Historic District	3/4/1994	District	Elizabeth City
72000983	Old Brick House	3/16/1972	Building	Elizabeth City
94000165	Riverside Historic District	3/11/1994	District	Elizabeth City
94000164	Shepard Street-South Road Street Historic District	3/11/1994	District	Elizabeth City
Perquimans County				
77001008	Belvidere	8/2/1977	Building	Belvidere
99000600	Belvidere Historic District	6/4/1999	District	Hertford
98000688	Church of the Holy Trinity	6/11/1998	Building	Hertford
74001366	Cove Grove	8/7/1974	Building	Hertford
93001541	Fletcher-Skinner-Nixon House and Outbuildings	1/21/1994	Building	Hertford
98001264	Hertford Historic District	10/22/1998	District	Hertford
98000276	Jacocks, Jonathan Hill, House	4/1/1998	Building	New Hope Township
73001365	Land's End	9/20/1973	Building	Hertford
99000716	Mitchell-Ward House	6/25/1999	Building	Belvidere
72000986	Myers-White House	1/20/1972	Building	Bethel
71000615	Newbold-White House	6/24/1971	Building	Hertford
73001366	Nixon, Samuel, House	10/15/1973	Building	Hertford
96000929	Old Neck Historic District	9/6/1996	District	Hertford
79001743	Perquimans County Courthouse	5/10/1979	Building	Hertford
74001368	Stockton	6/7/1974	Building	Woodville
74001367	Sutton-Newby House	9/10/1974	Building	Hertford
79001742	White, Isaac, House	3/23/1979	Building	Bethel
02001715	Winfall Historic District	1/15/2003	District	Winfall

Source: National Parks Service, National Register of Historic Places, November 2024

3.4 HOUSING

According to the 2018-2022 ACS 5-Year Estimates, there are 67,270 housing units in the Albemarle Region, of which approximately 86.5 percent are occupied. Approximately 27.6% of occupied units are renter-occupied. A high percentage of renters is an indicator of higher pre- and post-disaster vulnerability because, according to Cutter, et al. (2003), renters often do not have the financial resources of homeowners, are more transient, are less likely to have information about or access to recovery aid following a disaster and are more likely to require temporary shelter following a disaster. Higher rates of home ownership in some jurisdictions, including Camden and Gates Counties may indicate that more residents in these areas are able to implement certain types of mitigation in their homes.

Median home value in the Albemarle Region is $165,265. Of the Region's owner-occupied housing units, 58 percent have a mortgage. More than 49 percent of householders moved into their current homes since the year 2010, and another 21 percent moved in between 2000 and 2009, which indicates the growth the area has experienced. Householders of 5.6 percent of occupied housing units have no vehicle available to them; these residents may have difficulty in the event of an evacuation.

Over 67 percent of housing units in the Albemarle Region are detached single family homes, with an additional 1 percent attached single family homes. Approximately 23 percent of units are mobile homes, which can be more vulnerable to certain hazards, such as tornadoes and wind storms, especially if they aren't secured with tie downs.

Approximately 43 percent of all housing units in the region were built after 1990, and 14.8 percent were built between 1980 and 1989. While this housing stock is not particularly new, it is not particularly old, either. Age can indicate the potential vulnerability of a structure to certain hazards. For example, Camden, Chowan, Perquimans, and Pasquotank Counties first entered the National Flood Insurance Program in 1985 followed by Gates County in 1991 and Hertford County in 1999. Therefore, based on housing age estimates up to 45.3 percent of housing in Gates County and 86 percent of housing in Hertford County was built before any floodplain development restrictions were required. A few jurisdictions did not enter the NFIP until years later; therefore, the actual percent of housing built without floodplain development restrictions may be higher.

According to the 2018-2022 ACS 5-Year Estimates, the Albemarle Region has an average household size of approximately 2.5 people per owner-occupied housing unit which is identical to the owner-occupied household size reported for the State of North Carolina. Camden County shows the largest household size in the Region with approximately 2.8 people per housing unit. Of all the housing units in the Albemarle Region, 18 percent are vacant. Table 3.10 provides further detail on housing in the region.

Table 3.10 – Housing Characteristics, Albemarle, 2010 and 2022

Jurisdiction	Housing Units (2010)	Housing Units (2022)	Housing Units Percent Change (2010-2022)	Owner-Occupied, % (2022)[1]	Vacant Units, % (2022)[2]	Median Home Value (2022)
Camden County	**4,104**	**4,170**	**1.6%**	**84.1%**	**7.2%**	**$261,000**
Chowan County	**7,289**	**7,162**	**-1.7%**	**64.4%**	**13.2%**	**$181,400**
Edenton	2,411	2,671	10.7%	42.4%	17.3%	$222,100
Gates County	**5,046**	**4,819**	**-4.5%**	**79.7%**	**14%**	**$153,000**
Gatesville	171	156	-8.7%	76.8%	36.5%	$176,900
Hertford County	**10,509**	**9,864**	**-6.1%**	**65.4%**	**15.3%**	**$103,600**
Ahoskie	2,309	2,406	4.2%	40.3%	17.1%	$112,500
Cofield	216	222	2.7%	60.7%	22.1%	$66,300

Jurisdiction	Housing Units (2010)	Housing Units (2022)	Housing Units Percent Change (2010-2022)	Owner-Occupied, % (2022)[1]	Vacant Units, % (2022)[2]	Median Home Value (2022)
Como	47	43	-8.5%	76.7%	30.2%	$118,800
Harrellsville	53	69	30.1%	72.3%	5.8%	$112,500
Murfreesboro	1,107	1,086	-1.8%	51.6%	10.5%	$141,200
Winton	393	380	-3.3%	50.8%	30.5%	$76,200
Pasquotank County	**16,488**	**17,445**	**5.8%**	**64.2%**	**11.6%**	**$201,500**
Elizabeth City	8,482	8,311	-2%	42.8%	14.5%	$166,100
Perquimans County	**6,887**	**6,906**	**0.2%**	**76.6%**	**19.4%**	**$211,100**
Hertford	1,104	1,110	0.5%	61.4%	24.9%	$184,200
Winfall	373	450	20.6%	60.4%	16.9%	$321,100
Region Total	**66,989**	**67,270**	**0.4%**	**62.9%**	**18%**	**$165,265**

Source: U.S. Census Bureau 2010 Decennial Census, American Community Survey 2018-2022 5-Year Estimates
Note: 1) Owner-Occupied reported as percent of occupied units; 2) vacant-unit reported as a percent of the total number of housing units.

3.5 INFRASTRUCTURE

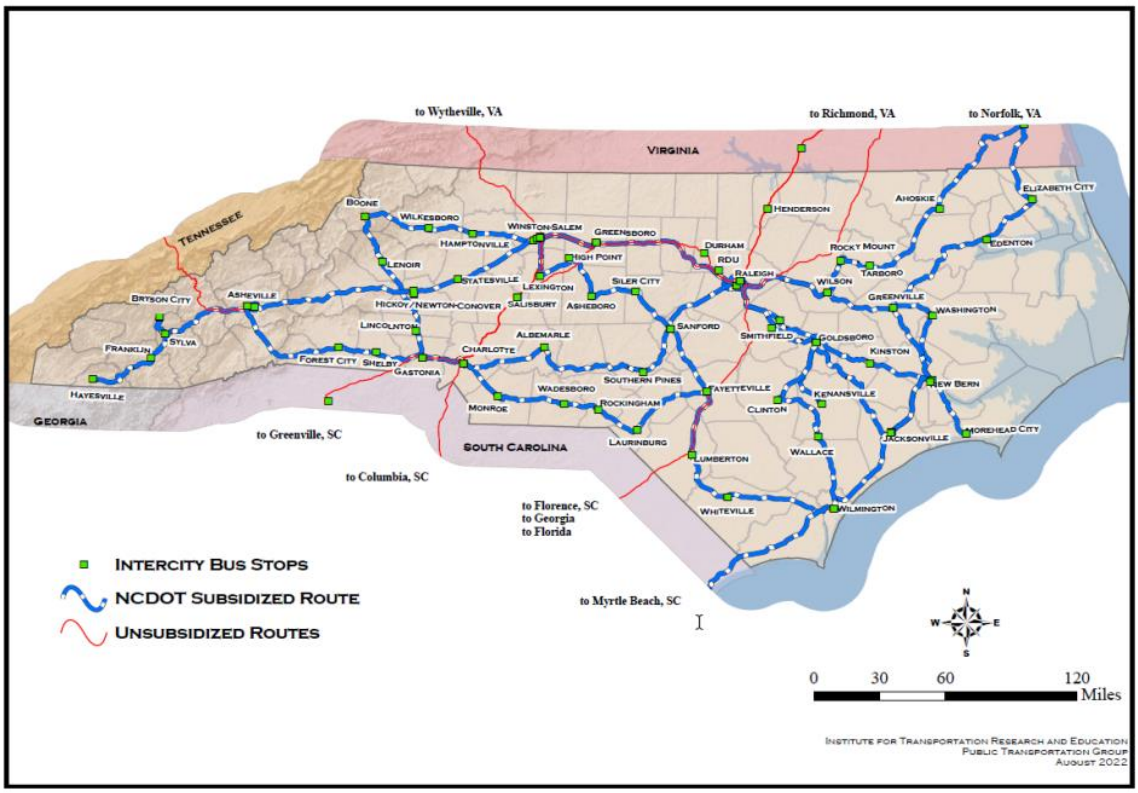
3.5.1 TRANSPORTATION

Due to the rural nature of the Albemarle Region, the vast majority of transportation is car centric and depends on US-158, US-17, and US-13 as the main freeways through the Region. Between 2014 to 2016 all counties in the Albemarle Region adopted a Comprehensive Transportation Plan. These plans reported that the lack of more densely populated centers has not warranted further construction of fixed public transportation within the surrounding jurisdictions.

Camden, Chowan, Perquimans, and Pasquotank counties are members of the Inter-County Public Transportation Authority (ICPTA) which provides non-fixed route transportation services in rural areas to health care, shopping, education, employment, public services, and recreation. ICPTA offices are located in Elizabeth City in Pasquotank County where they maintain a fleet of busses and vans.

As shown in Figure 3.13, there is one intercity bus route in the Region that stops in Edenton, Elizabeth City, and Ahoskie as it provides transportation north to Norfolk, Virginia.

Figure 3.13 – North Carolina Intercity Bus Service: FY 2023-2024



Source: Connect NCDOT

3.5.2 UTILITIES

Electric power for the region is provided by various providers, including Dominion NC Power, Albemarle Electric Membership Corporation, and Roanoke Electric Cooperative. Water is provided by the individual counties. In the Albemarle Region, natural gas is provided by Piedmont Natural Gas.

3.6 CURRENT AND FUTURE LAND USE

A community's comprehensive plan and future land use map guide development decisions and indicate where growth can be expected to occur based on land suitability and the community's overall vision and priorities. This section summarizes current and future land use and growth and development trends in each participating jurisdiction.

CAMDEN COUNTY

In Camden County, land use, environment, and development regulations are the responsibility of the Planning and Building Departments. In addition to creating and updating the Land Use Plan, the division is responsible for enforcing the Unified Development Ordinance. The County's 2035 Comprehensive Plan was adopted in October 2012. Details on the plan can be found on the County's website.

Camden County primarily serves as a rural residential community with no formally incorporated municipalities located within the county. As of 2012, 94.5% of land in Camden County was zoned for

residential development, leaving only 5.5% of land to be developed as commercial, employment, or industrial. Figure 3.14 shows the existing land use in Camden County.

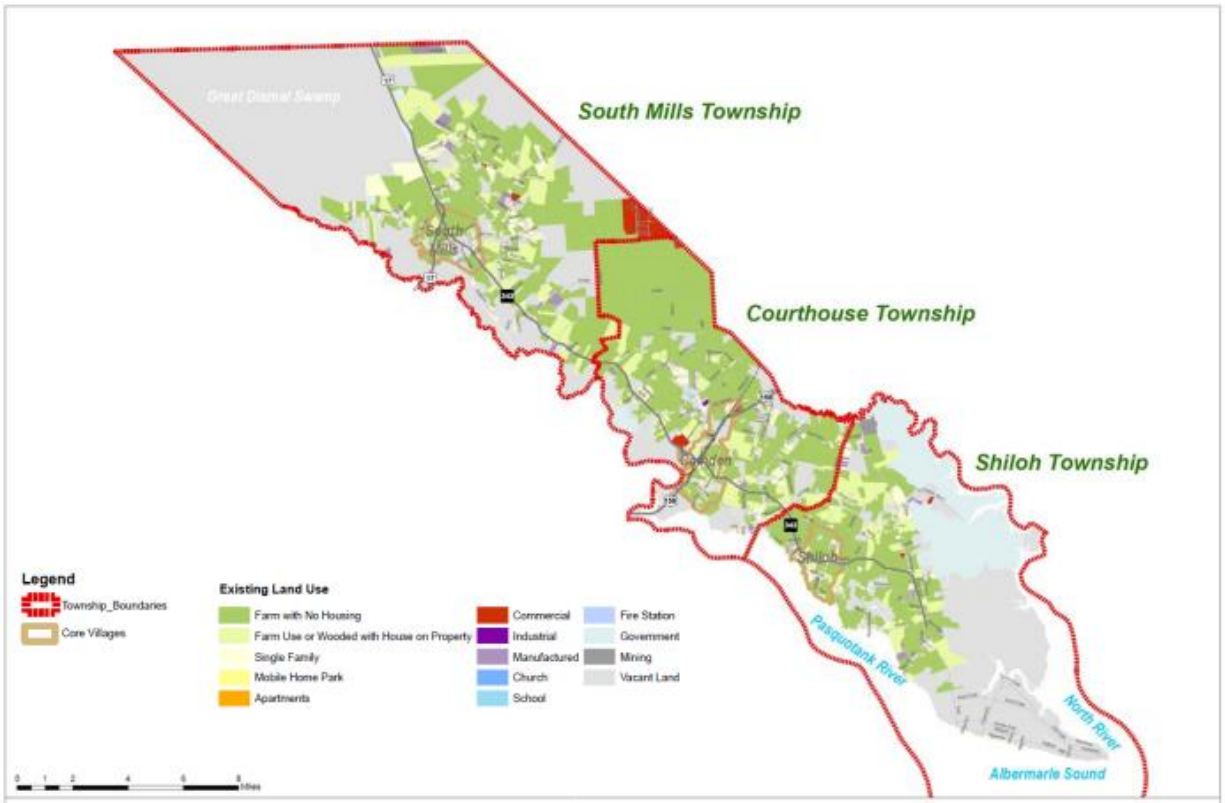
FUTURE DEVELOPMENT

The County's 2035 Comprehensive Plan expresses the need for housing stock diversity to provide for the growth projections in the future. The Plan uses a transect approach to planning, with eleven sectors, each with a different balance between protected and developed land. These sectors are:

- Environmental Preservation
- Rural Preservation
- Rural Residential
- Village Residential
- Village Mixed-Use
- Village Center
- Village Commercial
- Village Commercial Corridor
- Crossroads Commercial
- Mixed-Use Employment
- Marine Commercial

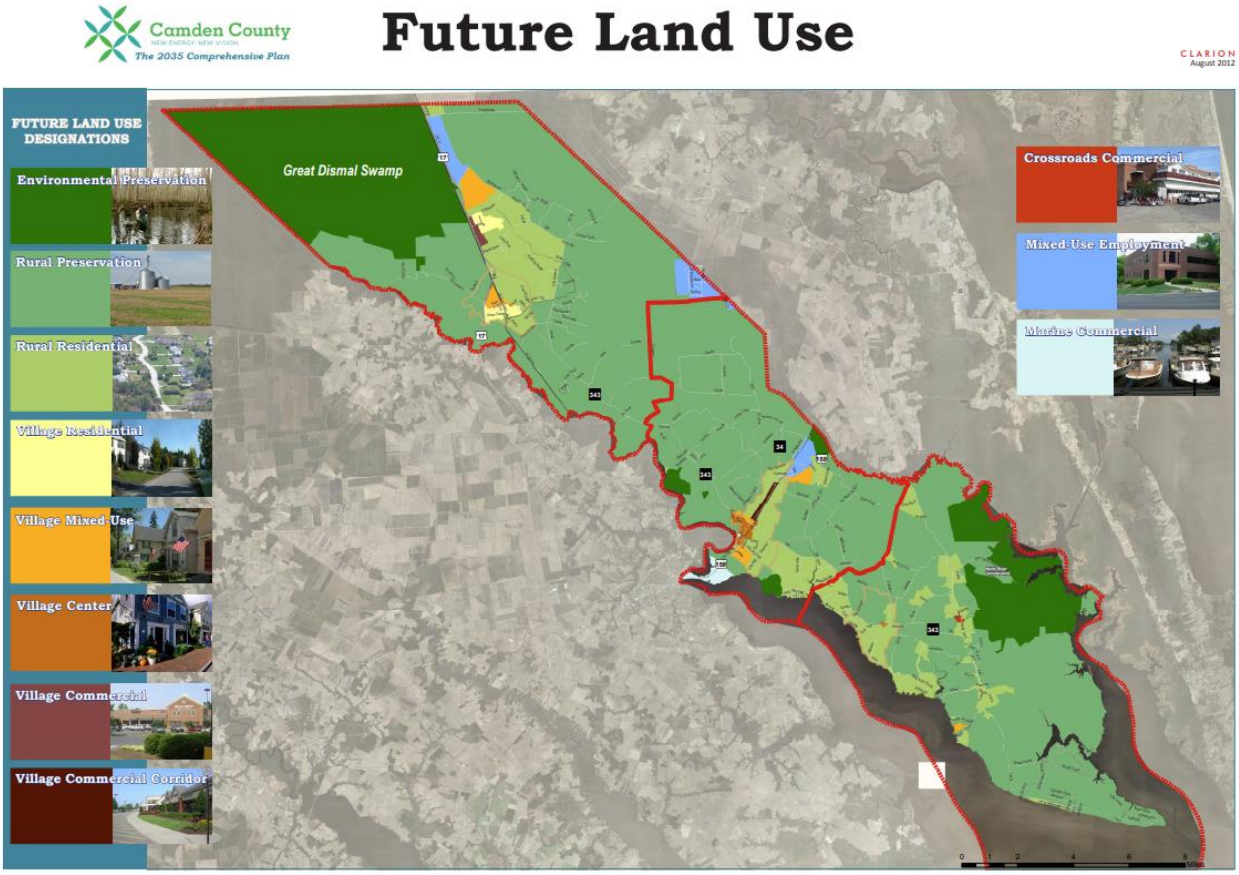
The Future Land Use Map indicates that controlled growth is planned around mixed-use village centers and commercial corridors, with mostly rural and environmental growth beyond those areas. Figure 3.15 shows Camden County's Future Land Use Map.

Figure 3.14 – Existing Land Use, Camden County



Source: Camden County, 2035 Comprehensive Plan

Figure 3.15 – Future Land Use, Camden County



Source: Camden County, 2035 Comprehensive Plan

CHOWAN COUNTY

In Chowan County, land use, environment, and development regulations are the responsibility of the Chowan Planning Office. In addition to creating and updating the Land Use Plan, the planning staff is responsible for enforcing the Chowan County Development Codes. The Town of Edenton is the only formally incorporated municipality located within the county and in August of 2018 combined efforts with the County to adopt The Chowan County and Town of Edenton Joint Land Use Plan. Details on the plan can be found on the County's website.

The vast majority of Chowan County is classified as agricultural residential, which provides farmland, forestry land, and open space scattered with small densities of residential. As of 2018, around 3 percent of Chowan County is classified as medium/high density residential, located primarily in areas around the Town of Edenton. Additionally, the low density residential classification occupies about 2 percent of the County's land area. Figure 3.16 shows the existing land use in Chowan County. Figure 3.17 shows the existing land use in the Town of Edenton.

FUTURE DEVELOPMENT

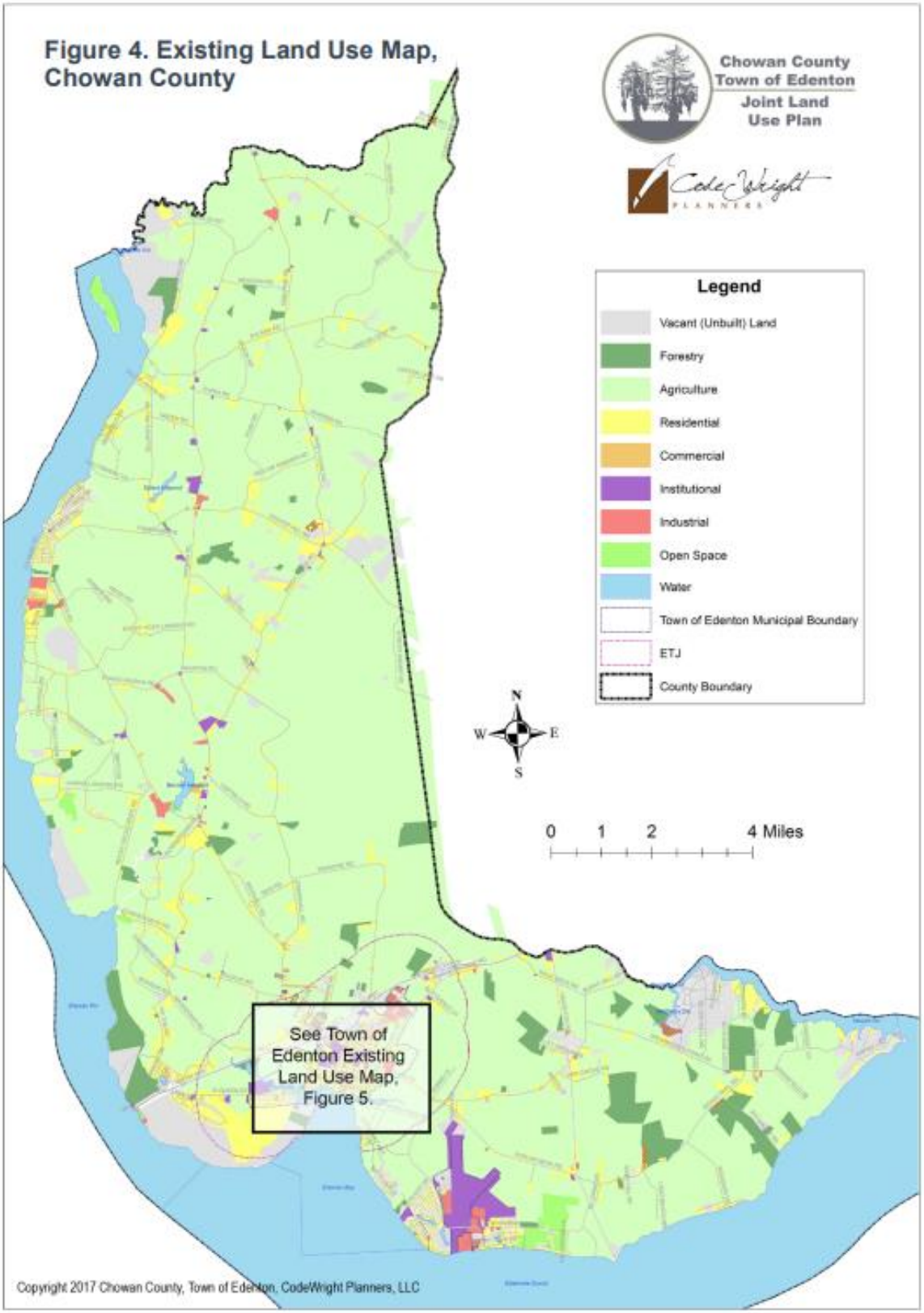
The Chowan County and Town of Edenton Joint Land Use Plan expresses the need to promote commercial development in Edenton and selected areas of the County while accommodating a variety of residential densities. The Plan uses a transect approach to planning, with seven sectors, each with a different balance between protected and developed land. These sectors for Chowan County are:

— Conservation

- Agricultural Residential
- Low Density Residential
- Medium/High Density Residential
- New Urban Waterfront
- Rural Center
- Industrial

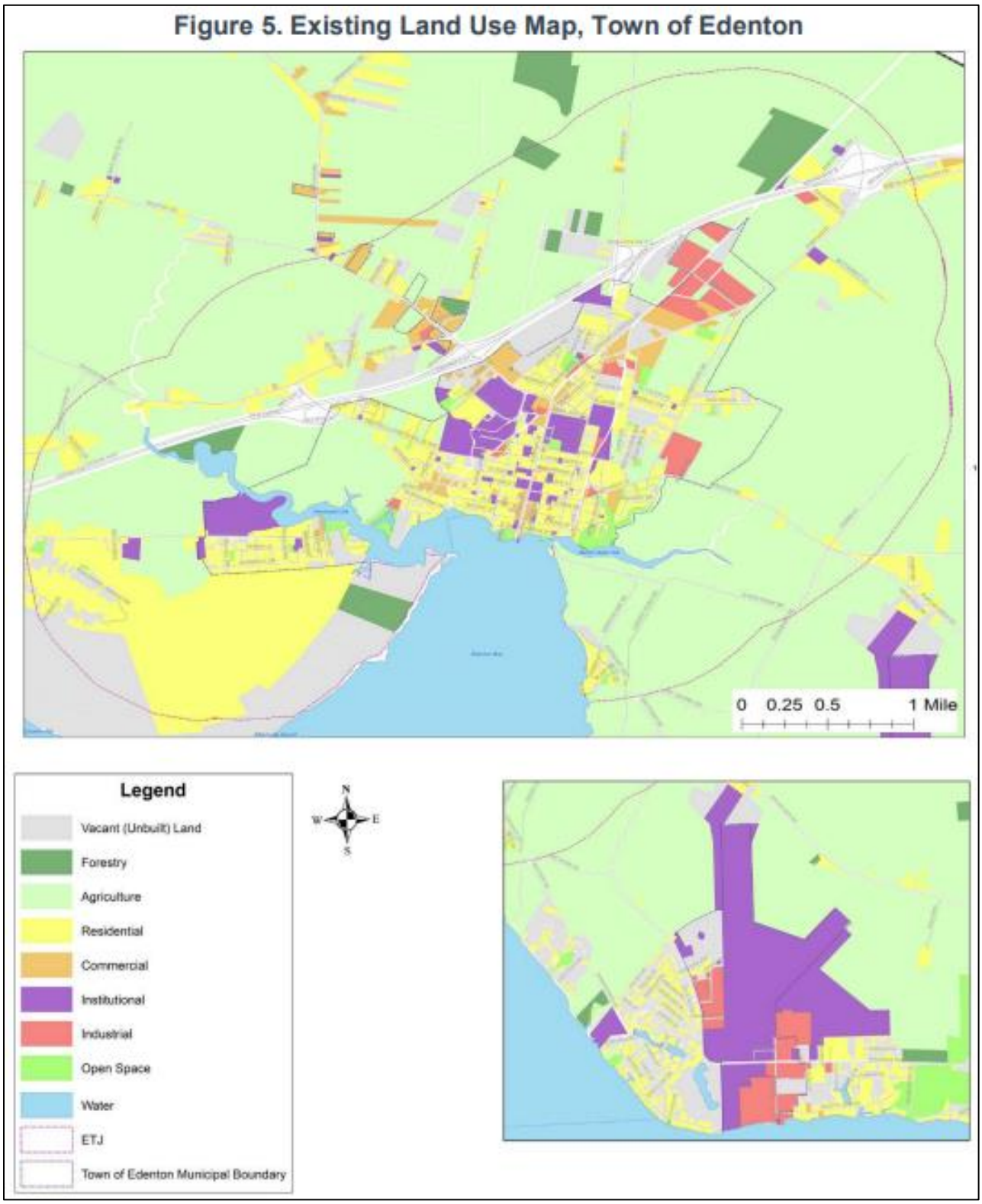
The Chowan County Future Land Use Maps indicates that controlled growth is planned around small areas of low and medium/high density residential locations, with mostly rural centers and conservation growth beyond those areas. For the Town of Edenton, the Future Land Use Map plans for higher levels of residential growth combined with downtown mixed use, commercial, and industrial zones. Figure 3.18 shows Chowan County's Future Land Use Map. Figure 3.19 shows the Town of Edenton's Future Land Use Map.

Figure 3.16 – Existing Land Use, Chowan County



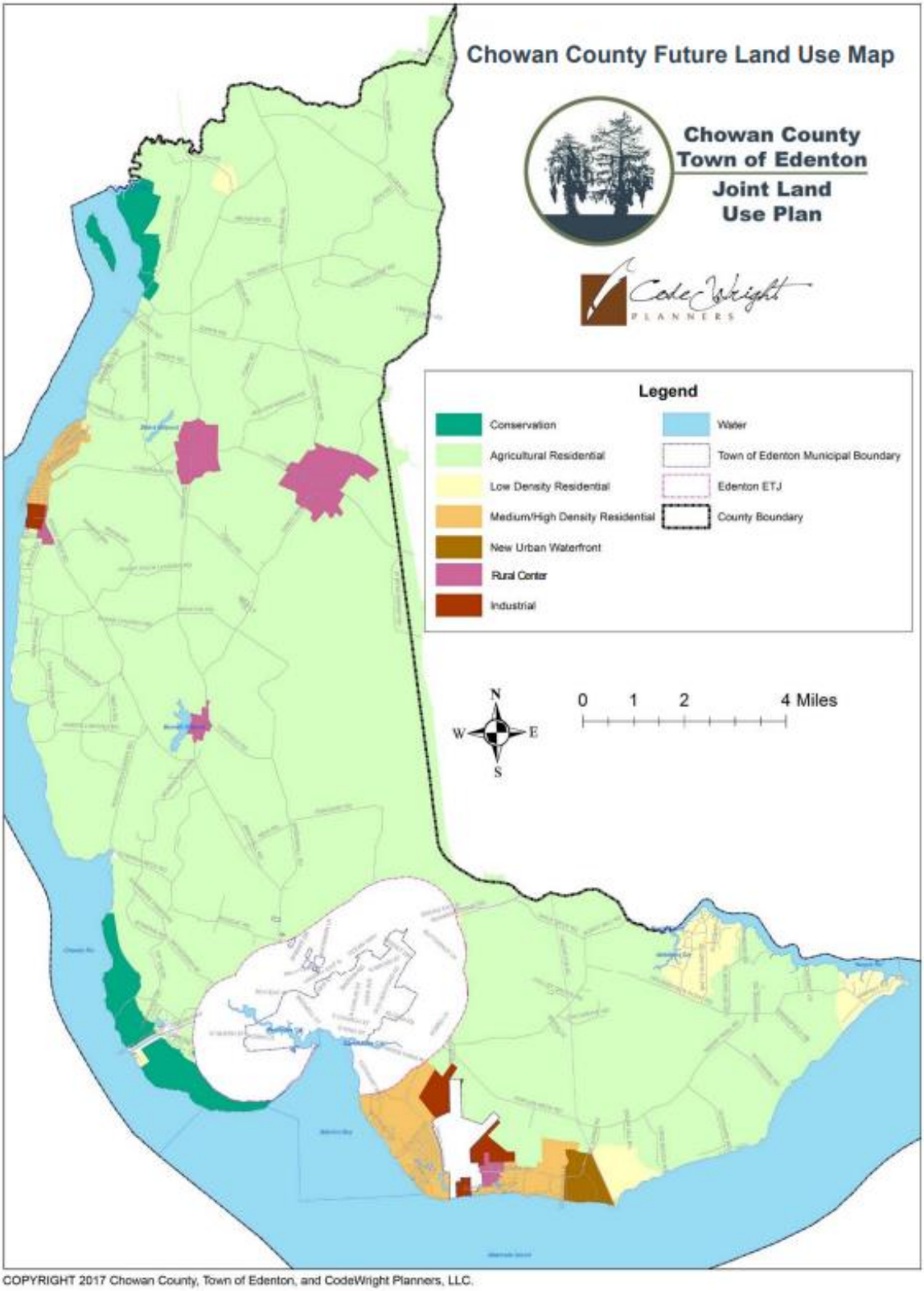
Source: 2018 Chowan County & Town of Edenton Joint Land Use Plan

Figure 3.17 – Existing Land Use, Town of Edenton



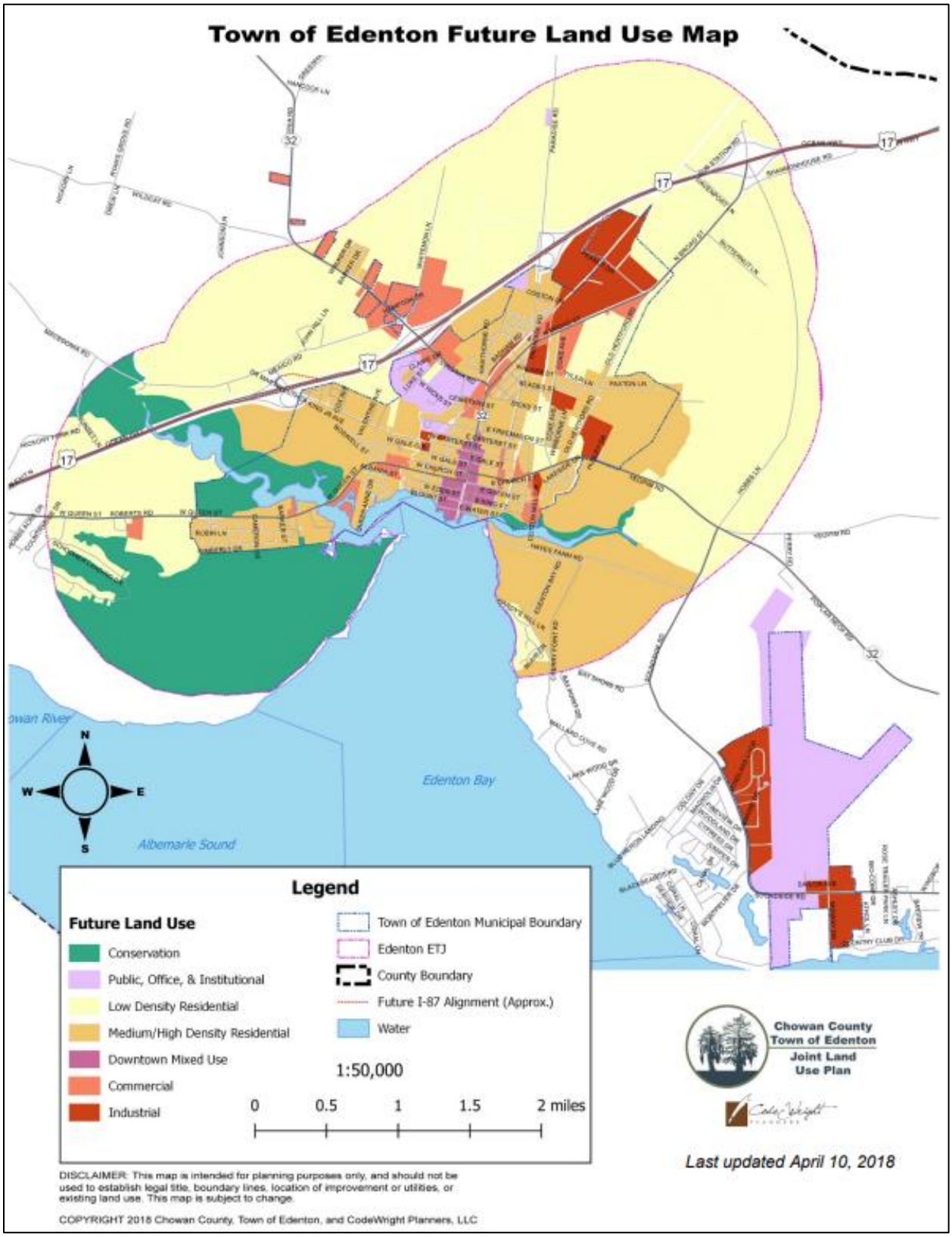
Source: 2018 Chowan County & Town of Edenton Joint Land Use Plan

Figure 3.18 – Chowan County Future Land Use Classification



Source: 2018 Chowan County & Town of Edenton Joint Land Use Plan

Figure 3.19 – Future Land Use, Town of Edenton



Source: 2018 Chowan County & Town of Edenton Joint Land Use Plan

GATES COUNTY

In Gates County, land use, environment, and development regulations are the responsibility of the Gates County Planning and Development Department. The Town of Gatesville is the only formally incorporated municipality located within the county. In December of 2016, Gates County adopted their most recent Comprehensive Land Use Plan. Details on the plan can be found on the County's website.

Due to Gates County being predominantly undeveloped and rural, much of the existing lands are classified as unimproved, rural residential, or agricultural lands. As of 2016, around 68 percent of lands in unincorporated areas of Gates County are undeveloped and used for agricultural purposes. The second largest land use category is rural residential at 17 percent of the total acreage. Table 3.11 and Figure 3.20 show the existing land use in Gates County. Table 3.12 and Figure 3.21 show the existing land use in the Town of Gatesville.

Table 3.11 – Existing Land Use, Unincorporated Gates County

Land Use Category	Acres	% of Total
Commercial	165.57	0.08%
Office and Institutional	654.94	0.30%
Industrial	231.54	0.11%
Residential	4,819.53	2.21%
Rural Residential	37,789.47	17.32%
Conservation	23,458.04	10.75%
Agriculture/Forest/Vacant	148,243.60	67.96%
Right-of-Way	2,775.44	1.27%
Total	**218,138.13**	**100%**

Source: Gates County 2016 Comprehensive Land Use Plan

Table 3.12 – Existing Land Use, Town of Gatesville

Land Use Category	Acres	% of Total
Commercial	17.11	1.51%
Office and Institutional	43.29	3.83%
Industrial	6.70	0.59%
Residential	117.40	10.39%
Rural Residential	427.27	37.82%
Conservation	0.58	0.05%
Agriculture/Forest/Vacant	517.43	45.80%
Total	**1,129.78**	**100%**

Source: Gates County 2016 Comprehensive Land Use Plan

FUTURE DEVELOPMENT

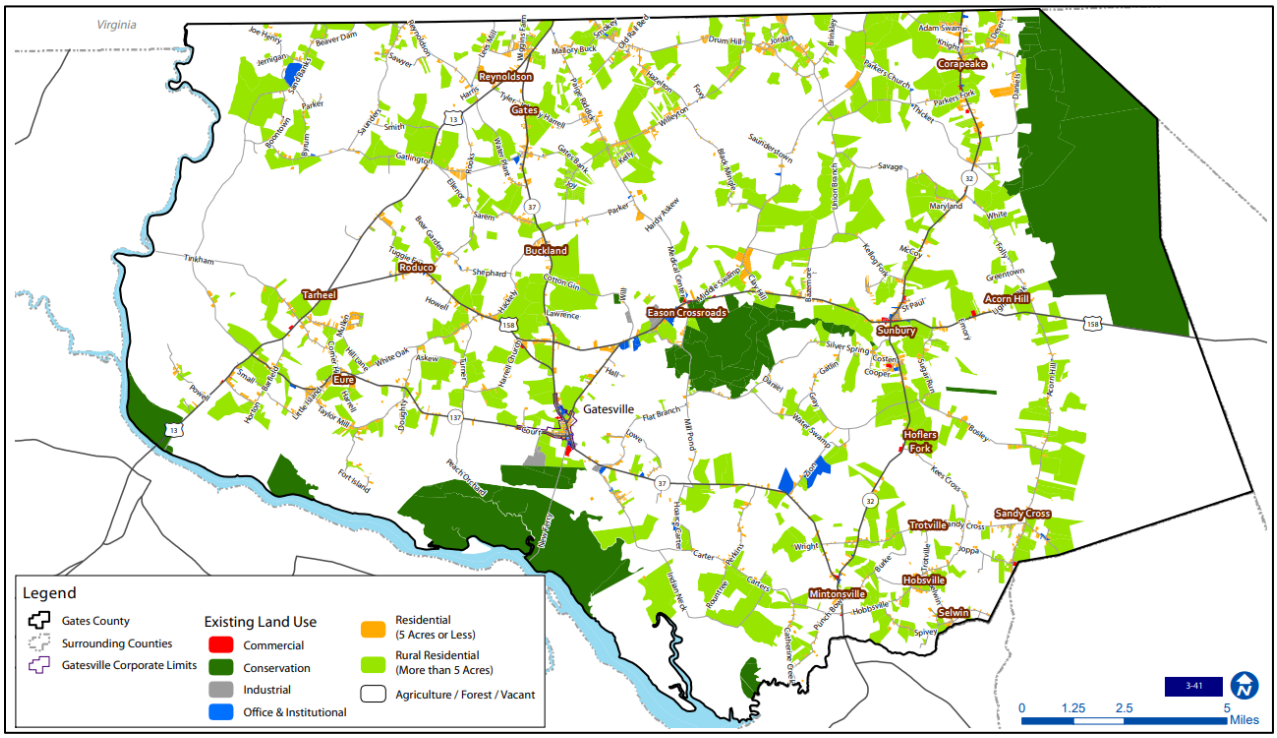
The Gates County Comprehensive Land Use Plan forecasts a small population increase of 0.02 percent in the coming years, however this plan expresses the desire to increase its higher density areas while continuing to protect its natural and open space areas. The Plan uses a transect approach to planning, with seven sectors, each with a different balance between protected and developed land. These sectors for Gates County are:

- Developed/Infill Areas
- Community Service Areas
- Industrial
- Rural Transition
- Agricultural/Rural Residential
- Rural Protection

— Conservation

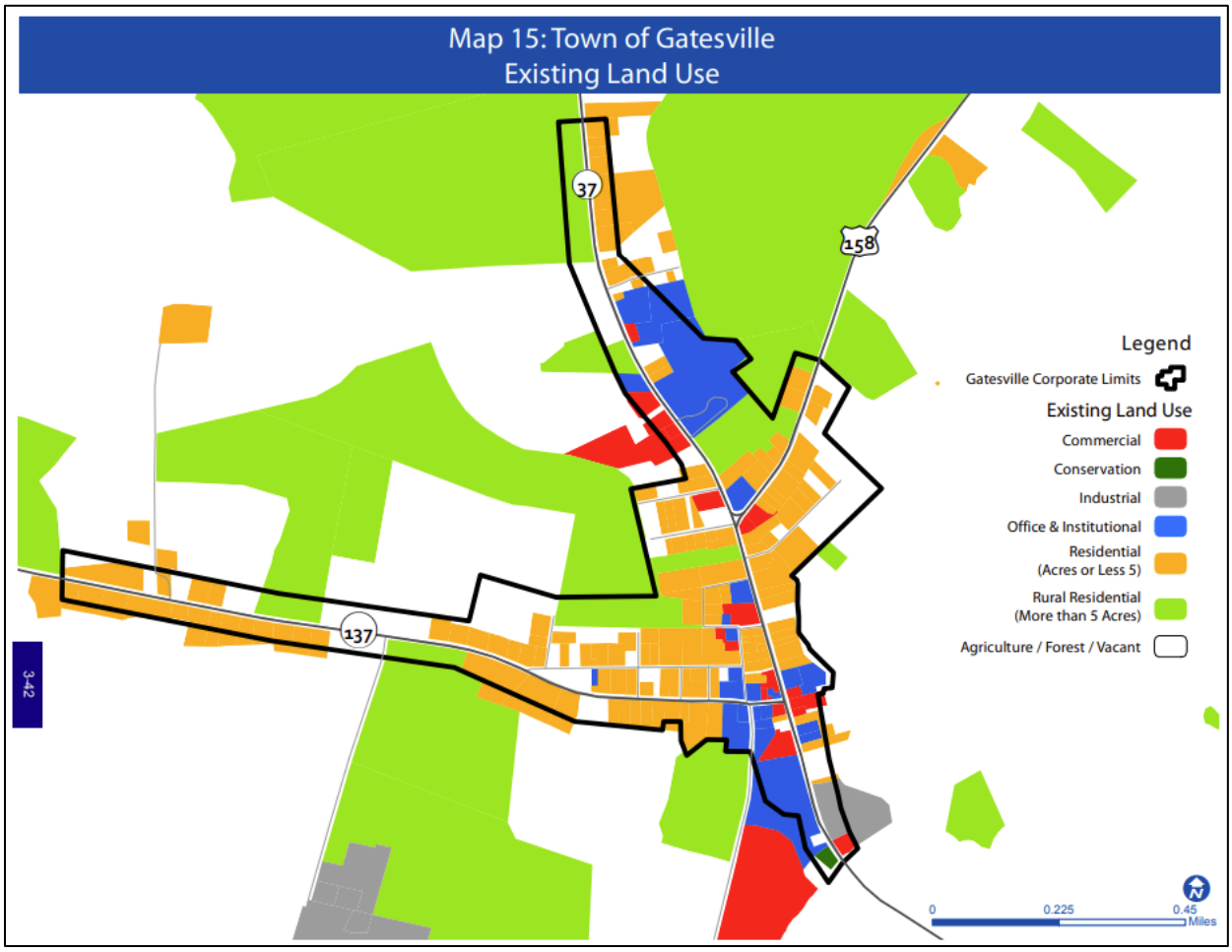
The Gates County Future Land Use Map shows rural protection as the largest land use category making up over 53 percent of the total land area. The developed/infill areas show the lowest percentage with only 0.2 percent of the total land area and are predominantly found in the Town of Gatesville. Figure 3.22 shows Gates County's Future Land Use Map.

Figure 3.20 – Gates County Existing Land Use Classification



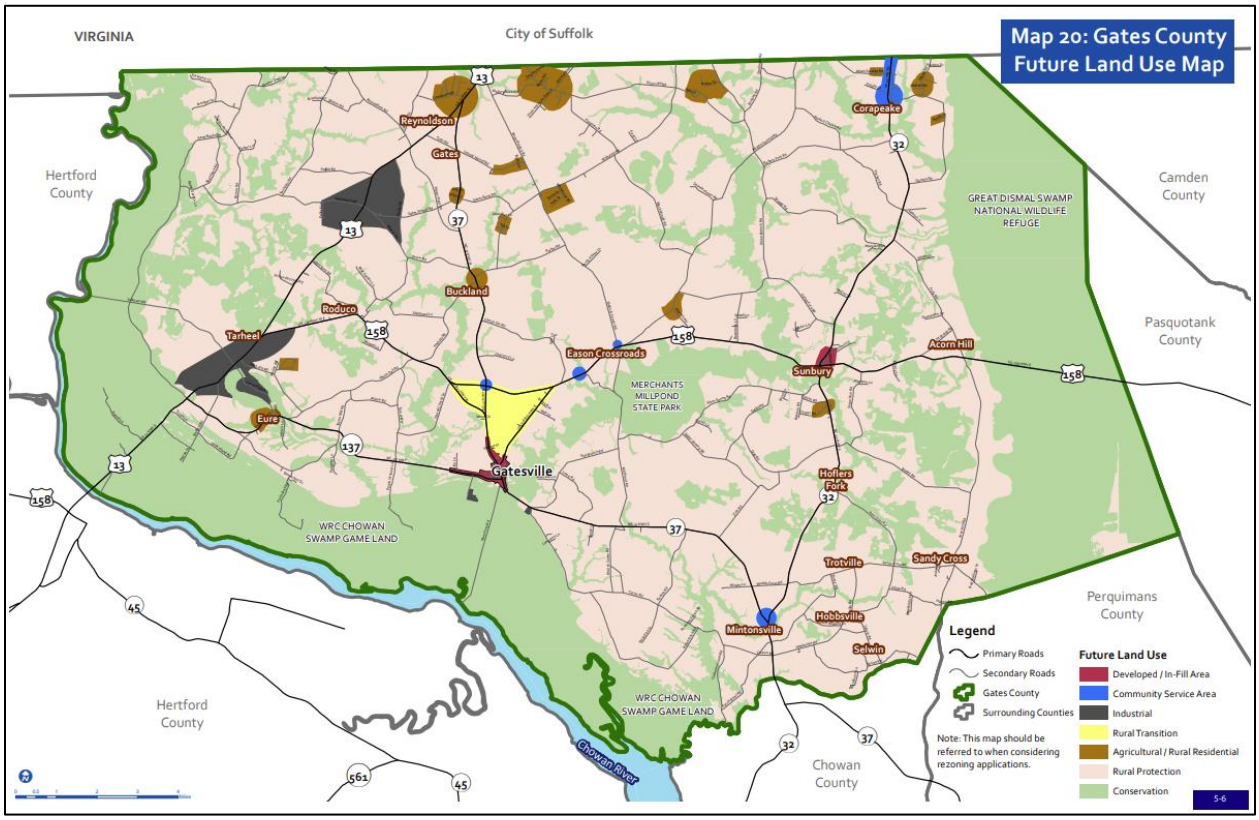
Source: Gates County 2016 Comprehensive Land Use Plan

Figure 3.21 – Existing Land Use, Town of Gatesville



Source: Gates County 2016 Comprehensive Land Use Plan

Figure 3.22 – Future Land Use, Gates County



Source: Gates County 2016 Comprehensive Land Use Plan

HERTFORD COUNTY

In Hertford County, land use, environment, and development regulations are the responsibility of the Planning and Zoning Departments. In addition to creating and updating the Land Use Plan, the division is responsible for enforcing the Unified Development Ordinance. Hertford County contains six formally incorporated municipalities, of these municipalities the Town of Ahoskie is the only one to adopt a Comprehensive Land Use plan in April of 2022. The Hertford County CAMA Land Use Plan Update was adopted in January 2011. Details on the plan can be found on the County's website.

The majority of Hertford County's land use is agriculture and forestry operations. The Towns of Ahoskie, Murfreesboro, and Winton contain a majority of the residential, commercial, and industrial land within the County. Figure 3.23 shows the existing land use and development trends in Hertford County.

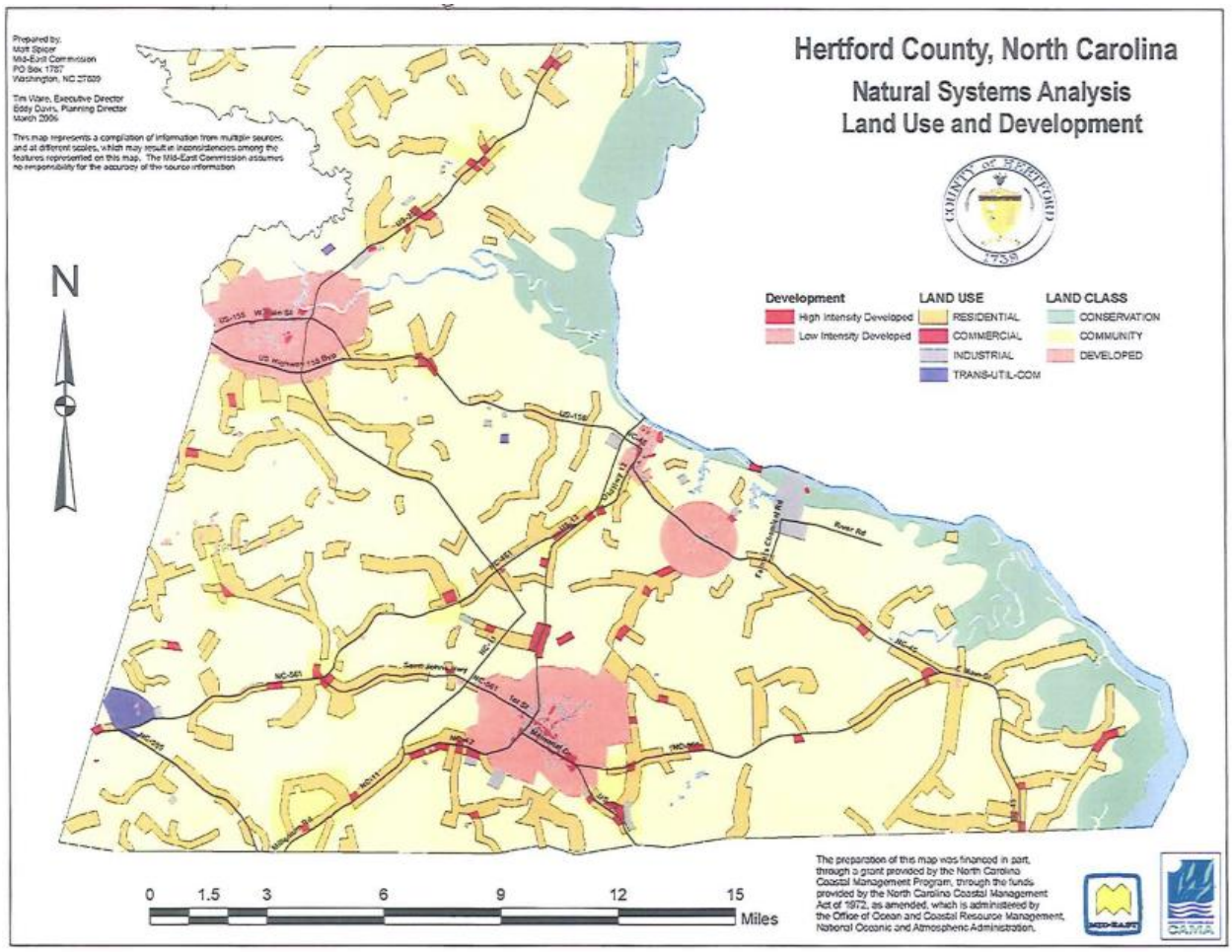
FUTURE DEVELOPMENT

The County's 2011 Comprehensive Plan expresses the desire to encourage farming throughout the County while supporting development operations to boost the local job market. The Plan uses a transect approach to planning, with four sectors, each with a different balance between protected and developed land. These sectors are:

- Developed
- Rural Development
- Rural
- Conservation

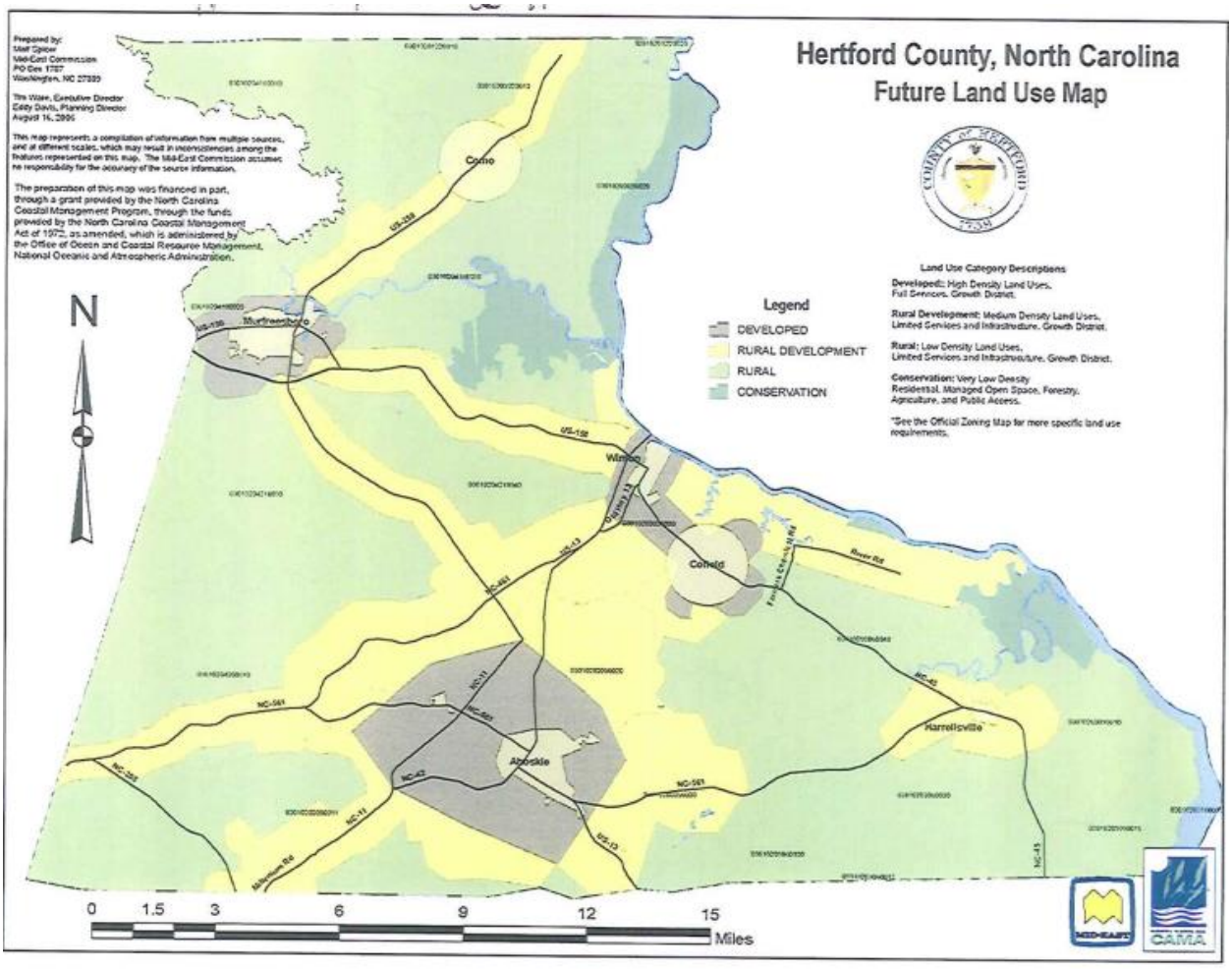
Figure 3.24 shows Hertford County's Future Land Use Map. Figure 3.25 shows the Town of Ahoskie's Future Land Use Map.

Figure 3.23 – Existing Land Use and Development, Hertford County



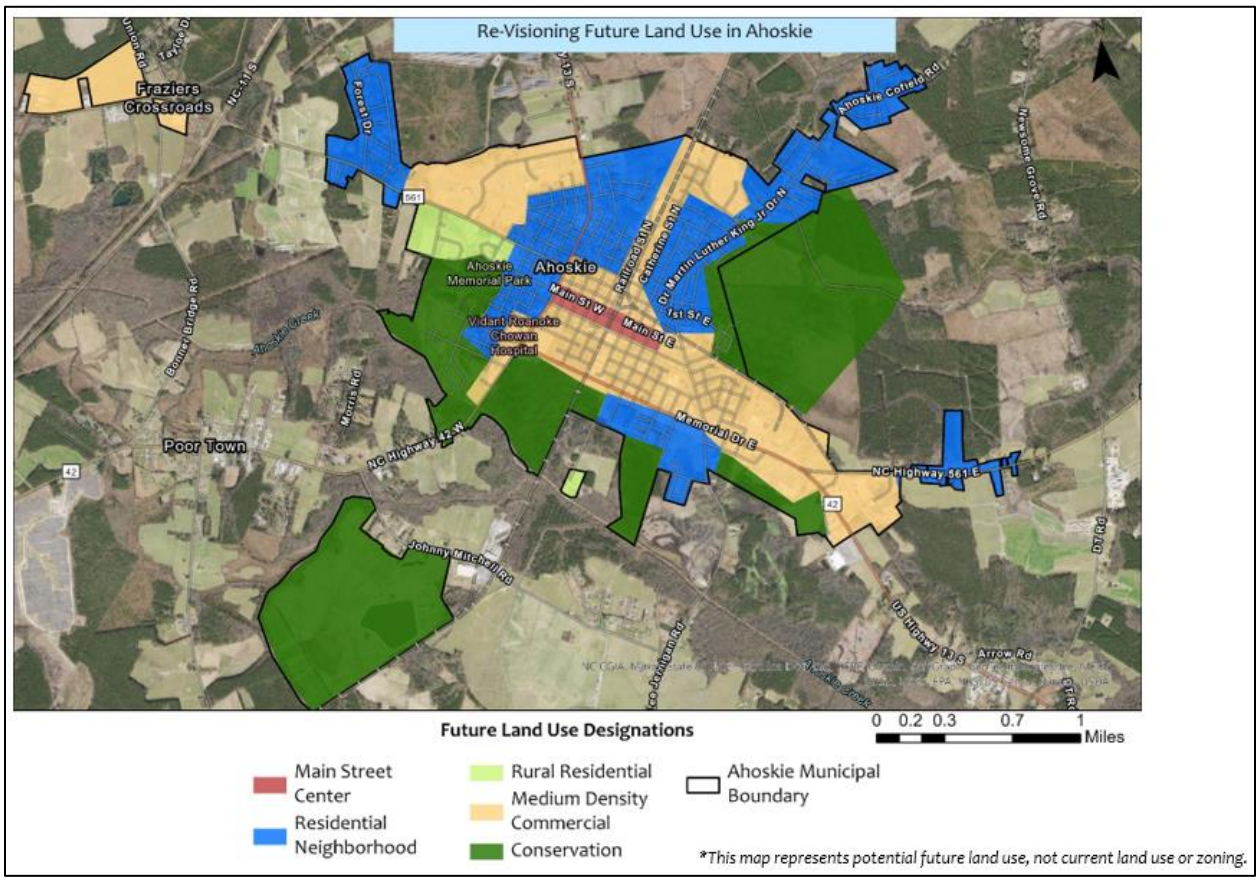
Source: Hertford County CAMA Land Use Plan 2011 Update

Figure 3.24 – Future Land Use, Hertford County



Source: Hertford County CAMA Land Use Plan 2011 Update

Figure 3.25 – Future Land Use, Town of Ahoskie



Source: Town of Ahoskie 2022 Comprehensive Land Use Plan

PASQUOTANK COUNTY

In Pasquotank County, land use, environment, and development regulations are the responsibility of the Planning and Inspections Departments. In addition to creating and updating the Land Use Plan, the planning staff is responsible for enforcing the zoning, subdivisions, and nuisance abatements. The City of Elizabeth City is the only formally incorporated municipality located within the County. The County's Comprehensive Land Use Plan was adopted in August of 2023. Details on the plan can be found on the County's website.

The vast majority of Pasquotank County is classified as agricultural/rural residential, which includes vacant parcels, large single family residential lots, and land for agricultural purposes. As of 2023, around 6 percent of the County is classified as residential while 2.3 percent is classified as commercial/non-residential. Figure 3.26 shows the existing land use in Pasquotank County.

FUTURE DEVELOPMENT

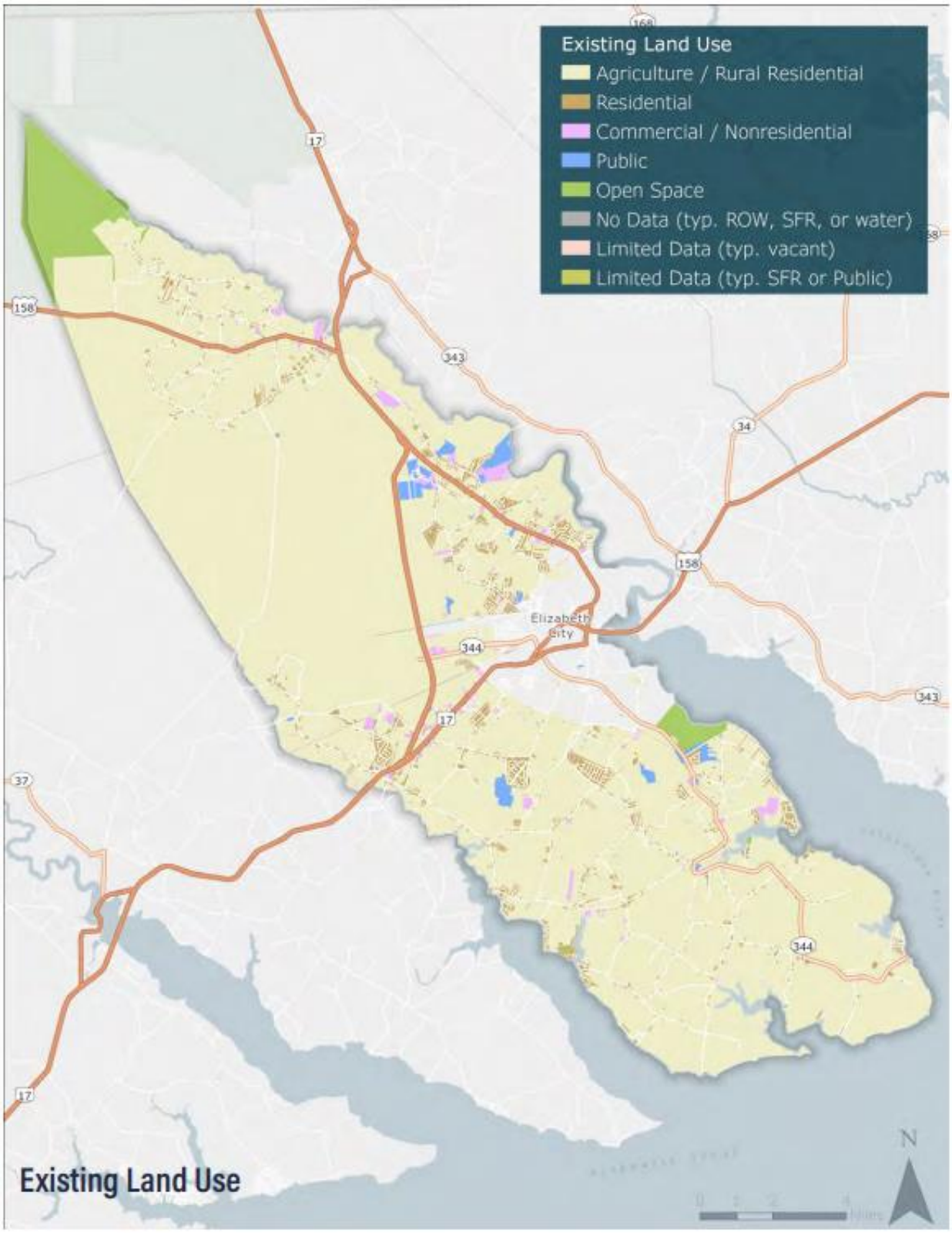
The Comprehensive Land Use Plan projects to see an increase in development as the number of residential permits has risen in recent years. In order to keep with the rural character of the area, majority of the municipal growth and higher levels of development will be seen within Elizabeth City's planning jurisdiction. The Plan uses a transect approach to planning, with five sectors, each with a different balance between protected and developed land. These sectors for Pasquotank County are:

— Agricultural/Rural

- Environmental/Conservation
- Low Density Residential
- Employment/Industrial
- Municipal Growth

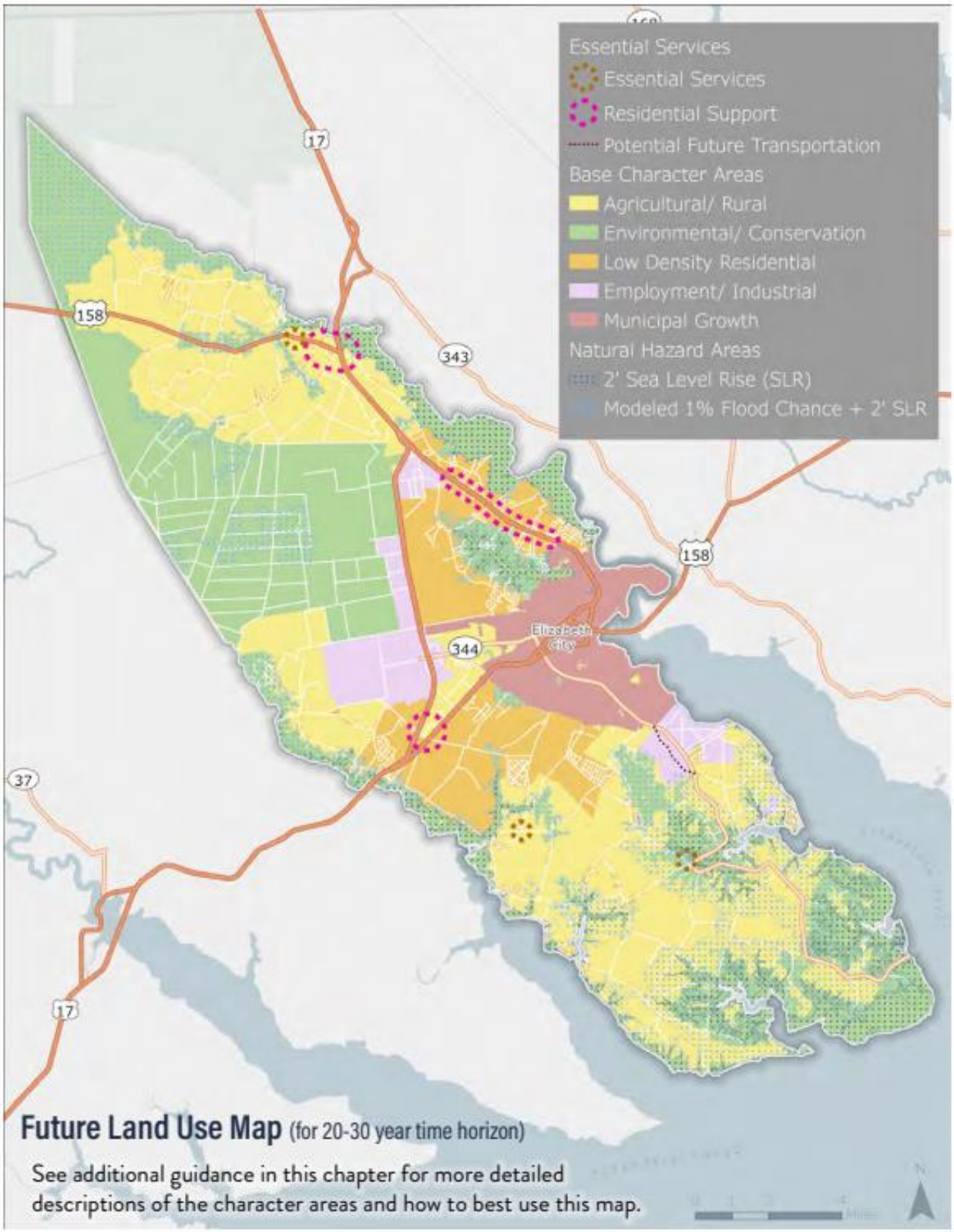
The Pasquotank County Future Land Use Map highlights areas of residential support and essential services. These areas are meant to provide general guidance to locations that could be primed for future development and small-scale commercial and institutional uses such as convenience stores, churches, schools, or small offices. Figure 3.27 shows Pasquotank County's Future Land Use Map.

Figure 3.26 – Existing Land Use, Pasquotank County



Source: 2023 Pasquotank County Land Use Plan

Figure 3.27 – Future Land Use, Pasquotank County



Source: 2023 Pasquotank County Land Use Plan

PERQUIMANS COUNTY

In Perquimans County, land use, environment, and development regulations are the responsibility of the Planning and Zoning Office. The County's CAMA CORE Land Use Plan was first adopted in 2005 and later recertified and updated in April of 2017. The Towns of Hertford and Winfall are the only formally incorporated municipalities located within the county and were officially adopted into the County's Land Use Plan. Details on the plan can be found on the County's website.

The vast majority of Perquimans County is rural in nature, providing vast natural areas and flood plains while the Towns of Hertford and Winfall provide the main commerce centers in the area. Residential development is largely associated with farms and can primarily be found along State roads. As of 2017, over 91 percent of the County is classified as residential agricultural. Figure 3.28 shows the existing land use in Perquimans County.

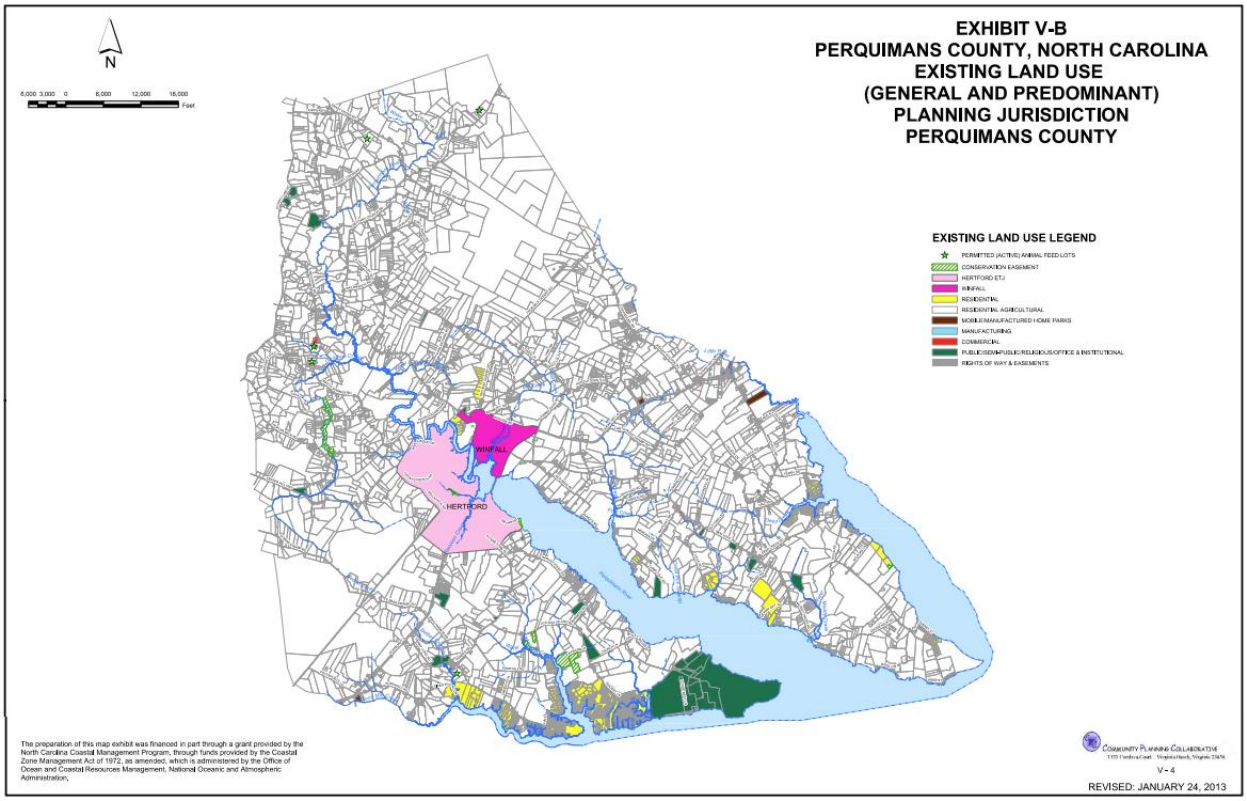
FUTURE DEVELOPMENT

The Land Use Plan envisions the majority of residential development to continue expanding primarily within the subdivisions of the Towns of Hertford and Winfall, with some smaller levels of rural development occurring near major roadways. Based on annual number of residential permits, Perquimans County expects to experience small increments of population growth over the years. The Plan uses a transect approach to planning, with seven sectors, each with a different balance between protected and developed land. These sectors for Perquimans County are:

- Residential
- Residential Agricultural
- Mobile/Manufactured Home Parks
- Manufacturing
- Commercial
- Public/Semi-Public/Religious/Office & Institutional
- Rights of Way & Easements

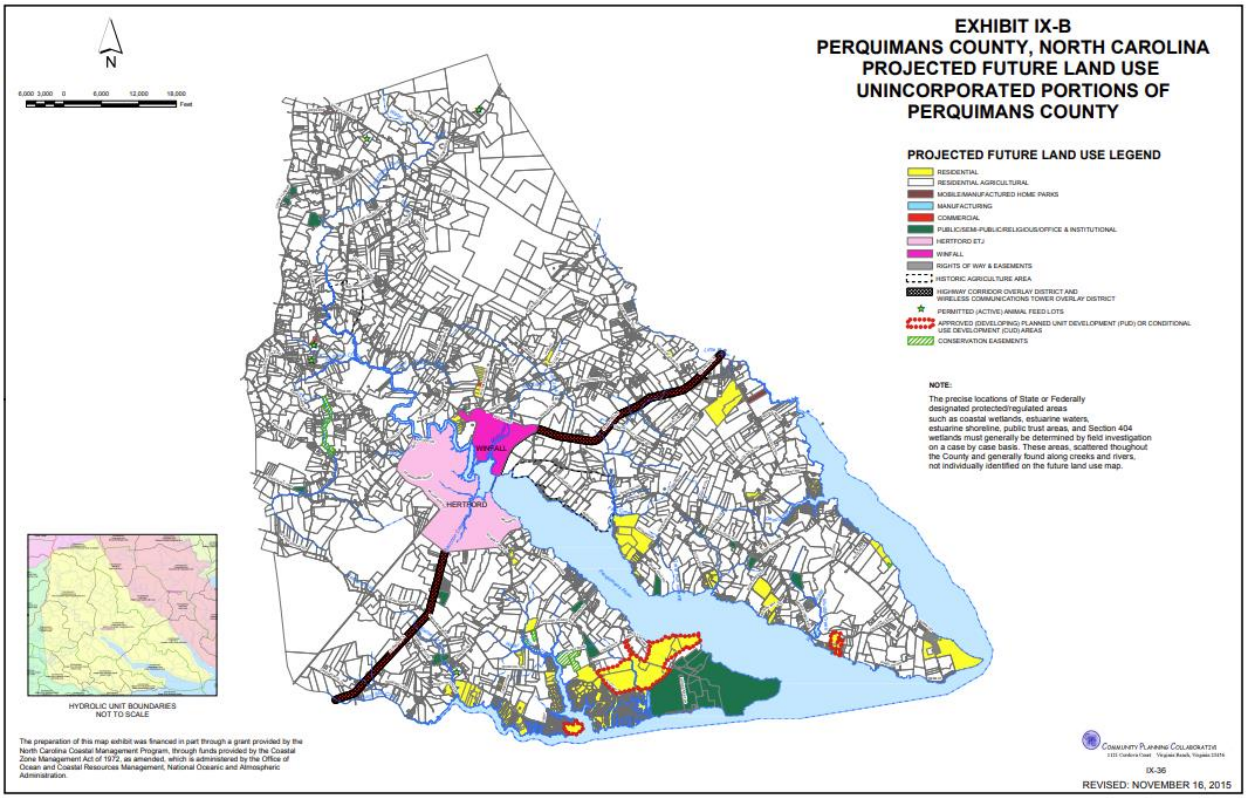
The Perquimans County Future Land Use Map shows that the majority of the total land area will remain classified as residential agricultural. However, the residential classification is expected to increase to about 7 percent of the County as a number of waterfront access properties and resort communities are expected to develop in the southern portion of the County. Figure 3.29 shows Perquimans County's Future Land Use Map.

Figure 3.28 – Existing Land Use, Perquimans County



Source: Perquimans County's 2017 CAMA CORE Land Use Plan

Figure 3.29 – Future Land Use, Perquimans County



Source: Perquimans County's 2017 CAMA CORE Land Use Plan

3.7 EMPLOYMENT AND INDUSTRY

3.7.1 WAGES AND EMPLOYMENT

Per the 2018-2022 American Community Survey 5-Year Estimates, the median household income for the Albemarle Region was $58,844, which is over 12 percent lower than the state's median household income ($66,186). However, approximately 14% of the population is considered to be living below the poverty level. Moreover, 20.6 percent of people under 18 years of age are living below the poverty level.

Table 3.13 shows employment statistics for all participating jurisdictions. Table 3.14 shows occupation statistics for all participating jurisdictions.

Table 3.13 – Employment Statistics for Albemarle Region, 2022

Jurisdiction	Population in Labor Force	Percent Employed* (%)	Percent Unemployed* (%)	Percent Not in Labor Force* (%)	Unemployment Rate (%)
Camden County	**5,166**	**58.3%**	**3.5%**	**37.2%**	**5.7%**
Chowan County	**6,203**	**51.7%**	**2.3%**	**45.8%**	**4.3%**
Edenton	2,084	52.7%	3.5%	43.8%	6.2%
Gates County	**5,030**	**53.1%**	**5.4%**	**41.5%**	**9.3%**
Gatesville	128	53.1%	7.0%	39.9%	11.7%

Jurisdiction	Population in Labor Force	Percent Employed* (%)	Percent Unemployed* (%)	Percent Not in Labor Force* (%)	Unemployment Rate (%)
Hertford County	**9,385**	**47.5%**	**3.7%**	**48.5%**	**7.2%**
Ahoskie	2,043	46.3%	6.3%	47.4%	11.9%
Cofield	194	51.1%	10.9%	38.0%	17.5%
Como	61	56.8%	18.5%	24.7%	24.6%
Harrellsville	101	52.5%	9.9%	37.7%	15.8%
Murfreesboro	1,033	45.4%	2.4%	50.2%	5.0%
Winton	331	51.7%	4.2%	44.1%	7.6%
Pasquotank County	**19,610**	**54.8%**	**3.4%**	**39.7%**	**5.8%**
Elizabeth City	8,765	52.3%	4.8%	40.7%	8.3%
Perquimans County	**5,398**	**46.8%**	**2.5%**	**50.7%**	**5.0%**
Hertford	944	49.3%	7.6%	42.8%	13.3%
Winfall	361	45.7%	7.5%	46.8%	14.1%
Region Total	**66,837**	**48.3%**	**5.9%**	**39.3%**	**9.9%**

Source: U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates

Table 3.14 – Percent of Employed Population by Occupation for Albemarle Region, 2022

Occupation	Management, business, science and arts (%)	Service (%)	Sales and Office (%)	Natural Resources, Construction, and Maintenance (%)	Production, transportation, and material moving (%)
Camden County	**46.1%**	**15.1%**	**19.5%**	**10.8%**	**8.4%**
Chowan County	**34.1%**	**24.4%**	**19.1%**	**8.6%**	**13.8%**
Edenton	22.6%	35.2%	20.0%	11.2%	11.1%
Gates County	**22.9%**	**19.1%**	**24.5%**	**18.2%**	**15.4%**
Gatesville	28.3%	8.0%	25.7%	18.6%	19.5%
Hertford County	**29.5%**	**18.6%**	**17.7%**	**10.5%**	**23.6%**
Ahoskie	35.9%	22.0%	16.8%	4.2%	21.1%
Cofield	27.5%	30.6%	5.0%	5.0%	31.9%
Como	26.1%	13.0%	28.3%	4.3%	28.3%
Harrellsville	30.6%	4.7%	28.2%	31.8%	4.7%
Murfreesboro	40.9%	17.8%	23.1%	5.1%	13.1%
Winton	24.2%	21.6%	23.2%	5.6%	25.5%
Pasquotank County	**33.8%**	**17.3%**	**22.1%**	**10.8%**	**15.9%**
Elizabeth City	33.2%	21.8%	25.2%	7.0%	12.7%
Perquimans County	**30.7%**	**19.0%**	**21.3%**	**13.8%**	**15.1%**
Hertford	39.7%	25.1%	21.0%	11.1%	3.1%
Winfall	34.5%	16.1%	14.5%	5.5%	29.4%
Region Total	**31.8%**	**19.3%**	**20.8%**	**10.7%**	**17.2%**

Source: U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates

Across the Region as a whole, major industry sectors in 2022 included Educational Services, and Health Care and Social Assistance (24.5 percent of employment); Manufacturing (11.7 of employment); Retail Trade (11 percent of employment); Public Administration (8.2 percent of employment).

Table 3.15 summarizes the major employers for each County in the Albemarle Region from AccessNC as of the 2023 annual report.

Table 3.15 – Major Employers in 2023, Albemarle Region

Employer	Industry Type	Estimated Employees
Camden County		
Camden County Board of Education	Educational Services	250-499
County of Camden	Public Administration	100-249
Chowan County		
Meherrin Agricultural & Chem Co Inc	Wholesale Trade	250-499
Edenton-Chowan Schools	Educational Services	250-499
Pitt County Memorial Hospital	Health Care and Social Assistance	250-499
Colony Tire Corporation	Retail Trade	250-499
Regulator Marine Inc	Manufacturing	250-499
Chowan County	Public Administration	100-249
United Parcel Service Inc	Transportation and Warehousing	100-249
Home Life Care Inc	Health Care and Social Assistance	100-249
Principle Long Term Care Inc	Health Care and Social Assistance	100-249
Gates County		
Gates County Board Of Education	Educational Services	250-499
Gates County	Public Administration	100-249
Ashton Lewis Lumber Co Inc	Manufacturing	50-99
Gates Milling Inc	Manufacturing	50-99
Hertford County		
Jernigan Oil Co Inc	Retail Trade	500-999
Pitt County Memorial Hospital	Health Care and Social Assistance	250-499
Nucor Corporation	Manufacturing	250-499
Hertford County Board Of Education	Educational Services	250-499
Hertford County	Public Administration	250-499
Roanoke Chowan Community Health Cen	Health Care and Social Assistance	100-249
Med Ex Medical Transport Service	Health Care and Social Assistance	100-249
Wal-Mart Associates Inc	Retail Trade	100-249
Chowan University	Educational Services	100-249
Roanoke-Chowan Community College	Educational Services	100-249
Kerr Group LLC	Manufacturing	100-249
Integrated Family Services LLC	Health Care and Social Assistance	100-249
Food Lion	Retail Trade	100-249
Home Life Care Inc	Health Care and Social Assistance	100-249
Tandem Corporation	Accommodation and Food Services	100-249
Enviva Management Company LLC	Wholesale Trade	100-249
Pasquotank County		
Sentara Internal Medicine Physician	Health Care and Social Assistance	500-999
Elizabeth City Pasquotank County Bd	Educational Services	500-999
Us Department Of Homeland Security	Public Administration	500-999

Employer	Industry Type	Estimated Employees
Elizabeth City State University	Educational Services	500-999
County Of Pasquotank	Public Administration	250-499
Wal-Mart Associates Inc	Retail Trade	250-499
Food Lion	Retail Trade	250-499
College Of The Albemarle	Educational Services	250-499
City Of Elizabeth City	Public Administration	250-499
Albemarle Regional Health Services	Health Care and Social Assistance	250-499
Nc Department Of Adult Corrections	Public Administration	100-249
Elizabeth City Health & Rehabilitat	Health Care and Social Assistance	100-249
Affordable Engineering Services Inc	Transportation and Warehousing	100-249
Akumin Operating Corp	Health Care and Social Assistance	100-249
Lowes Home Centers Inc	Retail Trade	100-249
Albemarle Physician Services - Sent	Health Care and Social Assistance	100-249
Aecom Management Services Inc	Transportation and Warehousing	100-249
Tcom Lp	Manufacturing	100-249
Tandem Corporation	Accommodation and Food Services	100-249
Moneysworth Linen Services Inc	Other Services (except Public Administration)	100-249
Hall Automotive LLC	Retail Trade	100-249
J&J Maintenance Inc	Administrative and Support and Waste Management and Remediation Services	100-249
J W Jones Lumber Co Inc	Manufacturing	100-249
Universal Forest Products Eastern C	Manufacturing	100-249
Perquimans County		
Perquimans County Schools	Educational Services	250-499
Perquimans County	Public Administration	100-249
Food Lion	Retail Trade	50-99
Northeast Academy For Aerospace And Advanced Technologies	Educational Services	50-99
Boeing Aerospace Operations Inc	Accommodation and Food Services	50-99
Fedex Ground Package System Inc	Transportation and Warehousing	50-99
Albemarle Plantation Properties Inc	Arts, Entertainment, and Recreation	50-99
Hertford Opco LLC	Health Care and Social Assistance	50-99

Source: ACCESSNC Employer Profile, 2023 Annual Report

4 RISK ASSESSMENT

4.1 OVERVIEW

Requirement §201.6(c)(2): [The plan shall include] A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.
Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the type...of all natural hazards that can affect the jurisdiction.

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the...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.

44 CFR Subsection D §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. Plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of:
A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;
(B): An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate; and
(C): Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

This section describes the Hazard Identification and Risk Assessment process for the development of the Albemarle Regional Hazard Mitigation Plan. It describes how the Region met the following requirements from the 10-step planning process:

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

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

This hazard risk assessment covers all of the Albemarle Region, including the unincorporated Counties and all incorporated jurisdictions participating in this plan.

The risk assessment process identifies and profiles relevant hazards and assesses the exposure of lives, property, and infrastructure to these hazards. The process allows for a better understanding of the potential risk to natural hazards in the region and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events. This risk assessment followed the methodology described in the FEMA publication Understanding Your Risks—Identifying Hazards and Estimating Losses (FEMA 386-2, 2002), which breaks the assessment down to a four-step process:



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

- **Section 4.2**: **Hazard Identification** identifies the natural and human-caused hazards that threaten the planning area.
- **Section 4.3: Risk Assessment Methodology and Assumptions**
- **Section 4.4: Asset Inventory** details the population, buildings, and critical facilities at risk within the planning area.
- **Section 4.5**: **Hazard Profiles, Analysis, and Vulnerability** discusses the threat to the planning area, describes previous occurrences of hazard events and the likelihood of future occurrences, and assesses the planning area's exposure to each hazard profiled; considering assets at risk, critical facilities, and future development trends.
- **Section 4.6: Conclusions on Hazard Risk** summarizes the results of the Priority Risk Index and defines each hazard as a Low, Medium, or High Risk hazard.

4.2 HAZARD IDENTIFICATION

To identify hazards relevant to the planning area, the HMPC began with a review of the list of hazards identified in the 2023 State Hazard Mitigation Plan and the 2020 Albemarle Regional Hazard Mitigation Plan. This review of hazards is summarized in Table 4.1. The HMPC used these lists to identify a full range of hazards for potential inclusion in this plan update and to ensure consistency across these planning efforts. All hazards on the below list were evaluated for inclusion in this plan update.

Table 4.1 – Full Range of Hazards Evaluated

Hazard	Included in 2023 State HMP?	Included in 2020 Albemarle Regional HMP?
Coastal Hazards (Erosion and Rip Current)	Yes, included with Hurricanes and Coastal Hazards	Yes
Dam Failure	Yes	Yes
Levee Failure	No	Yes
Drought	Yes	Yes
Earthquake	Yes	Yes
Extreme Heat	Yes	Yes
Flood	Yes	Yes
Hurricane and Tropical Storm	Yes, included with Hurricanes and Coastal Hazards	Yes
Severe Weather (Thunderstorm, Lightning, and Hail)	Yes, included with Tornadoes/Thunderstorms	Yes
Severe Winter Storm	Yes	Yes
Tornado	Yes, included with Tornadoes/Thunderstorms	Yes
Wildfire	Yes	Yes
Geological Hazards (Landslide & Sinkholes)	Yes	No
Infectious Disease	Yes	No
Hazardous Substances	Yes	No
Radiological Emergency	Yes	Yes
Cyber Threat	Yes	No

Hazard	Included in 2023 State HMP?	Included in 2020 Albemarle Regional HMP?
Terrorism	Yes	No
Civil Disturbance	Yes	No
Electromagnetic Pulse	Yes	No
Food Emergency	Yes	No

The HMPC evaluated the above list of hazards using existing hazard data, past disaster declarations, local knowledge, and information from the 2023 State Plan and the 2020 Albemarle Regional Plan to determine the significance of these hazards to the planning area. Significance was measured in general terms and focused on key criteria such as frequency and resulting damage, which includes deaths and injuries, as well as property and economic damage.

One significant resource in this effort was the National Oceanic and Atmospheric Administration's National Center for Environmental Information (NCEI), which has been tracking various types of severe weather since 1950. Their Storm Events Database contains an archive by county of destructive storm or weather data and information which includes local, intense and damaging events. NCEI receives storm data from the National Weather Service (NWS). The NWS receives their information from a variety of sources, which include but are not limited to: county, state and federal emergency management officials, local law enforcement officials, SkyWarn spotters, NWS damage surveys, newspaper clipping services, the insurance industry and the general public, among others. The NCEI database contains 1,078 records of severe weather events that occurred in Camden, Chowan, Gates, Hertford, Pasquotank, and Perquimans Counties in the 25-year period from 1998 through 2023. Table 4.2 summarizes these events.

Table 4.2 – NCEI Severe Weather Reports for the Albemarle Region Counties, Jan 1998 – Dec 2023

Type	# of Events	Property Damage	Crop Damage	Deaths	Injuries
Blizzard	2	$0	$0	0	0
Coastal Flood	11	$0	$0	0	0
Cold/Wind Chill	0	$0	$0	0	0
Drought	0	$0	$0	0	0
Extreme Cold/Wind Chill	0	$0	$0	0	0
Excessive Heat	6	$0	$0	0	0
Flash Flood	58	$7,150,000	$18,400,000	1	0
Flood	32	$2,200,000	$0	0	0
Frost/Freeze	20	$0	$0	0	0
Hail	121	$107,000	$105,000	0	0
Heat	7	$0	$0	1	0
Heavy Rain	146	$0	$0	0	0
Heavy Snow	0	$0	$0	0	0
High Wind	23	$485,000	$0	0	0
Hurricane	24	$27,934,000	$43,500,000	1	0
Ice Storm	2	$0	$0	0	0
Lightning	10	$73,000	$0	0	2
Storm Surge	0	$0	$0	0	0
Strong Wind	10	$29,000	$0	0	0
Thunderstorm Wind	312	$931,000	$2,000	2	1
Tornado	43	$7,051,000	$2,032,000	1	10
Tropical Storm	43	$4,975,000	$21,000,000	0	0
Wildfire	0	$0	$0	0	0

Type	# of Events	Property Damage	Crop Damage	Deaths	Injuries
Winter Storm	115	$0	$0	0	0
Winter Weather	93	$0	$0	0	0
Total:	**1,078**	**$50,935,000**	**$85,039,000**	**6**	**13**

Source: National Center for Environmental Information Events Database, accessed October 2024
Note: Losses reflect totals for all impacted areas for each event.

The HMPC also researched past events that resulted in a federal and/or state emergency or disaster declaration for Camden, Chowan, Gates, Hertford, Pasquotank, and Perquimans Counties in order to identify significant hazards. Federal and/or state disaster declarations may be granted when the Governor certifies that the combined local, county and state resources are insufficient and that the situation is beyond their recovery capabilities. When the local government's capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. If the disaster is so severe that both the local and state government capacities are exceeded, a federal emergency or disaster declaration may be issued allowing for the provision of federal assistance.

Records of designated counties for FEMA major disaster declarations start in 1964. Since then, Camden, Chowan, Gates, Hertford, Pasquotank, and Perquimans Counties have been designated in 17 different major disaster declarations. Table 4.3 summarizes the count of declarations per county, and Table 4.4 provides details for these declarations.

Table 4.3 – Summary of Disaster Declarations by County

County	Major Declarations Received
Camden	9
Chowan	12
Gates	8
Hertford	14
Pasquotank	9
Perquimans	10

Source: FEMA Disaster Declarations Summary, updated October 14, 2024

Table 4.4 – FEMA Major Disaster Declarations for Albemarle Region Counties

County*	Disaster #	Date	Incident Type	Event Title
H	4588	3/3/2021	Severe Storm	Tropical Storm Eta
Ch, H,	4568	10/14/2020	Hurricane	Hurricane Isaias
Pe	4543	5/8/2020	Severe Storm	Severe Storms, Tornadoes, and Flooding
Ca, Ch, G, H, Pa, Pe	4487	3/25/2020	Biological	COVID-19 Pandemic
Ca, Ch, Pa, Pe	4465	10/4/2019	Hurricane	Hurricane Dorian
Ca, Ch, G, H, Pa, Pe	4285	10/10/2016	Hurricane	Hurricane Matthew
Ca, Ch, G, H, Pa, Pe	4019	8/31/2011	Hurricane	Hurricane Irene
H	1969	4/19/2011	Severe Storm(s)	Severe Storms, Tornadoes, And Flooding
Ca, H	1942	10/14/2010	Severe Storm(s)	Severe Storms, Flooding, And Straight-Line Winds
Ca, Ch, G, H, Pa, Pe	1490	9/18/2003	Hurricane	Hurricane Isabel
Ca, Ch, G, H, Pa, Pe	1292	9/16/1999	Hurricane	Hurricane Floyd Major Disaster Declarations
Ch, Pa, Pe	1240	8/27/1998	Hurricane	Hurricane Bonnie

County*	Disaster #	Date	Incident Type	Event Title
Ch, H	1134	9/6/1996	Hurricane	Hurricane Fran
Ch,	1127	7/18/1996	Hurricane	Hurricane Bertha
G, H	1103	2/23/1996	Snow	Winter Storm
Ca, Ch, G, H, Pa	1087	1/13/1996	Snow	Blizzard Of 96
G, H, Pe	699	3/30/1984	Tornado	Severe Storms & Tornadoes
Ch, H, Pa, Pe	234	2/10/1968	Severe Ice Storm	Severe Ice Storm

Source: FEMA Disaster Declarations Summary, updated October 14, 2024

*County code: Ca = Camden, Ch = Chowan, G = Gates, H = Hertford, Pa = Pasquotank, Pe = Perquimans

Using the above information and additional discussion, the HMPC evaluated each hazard's significance to the planning area in order to decide which hazards to include in this plan update. Some hazard titles have been updated either to better encompass the full scope of a hazard or to assess closely related hazards together. Table 4.5 summarizes the determination made for each hazard.

Table 4.5 – Hazard Evaluation Results

Hazard	Included in this plan update?	Explanation for Decision
Flooding	Yes	The 2020 Albemarle plan and 2023 State plan addressed this hazard. Multiple disaster declarations for the region are related to flooding. NCEI reports 247 flood-related events.
Hurricanes and Coastal Hazards	Yes	The 2020 Albemarle plan identified hurricanes and tropical storms, which the 2023 State plan groups with coastal hazards. Past disaster declarations and NCEI storm reports indicate hurricanes are a significant hazard for the region. Other regional and local plans indicate erosion is also an issue in the region, particularly due to past hurricane activity and the region's coastal location.
Severe Winter Weather	Yes	The 2020 Albemarle plan and 2023 State plan addressed this hazard. The region has received several past disaster declarations related to this hazard. NCEI reports 59 days with severe winter weather events since 1996.
Excessive Heat	Yes	The 2020 Albemarle plan and 2023 State plan addressed this hazard. NCEI reports 13 heat events for the region.
Earthquake	Yes	The 2020 Albemarle plan and 2023 State plan addressed this hazard. The Albemarle region could be impacted by the Eastern Tennessee Seismic Zone and the Charleston fault.
Wildfire	Yes	The 2020 Albemarle plan and 2023 State plan addressed this hazard. Per data from the Southern Wildfire Risk Assessment, there are scattered areas of high damage potential in the region.
Dam & Levee Failure	Yes	The 2020 Albemarle plan and 2023 State plan addressed dam failure and there are multiple dams in the region. The 2020 Albemarle plan also addressed levee with the dam failure hazard. The USACE's National Levee Database identifies one USACE levee in the region.
Drought	Yes	The 2020 Albemarle plan and the 2023 State plan addressed this hazard. Despite limited records of past drought in the region, it is still considered a priority for inclusion in the plan.

Hazard	Included in this plan update?	Explanation for Decision
Tornadoes & Thunderstorms (including Lightning and Hail)	Yes	The 2020 Albemarle plan addressed these hazards, which are combined in the 2023 State plan. Multiple disaster declarations have been made in the region for severe storms, including three declarations for tornadoes. NCEI reports 443 wind, lightning and hail events in the past 20 years as well as 43 tornado segments.
Geological Hazards (Sinkhole, Landslide)	No	The 2020 Albemarle plan did not address this hazard. Past plan updates found that risk for landslides is low and occurrence is unlikely in the region. USGS data shows little to no geological basis for sinkhole risk in the region.
Infectious Disease	Yes	The State HMP reports the entire State is at risk, but vulnerability is low across all but two impact categories. There has been a past disaster declaration resulting from the Covid-19 pandemic. Based on this past risk, the HMPC decided to evaluate this hazard.
Hazardous Substances	Yes	The 2020 Albemarle plan did not address this hazard, but the HMPC decided to include it in this update given related events that have occurred in recent years throughout the country.
Radiological Emergency	Yes	The 2023 State plan addressed this hazard and notes that several counties in the Albemarle region are within the Ingestion Pathway Zone for the Surry Power Station in Virginia.
Cyber Threat	Yes	Cyber hazards are profile in the 2023 State plan, and the HMPC felt this hazard should be evaluated for the region.
Terrorism	No	The 2020 Albemarle plan did not address this hazard while the 2023 State plan did address this hazard. This hazard is better handled through state level mitigation and local emergency operations planning.
Civil Disturbance	No	The 2023 State plan reports that risk is highest in areas with large population groupings or gatherings. There is no history of civil disturbances in the region.
Electromagnetic Pulse	No	The 2023 State plan addresses this hazard. This hazard is more appropriately addressed at the State level.
Food Emergency	No	The 2023 State plan addresses this hazard. This hazard is more appropriately addressed at the State level.

The final list of hazards included in this plan are as follows:

- Dam & Levee Failure
- Drought
- Earthquake
- Excessive Heat
- Flooding
- Hurricane & Coastal Hazards
- Severe Winter Weather
- Tornadoes & Thunderstorms
- Wildfire
- Radiological Incident

- Infectious Disease
- Hazardous Substances
- Cyber Threat

4.3 RISK ASSESSMENT METHODOLOGY AND ASSUMPTIONS

The Disaster Mitigation Act of 2000 requires that the HMPC evaluate the risks associated with each of the hazards identified in the planning process. Each hazard was evaluated to determine its probability of future occurrence and potential impact. A vulnerability assessment was conducted for each hazard using either quantitative or qualitative methods depending on the available data, to determine its potential to cause significant human and/or monetary losses. A consequence analysis was also completed for each hazard.

Each hazard is profiled in the following format:

HAZARD DESCRIPTION

This section provides a description of the hazard, including discussion of its speed of onset and duration, as well as any secondary effects followed by details specific to the Albemarle Region.

LOCATION

This section includes information on the hazard's physical extent, with mapped boundaries where applicable.

EXTENT

This section includes information on the hazard extent in terms of magnitude and describes how the severity of the hazard can be measured. Where available, the most severe event on record is used as a frame of reference.

HISTORICAL OCCURRENCES

This section contains information on historical events, including the location and consequences of all past events on record within or near the Albemarle Region.

PROBABILITY OF FUTURE OCCURRENCE

This section gauges the likelihood of future occurrences based on past events and existing data. The frequency is generally determined by dividing the number of events observed by the number of years on record. This provides the percent chance of the event happening in any given year according to historical occurrence (e.g. 10 winter storm events over a 30-year period equates to a 33 percent chance of experiencing a severe winter storm in any given year).

CLIMATE CHANGE

Where applicable, this section discusses how climate change may or may not influence the risk posed by the hazard on the planning area in the future.

VULNERABILITY ASSESSMENT

This section quantifies, to the extent feasible using best available data, assets at risk to natural hazards and potential loss estimates. People, properties and critical facilities, and environmental assets that are vulnerable to the hazard are identified. Future development is also discussed in this section, including how exposure to the hazard may change in the future or how development may affect hazard risk.

The vulnerability assessments followed the methodology described in the FEMA publication Understanding Your Risks—Identifying Hazards and Estimating Losses (August 2001). The vulnerability assessment first describes the total vulnerability and values at risk and then discusses vulnerability by hazard. Data used to support this assessment included the following:

- Geographic Information System (GIS) datasets, including building footprints, topography, aerial photography, and transportation layers;
- Hazard layer GIS datasets from state and federal agencies;
- Written descriptions of inventory and risks provided by the State Hazard Mitigation Plan; and
- Written descriptions of inventory and risks provided by the previous Albemarle Regional Hazard Mitigation Plan.
- Exposure and vulnerability estimates provided by the North Carolina Emergency Management (NCEM) IRISK database.
- Crop insurance claims by cause from USDA's Risk Management Agency

Two distinct risk assessment methodologies were used in the formation of the vulnerability assessment: a quantitative analysis that relies upon best available data and technology and a qualitative analysis that relies on local knowledge and rational decision making.

Vulnerability can be quantified in those instances where there is a known, identified hazard area, such as a mapped floodplain. In these instances, the numbers and types of buildings subject to the identified hazard can be counted and their values tabulated. Where hazard risk cannot be distinctly quantified and modeled, other information can be collected in regard to the hazard area, such as the location of critical facilities, historic structures, and valued natural resources (e.g., an identified wetland or endangered species habitat). Together, this information conveys the vulnerability of that area to that hazard. The quantitative analysis for this plan update involved the use of NCEM's IRISK database, which provides modeled damage estimates for earthquake, flood, wind, and wildfire hazards.

NCEM's IRISK database incorporates county building footprint and parcel data. Footprints with an area less than 500 square feet were excluded from the analysis. To determine if a building is in a hazard area, the building footprints were intersected with each of the mapped hazard areas. If a building intersects two or more hazard areas (such as the 1-percent-annual-chance flood zone and the 0.2-percent-annual-chance flood zone), it is counted as being in the hazard area of highest risk. The parcel data provided building value and year built. Building value was used to determine the value of buildings at risk. Year built was used to determine if the building was constructed prior to or after the community had joined the NFIP and had an effective FIRM and building codes enforced.

Census blocks and Summary File 1 from the 2020 Census were used to determine population at risk. This included the total population, as well as the vulnerable elderly and children age groups. To determine population at risk, the census blocks were intersected with the hazard area. To better determine the actual number of people at risk, the intersecting area of the census block was calculated and divided by the total area of the census block to determine a ratio of area at risk. This ratio was applied to the population of the census block. For example, a census block has a population of 400 people. Five percent of the census block intersects the 1-percent-annual-chance flood hazard area. The ratio estimates that 20 people are then at risk within the 1-percent-annual-chance flood hazard area (5% of the total population for that census block).

Certain assumptions are inherent in any risk assessment. For the Albemarle Regional HMP, three primary assumptions were discussed by the HMPC from the beginning of the risk assessment process: (1) that the best readily available data would be used, (2) that the hazard data selected for use is reasonably accurate for mitigation planning purposes, and (3) that the risk assessment will be regional in nature with local, municipal-level data provided where appropriate and practical.

Key methodologies and assumptions made for specific hazards analysis are described in their respective profiles.

PRIORITY RISK INDEX

The conclusions drawn from the hazard profiling and vulnerability assessment process can be used to prioritize all potential hazards to the Albemarle Region. The Priority Risk Index (PRI) was applied for this purpose because it provides a standardized numerical value so that hazards can be compared against one another (the higher the PRI value, the greater the hazard risk). PRI values are obtained by assigning varying degrees of risk to five categories for each hazard (probability, impact, spatial extent, warning time, and duration). Each degree of risk was assigned a value (1 to 4) and a weighting factor as summarized in Table 4.6.

The sum of all five risk assessment categories equals the final PRI value, demonstrated in the equation below (the highest possible PRI value is 4.0).

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

The purpose of the PRI is to categorize and prioritize all potential hazards for the Albemarle Region as high, moderate, or low risk. The summary hazard classifications generated through the use of the PRI allow for the prioritization of high and moderate hazard risks for mitigation planning purposes.

The results of the risk assessment and PRI scoring are provided in Section 4.6 Conclusions on Hazard Risk.

Table 4.6 – Priority Risk Index

RISK ASSESSMENT	LEVEL	DEGREE OF RISK CRITERIA	INDEX	WEIGHT
PROBABILITY What is the likelihood of a hazard event occurring in a given year?	**UNLIKELY**	LESS THAN 1% ANNUAL PROBABILITY	**1**	**30%**
	POSSIBLE	BETWEEN 1 & 10% ANNUAL PROBABILITY	**2**	
	LIKELY	BETWEEN 10 & 100% ANNUAL PROBABILITY	**3**	
	HIGHLY LIKELY	100% ANNUAL PROBABILTY	**4**	
IMPACT In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs?	**MINOR**	VERY FEW INJURIES, IF ANY. ONLY MINOR PROPERTY DAMAGE & MINIMAL DISRUPTION ON QUALITY OF LIFE. TEMPORARY SHUTDOWN OF CRITICAL FACILITIES.	**1**	**30%**
	LIMITED	MINOR INJURIES ONLY. MORE THAN 10% OF PROPERTY IN AFFECTED AREA DAMAGED OR DESTROYED. COMPLETE SHUTDOWN OF CRITICAL FACILITIES FOR > 1 DAY	**2**	
	CRITICAL	MULTIPLE DEATHS/INJURIES POSSIBLE. MORE THAN 25% OF PROPERTY IN AFFECTED AREA DAMAGED OR DESTROYED. COMPLETE SHUTDOWN OF CRITICAL FACILITIES FOR > 1 WEEK.	**3**	
	CATASTROPHIC	HIGH NUMBER OF DEATHS/INJURIES POSSIBLE. MORE THAN 50% OF PROPERTY IN AFFECTED AREA DAMAGED OR DESTROYED. COMPLETE SHUTDOWN OF CRITICAL FACILITIES > 30 DAYS.	**4**	
SPATIAL EXTENT How large of an area could be impacted by a hazard event? Are impacts localized or regional?	**NEGLIGIBLE**	LESS THAN 1% OF AREA AFFECTED	**1**	**20%**
	SMALL	BETWEEN 1 & 10% OF AREA AFFECTED	**2**	
	MODERATE	BETWEEN 10 & 50% OF AREA AFFECTED	**3**	
	LARGE	BETWEEN 50 & 100% OF AREA AFFECTED	**4**	
WARNING TIME Is there usually some lead time associated with the hazard event? Have warning measures been implemented?	**MORE THAN 24 HRS**	SELF DEFINED	**1**	**10%**
	12 TO 24 HRS	SELF DEFINED	**2**	
	6 TO 12 HRS	SELF DEFINED	**3**	
	LESS THAN 6 HRS	SELF DEFINED	**4**	
DURATION How long does the hazard event usually last?	**LESS THAN 6 HRS**	SELF DEFINED	**1**	**10%**
	LESS THAN 24 HRS	SELF DEFINED	**2**	
	LESS THAN 1 WEEK	SELF DEFINED	**3**	
	MORE THAN 1 WEEK	SELF DEFINED	**4**	

4.4 ASSET INVENTORY

4.4.1 POPULATION

North Carolina Emergency Management's (NCEM) IRISK database provided the asset inventory used for this vulnerability assessment. Population data in IRISK is pulled from the 2020 Census and includes a breakdown of population into two subpopulations considered to be a greater risk than the general population, elderly and children. Table 4.7 details the population counts by jurisdiction used for the vulnerability assessment.

Table 4.7 – Population Counts by Jurisdiction, 2020

Jurisdiction	2020 Census Population	Elderly (Age 65 and Over)	Children (Age 5 and Under)
Camden			
Unincorporated Camden County	10,647	1,882	554
Subtotal Camden	**10,647**	**1,882**	**554**
Chowan			
Unincorporated Chowan County	9,526	2,329	421
Town of Edenton	4,616	1,190	343
Subtotal Chowan	**14,142**	**3,519**	**764**
Gates			
Unincorporated Gates County	10,620	2,224	388
Town of Gatesville	23	4	1
Subtotal Gates	**10,643**	**2,228**	**389**
Hertford			
Unincorporated Hertford County	18,867	3,764	818
Town of Ahoskie	1,835	402	89
Town of Como	115	24	5
Town of Harrellsville	7	2	0
Town of Murfreesboro	719	150	20
Town of Winton	47	8	4
Village of Cofield	75	20	2
Subtotal Hertford	**21,665**	**4,370**	**938**
Pasquotank			
Unincorporated Pasquotank County	26,547	4,851	1,600
City of Elizabeth City	15,444	2,241	1,087
Subtotal Pasquotank	**41,991**	**7,092**	**2,687**
Perquimans			
Unincorporated Perquimans County	12,696	3,556	557
Town of Hertford	466	121	27
Town of Winfall	166	32	10
Subtotal Perquimans	**13,328**	**3,709**	**594**
Total Region	**112,416**	**22,800**	**5,926**

Source: NCEM IRISK Database; 2020 Decennial Census

4.4.2 PROPERTY

Building counts were also provided by the IRISK database and are detailed in Table 4.8. These values were generated using locally-provided building footprint and parcel data as well as data generated by NCEM. The methodology for generating the building asset inventory is described in greater detail in Section 4.3. The IRISK building inventory reflects an 2.5% increase in total building count and a 15.5% increase in total exposed building value since the development of the 2020 plan. The Planning Area Profile in Section 3 describes recent growth and development and provides context for understanding the degree to which exposure and vulnerability may have increased.

Table 4.8 – Building Counts and Values by Jurisdiction

Jurisdiction	Building Count	Building Value
Camden		
Unincorporated Camden County	5,675	$642,124,479
Subtotal Camden	**5,675**	**$642,124,479**
Chowan		
Unincorporated Chowan County	6,944	$1,129,193,949
Town of Edenton	3,110	$768,038,760
Subtotal Chowan	**10,054**	**$1,897,232,709**
Gates		
Unincorporated Gates County	6,637	$526,858,623
Town of Gatesville	204	$27,526,739
Subtotal Gates	**6,841**	**$554,385,362**
Hertford		
Unincorporated Hertford County	8,307	$831,282,214
Town of Ahoskie	2,744	$432,519,569
Town of Como	91	$3,710,336
Town of Harrellsville	100	$4,999,696
Town of Murfreesboro	2,275	$233,894,542
Town of Winton	479	$31,709,099
Village of Cofield	287	$27,563,079
Subtotal Hertford	**14,283**	**$1,565,678,535**
Pasquotank		
Unincorporated Pasquotank County	10,739	$1,290,538,449
City of Elizabeth City	8,843	$1,399,106,742
Subtotal Pasquotank	**19,582**	**$2,689,645,191**
Perquimans		
Unincorporated Perquimans County	6,399	$904,667,552
Town of Hertford	1,246	$177,913,643
Town of Winfall	428	$60,813,322
Subtotal Perquimans	**8,073**	**$1,143,394,517**
Total Region	**64,508**	**$8,492,460,793**

Source: NCEM IRISK Database; GIS analysis

* City of Elizabeth City building counts and values are accounted for under Pasquotank County.

4.4.3 CRITICAL INFRASTRUCTURE & KEY RESOURCES AND HIGH POTENTIAL LOSS PROPERTIES

The IRISK database also identifies Critical Infrastructure and Key Resources (CIKR) buildings as well as High Potential Loss Properties. These properties are detailed in Table 4.9 and Table 4.10, respectively.

Table 4.9 – Critical Infrastructure and Key Resources by Type and Jurisdiction

Jurisdiction	Food and Agriculture	Banking and Finance	Chemical & Hazardous	Commercial	Communications	Critical Manufacturing	EM	Healthcare	Government Facilities	Defense Industrial Base	National Monuments and Icons	Nuclear Reactors, Materials and	Postal and Shipping	Transportation Systems	Energy	Emergency Services	Water	Other	Total
Camden County																			
Unincorporated Camden County	1,154	40	0	292	0	38	8	0	238	0	0	0	0	0	0	4	10	0	**1,784**
Chowan County																			
Unincorporated Chowan County	980	69	0	205	0	103	2	0	25	0	0	0	0	0	0	4	20	0	**1,408**
Town of Edenton	96	150	0	470	0	166	94	0	110	0	0	0	0	0	2	4	2	0	**1,094**
Gates County																			
Unincorporated Gates County	3,184	2	0	482	0	92	14	0	118	0	0	0	0	60	0	0	4	0	**3,956**
Town of Gatesville	14	0	0	64	0	16	2	0	40	0	0	0	0	8	0	0	0	0	**144**
Hertford																			
Unincorporated Hertford County	2,712	0	0	320	0	136	12	0	102	0	0	0	0	10	26	0	60	0	**3,378**
Town of Ahoskie	34	6	0	480	0	70	70	0	126	0	0	0	0	66	2	0	30	2	**886**
Town of Como	42	0	0	10	0	0	0	0	4	0	0	0	0	0	0	0	2	0	**58**
Town of Harrellsville	0	0	0	20	0	0	0	0	8	0	0	0	0	0	0	0	2	0	**30**
Town of Murfreesboro	120	0	0	222	0	28	12	0	110	0	0	0	0	26	0	0	14	4	**536**
Town of Winton	0	0	0	90	0	14	2	0	44	0	0	0	0	2	0	0	8	0	**160**
Village of Cofield	18	0	0	20	0	58	0	0	4	0	0	0	0	0	4	0	4	0	**108**
Pasquotank County																			
Unincorporated Pasquotank County	628	90	0	334	4	167	13	0	112	0	0	0	0	0	0	5	30	0	**1,383**

Jurisdiction	Food and Agriculture	Banking and Finance	Chemical & Hazardous	Commercial	Communications	Critical Manufacturing	EM	Healthcare	Government Facilities	Defense Industrial Base	National Monuments and Icons	Nuclear Reactors, Materials and	Postal and Shipping	Transportation Systems	Energy	Emergency Services	Water	Other	Total
City of Elizabeth City	34	140	0	667	3	153	44	0	124	0	0	0	0	0	2	11	20	0	**1,198**
Perquimans County																			
Unincorporated Perquimans County	98	2	0	418	0	88	20	0	118	0	0	0	0	48	0	4	0	0	**796**
Town of Hertford	26	32	0	236	6	42	16	0	62	0	0	4	2	36	0	2	0	0	**464**
Town of Winfall	12	0	0	50	0	14	6	0	38	0	0	2	0	16	2	0	0	0	**140**
Total	**9,152**	**531**	**0**	**4,380**	**13**	**1,185**	**315**	**0**	**1,383**	**0**	**0**	**6**	**2**	**272**	**38**	**34**	**206**	**6**	**17,523**

Source: NCEM Risk Management Tool

Table 4.10 – High Potential Loss Properties by Use and Jurisdiction

Jurisdiction	Residential	Commercial	Industrial	Government	Agricultural	Religious	Utilities	Total
Camden County								
Unincorporated Camden County	4	6	2	16	0	0	0	**28**
Chowan County								
Unincorporated Chowan County	2	15	5	6	4	4	17	53
Town of Edenton	20	68	16	22	0	10	2	138
Gates County								
Unincorporated Gates County	0	10	0	8	2	2	4	**26**
Town of Gatesville	0	0	0	2	0	0	0	**2**
Hertford								
Unincorporated Hertford County	2	0	8	12	0	0	50	**72**
Town of Ahoskie	6	30	2	6	0	2	18	**64**
Town of Como	-	-	-	-	-	-	-	-
Town of Harrellsville	-	-	-	-	-	-	-	-
Town of Murfreesboro	0	8	2	30	0	2	2	**44**
Town of Winton	0	0	0	6	0	0	0	**6**

Jurisdiction	Residential	Commercial	Industrial	Government	Agricultural	Religious	Utilities	Total
Village of Cofield	0	0	6	0	0	0	4	**10**
Pasquotank County								
Unincorporated Pasquotank County	11	13	4	29	0	2	7	66
City of Elizabeth City	30	37	2	46	0	12	20	147
Perquimans County								
Unincorporated Perquimans County	74	52	8	38	0	4	0	176
Town of Hertford	4	10	0	18	0	0	0	32
Town of Winfall	0	4	0	6	0	0	0	10
Total	**153**	**253**	**55**	**245**	**6**	**38**	**124**	**874**

Source: NCEM Risk Management Tool

Note: A dash (-) indicates that no high potential loss facilities were reported in RMT.

Using the existing CIKR inventory and local data, the HMPC and community staff refined and supplemented the IRISK asset inventory with a current list of critical facilities. These assets are considered community lifelines, which are defined by FEMA as the buildings and infrastructure that enable the continuous operation of critical business and government functions and are essential to human health and safety or economic security. Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. These critical facilities are a priority for mitigation planning and were examined against known hazard areas, where possible, in this risk assessment.

Critical facilities are summarized in Table 4.11 and shown by County in Figure 4.1 through Figure 4.6. More details on critical facilities are provided in the jurisdictional annexes.

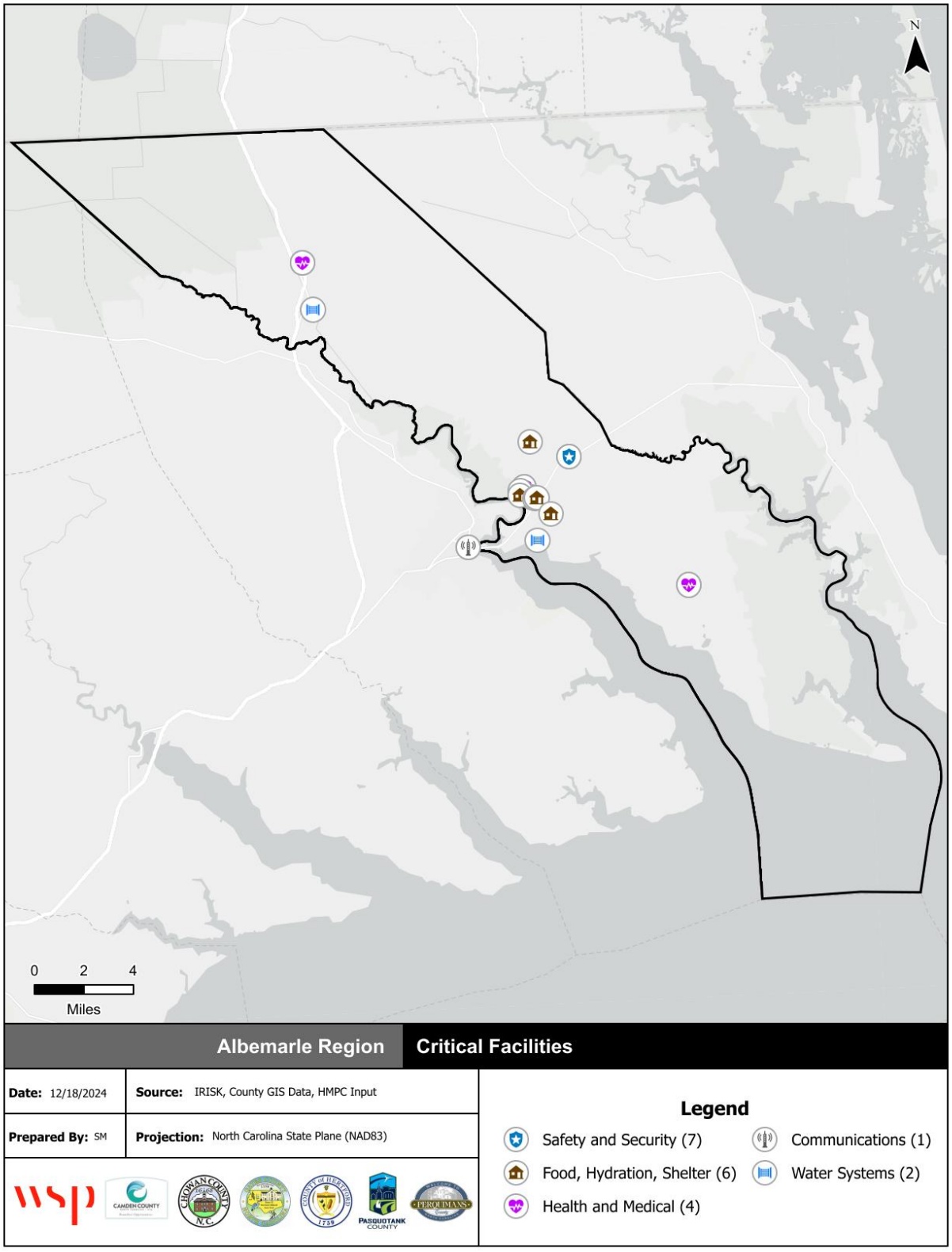
Table 4.11 – Critical Facilities

Jurisdiction	FEMA Lifeline Type								Total
	Communications	Energy	Food, Hydration, Shelter	Hazardous Materials	Health and Medical	Safety and Security	Transportation	Water Systems	
Camden County Total	**-**	**-**	**6**	**-**	**4**	**6**	**-**	**2**	**18**
Chowan County Total	**1**	**-**	**77**	**-**	**1**	**7**	**1**	**11**	**98**
Unincorporated Chowan County	-	-	67	-	-	1	-	6	75
Town of Edenton	-	-	10	-	1	6	1	5	23
Gates County Total	**-**	**-**	**114**	**-**	**-**	**1**	**-**	**1**	**116**
Unincorporated Gates County	-	-	114	-	-	-	-	1	115

Jurisdiction	FEMA Lifeline Type								Total
	Communications	Energy	Food, Hydration, Shelter	Hazardous Materials	Health and Medical	Safety and Security	Transportation	Water Systems	
Town of Gatesville	-	-	-	-	-	1	-	-	1
Hertford County Total	**-**	**-**	**176**	**-**	**1**	**3**	**-**	**28**	**208**
Unincorporated Hertford County	-	-	176	-	-	1	-	13	190
Town of Ahoskie	-	-	-	-	1	-	-	5	6
Town of Como	-	-	-	-	-	-	-	-	-
Town of Harrellsville	-	-	-	-	-	2	-	2	4
Town of Murfreesboro	-	-	-	-	-	-	-	3	3
Town of Winton	-	-	-	-	-	-	-	3	3
Village of Cofield	-	-	-	-	-	-	-	2	2
Pasquotank County Total	**2**	**-**	**21**	**-**	**6**	**21**	**1**	**4**	**55**
Unincorporated Pasquotank County	-	-	5	-	2	8	1	3	19
City of Elizabeth City	2	-	16	-	4	13	-	1	36
Perquimans County Total	**-**	**-**	**115**	**-**	**1**	**13**	**-**	**6**	**135**
Unincorporated Perquimans County	-	-	102	-	-	4	-	2	108
Town of Hertford	-	-	12	-	1	7	-	2	22
Town of Winfall	-	-	1	-	-	2	-	2	5
Region Total	**3**	**-**	**509**	**-**	**13**	**51**	**2**	**52**	**630**

Source: NCEM IRISK Database; GIS analysis

Figure 4.1 – Camden County Critical Facilities



Source: NCEM IRISK Database, GIS Analysis

Figure 4.2 – Chowan County Critical Facilities

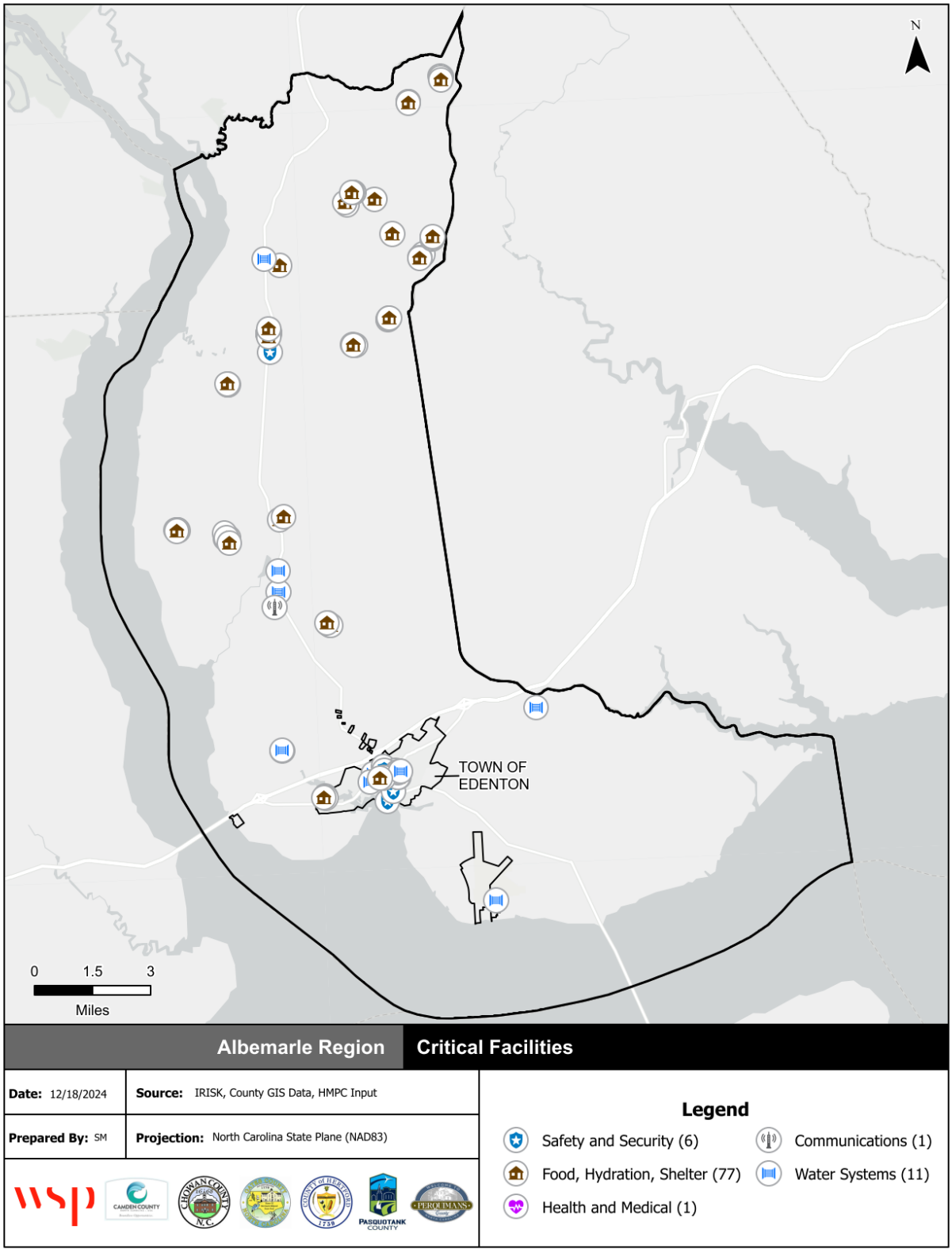
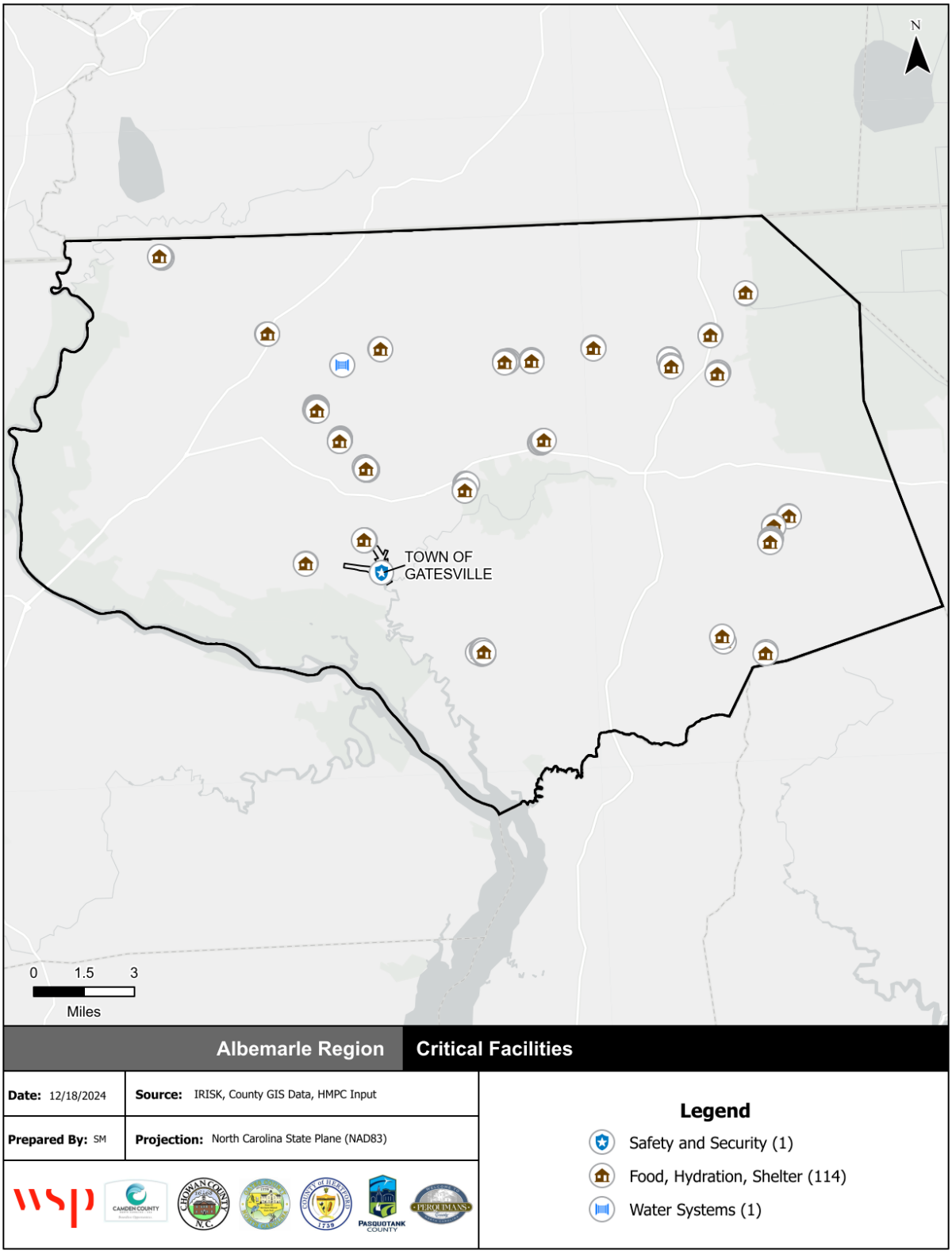
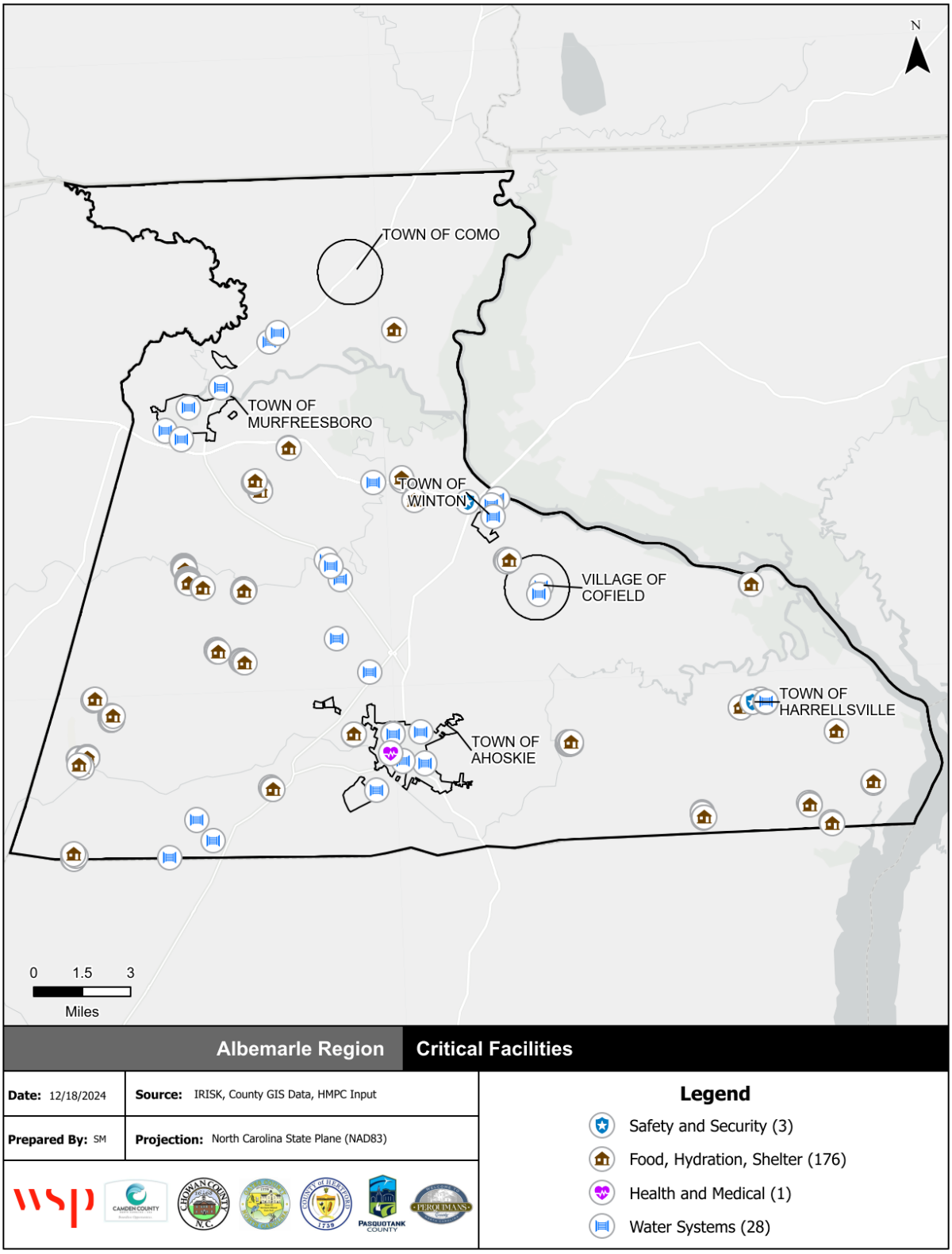


Figure 4.3 – Gates County Critical Facilities



Source: NCEM IRISK Database, GIS Analysis

Figure 4.4 – Hertford County Critical Facilities



Source: NCEM IRISK Database, GIS Analysis

Figure 4.5 – Pasquotank County Critical Facilities

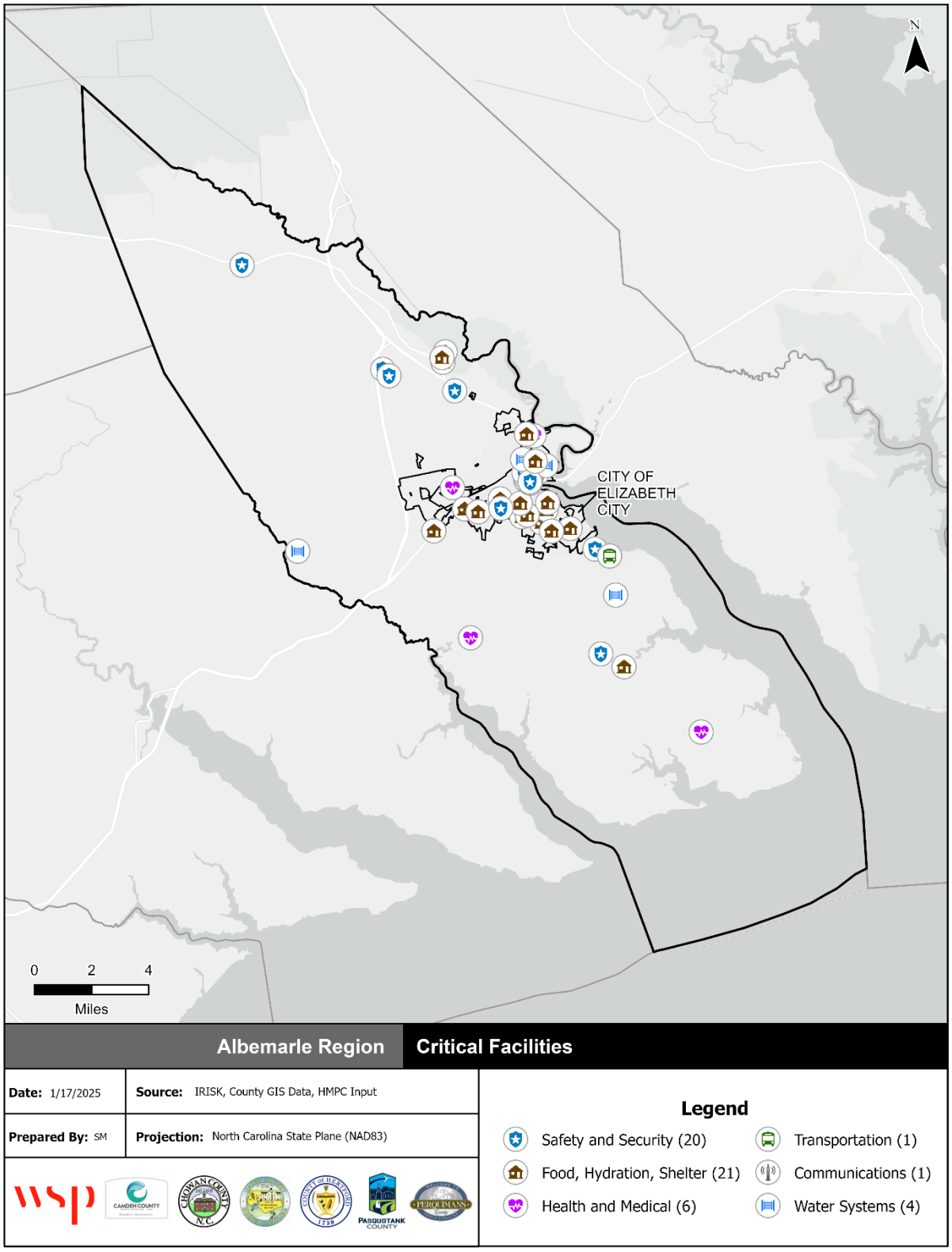
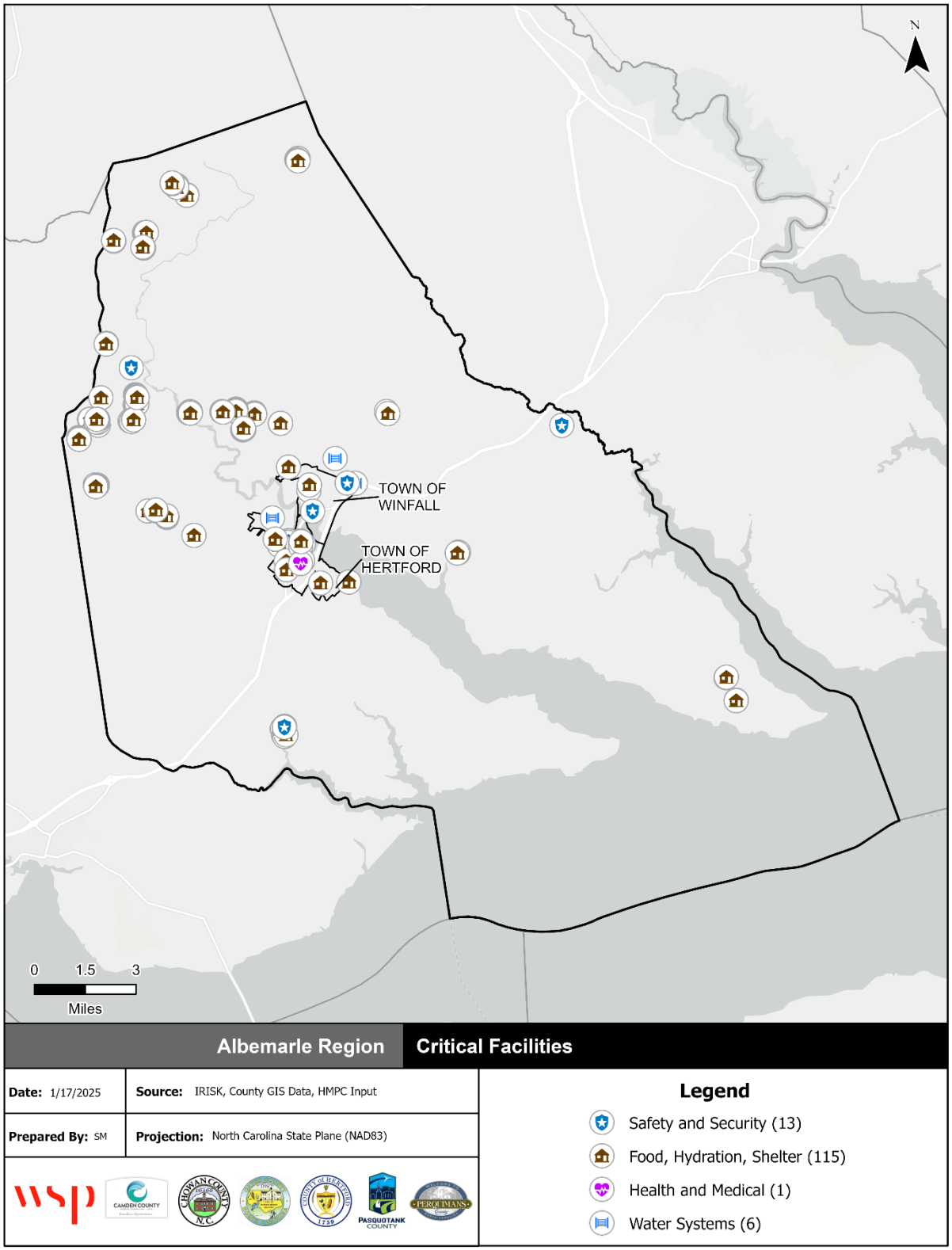


Figure 4.6 – Perquimans County Critical Facilities



4.4.4 AGRICULTURE

The agricultural industry is also highly vulnerable to natural hazards, which can cause both crop and livestock losses. The exposure of agriculture in the region was measured using the USDA's 2022 Census of Agriculture. Table 4.12 below summarizes agricultural exposure in the Albemarle Region by county.

Table 4.12 – Summary of Agriculture Exposure by County

County	Number of Farms	Acreage in Farms	Proportion of Total Land Area in Farms	Acreage with Crop Insurance	Market Value of Agricultural Products	Estimate Market Value of Land & Buildings
Camden	76	54,621	35.5%	36,879 (67.5%)	$64,607,000	$218,886,000
Chowan	134	73,439	66.5%	47,452 (64.6%)	$86,772,000	$291,791,000
Gates	122	71,866	33.0%	48,250 (67.1%)	$137,377,000	$307,182,000
Hertford	97	67,209	29.7%	42,796 (63.7%)	$102,381,000	$243,519,000
Pasquotank	133	95,870	66.0%	81,889 (85.4%)	$81,736,000	$420,135,000
Perquimans	137	78,264	49.5%	65,582 (87.8%)	$102,879,000	$306,623,000

Source: USDA 2022 Census of Agriculture

4.5 HAZARD PROFILES, ANALYSIS, AND VULNERABILITY

4.5.1 DAM & LEVEE FAILURE

HAZARD BACKGROUND

DAM FAILURE

A dam is a barrier constructed across a watercourse that stores, controls, or diverts water. Dams are usually constructed of earth, rock, concrete, or mine tailings. The water impounded behind a dam is referred to as the reservoir and is measured in acre-feet. One acre-foot is the volume of water that covers one acre of land to a depth of one foot. Dams can benefit farmland, provide recreation areas, generate electrical power, and help control erosion and flooding issues. A dam failure is the collapse or breach of a dam that causes downstream flooding. Dam failures may be caused by natural events, manmade events, or a combination. Due to the lack of advance warning, failures resulting from natural events, such as earthquakes or landslides, may be particularly severe. Prolonged rainfall and subsequent flooding is the most common cause of dam failure.

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

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

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

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

Dam failure can occur with little warning. Intense storms may produce a flood in a few hours or even minutes for upstream locations. Flash floods occur within six hours of the beginning of heavy rainfall,

and dam failure may occur within hours of the first signs of breaching. Other failures and breaches can take much longer to occur, from days to weeks, as a result of debris jams or the accumulation of melting snow.

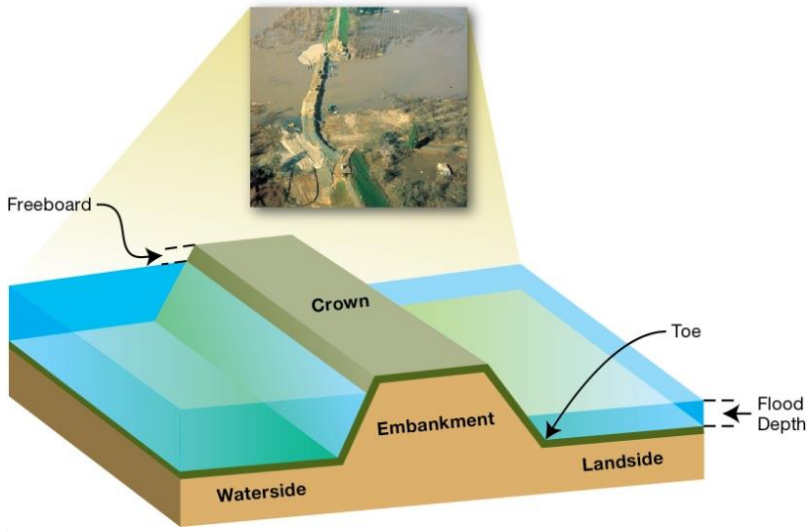
Dam failures are of particular concern because the failure of a large dam has the potential to cause more death and destruction than the failure of any other manmade structure. This is because of the destructive power of the flood wave that would be released by the sudden collapse of a large dam. Dams are innately hazardous structures. Failure or poor operation can result in the release of the reservoir contents—this can include water, mine wastes, or agricultural refuse–causing negative impacts upstream or downstream or at locations far from the dam. Negative impacts of primary concern are loss of human life, property damage, lifeline disruption, and environmental damage.

LEVEE FAILURE

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

Levees and floodwalls are constructed from the earth, compacted soil or artificial materials, such as concrete or steel. To protect against erosion and scouring, earthen levees can be covered with grass and gravel or hard surfaces like stone, asphalt, or concrete. Levees and floodwalls are typically built parallel to a waterway, most often a river, in order to reduce the risk of flooding to the area behind it. Figure 4.7 shows the anatomy of a typical levee.

Figure 4.7 – Anatomy of a Typical Levee



Source: FEMA, What is a Levee Fact Sheet, August 2020

Levees provide strong flood protection, but they are not failsafe. Levees are designed to protect against a specific flood level and could be overtopped during severe weather events. Levees reduce, not eliminate, the risk to individuals and structures behind them. A levee system failure or overtopping can create severe flooding and high-water velocities. It is important to remember that no levee provides protection

from events for which it was not designed, and proper operation and maintenance are necessary to reduce the probability of failure.

For both dam and levee failure events, there is generally very little warning time. A failure may result from heavy rains and flash flooding and occur within hours of the first signs of breaching. The duration of the flood will vary but may last as long as a week.

Warning Time: 4 – Less than 6 hours

Duration: 3 – Less than one week

LOCATION

DAM FAILURE

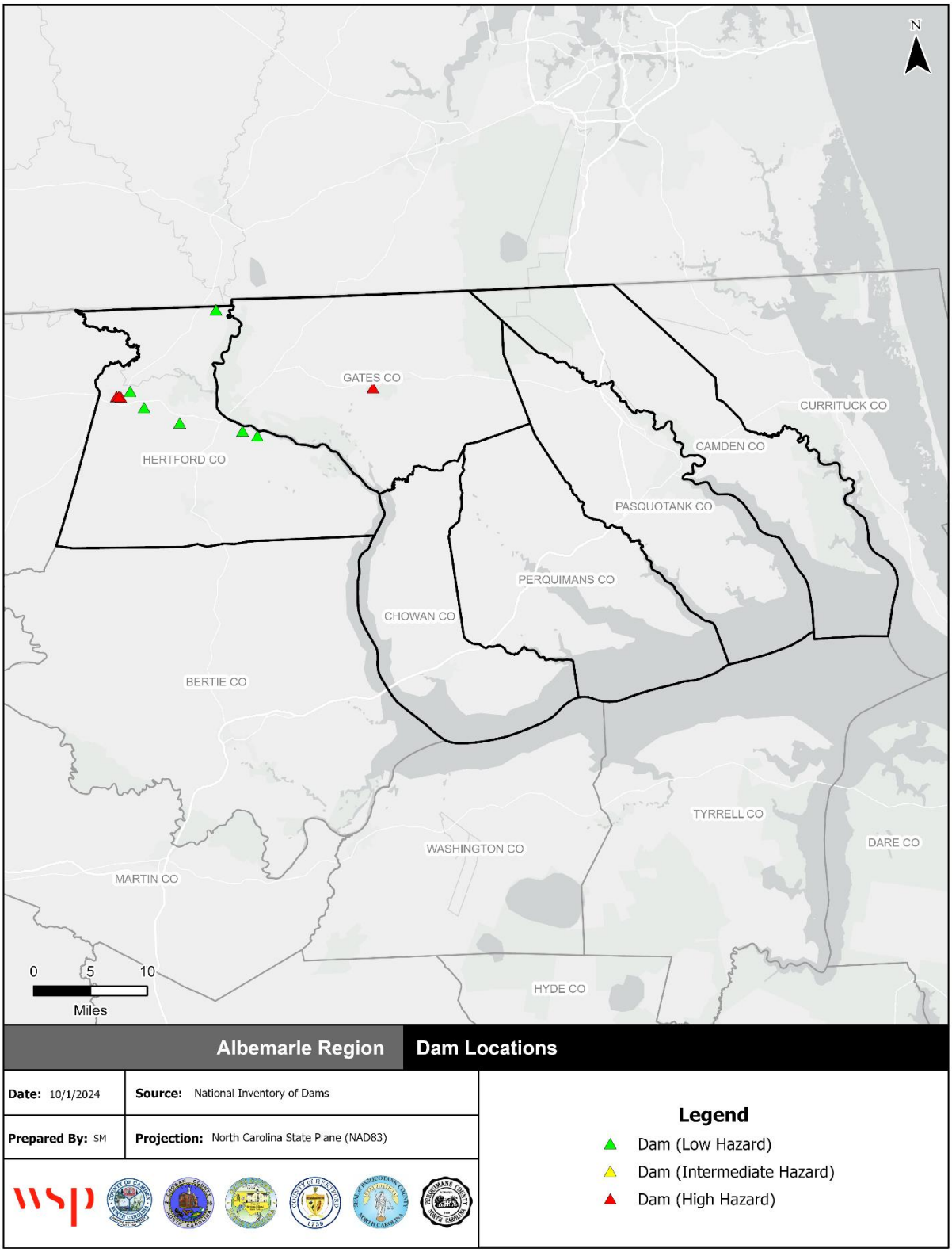
The North Carolina Dam Inventory, maintained by North Carolina Department of Environmental Quality, provides a detailed inventory of all dams in the state. As of December 2023, there are 15 dams in the Albemarle Region, of which 10 are rated low hazard, 1 is rated intermediate hazard, and 4 are rated high hazard. Table 4.13 lists all dams with high hazard potential in the region. Figure 4.8 shows the location of all dams in the Albemarle Region. Camden, Chowan, Pasquotank, and Perquimans counties do not contain any dams.

Table 4.13 - High Hazard Dams in the Albemarle Region

Dam Name	NID ID	Ownership	Max Capacity (Ac-Ft)	Nearest Downstream Location
Gates County				
Merchants Millpond Dam	NC05680	Unknown	3100	Unknown
Hertford County				
Chowan University Dam	NC03079	Private	55	Murfreesboro
Holly Hill Road Dam	NC03080	Private	32	Murfreesboro
Revelles Pond Dam Upper	NC03081	Private	30	Murfreesboro

Source: North Carolina Dam Inventory

Figure 4.8 – Dam Locations



Source: North Carolina Dam Inventory, October 2024

LEVEE FAILURE

According to the US Army Corps of Engineers' (USACE) National Levee Database (NLD), there is one recognized levee in the Albemarle Region, located in Pasquotank County. This levee is detailed in Table 4.14 and its location is shown in Figure 4.9.

Table 4.14 – Levee in the Albemarle Region

Levee Name	Year Constructed	Embankment Length (mi)	Levee Safety Action Classification	People at Risk	Structures at Risk	Property Value
Pasquotank River FCP	1959	3.09	Low	6	4	$300,000

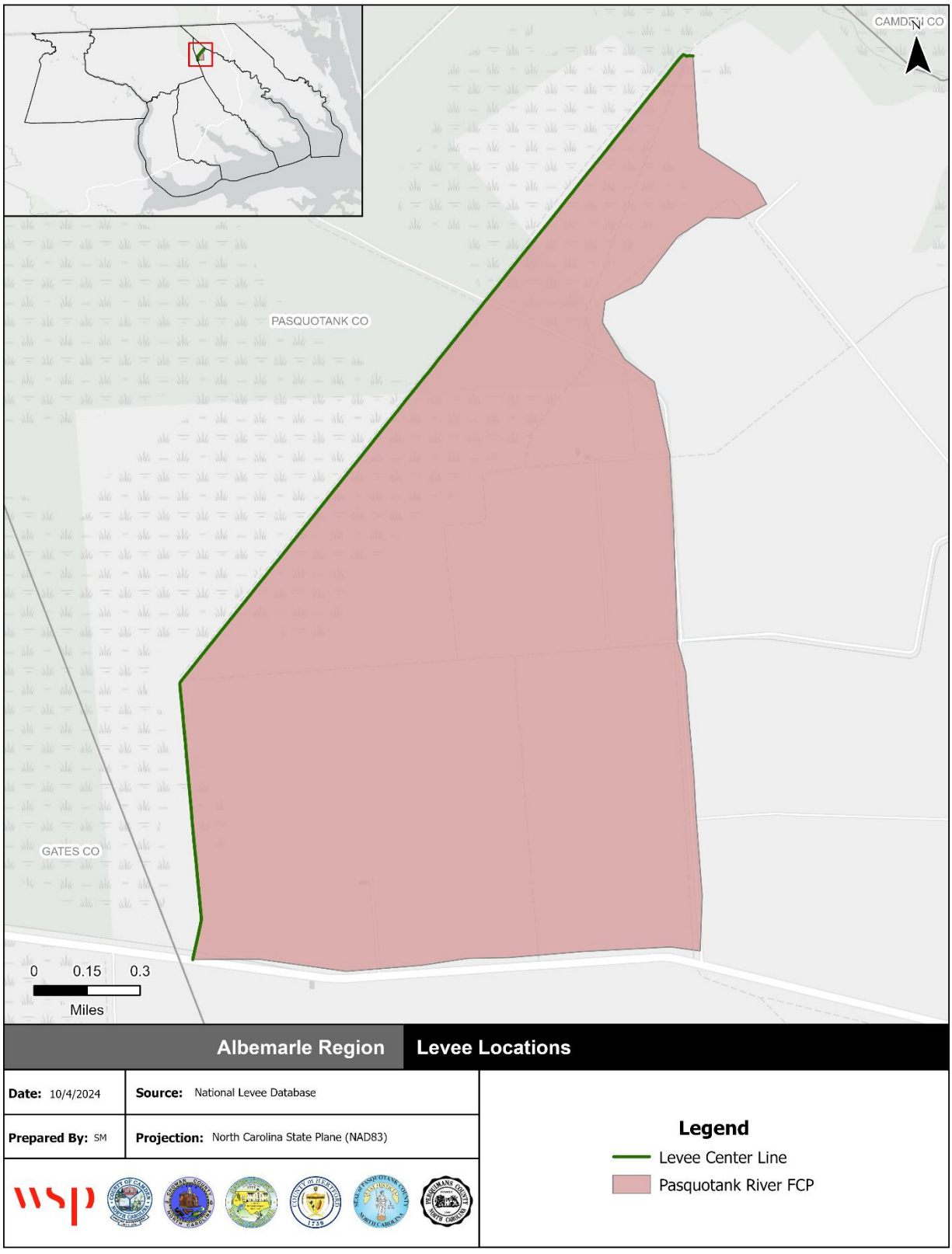
Source: National Levee Database

The following is a description of the Pasquotank River Flood Control Project (FCP) levee as provided by the USACE NLD:

"The essential elements of the project consisted of a low levee, with gated outlets (gravity drain pipes) at Newland Canal, Shepard Ditch, and the Local Canal. Newland Canal is located at the southern end of the Project, Local Canal at the northern end, and Shepard Ditch approximately in the middle. The levee was constructed to an elevation of 21 feet at U. S. Highway 158, and decreasing in elevation to 19 feet where it intersects the Local Canal about 2,100 feet southwest of the Pasquotank River. The levee was designed at a length of about 3.1 miles, a top width of 8 feet, and side slopes of 1 vertical to 2 horizontal. The average height is about 3.5 feet above normal ground. Excavation for the levee was obtained from a ditch along the land side of the levee between Newland Canal and Shepard Ditch and from the swamp side for the remainder of the levee's length. The ditch is located so as to provide a minimum berm of 20 feet between the toe of the levee and the ditch for use by maintenance equipment. The ditch was graded to provide drainage toward existing drainage canals and to the river. One 48-inch culvert with slide gate was installed in the levee at Newland Canal, a 36-inch culvert with slide gate at Shepard Ditch, and a 36-inch culvert with flap gate at the Local Canal."

Spatial Extent: 1 – Negligible

Figure 4.9 – Levee Locations in the Albemarle Region



Source: National Levee Database

EXTENT

DAM FAILURE

Each state has definitions and methods to determine the hazard potential of a dam. In North Carolina, dams are regulated by the state if they are 25 feet or more in height and impound 50 acre-feet or more. Dams and impoundments smaller than that may fall under state regulation if it is determined that failure of the dam could result in loss of human life or significant damage to property. The height of a dam is from the highest point on the crest of the dam to the lowest point on the downstream toe, and the storage capacity is the volume impounded at the elevation of the highest point on the crest of the dam.

Dam Safety Program engineers determine the "hazard potential" of a dam, meaning the probable damage that would occur if the structure failed, in terms of loss of human life and economic loss or environmental damage. Dams are assigned one of three classes based on the nature of their hazard potential:

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

Table 4.15 – 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
	Loss of human life*	Probable loss of 1 or more human lives
High	Economic damage	More than $200,000
	*Probable loss of human life due to breached roadway or bridge on or below the dam	250 or more vehicles per day

Source: NCDENR

LEVEE FAILURE

The USACE rates levee risk using the Levee Systems Action Classification (LSAC) which is a scale of 1 – Very High to 5 – Very Low. Definitions are provided in terms of actions to take for risk reduction, as detailed in Table 4.16 below.

Table 4.16 – Levee Systems Action Classification (LSAC) Rating Definitions

Rating	Actions for Levee Systems and Leveed Areas in this Class
1 – Very High	Based on risk drivers, take immediate action to implement interim risk reduction measures. Increase frequency of levee monitoring, communicate risk characteristics to the community within an expedited timeframe; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning systems and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions as very high priority.
2 – High	Based on risk drivers, implement interim risk reduction measures. Increase frequency of levee monitoring; communicate risk characteristics to the community within an expedited timeframe; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions as high priority.
3 – Moderate	Based on risk drivers, implement interim risk reduction measures as appropriate. Verify risk information is current and implement routine monitoring program; assure O&M is up to date; communicate risk characteristics to the community in a timely manner; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions as a priority.
4 – Low	Verify risk information is current and implement routine monitoring program and interim risk reduction measures if appropriate; assure O&M is up to date; communicate risk characteristics to the community as appropriate; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions to further reduce risk to as low as practicable.
5 – Very Low	Continue to implement routine levee monitoring program, including operation and maintenance, inspections, and monitoring of risk. Communicate risk characteristics to the community as appropriate; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and recommend purchase of flood insurance.

Source: USACE National Levee Database

The only levee in the planning area is rated Low on the LSAC scale, therefore impacts from a failure would be minor.

Failure of a dam or levee would affect only a negligible area but could cause serious property damage within the affected area.

Impact: 2 – Limited

HISTORICAL OCCURRENCES

No records could be found of historical instances of dam failure in the region.

There is no record of past occurrence of levee failure, however the National Levee Database notes that the Pasquotank River FCP levee was likely overtopped during Hurricane Floyd in 1999.

PROBABILITY OF FUTURE OCCURRENCE

Given the significant presence of high hazard dams in Gates and Hertford counties in the Albemarle Region, failure of a dam is possible. Dam failure has not occurred in the region since 1996, however historical events alone do not provide an adequate estimate of potential future occurrence. With heavy rain events becoming more frequent and intense, conditions conducive to dam failure may occur more frequently as well. As the next downstream community for three of the four, Murfreesboro in Hertford County has an especially high level of risk to a dam failure.

According to the national Levee Database, the annual probability of the flood event that would load the levee system to the point of overtopping is 0.05%. Therefore, failure of the levee due to overtopping is unlikely.

Probability: 1 – Unlikely

CLIMATE CHANGE

Studies have been conducted to investigate the impact of climate change scenarios on dam safety. The safety of dams for the future climate can be based on an evaluation of changes in design floods and the freeboard available to accommodate an increase in flood levels. The results from the studies indicate that the design floods with the corresponding outflow floods and flood water levels will increase in the future, and this increase will affect the safety of the dams in the future. Studies concluded that the total hydrological failure probability of a dam will increase in the future climate and that the extent and depth of flood waters will increase by the future dam break scenario. These changes would likely produce similar impacts on levees.

VULNERABILITY ASSESSMENT

METHODOLOGIES AND ASSUMPTIONS

Dam inundation areas were not available for the identified dams; therefore, a quantitative vulnerability assessment could not be completed. Vulnerability discussed below is based on anecdotal evidence and theoretical understanding of potential risks.

PEOPLE

A person's immediate vulnerability to a dam failure is directly associated with the person's distance downstream of the dam as well as proximity to the stream carrying the floodwater from the failure. For dams that have an Emergency Action Plan (EAP), the vulnerability of loss of life for persons in their homes or on their property may be mitigated by following the EAP evacuation procedures; however, the displaced persons may still incur sheltering costs. For persons located on the river (e.g. for recreation) the vulnerability of loss of life is significant.

People are also vulnerable to the loss of the uses of the lake upstream of a dam following failure. Several uses are minor, such as aesthetics or recreational use. However, some lakes serve as drinking water supplies and their loss could disrupt the drinking water supply and present a public health problem.

The NLD estimates that 6 people are at risk to levee failure in the Region, all in Pasquotank County.

PROPERTY

Vulnerability of the built environment includes damage to the dam itself and any man-made feature located within the inundation area caused by the dam failure. Downstream of the dam, vulnerability includes potential damage to homes, personal property, commercial buildings and property, and government owned buildings and property; destruction of bridge or culvert crossings; weakening of

bridge supports through scour; and damage or destruction of public or private infrastructure that cross the stream such as water and sewer lines, gas lines and power lines. Water dependent structures on the lake upstream of the dam, such as docks/piers, floating structures or water intake structures, may be damaged by the rapid reduction in water level during the failure.

Similarly, levee failures can result in inundation and damages to buildings, personal property, and infrastructure. If a levee fails or is overtopped, the resulting flooding may be severe, as the levee then acts as a barrier, preventing drainage of the flood waters. According to NLD, there are 4 buildings at risk in leveed areas, worth an estimated $300,000.

ENVIRONMENT

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

CONSEQUENCE ANALYSIS

Table 4.17 summarizes the potential negative consequences of dam & levee failure.

Table 4.17 – Consequence Analysis – Dam and Levee Failure

Category	Consequences
Public	Localized impact expected to be severe for inundation area and moderate to light for other adversely affected areas.
Responders	Localized impact expected to limit damage to personnel in the inundation area at the time of the incident.
Continuity of Operations (including Continued Delivery of Services)	Damage to facilities/personnel in the area of the incident may require temporary relocation of some operations. Localized disruption of roads and/or utilities may postpone delivery of some services. Regulatory waivers may be needed locally. Fulfillment of some contracts may be difficult. Impact may reduce deliveries.
Property, Facilities and Infrastructure	Localized impact to facilities and infrastructure in the inundation area of the incident. Some severe damage possible.
Environment	Localized impact expected to be severe for inundation area and moderate to light for other adversely affected areas. Consequences include erosion, water quality degradation, wildlife displacement or destruction, and habitat destruction.
Economic Condition of the Jurisdiction	Local economy and finances adversely affected, possibly for an extended period of time, depending on damage and length of investigation.
Public Confidence in the Jurisdiction's Governance	Localized impact expected to primarily adversely affect only the dam owner and local entities.

HAZARD SUMMARY BY JURISDICTION

The following table summarizes dam and levee failure hazard risk by jurisdiction. Warning time and duration are inherent to the hazard and remain constant across jurisdictions. Spatial extent of any dam or levee failure will be negligible relative to the planning area. Jurisdictions with high hazard dams or levees

upstream or within their boundaries were assigned a probability rating of possible and an impact score of critical. Jurisdictions with no high hazard dams or levees were assigned a probability rating of unlikely and an impact rating of limited.

Jurisdiction	Probability	Impact	Spatial Extent	Warning Time	Duration	Score	Priority
Camden County	1	2	1	4	3	1.8	L
Chowan County	1	2	1	4	3	1.8	L
Edenton	1	2	1	4	3	1.8	L
Gates County	2	3	1	4	3	2.4	M
Gatesville	2	3	1	4	3	2.4	M
Hertford County	2	3	1	4	3	2.4	M
Ahoskie	1	2	1	4	3	1.8	L
Como	1	2	1	4	3	1.8	L
Harrellsville	1	2	1	4	3	1.8	L
Murfreesboro	2	3	1	4	3	2.4	M
Winton	1	2	1	4	3	1.8	L
Cofield	1	2	1	4	3	1.8	L
Pasquotank County	2	3	1	4	3	2.4	M
Elizabeth City	1	2	1	4	3	1.8	L
Perquimans County	1	2	1	4	3	1.8	L
Hertford	1	2	1	4	3	1.8	L
Winfall	1	2	1	4	3	1.8	L

4.5.2 DROUGHT

HAZARD BACKGROUND

Drought is a condition of climatic dryness that is severe enough to reduce soil moisture and water below the minimum necessary for sustaining plant, animal, and human life systems. Influencing factors include temperature patterns, precipitation patterns, agricultural and domestic water-supply needs, and growth. Lack of annual precipitation and poor water conservation practices can result in drought conditions.

Drought is a gradual phenomenon. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Most natural disasters, such as floods or wildland fires, occur relatively rapidly and afford little time for preparing for disaster response. Droughts occur slowly, over a multi-year period, and can take years before the consequences are realized. It is often not obvious or easy to quantify when a drought begins and ends. Droughts can be a short-term event over several months or a long-term event that lasts for years or even decades.

Drought is a complex issue involving many factors—it occurs when a normal amount of moisture is not available to satisfy an area's usual water-consuming activities. Drought can often be defined regionally based on its effects and common drought types are detailed below:

- **Meteorological drought** is usually defined by a period of below average water supply.
- **Agricultural drought** occurs when there is an inadequate water supply to meet the needs of the State's crops and other agricultural operations such as livestock.
- **Hydrological drought** is defined as deficiencies in surface and subsurface water supplies. It is generally measured as streamflow, snowpack, and as lake, reservoir, and groundwater levels.
- **Socioeconomic drought** occurs when a drought impacts health, well-being, and quality of life or when a drought starts to have an adverse economic impact on a region.

Drought impacts are wide-reaching and may be economic, environmental, and/or societal. The most significant impacts associated with drought in the Albemarle Region are those related to water intensive activities such as agriculture, wildland fire protection, municipal usage, commerce, tourism, recreation, and wildlife preservation. Drought conditions can also cause soil to compact, increasing an area's susceptibility to flooding, and reduce vegetation cover, which exposes soil to wine and erosion. A reduction to electric power generation and water quality deterioration are also potential problems.

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

The **Palmer Drought Severity Index** (PDSI) devised in 1965, was the first drought indicator to assess moisture status comprehensively. It uses temperature and precipitation data to calculate water supply and demand, incorporates soil moisture, and is considered most effective for unirrigated cropland. It primarily reflects long-term drought and has been used extensively to initiate drought relief. It is more complex than the Standardized Precipitation Index (SPI) and the Drought Monitor.

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

Describe local conditions pertaining to this hazard. Include descriptions of geographic boundaries, recognized districts, localized areas of concern, etc.

The State of North Carolina has a Drought Assessment and Response Plan as an Annex to its Emergency Operations Plan. This plan provides the framework to coordinate statewide response to a drought incident.

Warning Time: 1 – More than 24 hours

Duration: 4 – More than one week

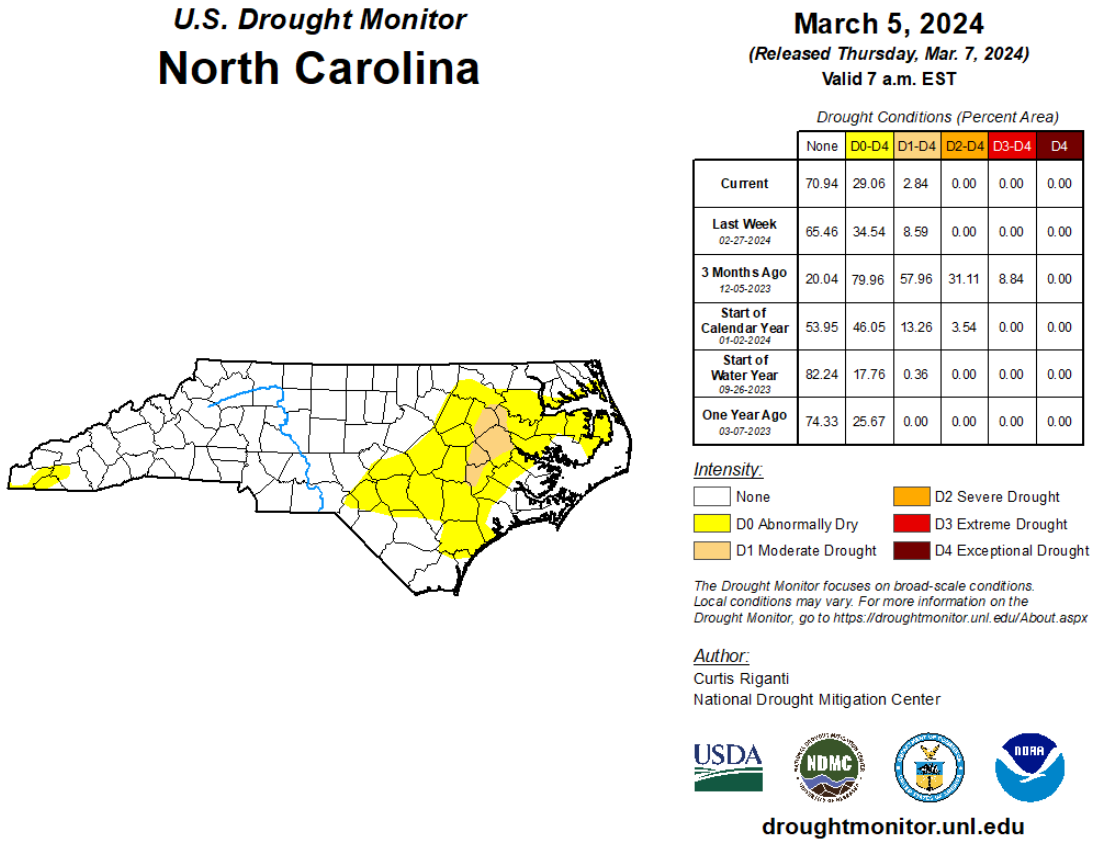
LOCATION

Drought poses a regional threat that can encompass an entire planning area and in certain instances even an entire state. The National Weather Service views drought and extreme heat as phenomena affecting broad forecast "zones", making it uncommon to pinpoint locations within planning areas that are more vulnerable to these hazards than others. From this perspective, each county is perceived to be uniformly at risk of experiencing drought and extreme heat. Historically, the Eastern United States has experienced fewer significant long-term droughts compared to the Central and Western regions of the country. Although, there has been an increase in drought throughout the Region in recent years.

Figure 4.10 notes the U.S. Drought Monitor's drought ratings for North Carolina as of March 5, 2024; as of that date, the southeastern part of the region has experienced abnormally dry conditions. Although, this is not the case for the entire region. This map shows the regional nature of drought.

Spatial Extent: 4 – Large

Figure 4.10 – US Drought Monitor for Week of March 5, 2024



Source: U.S. Drought Monitor

EXTENT

The most significant impacts associated with drought in the Albemarle Region are those related to water intensive activities such as agriculture, wildfire protection, municipal usage, commerce, tourism, recreation, and wildlife preservation. Drought conditions can also cause soil to compact and not absorb water well, potentially making an area more susceptible to flooding.

Drought is typically assessed in terms of intensity, utilizing the U.S. Drought Monitor Scale. This scale evaluates drought conditions by considering various factors such as the Palmer Drought Severity Index, the Standardized Precipitation Index, the Keetch-Byram Drought Index, soil moisture indicators, and other relevant information including the impact on communities. Detailed classifications employed by U.S. Drought Monitor is outlined in Figure 4.11. When the scale indicates a severity of D2 (severe) or higher, it commonly signifies potential losses in crops or pastures, water scarcity issues, and the necessity to implement water conservation measures. Majority of droughts in the region fall into D0 (abnormal) to D1 (moderate), although the Albemarle Region remains vulnerable to droughts of any severity level.

Figure 4.11 – US Drought Monitor Classifications

			Ranges				
Category	Description	Possible Impacts	Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought: ▪ short-term dryness slowing planting, growth of crops or pastures Coming out of drought: ▪ some lingering water deficits ▪ pastures or crops not fully recovered	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	▪ Some damage to crops, pastures ▪ Streams, reservoirs, or wells low, some water shortages developing or imminent ▪ Voluntary water-use restrictions requested	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	▪ Crop or pasture losses likely ▪ Water shortages common ▪ Water restrictions imposed	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	▪ Major crop/pasture losses ▪ Widespread water shortages or restrictions	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	▪ Exceptional and widespread crop/pasture losses ▪ Shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

Source: US Drought Monitor

Though most droughts experienced in the Albemarle Region fall into the D0 (abnormal) or D1 (moderate) category, the counties in the region are susceptible to any of these levels of drought. All counties have experienced at least D2 (severe) drought conditions in the last 20 years.

Impact: 2 – Limited

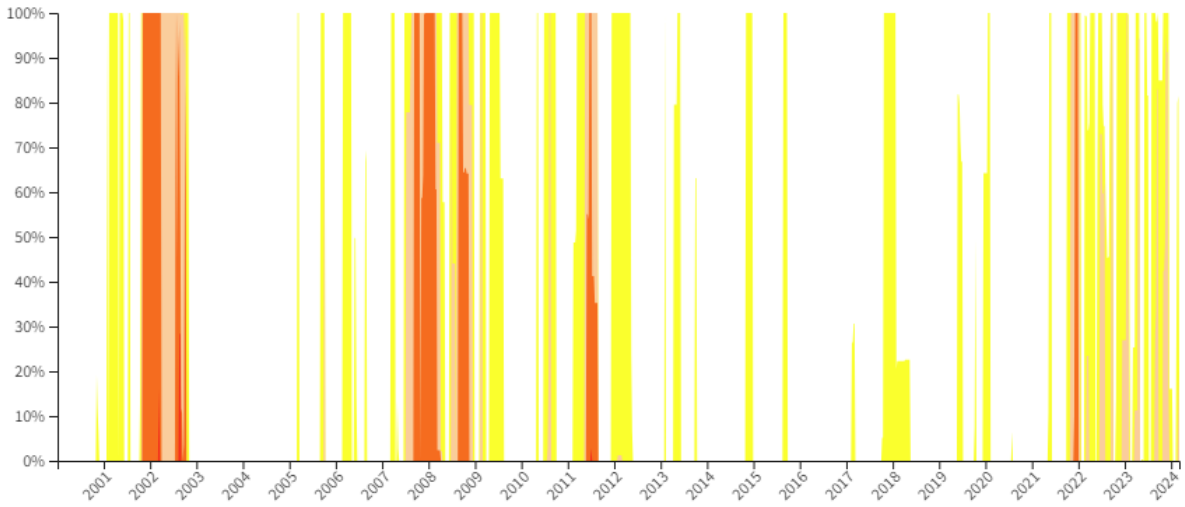
HISTORICAL OCCURRENCES

Figure 4.12 through Figure 4.17 show historical periods where each county was considered in some level of drought condition. The color key shown in Figure 4.11 indicates the intensity of the drought.

CAMDEN COUNTY

Between 2000 and 2024, Camden County was in some level of drought 36.2% of the time.

Figure 4.12 – US Drought Monitor Historical Trends – Camden County 2000-2024

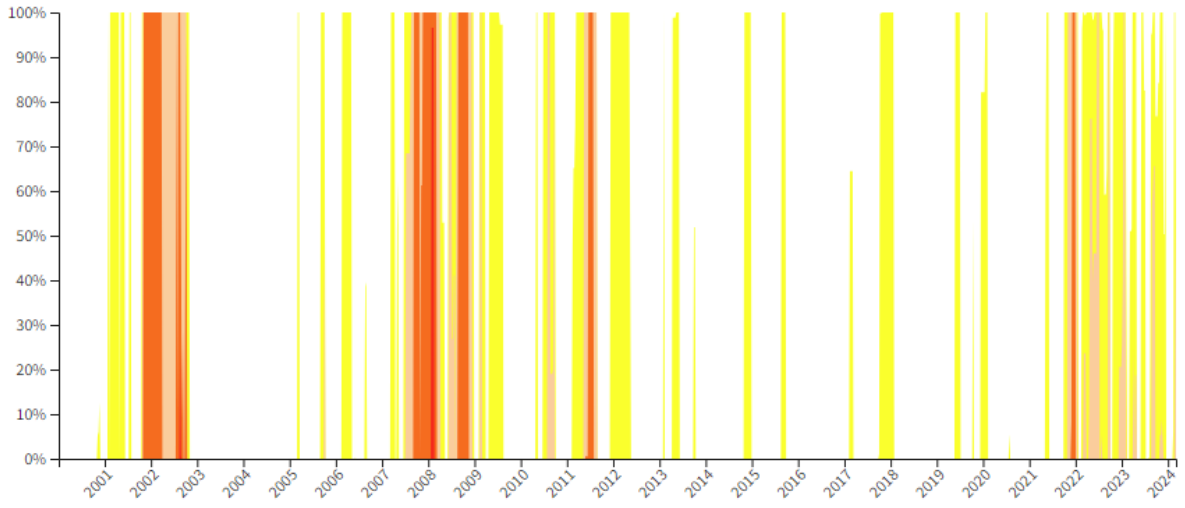


Source: U.S. Drought Monitor

CHOWAN COUNTY

Between 2000 and 2024, Chowan County was in some level of drought 34.5% of the time. The County recorded nearly 5 weeks in "extreme drought".

Figure 4.13 – US Drought Monitor Historical Trends – Chowan County 2000-2024

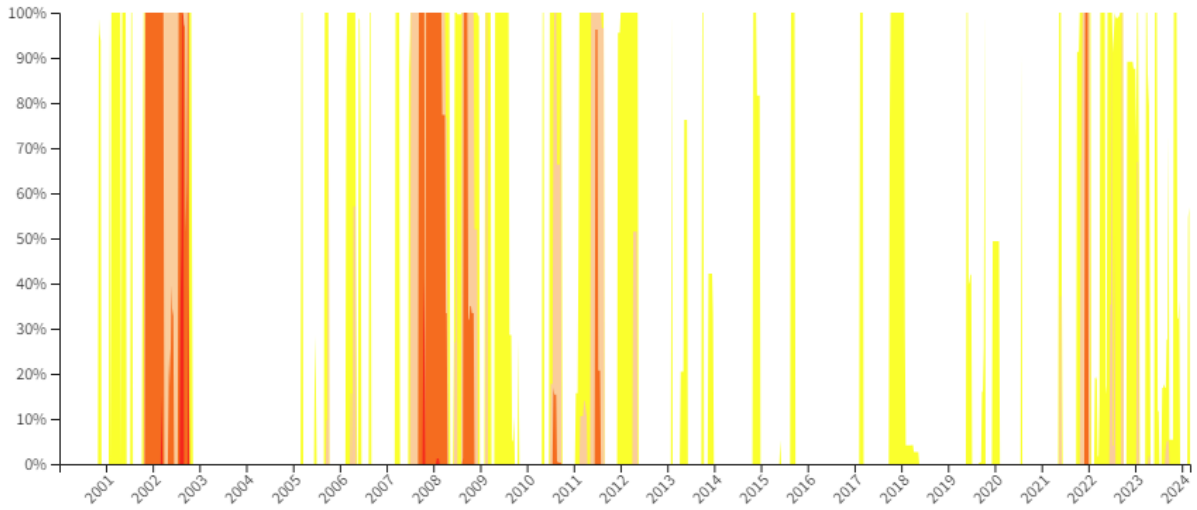


Source: U.S. Drought Monitor

GATES COUNTY

Between 2000 and 2024, Gates County was in some level of drought 37.6% of the time. The County recorded eleven weeks in "extreme" drought during this timeframe.

Figure 4.14 – US Drought Monitor Historical Trends – Gates County 2000-2024

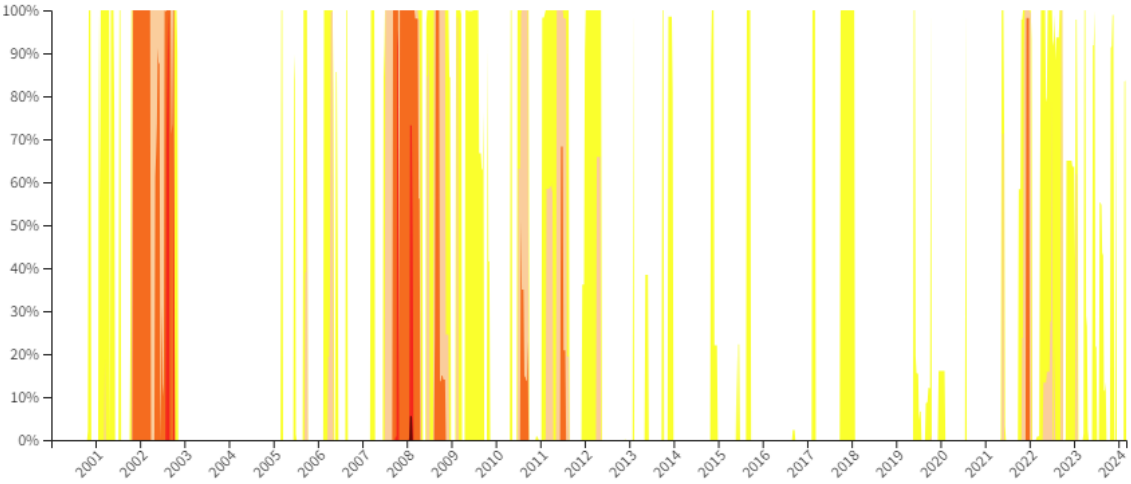


Source: U.S. Drought Monitor

HERTFORD COUNTY

Between 2000 and 2024, Hertford County was in some level of drought 37.2% of the time. The County recorded 14 weeks in "extreme" drought and three weeks in "exceptional" drought during this timeframe.

Figure 4.15 – US Drought Monitor Historical Trends – Hertford County 2000-2024

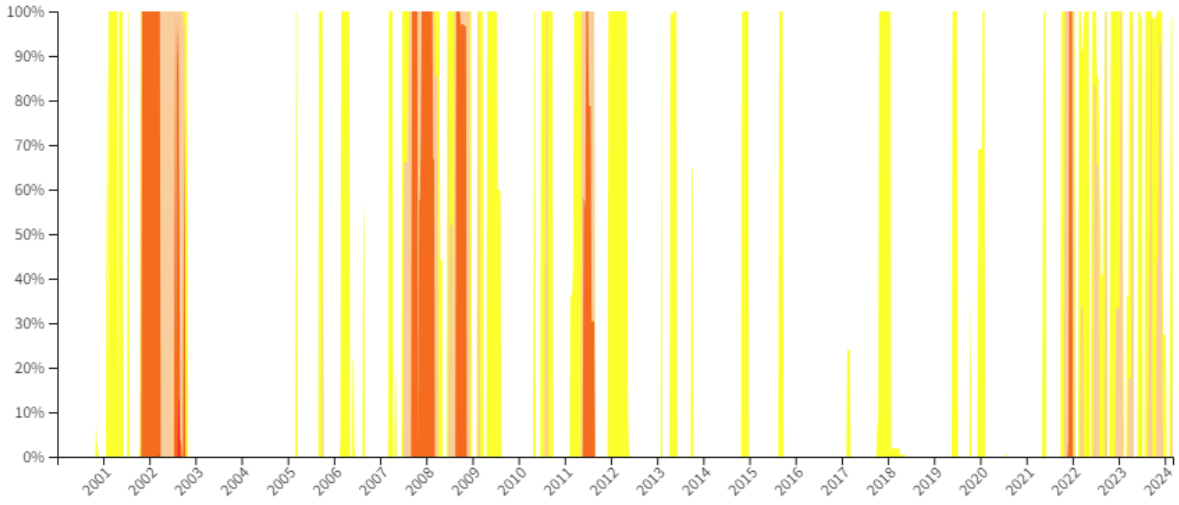


Source: U.S. Drought Monitor

PASQUOTANK COUNTY

Between 2000 and 2024, Pasquotank County was in some level of drought 36.0% of the time. The County recorded three weeks in "extreme" drought during this timeframe.

Figure 4.16 – US Drought Monitor Historical Trends – Pasquotank County 2000-2024

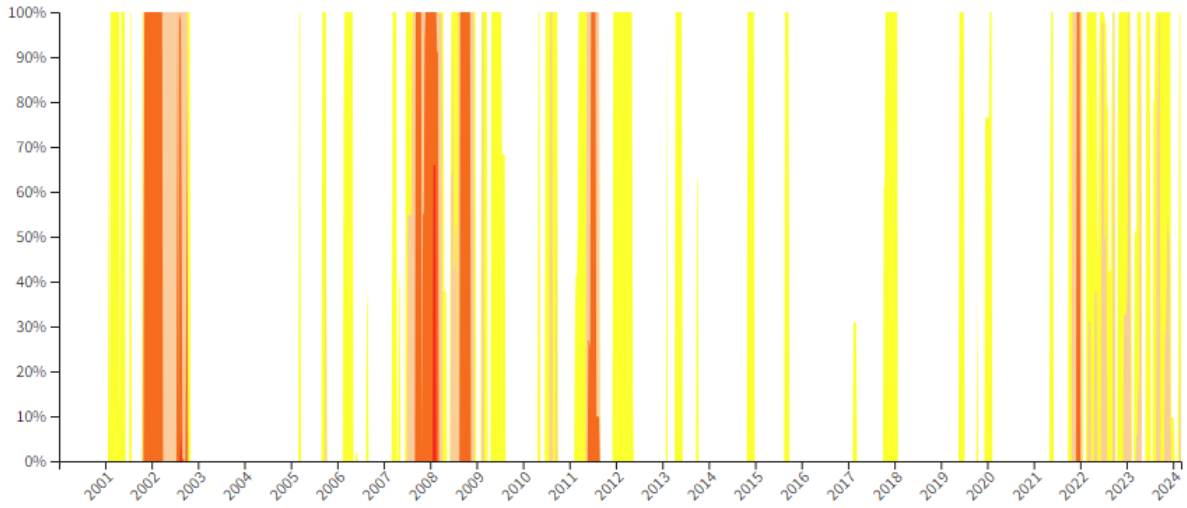


Source: U.S. Drought Monitor

PERQUIMANS COUNTY

Between 2000 and 2024, Perquimans County was in some level of drought 34.5% of the time. The County recorded five weeks in "extreme" drought during this timeframe.

Figure 4.17 – US Drought Monitor Historical Trends – Perquimans County 2000-2024



Source: U.S. Drought Monitor

The National Drought Mitigation Center (NDMC), located at the University of Nebraska in Lincoln, provides a clearinghouse for information on the effects of drought, based on reports from media, observers, impact records, and other sources.

According to the NDMC's Drought Impact Reporter, during the 10-year period from January 2013 through December 2023, 108 drought impacts were noted for the State of North Carolina, of which 34 were reported to affect the counties in the Albemarle Region.

Table 4.18 summarizes the number of impacts reported by category and the years impacts were reported for each category. Note that the Drought Impact Reporter assigns multiple categories to each impact, and that the same impacts were listed for almost every county in the region, which speaks to the regional nature of drought.

Table 4.18 – Drought Impacts Reported in the Albemarle Region, January 2013 - December 2023

Category	Camden	Chowan	Gates	Hertford	Pasquotank	Perquimans	Years Reported
	Impacts						
Fire	5	5	4	4	5	5	2019, 2021,
Relief, Response & Restrictions	6	6	5	5	6	6	2019, 2020, 2021,
Water Supply & Quality	1	1	1	1	1	1	2020

Source: Drought Impact Reporter, http://droughtreporter.unl.edu

PROBABILITY OF FUTURE OCCURRENCE

Between 2000-2024, the Region spent an average of 455 weeks in some level of drought condition, ranging from abnormally dry to exceptional drought. This equates to a 63.9% chance of drought in any given week. The level of drought condition throughout the region has nearly doubled since the last plan update. Table 4.19 shows historical data by county.

Table 4.19 – Historical Weeks in Drought by County, 2000-2024

County	Weeks in Any Drought	Percent of Time Drought
Camden	457	36.2%
Chowan	436	34.5%
Gates	475	37.6%
Hertford	473	37.2%
Pasquotank	455	36.0%
Perquimans	436	34.5%

Source: US Drought Monitor

Probability: 3 – Likely

CLIMATE CHANGE

The United States Geological Survey (USGS) reports that climate change has already altered the natural pattern of droughts across the country. Climate change has made droughts longer, more frequent, and more severe. With heavy precipitation events becoming more common, its anticipated that the average number of consecutive dry days will likely rise. Temperatures are projected to continue rising, evaporation rates are expected to increase, resulting in decreased soil moisture levels. These combined factors indicate a probable increase in both the intensity and duration of droughts in the Southeast.

VULNERABILITY ASSESSMENT

METHODOLOGIES AND ASSUMPTIONS

Vulnerability to drought in the Albemarle region is determined by historical drought occurrences within the planning area and broad apprehensions regarding potential drought impacts. Agricultural vulnerability

was estimated using data from the US Department of Agriculture Risk Management Agency and a review of past claims related to drought.

PEOPLE

Drought is often accompanied by prolonged periods of extreme heat, negative health impacts such as dehydration can also occur, where children and elderly are most susceptible. Drought can also contribute to health issues by compromising water quality due to decreased water levels. Additionally, when coupled with extreme hear, droughts can lead to an increase in heat-related illnesses such heat-stroke, potentially resulting in loss of life.

The historical and potential impacts of drought on populations include agricultural sector job loss, secondary economic losses to local businesses and public recreational resources, increased cost to local and state government for large-scale water acquisitions and delivery, water rationing, and water wells running dry for individuals and families.

PROPERTY

Direct structural damage from drought is rare, though it can happen. Droughts can disrupt soil cycles, leading to soil shrinking and swelling, potentially causing cracks in foundations and damaging infrastructure. It can also profoundly impact landscapes, posing financial burdens on property owners. Drought is unlikely to cause damages to the built environment. However, in areas with shrinking and expansive soils, drought may lead to structural damages. Drought may cause severe property loss for the agricultural industry in terms of crop and livestock losses. The USDA's Risk Management Agency (RMA) maintains a database of all paid crop insurance claims. Between 2007-2021, the sum of claims paid for crop damage as a result of drought in the counties of the Albemarle Region was $30,905,317.00, or an average of $2,207,522.64 in losses per year. Table 4.20 summarizes the regional crop losses due to drought reported in the RMA system.

Table 4.20 – Crop Losses Resulting from Drought, 2007-2021

Year	Determined Acres	Indemnity Amount
2007	37,499.60	$4,205,220
2008	39,686.72	$4,919,667
2009	3,030.24	$272,255
2010	30,066.75	$4,144,699
2011	52,424.78	$9,891,274
2012	2,267.54	$594,965
2013	2,193.11	$307,028
2014	1,016.96	$147,837.30
2015	6,327.07	$788,656.18
2016	5,724.70	$1,118,459.03
2017	533.66	$67,252.50
2018	119.6	$11,498.00
2019	11,781.36	$1,790,803.00
2020	17,915.99	$2,639,937.95
2021	4,233.23	$5,764.80
Total	**214,821.31**	**$30,905,317.00**

Source: USDA Risk Management Agency

Table 4.21 summarizes county-specific data on indemnity amounts, as well as average payout amounts per year. Hertford County by far suffered the greatest impacts agriculturally from drought, with over $12 million in payouts over the 14-year timespan.

Table 4.21 – County-Specific Total Crop Losses Resulting from Drought, 2007-2021

County	Determined Acres	Indemnity Amount	Average Annual Indemnity
Camden	13,373.84	$1,602,281	$114,448.64
Chowan	17,124.55	$1,981,098	$141,507.00
Gates	31,935.62	$4,454,395	$318,171.07
Hertford	68,506.41	$12,087,657	$863,404.07
Pasquotank	46,762.81	$6,808,345	$486,310.36
Perquimans	36,958.03	$4,453,252	$318,089.43
Total	**214,661.26**	**$31,387,028**	**$2,241,930.57**

Source: USDA Risk Management Agency

ENVIRONMENT

Environmental losses from drought are associated with damage to plants, animals, wildfire, and air and water quality, forest and range fires, landscape degradation, biodiversity loss, and soil erosion. While some impacts are transient, resolving once the drought subsides, others endure or may become irreversible. For instance, wildlife habitats may suffer from the loss of wetlands, lakes, and vegetation, yet many species can eventually rebound. Landscape degradation and heightened soil erosion may lead to lasting declines in biological productivity. Despite the challenges in quantifying environmental losses, heightened public awareness and concern for environmental well-being have prompted public officials to allocate greater attention and resources to mitigate these effects. Moreover, if climate change forecasts of prolonged drought followed by intense rainfall events hold true, the risk of flash flooding also escalates under such conditions.

Specific to the Albemarle Region, the National Drought Mitigation Center listed impacts in the Region including water conservation, increased fire risk, and wildlife and agriculture life cycle impacts occurring.

CONSEQUENCE ANALYSIS

Droughts could potentially have the following consequences in the Albemarle Region.

Table 4.22 – Consequence Analysis - Drought

Category	Consequences
Public	The public can be impacted through health effects due to economic losses, conflicts arising from water shortages, decreased incomes, limited recreational opportunities, increased occurrences of heat stroke and even fatalities.
Responders	Responders are unlikely to be significantly impacted from drought. However, the exceptional drought conditions might affect the availability of water for immediate response to wildfires.
Continuity of Operations (including Continued Delivery of Services)	The continuity of operations would experience minimal disruption from drought, given the ample warning time available to implement plans for maintaining operational continuity.

Category	Consequences
Property, Facilities and Infrastructure	Drought has the capacity to impact water supply across residential, commercial, institutional, industrial, and government-owned areas, potentially leading to reduced levels in wells and reservoirs. As a result, utilities may find it necessary to raise rates to cope with the decreased availability of water.
Environment	Environmental impacts include strain on local plant and wildlife; increased probability of erosion and wildfire.
Economic Condition of the Jurisdiction	Farmers could encounter crop losses or heightened expenses related to livestock. Additionally, business reliant on agriculture may suffer secondary effects. The severity of drought could extend its impact to local enterprises in landscaping, recreation, and tourism, as well as public utilities.
Public Confidence in the Jurisdiction's Governance	In cases of prolonged drought without relief, local, or state governments frequently need to implement water restrictions, potentially affecting public confidence.

HAZARD SUMMARY BY JURISDICTION

The following table summarizes drought hazard risk by jurisdiction. Warning time, duration and spatial extent are inherent to the hazard and remain constant across jurisdictions. Most damages that result from drought are to crops and other agriculture-related activities as well as water-dependent recreation industries. Probability is based on past occurrences of drought on the county level and is uniform across the region. The magnitude of impacts has varied by county during past droughts; drought impact is considered more severe in jurisdictions with significant presence of agriculture and where agricultural impacts have previously been reported.

Jurisdiction	Probability	Impact	Spatial Extent	Warning Time	Duration	Score	Priority
Camden County	3	1	4	1	4	2.5	M
Chowan County	3	1	4	1	4	2.5	M
Edenton	3	1	4	1	4	2.5	M
Gates County	3	1	4	1	4	2.5	M
Gatesville	3	1	4	1	4	2.5	M
Hertford County	3	2	4	1	4	2.8	M
Ahoskie	3	2	4	1	4	2.8	M
Como	3	2	4	1	4	2.8	M
Harrellsville	3	2	4	1	4	2.8	M
Murfreesboro	3	2	4	1	4	2.8	M
Winton	3	2	4	1	4	2.8	M
Cofield	3	2	4	1	4	2.8	M
Pasquotank County	3	2	4	1	4	2.8	M
Elizabeth City	3	2	4	1	4	2.8	M
Perquimans County	3	1	4	1	4	2.5	M
Hertford	3	1	4	1	4	2.5	M
Winfall	3	1	4	1	4	2.5	M

4.5.3 EARTHQUAKE

HAZARD BACKGROUND

An earthquake is the vibration of the earth's surface following a release of energy in the earth's crust. This energy can be generated by a volcanic eruption or by the sudden dislocation of the crust, which is the cause of most destructive earthquakes. The crust may first bend and then, when the stress exceeds the strength of the rocks, break and snap to a new position. In the process of breaking, vibrations called "seismic waves" are generated. These waves travel outward from the source of the earthquake at varying speeds.

Earthquakes can last from a few seconds to over five minutes; they may also occur as a series of tremors over several days. The actual movement of the ground in an earthquake is seldom the direct cause of injury or death. Casualties generally result from falling objects and debris. Disruption of communications, electrical power supplies and gas, sewer, and water lines should be expected. Earthquakes may trigger fires, dam failures, landslides, uneven ground settling, flooding, and releases of hazardous material, resulting in damage to homes, buildings, power and telephone infrastructure, roads, tunnels, and railways, further compounding their disastrous effects.

Warning Time: 4 – Less than six hours

Duration: 1 – Less than six hours

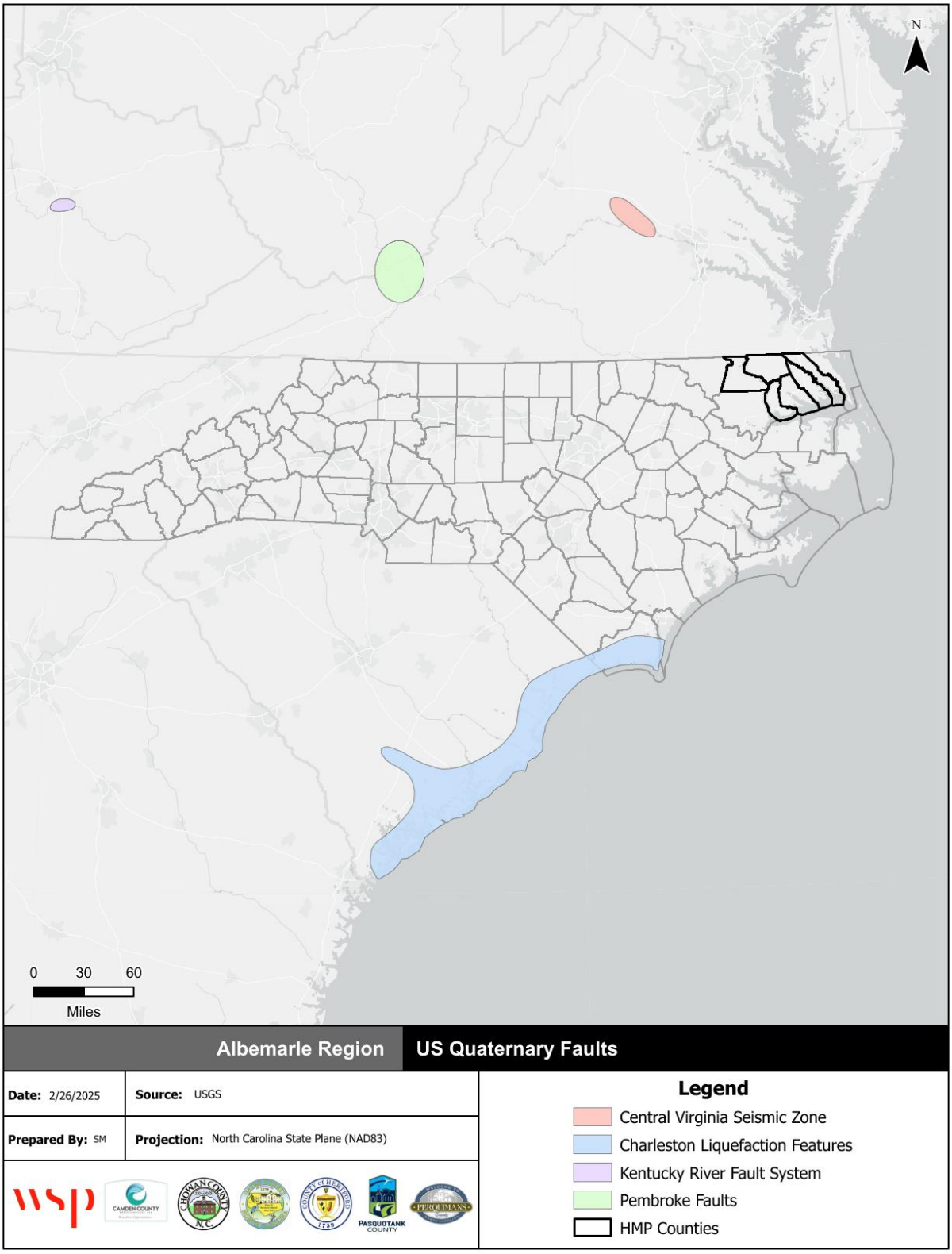
LOCATION

Figure 4.18 reflects the Quaternary fault lines that present an earthquake hazard for the planning area based on data from the USGS Earthquake Hazards Program.

Earthquakes pose a risk across all of North Carolina, with the Western and Southern regions being particularly susceptible to significant seismic activity. The state is influenced by both Charleston Fault in South Carolina and the New Madrid Fault in Tennessee, both of which have produced earthquakes exceeding 8.0 on the Richter Scale within the last two centuries. Furthermore, numerous smaller fault lines in eastern Tennessee and throughout North Carolina could also potentially generate lesser but still impactful shaking.

Spatial Extent: 4 – Large

Figure 4.18 – US Quaternary Faults



Source: USGS Earthquake Hazards Program

EXTENT

Earthquakes are typically classified in one of two ways: by the amount of energy released, measured as magnitude; or by the impact on people and structures, measure by intensity. Magnitude is measured using the Richter Scale, an open-ended logarithmic scale that describes the energy release of an earthquake through a measure of shock wave amplitude. A detailed description of the Richter Scale is given in Table 4.23. Although the Richter scale is usually used by the news media when reporting the intensity of earthquakes and is the scale most familiar to the public, the scale currently used by the scientific community in the United States is called the Modified Mercalli Intensity (MMI) scale. The MMI scale is an arbitrary ranking based on observed effects. Table 4.24 shows descriptions for levels of earthquake intensity on the MMI scale compared to the Richter scale.

Table 4.23 – Richter Scale

Magnitude	Effects
Less than 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 100 kilometers across where people live.
7.0 – 7.9	Major earthquake. Can cause serious damage over larger areas.
8.0 or greater	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

Source: 2023 North Carolina State Hazard Mitigation Plan

Table 4.24 –Modified Mercalli Intensity (MMI) Scale

MMI	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt by a few persons at rest, especially on upper floors of buildings.
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.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
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.
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.
X	Extreme	Some will-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

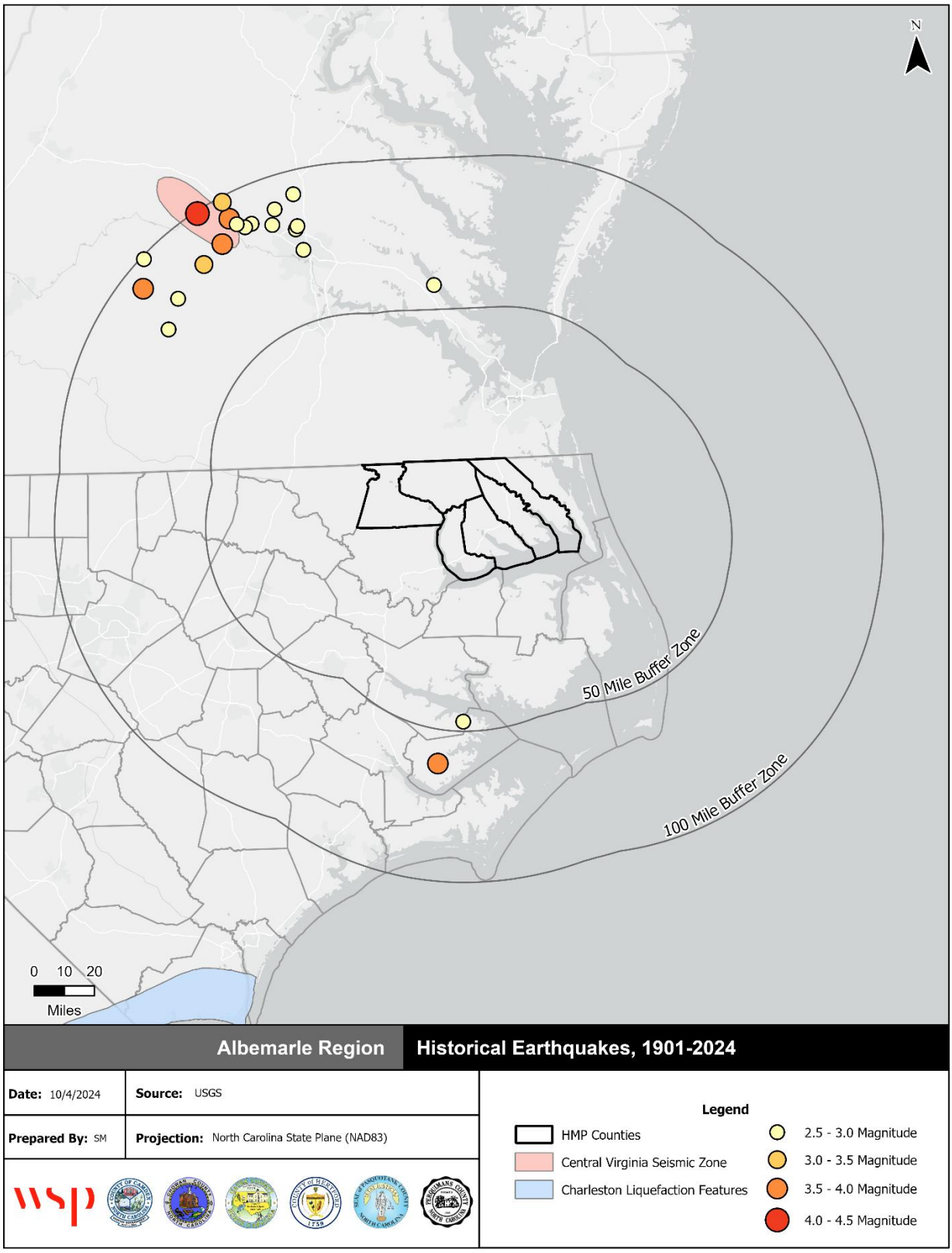
Source: USGS Earthquake Hazards Program

Impact: 1 – Minor

HISTORICAL OCCURRENCES

The USGS Earthquake Hazards Program maintains a database of all historical earthquakes of a magnitude 2.5 and greater. These events are illustrated in the following pages. Figure 4.19 shows the epicenter of earthquakes that have occurred within 50 and 100 miles of the Albemarle Region. This includes events from 1901 to 2024. Given the long distances across which earthquake impacts can be felt, these events might not encompass all earthquakes that have affected the Region. The USGS Earthquake Hazards Program compiles data on a variety of earthquake metrics, including felt impact. According to USGS records, there have not been any earthquakes with a felt impact in the Albemarle Region since 1900.

Figure 4.19 – Historical Earthquakes, Distance from Albemarle Region, 1901-2024



Source: USGS Earthquakes Hazard Program

PROBABILITY OF FUTURE OCCURRENCE

Figure 4.19 illustrates earthquakes have been recorded near the Albemarle Region. However, it's important to note that seismic events impacting the Region may extend beyond those depicted in the figure, as earthquake effects can be felt over considerable distances. However, according to USGS records, North Carolina has experienced five earthquakes with discernible impacts since 1989, but none of these events resulted in felt impacts within in Albemarle Region.

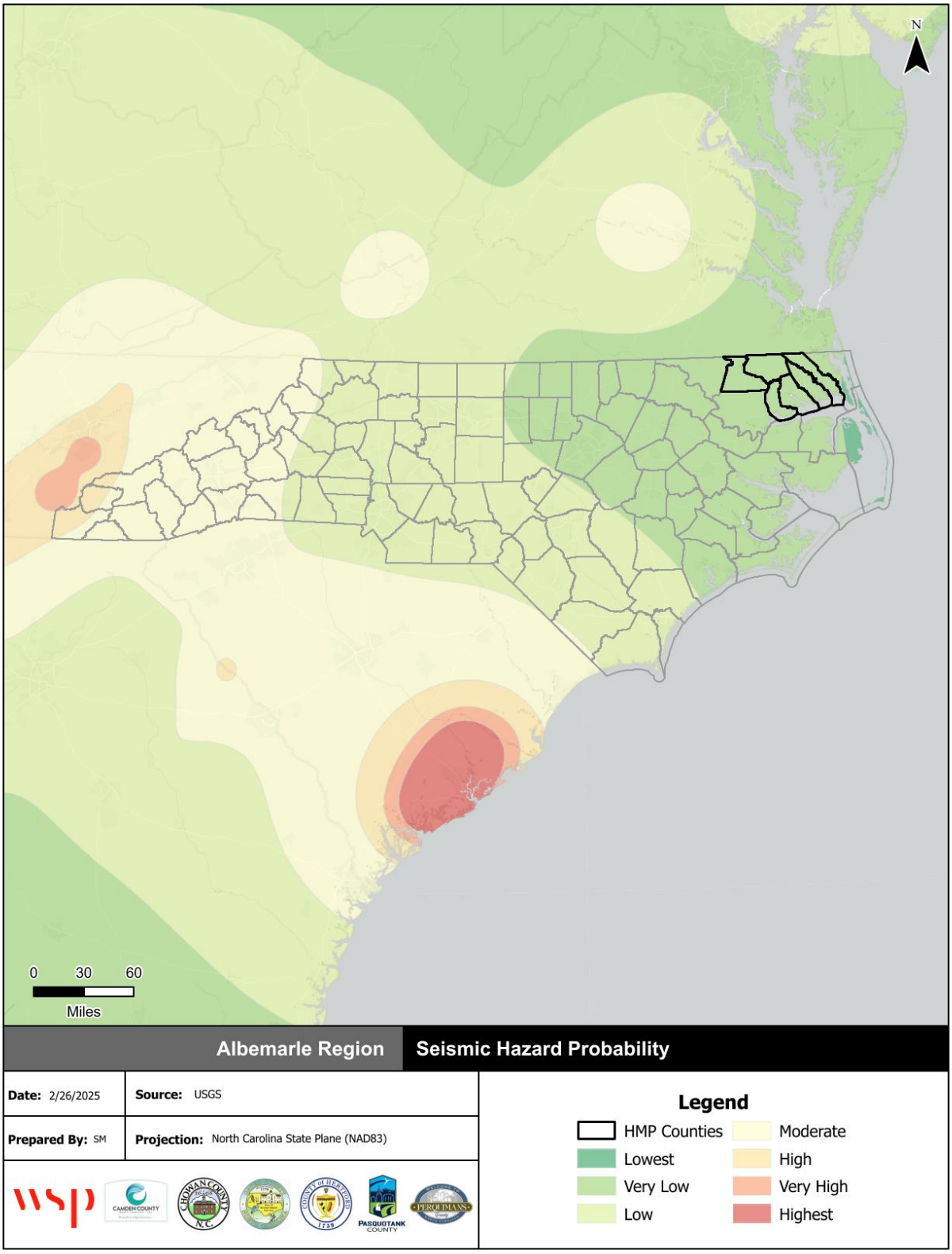
Based on historical occurrence as an indicator of future probability, the Albemarle Region has low chance of an earthquake occurring in any given year. Future probability for the Region is unlikely.

Figure 4.20 reflects the seismic hazard for Albemarle Region based on the national USGS map of peak acceleration with two percent probability of exceedance in 50 years, which USGS simplifies into risk ratings from "very low" to "highest". To produce these estimates, the ground motions being considered at a given location are those from all future possible earthquake magnitudes at all possible distances from that location. The ground motion coming from a particular magnitude and distance is assigned an annual probability equal to the annual probability of occurrence of the causative magnitude and distance. The method assumes a reasonable future catalog of earthquakes, based upon historical earthquake locations and geological information on the recurrence rate of fault ruptures. When all the possible earthquakes and magnitudes have been considered, a ground motion value is determined such that the annual rate of its being exceeded has a certain value. Therefore, for the given probability of exceedance, two percent, the locations shaken more frequently will have larger ground motions.

As shown on the map below, the entirety of the Albemarle Region is located within the medium green zone, which represents "very low" seismic hazard risk. Based on this data, it can be reasonably assumed that an earthquake event affecting the Region is unlikely.

Probability: 1 – Unlikely

Figure 4.20 – Seismic Hazard Information for North Carolina



Source: USGS Earthquake Hazards Program

CLIMATE CHANGE

Studies have yet to provide quantification of this relationship, so recent earthquakes should not be directly attributed to climate change. Although still inconclusive, preliminary findings suggest that more severe earthquakes and tsunamis could eventually be recognized as additional adverse consequences of climate change.

VULNERABILITY ASSESSMENT

METHODOLOGIES AND ASSUMPTIONS

Population and property at risk to earthquakes was estimated using data from the NCEM IRISK database, which was compiled in NCEM's Risk Management Tool.

PEOPLE

Earthquake occurrences within the counties of the Albemarle Region are typically associated with mild ground shaking, minimizing the likelihood of injuries or fatalities. The primary safety concern in such situations typically revolves around objects falling, presenting the greatest risk to safety.

Table 4.25 and Table 4.26 detail the population estimated to be at risk from a 250-year earthquake and a 500-year earthquake, respectively, according to the NCEM IRISK database.

Table 4.25 – Estimated Population Impacted by 250-Year Earthquake

Jurisdiction	Total Population	Total Population at Risk		All Elderly Population	Elderly Population at Risk		All Children Population	Children at Risk	
		Number	Percent		Number	Percent		Number	Percent
Camden	10,647	0	0%	1,882	0	0%	554	0	0%
Chowan	9,526	0	0%	2,329	0	0%	421	0	0%
Edenton	4,616	0	0%	1,190	0	0%	343	0	0%
Gates	10,620	0	0%	2,224	0	0%	388	0	0%
Gatesville	23	0	0%	4	0	0%	1	0	0%
Hertford	18,867	0	0%	3,764	0	0%	818	0	0%
Ahoskie	1,835	0	0%	402	0	0%	89	0	0%
Como	115	0	0%	24	0	0%	5	0	0%
Harrellsville	7	0	0%	2	0	0%	0	0	0%
Murfreesboro	719	0	0%	150	0	0%	20	0	0%
Winton	47	0	0%	8	0	0%	4	0	0%
Cofield	75	0	0%	20	0	0%	2	0	0%
Pasquotank	26,547	0	0%	4,851	0	0%	1,600	0	0%
Elizabeth City	15,444	0	0%	2,241	0	0%	1,087	0	0%
Perquimans	12,696	0	0%	3,556	0	0%	557	0	0%
Hertford	466	0	0%	121	0	0%	27	0	0%
Winfall	166	0	0%	32	0	0%	10	0	0%
Total	**112,416**	**0**	**0%**	**22800**	**0**	**0%**	**5926**	**0**	**0%**

Source: NCEM Risk Management Tool

Table 4.26 – Estimated Population Impacted by 500-Year Earthquake

Jurisdiction	Total Population	Total Population at Risk		All Elderly Population	Elderly Population at Risk		All Children Population	Children at Risk	
		Number	Percent		Number	Percent		Number	Percent
Camden	10,647	2,075	19%	1,882	367	20%	554	108	19%
Chowan	9,526	5,215	55%	2,329	1,275	55%	421	230	55%
Edenton	4,616	1,100	24%	1,190	284	24%	343	82	24%
Gates	10,620	7,578	71%	2,224	1,587	71%	388	277	71%
Gatesville	23	23	100%	4	4	100%	1	1	100%
Hertford	18,867	18,867	100%	3,764	3,764	100%	818	818	100%
Ahoskie	1,835	1,835	100%	402	402	100%	89	89	100%
Como	115	115	100%	24	24	100%	5	5	100%
Harrellsville	7	7	100%	2	2	100%	0	0	0%
Murfreesboro	719	719	100%	150	150	100%	20	20	100%
Winton	47	47	100%	8	8	100%	4	4	100%
Cofield	75	75	100%	20	20	100%	2	2	100%
Pasquotank	26,547	8,927	34%	4,851	1,631	34%	1,600	538	34%
Elizabeth City	15,444	3,767	24%	2,241	547	24%	1,087	265	24%
Perquimans	12,696	4,568	36%	3,556	1,280	36%	557	200	36%
Hertford	466	135	29%	121	35	29%	27	8	30%
Winfall	166	41	25%	32	8	25%	10	2	20%
Total	**112,416**	**55,094**	**49%**	**22800**	**11388**	**50%**	**5926**	**2649**	**45%**

Source: NCEM Risk Management Tool

PROPERTY

During a severe earthquake event, buildings face the risk of damage from both the shaking itself and the ground beneath them, a phenomenon known as subsidence. In extreme cases, structures may even sink into the ground due to soil liquefication. Structures built across fault lines are particularly vulnerably to serious damage caused by ground displacement during earthquakes.

Beyond structural damage, earthquakes can also lead to secondary hazards affecting infrastructure. Damages to dams or levees, for example, could result in failures and subsequent flooding. Additionally, fires may ignite from broken gas or power lines, posing a significant threat, particularly if damages water lines impair firefighting efforts.

There have been no records of the Albemarle Region being impacted by an earthquake with more than a low intensity, so damage to the built environment is unlikely.

Table 4.27 and Table 4.28 detail the estimated buildings impacted from varying magnitudes of earthquake events.

Table 4.27 – Estimated Buildings Impacted by 250-Year Earthquake Event

Jurisdiction	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden	5,675	0	0%	$0	0	0%	$0	0	0%	$0	0	0%	$0
Chowan	6,944	0	0%	$0	29	0%	$126	2	0%	$2	31	0%	$128
Edenton	3,110	0	0%	$0	15	0%	$357	0	0%	$0	15	0%	$357
Gates	6,637	0	0%	$0	35	1%	$447	0	0%	$0	35	1%	$447
Gatesville	204	0	0%	$0	2	1%	$12	3	1%	$16	5	2%	$28
Hertford	8,307	0	0%	$0	41	0%	$1,610	13	0%	$143	54	1%	$1,753
Ahoskie	2,744	0	0%	$0	42	2%	$581	8	0%	$78	50	2%	$659
Como	91	0	0%	$0	0	0%	$0	0	0%	$0	0	0%	$0
Harrellsville	100	0	0%	$0	0	0%	$0	1	1%	$2	1	1%	$2
Murfreesboro	2,275	0	0%	$0	32	1%	$512	10	0%	$31	42	2%	$543
Winton	479	0	0%	$0	10	2%	$859	5	1%	$193	15	3%	$1,052
Cofield	287	0	0%	$0	23	8%	$370	0	0%	$0	23	8%	$370
Pasquotank	10,739	0	0%	$0	7	0%	$57	0	0%	$0	7	0%	$57
Elizabeth City	8,843	0	0%	$0	24	0%	$103	0	0%	$0	24	0%	$103
Perquimans	6,399	0	0%	$0	1	0%	$21	0	0%	$0	1	0%	$21
Hertford	1,246	0	0%	$0	0	0%	$0	0	0%	$0	0	0%	$0
Winfall	428	0	0%	$0	0	0%	$0	0	0%	$0	0	0%	$0
Total	**64,508**	**0**	**0%**	**$0**	**261**	**0%**	**$5,055**	**42**	**0%**	**$465**	**303**	**1%**	**$5,520**

Source: NCEM Risk Management Tool

Table 4.28 – Estimated Buildings Impacted by 500-Year Earthquake Event

Jurisdiction	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden	5,675	932	16%	$3,262	629	11%	$3,661	145	3%	$9,802	1,706	30%	$16,726
Chowan	6,944	3,029	44%	$13,820	1,288	19%	$30,935	71	1%	$13,500	4,388	63%	$58,255
Edenton	3,110	592	19%	$10,107	450	14%	$48,354	92	3%	$16,596	1,134	36%	$75,057
Gates	6,637	3,326	50%	$16,180	1,814	27%	$39,135	145	2%	$21,935	5,285	80%	$77,250
Gatesville	204	132	65%	$642	44	22%	$2,500	28	14%	$4,313	204	100%	$7,455
Hertford	8,307	6,618	80%	$34,451	1,519	18%	$53,036	126	2%	$23,767	8,263	99%	$111,254
Ahoskie	2,744	2,313	84%	$16,845	313	11%	$58,535	102	4%	$12,806	2,728	99%	$88,185
Como	91	62	68%	$232	25	27%	$530	3	3%	$210	90	99%	$972
Harrellsville	100	85	85%	$232	8	8%	$193	6	6%	$386	99	99%	$812
Murfreesboro	2,275	2,009	88%	$13,318	183	8%	$17,747	76	3%	$21,191	2,268	100%	$52,256
Winton	479	399	83%	$2,455	33	7%	$16,088	43	9%	$9,255	475	99%	$27,798
Cofield	287	233	81%	$778	47	16%	$7,151	3	1%	$138	283	99%	$8,067
Pasquotank	10,739	3,136	29%	$17,961	1,108	10%	$43,373	181	2%	$28,950	4,425	41%	$90,284
Elizabeth City	8,843	1,839	21%	$15,017	885	10%	$56,183	239	3%	$23,662	2,963	34%	$94,862
Perquimans	6,399	2,164	34%	$13,888	211	3%	$13,789	129	2%	$21,109	2,504	39%	$48,785
Hertford	1,246	292	23%	$3,714	135	11%	$8,591	63	5%	$9,325	490	39%	$21,630
Winfall	428	88	21%	$523	33	8%	$1,466	23	5%	$2,480	144	34%	$4,470
Total	**64,508**	**27,249**	**45%**	**$163,425**	**8,725**	**14%**	**$401,267**	**1,475**	**2%**	**$219,425**	**37,449**	**62%**	**$784,118**

Source: NCEM Risk Management Tool

ENVIRONMENT

An earthquake is unlikely to cause substantial impacts to the natural environment in the Region. While there's a possibility of damage to the built environment, such as ruptured gas lines affecting the surroundings, historical occurrences suggest that this type of damage is unlikely.

CONSEQUENCE ANALYSIS

Table 4.29 summarizes the potential negative consequences of earthquake.

Table 4.29 – Consequence Analysis - Earthquake

Category	Consequences
Public	Severe impacts are anticipated for individuals who lack protection or are unable to seek shelter, while those who are adequately protected can expect moderate to light impacts.
Responders	Responders may be required to enter unstable structures or compromised infrastructure. Unprotected personnel are likely to face severe adverse impacts, while protected personnel can expect impacts ranging from moderate to light.
Continuity of Operations (including Continued Delivery of Services)	Damage to facilities and personnel in the incident area may necessitate the relocation of operations and the execution of alternate lines of succession. Disruptions to communication lines and the destruction of facilities could significantly delay the delivery of services.
Property, Facilities and Infrastructure	Earthquakes may result in significant damages to facilities, infrastructure, people, and hazardous materials within the affected area.
Environment	The event could lead to substantial damage, resulting in the denial or postponement of access to certain areas. Remediation effort may be necessary.
Economic Condition of the Jurisdiction	The local economy and financial stability are anticipated to suffer negative consequences, potentially persisting for an extended duration.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response, and recovery are not timely and effective.

HAZARD SUMMARY BY JURISDICTION

The following table summarizes earthquake hazard risk. Earthquake risk is uniform across the planning area; there is no variation in risk by jurisdiction.

Jurisdiction	Probability	Impact	Spatial Extent	Warning Time	Duration	Score	Priority
All jurisdictions	1	1	4	4	1	1.9	L

4.5.4 EXCESSIVE HEAT

HAZARD BACKGROUND

Per information provided by Ready.gov, in most of the United States extreme heat is defined as a long period (2 to 3 days) of high heat and humidity with temperatures above 90 degrees. As temperatures rise, our bodies naturally cool down by sweating. In extreme heat, the body must work extra hard to maintain a normal temperature and sweating might not be enough to cool down. When this happens, a person's body temperature rises faster than it can cool itself. Additionally, when the humidity is high, as is common during extreme heat events in North Carolina, evaporative cooling through sweating becomes less effective. Heat-related illnesses occur when the body overheats from exposure to high temperatures and in severe cases can cause damage to the brain and other vital organs[1]. Heat-related illnesses can also arise from moderate to vigorous physical activity in hot situations.

Extreme heat often results in the highest annual number of deaths among all weather-related disasters. On average, the number of extreme heat days has been increasing each year, putting residents at a higher risk of heat-related illnesses. In 2023, more people in the United States died of heat-related illness than any year on record[2]. Per Ready.gov, older adults, children, and people with certain illnesses and chronic conditions are at greater risk from extreme heat; and humidity increases the feeling of heat.

The National Weather Service (NWS) uses the heat index, also known as apparent temperature, to determine when to issue health alerts. The heat index is a measure of how hot it really feels when the relative humidity is considered along with the actual air temperature. In most areas of the country, the NWS 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[3,4].

In North Carolina, the Department of Health and Human Services (DHHS) uses regional temperature thresholds to activate its Heat Health Alert System. The regional thresholds recognize that an area's typical climate conditions and relevant local factors, such as the proportion of the population engaged in outdoor work, can impact how heat affects the local population. DHHS sends heat alerts to county health departments and Heat Health Alert System subscribers when the daily maximum heat index is forecasted to meet or exceed the heat index threshold for their region. In the Albemarle Region, all participating jurisdictions experience a heat index threshold of 101°F, as shown in Figure 4.21.

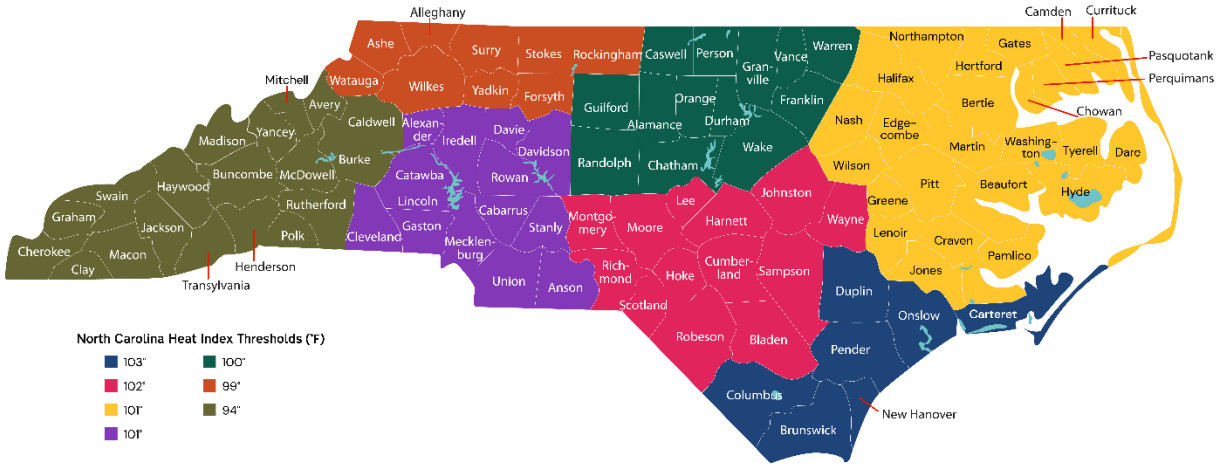
[1] www.cdc.gov/disasters/extremeheat/heat_guide.html.

[2] https://apnews.com/article/record-heat-deadly-climate-change-humidity-south-11de21a526e1cbe7e306c47c2f12438d

[3] https://www.weather.gov/safety/heat-index

[4] https://www.weather.gov/safety/heat-ww

Figure 4.21 – North Carolina Heat Index Thresholds



Source: https://climate.ncsu.edu/heat_toolkit/thresholds/

The most dangerous place to be during an extreme heat incident is in a permanent home, with little or no air conditioning. Those at greatest risk for heat-related illness include people 65 years of age and older, young children, people with chronic health problems such as heart disease, people who are obese, people who are socially isolated, and people who are on certain medications, such as tranquilizers, antidepressants, sleeping pills, or drugs for Parkinson's disease. However, even young and healthy individuals are susceptible if they participate in strenuous physical activities during hot weather or are not acclimated to hot weather. Table 4.30 lists typical symptoms and health impacts of exposure to extreme heat.

Table 4.30 – Typical Health Impacts of Extreme Heat

Heat Index (HI)	Disorder
80-90˚ F (HI)	Fatigue possible with prolonged exposure and/or physical activity
90-103˚ F (HI)	Heatstroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity
103-124˚ F (HI)	Heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity
125F or higher	Heat stroke highly likely

Source: National Weather Service Heat Index Program, www.weather.gov/ama/heatindex

The National Weather Service has a system in place to initiate alert procedures (advisories or warnings) when the Heat Index is expected to have a significant impact on public safety. The expected severity of the heat determines whether advisories or warnings are issued. A common guideline for issuing excessive heat alerts is when the maximum daytime Heat Index is expected to equal or exceed 105 degrees Fahrenheit (°F) and the night time minimum Heat Index is 75°F or above for two or more consecutive days. A heat advisory is issued when temperatures reach 105°F and a warning is issued at 115°F.

Impacts of extreme heat are not only focused on human health, as prolonged heat exposure can have devastating impacts on infrastructure as well. Prolonged high heat exposure increases the risk of pavement deterioration, as well as railroad warping or buckling. High heat also puts a strain on energy systems and consumption, as air conditioners are run at a higher rate and for longer; extreme heat can also reduce transmission capacity over electric systems.

Warning Time: 1 – More than 24 hours

Duration: 3 – Less than one week

LOCATION

Historically, extreme heat is a regional hazard. The entire planning area is susceptible to high temperatures and incidents of extreme heat and indeed the vast majority of the planning area would suffer some level of impact from the same event. In extreme heat incidents recorded in 2011 and 2012, all six counties in the region experienced its impacts concurrently.

Spatial Extent: 4 – Large

EXTENT

The extent of extreme heat can be defined by the maximum apparent temperature reached. Apparent temperature is a function of ambient air temperature and relative humidity and is reported as the heat index. The National Weather Service Forecast Office in Raleigh sets the following criteria for heat advisory and excessive heat warning:

- **Heat Advisory** – Heat Index of 105°F to 109°F for 3 hours or more. Can also be issued for lower values 100°F to 104°F for heat lasting several consecutive days
- **Excessive Heat Watch** – Potential for heat index values of 110°F or hotter within 24 to 48 hours. Also issued during prolonged heat waves when the heat index is near 110°F
- **Excessive Heat Warning** – Heat Index of 110°F or greater for any duration

The extent of extreme heat can be defined by the maximum temperature reached. The highest temperature recorded in the Albemarle Region is 107 degrees Fahrenheit in Elizabeth City, Pasquotank County in July 1942. The entire planning area is susceptible to high temperatures and extreme heat.

Table 4.31 – Maximum Temperatures Recorded by County

County	Maximum Temperature Recorded	Location	Date of Record
Camden County	No weather stations with data in this county		
Chowan County	105° F	Edenton	July 18, 1942
Gates County	No weather stations with data in this county		
Hertford County	105° F	Murfreesboro	July 11, 1993
Pasquotank County	107° F	Elizabeth City	July 18, 1942
Perquimans County	No weather stations with data in this county		

Source: North Carolina Climate Office

Impact: 1 – Minor

HISTORICAL OCCURRENCES

According to the National Oceanic and Atmospheric Administration (NOAA), 2019 was North Carolina's hottest year on record; that record stretches back 124 years to 1895.

The NCEI reports 13 heat incidents across the Albemarle Region between 1998 and 2021; these incidents caused one fatality, no injuries, and no property or crop damage. The narratives included for these

incidents indicate that hot and humid conditions with high temperatures and heat index values between 105 and 109 degrees resulted in the death of a 73-year-old male in Chowan County in July 2016.

Heat index records maintained by the North Carolina Climate Office indicate that the Region regularly experiences heat index temperatures above 100°F. Table 4.32 through Table 4.34 provide counts of heat index values by threshold recorded from 1999-2023 at the Edenton Northeastern Regional Airport weather station (KEDE), the Elizabeth City Regional Airport (KECG), and the Ahoskie Tri-County Airport (KASJ), respectively, used as indicators for the Albemarle Region overall as these are the main weather stations maintained by the North Carolina Climate Office within the Region. Counts are provided as the number of hours in a given year where the heat index reached or exceeded 100°F.

Table 4.32 - Historical Heat Index Counts, Edenton Northeastern Regional Airport (KEDE), 1999-2023

Year	Heat Index Value				Total
	100-104˚F	105-109˚F	110-114˚F	≥115˚F	
1999	67	40	10	8	125
2000	35	11	0	0	46
2001	24	12	1	0	37
2002	95	59	36	10	200
2003	68	25	2	0	95
2004	54	57	13	0	124
2005	110	73	34	33	250
2006	67	30	8	0	105
2007	27	15	2	1	45
2008	52	9	0	0	61
2009	56	4	0	0	60
2010	129	44	20	0	193
2011	66	33	9	0	108
2012	49	41	2	1	93
2013	14	0	0	0	14
2014	18	0	0	0	18
2015	45	7	0	0	52
2016	114	24	3	0	141
2017	77	22	15	0	114
2018	127	20	0	0	147
2019	149	55	18	1	223
2020	121	57	54	7	239
2021	157	87	36	1	281
2022	117	71	66	14	268
2023	107	112	59	26	304
Sum	**1945**	**908**	**388**	**102**	**3343**
Average	**78**	**36**	**16**	**4**	**134**

Source: North Carolina Climate Office, Heat Index Climatology Tool

Table 4.33 – Historical Heat Index Counts, Elizabeth City Regional Airport (KECG), 1999-2023

Year	Heat Index Value				Total
	100-104˚F	105-109˚F	110-114˚F	≥115˚F	
1999	95	45	22	8	170
2000	25	11	0	0	36
2001	46	12	3	0	61
2002	68	16	12	0	96
2003	53	10	7	0	70
2004	43	10	1	0	54
2005	48	15	4	0	67
2006	34	14	4	0	52
2007	19	9	6	0	34
2008	24	0	0	0	24
2009	31	0	0	0	31
2010	94	27	19	1	141
2011	97	27	14	0	138
2012	90	50	25	2	167
2013	18	0	0	0	18
2014	16	0	0	0	16
2015	53	8	0	0	61
2016	97	34	3	0	134
2017	66	25	12	0	103
2018	115	20	0	0	135
2019	83	25	3	0	111
2020	124	61	36	5	226
2021	63	16	0	0	79
2022	81	13	1	0	95
2023	67	16	3	1	87
Sum	**1550**	**464**	**175**	**17**	**2206**
Average	**62**	**19**	**7**	**1**	**88**

Source: North Carolina Climate Office, Heat Index Climatology Tool

Table 4.34 - Historical Heat Index Counts, Ahoskie Tri-County Airport (KASJ), 1999-2023

Year	Heat Index Value				Total
	100-104˚F	105-109˚F	110-114˚F	≥115˚F	
1999	24	9	0	0	33
2000	14	20	2	0	36
2001	6	2	0	0	8
2002	146	66	5	1	218
2003	74	22	0	0	96
2004	12	6	1	0	19
2005	120	44	0	1	165
2006	103	72	22	9	206

Year	Heat Index Value				Total
	100-104˚F	105-109˚F	110-114˚F	≥115˚F	
2007	52	33	34	9	128
2008	53	25	2	0	80
2009	1	0	0	0	1
2010	122	50	4	1	177
2011	48	19	1	0	68
2012	66	25	0	0	91
2013	3	0	0	0	3
2014	2	0	0	0	2
2015	28	0	0	0	28
2016	77	15	1	0	93
2017	10	10	0	0	20
2018	4	1	0	0	5
2019	29	11	2	0	42
2020	61	3	0	0	64
2021	29	1	0	0	30
2022	25	0	0	0	25
2023	18	2	0	0	20
Sum	**1127**	**436**	**74**	**21**	**1658**
Average	**45**	**17**	**3**	**1**	**66**

Source: North Carolina Climate Office, Heat Index Climatology Tool

According to the data collected from all three weather stations, the Region averages 96 hours per year with heat index values above 100°F. The frequency and intensity of higher temperatures is greater in inland areas of the region compared to coastal locations.

PROBABILITY OF FUTURE OCCURRENCE

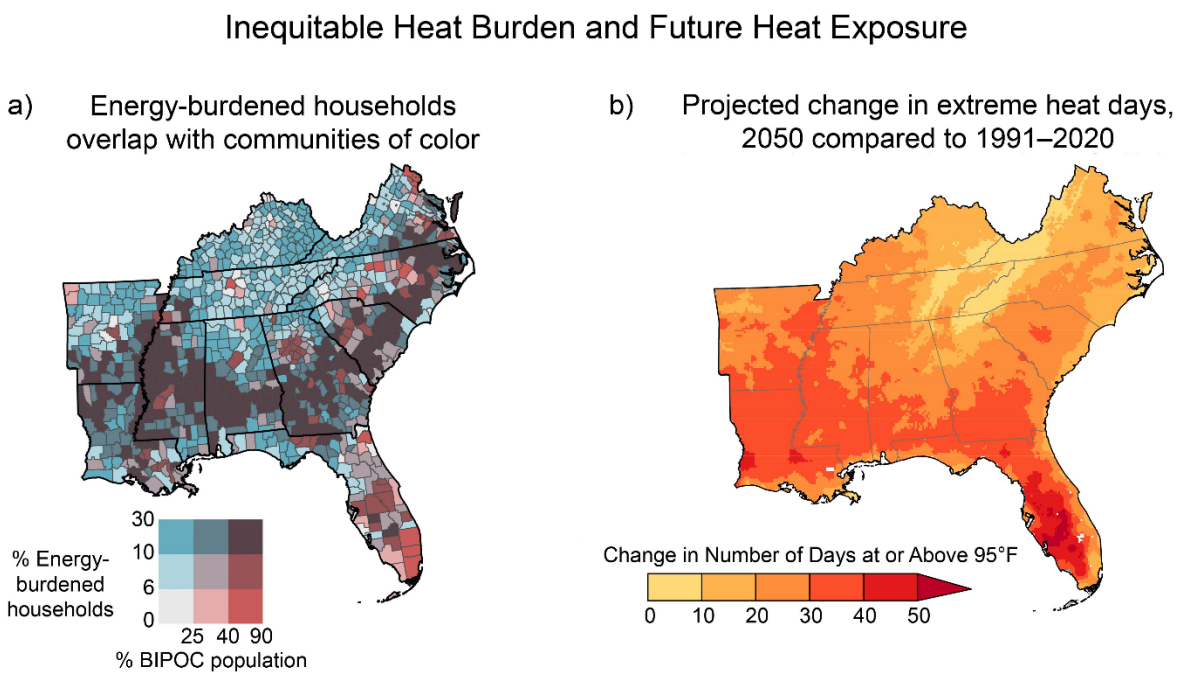
Data was gathered from the North Carolina State Climate Office's Heat Index Climatology Tool using the Edenton Northeastern Regional Airport weather station (KEDE), the Elizabeth City Regional Airport weather station, and the Ahoskie Tri-County Airport weather station as approximations for the Albemarle Region. Based on 25 years of available data, the Region averages 96 hours per year with heat index temperatures above 100°F. Heat index temperatures surpassed 100°F every year since 1999 at all three weather stations located within the Region.

Probability: 4 – Highly Likely

CLIMATE CHANGE

Research shows that average temperatures will continue to rise in the Southeast United States and globally, directly affecting the Albemarle Region in North Carolina. Per the Fifth National Climate Assessment, "The number of extreme warm days (above 95°F) is expected to continue increasing with every increment of global warming" and that "heatwaves in the Southeast are happening more frequently and are occurring during a longer heat season, with some cities also showing increasing trends in their duration and intensity." Additional heat stresses can be attributed to the urban heat island effect which can increase the temperature of those living in urban environments compared to rural areas. The number of days over 95°F in the Albemarle Region is expected to increase by between 10 and 20 days annually, as shown in Figure 4.22.

Figure 4.22 – Projected Change in Number of Days Over 95˚F



Source: USGCRP, 2023: Fifth National Climate Assessment

The Fifth National Climate Assessment also notes that warm nights (minimum temperatures at or above 70°F) in the southeast have increased the most compared to all other continental U.S. regions.

The State Climate Office of North Carolina's County-specific climate projections, which are based on the Fifth National Climate Assessment are summarized in Table 4.35 and Table 4.36 below. This data indicates that extreme heat days in the region could more than quadruple, and days with nighttime temperatures above 70°F are expected to almost double.

Table 4.35 – Extreme Heat Projections, Days per Year with Maximum Temperatures Over 95˚F

County	Historical	Best Case Scenario	Worst Case Scenario
Camden	5	19	26
Chowan	5	21	32
Gates	6	23	32
Hertford	9	24	33
Pasquotank	5	20	28
Perquimans	5	20	30

Source: North Carolina Resilience Exchange Climate Projections and Observations

Table 4.36 – Extreme Heat Projections, Nights per Year with Minimum Temperatures Over 70˚F

County	Historical	Best Case Scenario	Worst Case Scenario
Camden	49	80	92
Chowan	43	76	89
Gates	27	58	72
Hertford	23	50	64
Pasquotank	47	78	91
Perquimans	46	78	91

Source: North Carolina Resilience Exchange Climate Projections and Observations

VULNERABILITY ASSESSMENT

METHODOLOGIES AND ASSUMPTIONS

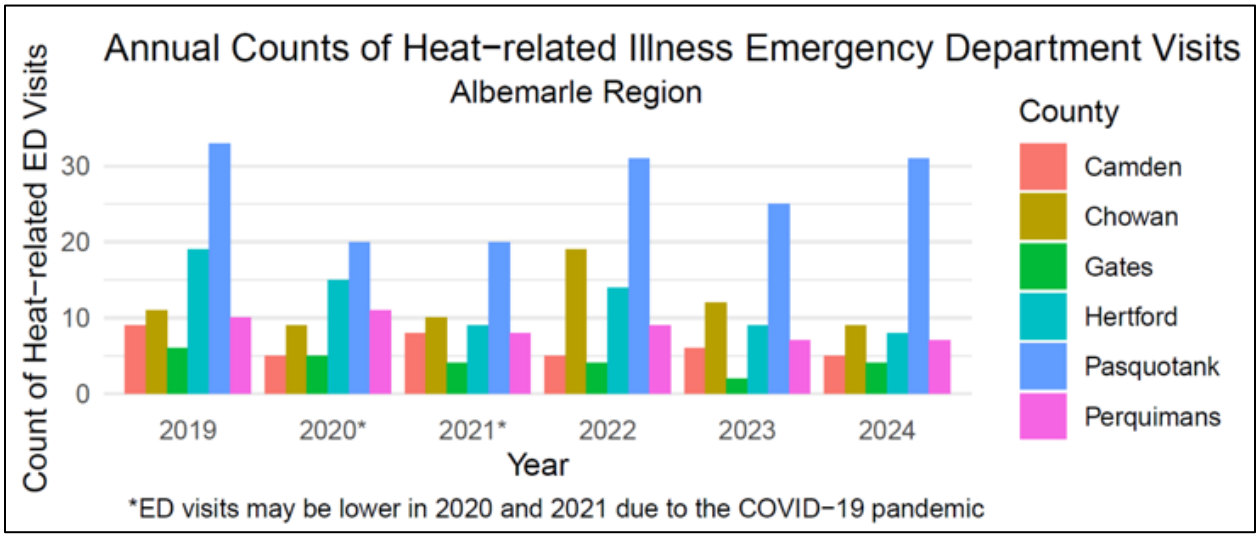
No data is available to assess the vulnerability of buildings and infrastructure in the planning area to extreme heat. Vulnerability of people was assessed using data from the NC Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT). Vulnerability of crops was evaluated based on historical crop insurance claim data from the USDA Risk Management Agency.

PEOPLE

Extreme heat can cause heat stroke and even loss of human life. The elderly and the very young are most at risk to the effects of heat. People who are isolated, people who work outdoors and/or do strenuous labor, people with chronic health problems such as heart disease or asthma, people who are obese, and people who are on certain medications, such as tranquilizers, antidepressants, sleeping pills, or drugs for Parkinson's disease are also more vulnerable to extreme heat.

Using public health syndromic surveillance system data from NC DETECT, Figure 4.23 shows the annual count of emergency department visits for heat-related illness in the Albemarle Region. Between 2019 and 2024, Pasquotank County received the highest annual count of emergency department visits every year when compared to the rest of the Region, while Gates County received the least.

Figure 4.23 – Annual Counts of Heat-Related Illness Emergency Department Visits, Albemarle Region



Source: North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT)

PROPERTY

Extreme heat is unlikely to cause significant damages to the built environment. However, road surfaces can be damaged as asphalt softens, and concrete sections may buckle under expansion caused by heat. Train rails may also distort or buckle under the stress of head induced expansion. Power transmission lines may sag from expansion and if contact is made with vegetation the line may short out causing power outages. Additional power demand for cooling also increases power line temperature adding to heat impacts.

Extreme heat can also cause significant agricultural losses. Between 2007-2023, the sum of claims paid for crop damage due to heat in the Albemarle Region was $3,820,439.48, impacting 14,790.32 acres and

causing an average of $152,817.58 in losses each year. The most impactful year by indemnity was 2020, when just under $1 million was paid for claims due to crop damage and over 6,600 acres were impacted.

Table 4.37 summarizes the crop losses due to drought reported in the RMA system.

Table 4.37 – Regional Crop Losses Resulting from Heat, 2007-2023

Year	Determined Acres	Indemnity Amount
2007	40.54	$7,254.00
2008	74.94	$2,034.00
2009	52.34	$21,341.00
2010	1,247.01	$459,621.00
2011	677.84	$41,431.00
2012	749.90	$135,032.00
2013	-	-
2014	90.82	$12,383.65
2015	1,517.15	$302,537.90
2016	722.74	$367,452.05
2017	241.18	$196,491.75
2018	315.82	$206,576.5
2019	1,159.24	$575,826.76
2020	6,642.75	$979,212.5
2021	-	-
2022	692.75	$224,879.92
2023	565.3	$288,365.45
Total	**14,790.32**	**$3,820,439.48**

Source: USDA Risk Management Agency

ENVIRONMENT

Wild animals are vulnerable to heat disorders similar to humans, including mortality. Vegetation growth can be stunted, or plants may be killed if temperatures rise above their tolerance extremes.

CONSEQUENCE ANALYSIS

Table 4.38 summarizes the potential negative consequences of excessive heat.

Table 4.38 – Consequence Analysis – Excessive Heat

Category	Consequences
Public	Extreme heat may cause illness and/or death.
Responders	Consequences may be greater for responders if their work requires exertion and/or wearing heavy protective gear.
Continuity of Operations (including Continued Delivery of Services)	Continuity of operations is not expected to be impacted by extreme heat because warning time for these events is long.
Property, Facilities and Infrastructure	Minor impacts may occur, including possible damages to road surfaces and power lines.
Environment	Environmental impacts include strain on local plant and wildlife, including potential for illness or death.

Category	Consequences
Economic Condition of the Jurisdiction	Farmers may face crop losses or increased livestock costs.
Public Confidence in the Jurisdiction's Governance	Extreme heat is unlikely to impact public confidence.

HAZARD SUMMARY BY JURISDICTION

The following table summarizes extreme heat hazard risk by jurisdiction. Extreme heat risk does not vary significantly by jurisdiction; however, several communities were assigned higher impact ratings based on their exposure of vulnerable populations and agriculture. Agricultural vulnerability is highest in Hertford County, and Perquimans County, the Towns of Edenton, Harrellsville, and Hertford, and the Village of Cofield have the highest proportions of older residents (more than 25 percent) who may be more vulnerable to heat.

Jurisdiction	Probability	Impact	Spatial Extent	Warning Time	Duration	Score	Priority
Camden County	4	2	4	1	3	3.0	H
Chowan County	4	2	4	1	3	3.0	H
Edenton	4	3	4	1	3	3.3	H
Gates County	4	2	4	1	3	3.0	H
Gatesville	4	2	4	1	3	3.0	H
Hertford County	4	3	4	1	3	3.3	H
Ahoskie	4	2	4	1	3	3.0	H
Como	4	2	4	1	3	3.0	H
Harrellsville	4	3	4	1	3	3.3	H
Murfreesboro	4	2	4	1	3	3.0	H
Winton	4	2	4	1	3	3.0	H
Cofield	4	3	4	1	3	3.3	H
Pasquotank County	4	2	4	1	3	3.0	H
Elizabeth City	4	2	4	1	3	3.0	H
Perquimans County	4	3	4	1	3	3.3	H
Hertford	4	3	4	1	3	3.3	H
Winfall	4	2	4	1	3	3.0	H

4.5.5 FLOODING

HAZARD BACKGROUND

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

SOURCES AND TYPES OF FLOODING

Flooding within the Albemarle Region can be attributed to three main sources as noted below.

Riverine Flooding: During heavy rainfall events, the primary riverine flooding sources in the Albemarle Region are as follows, per each county's effective Flood Insurance Study:

- **Camden County**: Joyce Creek and tributaries, Areneuse Creek, Dismal Swamp Canal, Mill Dam Creek and tributaries, Run Swamp Canal, Sawyers Creek and tributaries, and Pasquotank River.
- **Chowan County**: Pembroke Creek and tributaries, Filberts Creek, Queen Anne Creek and tributaries, Rockyhock Creek and tributaries, Burnt Mill Creek, and Goodwin Mill Creek
- **Gates County**: Acorn Hill Millpond, Bennetts Creek and tributaries, Blackwater River, Beaverdam Creek and tributaries, Buckland Mill Branch and tributaries, Catherine Creek, Chowan River, Cole Creek and tributaries, Corapeake Swamp and tributaries, Cypress Swamp, Duke Swamp and tributaries, Ellis Swamp and tributaries, Flat Branch, Folly Swamp and tributaries, Goodman Swamp and tributaries, Goose Creek tributaries, Gum Branch, Hackley Swamp and tributaries, Harrell Swamp, Jady Branch, Jernigan Branch, Licking Branch, Middle Swamp, Mill Branch, Mill Swamp and tributaries, Perquimans River, Raynor Swamp and tributaries, Sarem Creek, Somerton Creek, Taylor Mill Pond, Taylor Swamp and tributaries, Trotman Creek and tributaries, Walton Pond, and Warwick Creek.
- **Hertford County**: Ahoskie Creek and tributaries, Chowan River and tributaries, Long Branch and tributaries, Mill Branch and tributaries, Meherrin River tributaries, Wiccacon River and tributaries, and other streams.
- **Pasquotank County**: Knobbs Creek, Knobbs Creek Tributary, and Little River
- **Perquimans County**: Little and Perquimans Rivers

These rivers and their tributaries are susceptible to overflowing their banks during and following excessive precipitation events. Though less common, riverine flood events (such as the "1%-annual-chance flood") will cause significantly more damage and economic disruption for the area than incidences of localized stormwater flooding.

Coastal Flooding: All lands bordering the coast along the Atlantic Ocean and in low-lying coastal plains are susceptible to tidal effects and flooding. Coastal land such as sand bars, barrier islands and deltas provide a buffer zone to help protect human life and real property relative to the sea much as flood plains provide a buffer zone along rivers and other bodies of water. Coastal floods usually occur because of abnormally high tides or tidal waves, storm surge and heavy rains in combination with high tides, and tropical storms and hurricanes.

Wind-driven surge generated in the Atlantic Ocean and pushed into Albemarle Sound and other waters is a primary source of flooding in the Region. The areas beyond the Sound that are susceptible to surge flooding are summarized from each county's FIS as follows:

- **Camden County:** North River, Pasquotank River, Sawyers Creek

- **Chowan County:** Chowan River, Pembroke Creek, Trotman Creek
- **Gates County:** Chowan River
- **Pasquotank County:** Charles Creek, Knobbs Creek, Knobbs Creek Tributary, Little River, and Pasquotank River
- **Perquimans County:** Yeopim River and the downstream portions of Perquimans and Little Rivers

Several of the waterbodies vulnerable to coastal flooding are also susceptible to riverine flooding, indicating the potential for compounding risk when hurricane and tropical storm events bring both coastal surge and heavy rainfall.

Flash Flooding: A flash flood occurs when water levels rise at an extremely fast rate as a result of intense rainfall over a brief period, possibly from slow-moving intense thunderstorms and sometimes combined with rapid snowmelt, ice jam release, frozen ground, saturated soil, or impermeable surfaces. Ice jam flooding is a form of flash flooding that occurs when ice breaks up in moving waterways, and then stacks on itself where channels narrow. This creates a natural dam, often causing flooding within minutes of the dam formation. Flash flooding can happen in Special Flood Hazard Areas (SFHAs) as delineated by the National Flood Insurance Program (NFIP) and can also happen in areas not associated with floodplains. Flash flood hazards caused by surface water runoff are most common in urbanized areas, where greater population density generally equates to more impervious surface (e.g., pavement and buildings) which increases the amount of surface water generated.

Flash flooding is a dangerous form of flooding which can reach full peak in only a few minutes. Rapid onset allows little or no time for protective measures. Flash flood waters move at very fast speeds and can move boulders, tear out trees, scour channels, destroy buildings, and obliterate bridges. Flash flooding can result in higher loss of life, both human and animal, than slower developing river and stream flooding.

In certain areas, aging storm sewer systems are not designed to carry the high volume currently needed to handle the increased storm runoff. Typically, the result is water backing into basements, which damages mechanical systems and can create serious public health and safety concerns.

Localized flooding may be caused by the following issues:

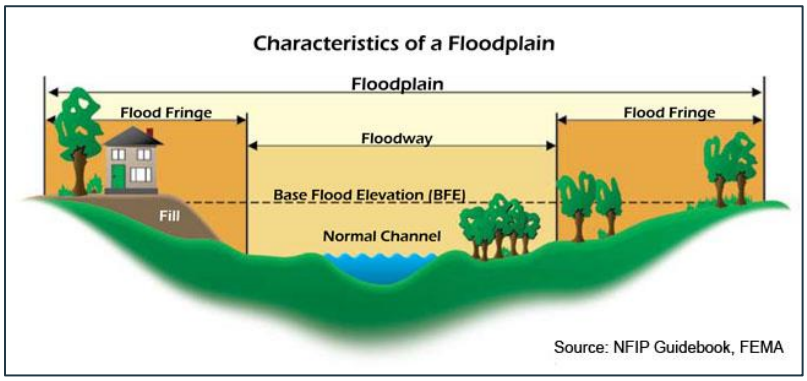
- **Inadequate Capacity –** An undersized/under capacity pipe system can cause water to back-up behind a structure which can lead to areas of ponded water and/or overtopping of banks.
- **Clogged Inlets** – Debris covering the asphalt apron and the top of grate at catch basin inlets may contribute to an inadequate flow of stormwater into the system. Debris within the basin itself may also reduce the efficiency of the system by reducing the carrying capacity.
- **Blocked Drainage Outfalls** – Debris blockage or structural damage at drainage outfalls may prevent the system from discharging runoff, which may lead to a back-up of stormwater within the system.
- **Improper Grade** – Poorly graded asphalt around catch basin inlets may prevent stormwater from entering the catch basin as designed. Areas of settled asphalt may create low spots within the roadway that allow for areas of ponded water.

FLOODING AND FLOODPLAINS

In the case of riverine flooding, the area adjacent to a channel is the floodplain, as shown in Figure 4.24. A floodplain is flat or nearly flat land adjacent to a stream or river that experiences occasional or periodic flooding. It includes the floodway, which consists of the stream channel and adjacent areas that carry flood flows, and the flood fringe, which are areas covered by the flood, but which do not experience a strong current. Floodplains are made when floodwaters exceed the capacity of the main channel or escape the channel by eroding its banks. When this occurs, sediments (including rocks and debris) are

deposited that gradually build up over time to create the floor of the floodplain. Floodplains generally contain unconsolidated sediments, often extending below the bed of the stream.

Figure 4.24 – Characteristics of a Floodplain



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

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

Warning Time: 3 – 6 to 12 hours

Duration: 3 – Less than one week

LOCATION

Areas at risk of flooding occur throughout the planning area and can be identified, in part, by regulated floodplains. Regulated floodplains are illustrated on inundation maps called Flood Insurance Rate Maps (FIRMs). A FIRM is the official map for a community on which FEMA has delineated both the Special Flood Hazard Areas (SFHAs) and the risk premium zones applicable to the community. SFHAs represent the areas subject to inundation by the 100-year flood event. Structures located within the SFHA have a 26-percent chance of flooding during the life of a standard 30-year mortgage.

Flood prone areas were identified within the Pamlico Sound Region using the current effective Flood Insurance Studies and associated FIRMs, with the most recent updates and/or revisions dated December 21, 2018 for Camden County, Chowan County, Pasquotank County, and Perquimans County, July 20, 2009 for Gates County, and August 3, 2009 for Hertford County. Table 4.39 summarizes the flood insurance zones identified by the Digital FIRMs (DFIRMs) within the Region.

Table 4.39 – Mapped Flood Insurance Zones within the Albemarle Region

Zone	Description
AE	AE Zones, also within the 100-year flood limits, are defined with BFEs that reflect the combined influence of stillwater flood elevations and wave effects less than 3 feet. The AE Zone generally extends from the landward VE zone limit to the limits of the 100-year flood from coastal sources, or until it reaches the confluence with riverine flood sources. The AE Zones also depict the SFHA due to riverine flood sources, but instead of being subdivided into separate zones of differing BFEs with possible wave effects added, they represent the flood profile determined by hydrologic and hydraulic investigations and have no wave effects. The Coastal AE Zone is differentiated from the AE Zone by the Limit of Moderate Wave Action (LiMWA) and includes areas susceptible to wave action between 1.5 to 3 feet.
A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30 - year mortgage. Because detailed analyses are not performed for such areas, no depths or base flood elevations are shown within these zones.
AO	Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply.
VE	Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Whole-foot Base Flood Elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.
0.2% Annual Chance (shaded Zone X)	Moderate risk areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by a levee. No BFEs or base flood depths are shown within these zones. (Zone X (shaded) is used on new and revised maps in place of Zone B.)
Zone X (unshaded)	Minimal risk areas outside the 1-percent and .2-percent-annual-chance floodplains. No BFEs or base flood depths are shown within these zones. Zone X (unshaded) is used on new and revised maps in place of Zone C.

Source: FEMA

Figure 4.25 through Figure 4.30 reflect the effective mapped flood insurance zones for the counties in the Albemarle Region.

Spatial Extent: 3 – Moderate

Figure 4.25 – FEMA Flood Hazard Areas in Camden County

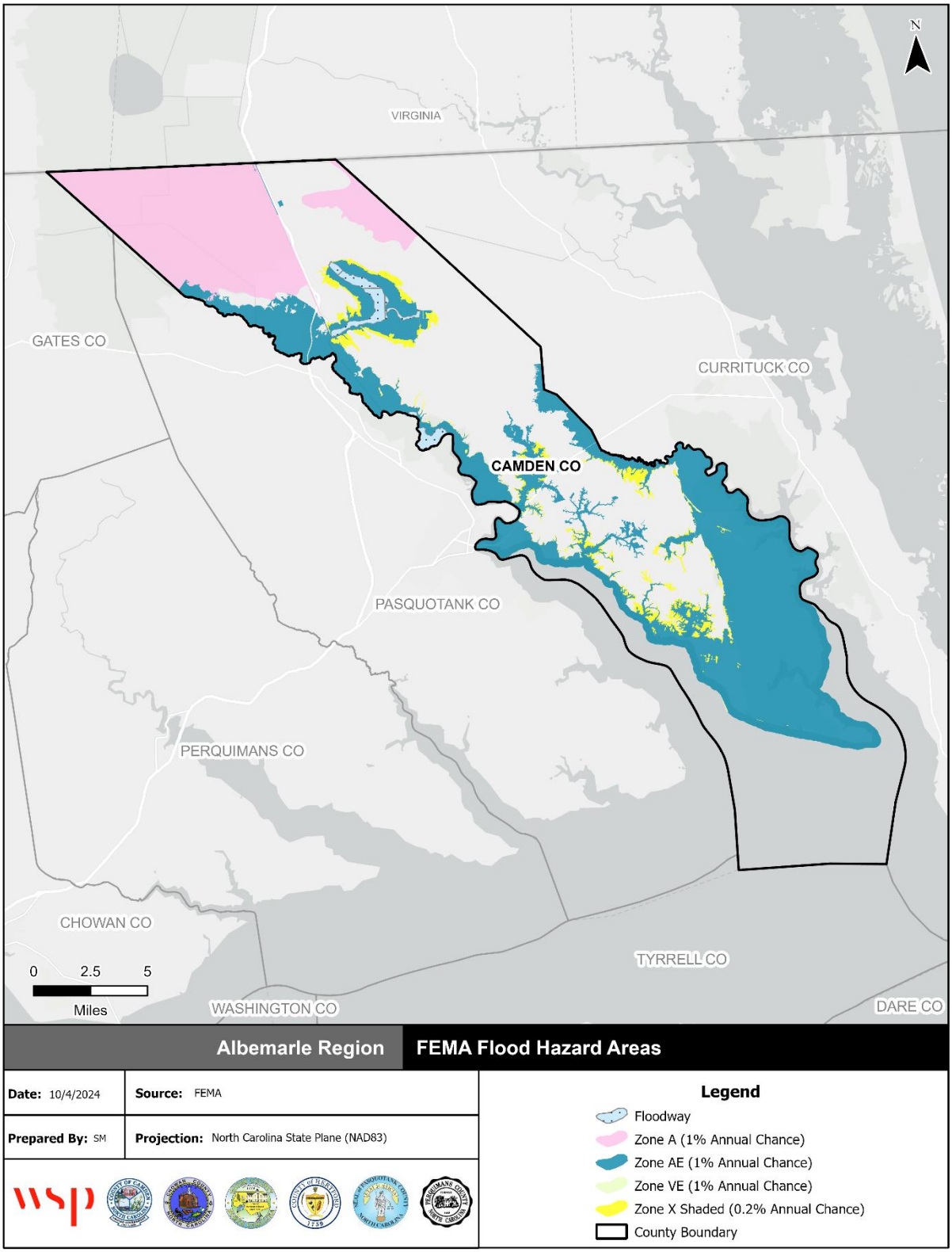


Figure 4.26 – FEMA Flood Hazard Areas in Chowan County

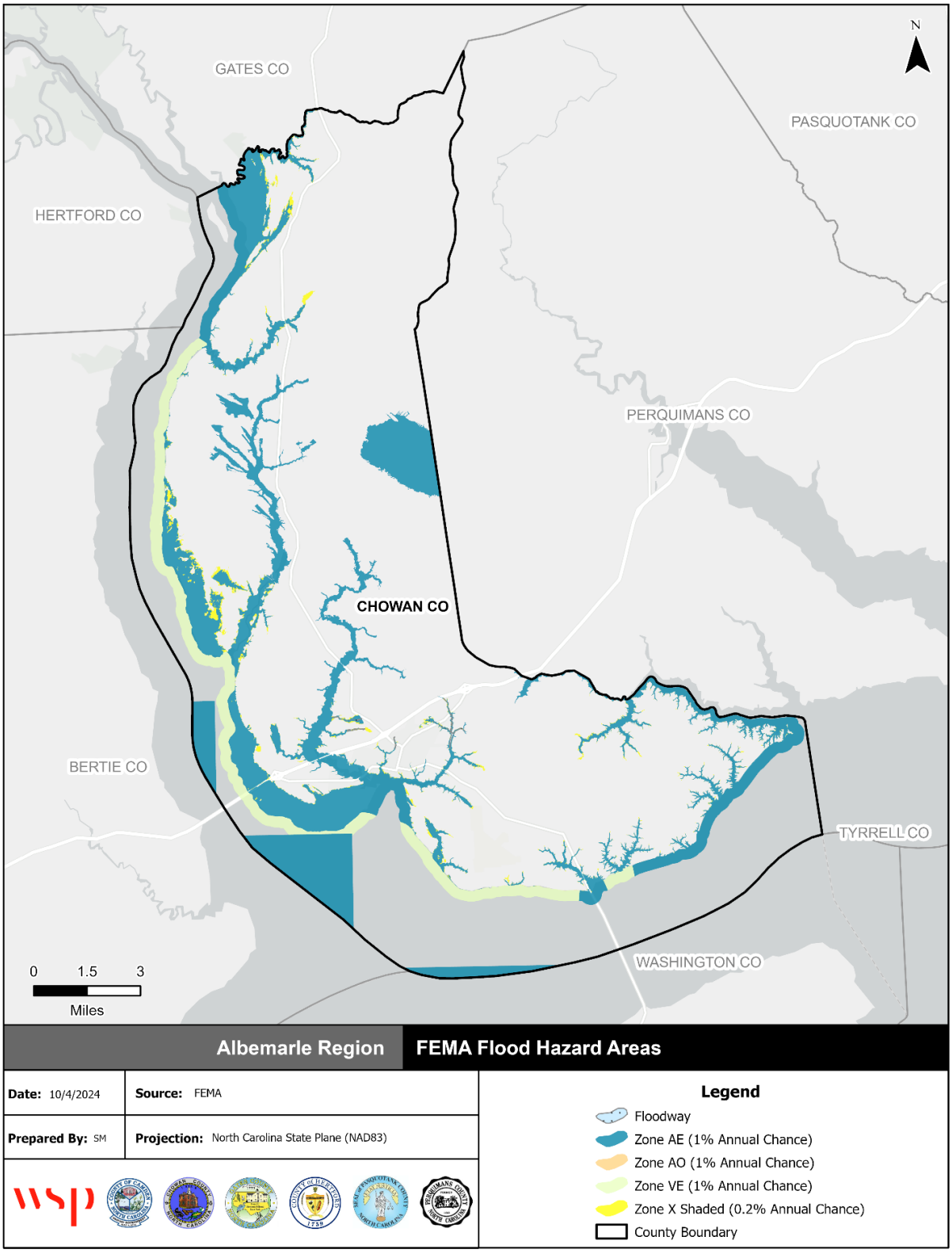


Figure 4.27 – FEMA Flood Hazard Areas in Gates County

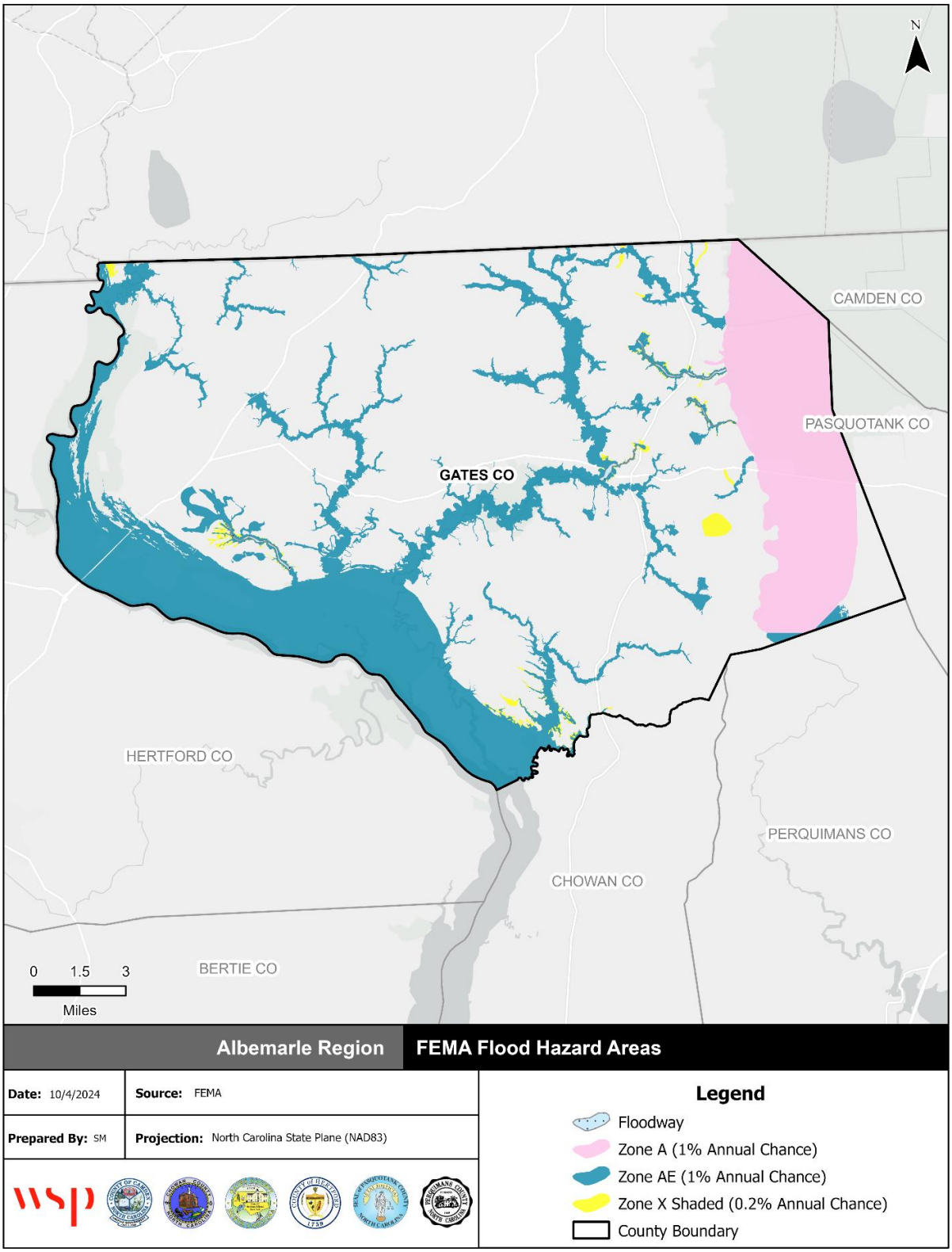


Figure 4.28 – FEMA Flood Hazard Areas in Hertford County

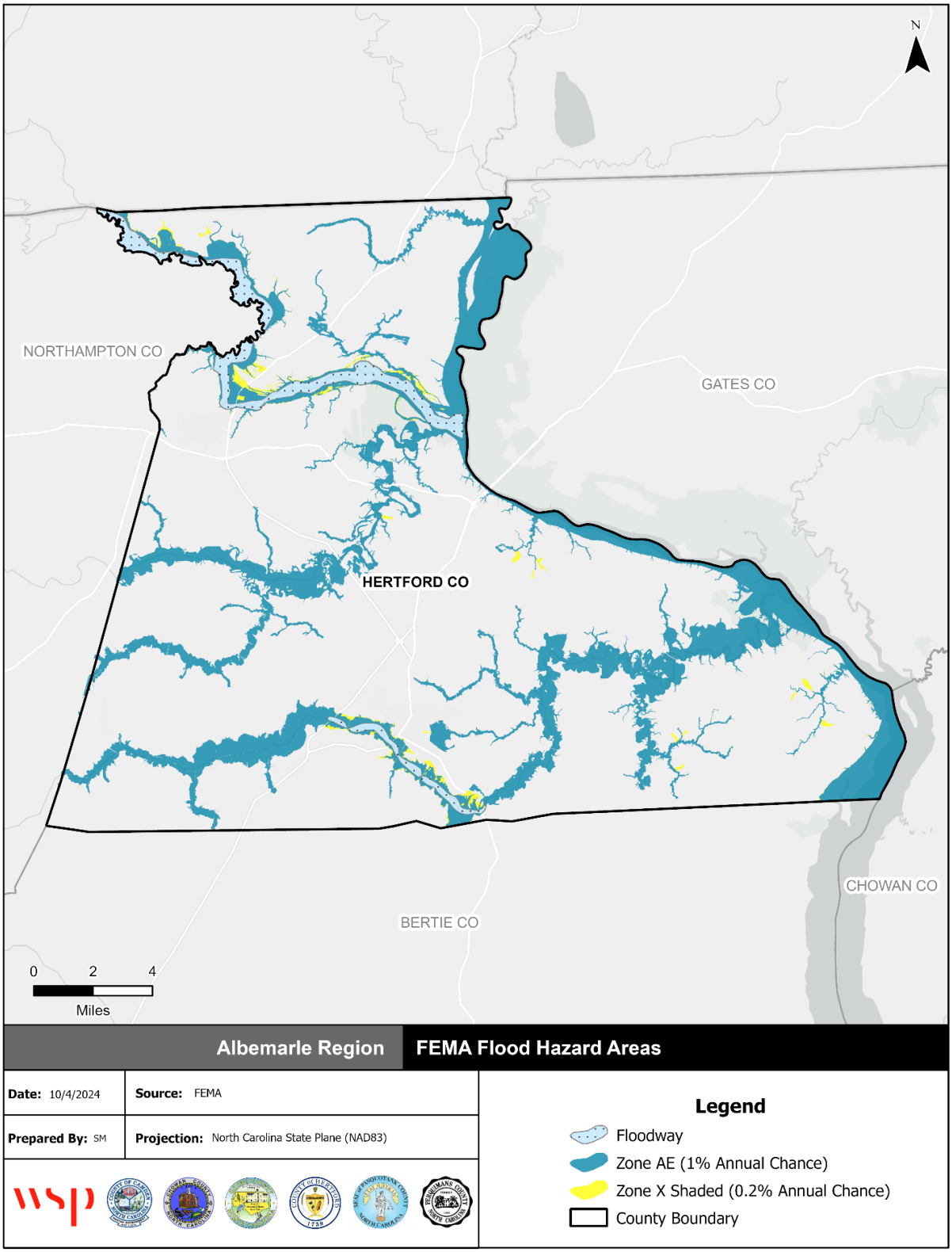


Figure 4.29 – FEMA Flood Hazard Areas in Pasquotank County

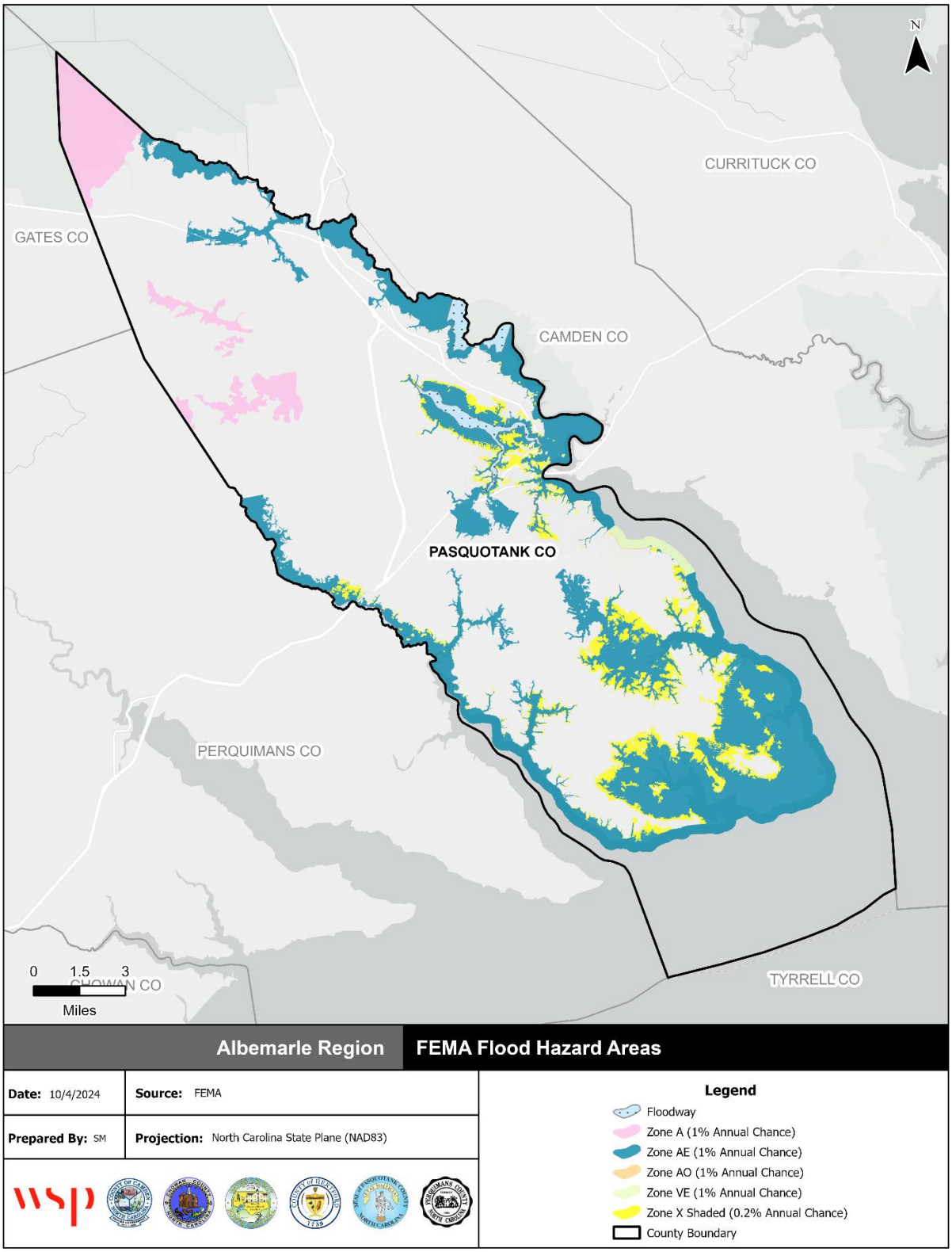
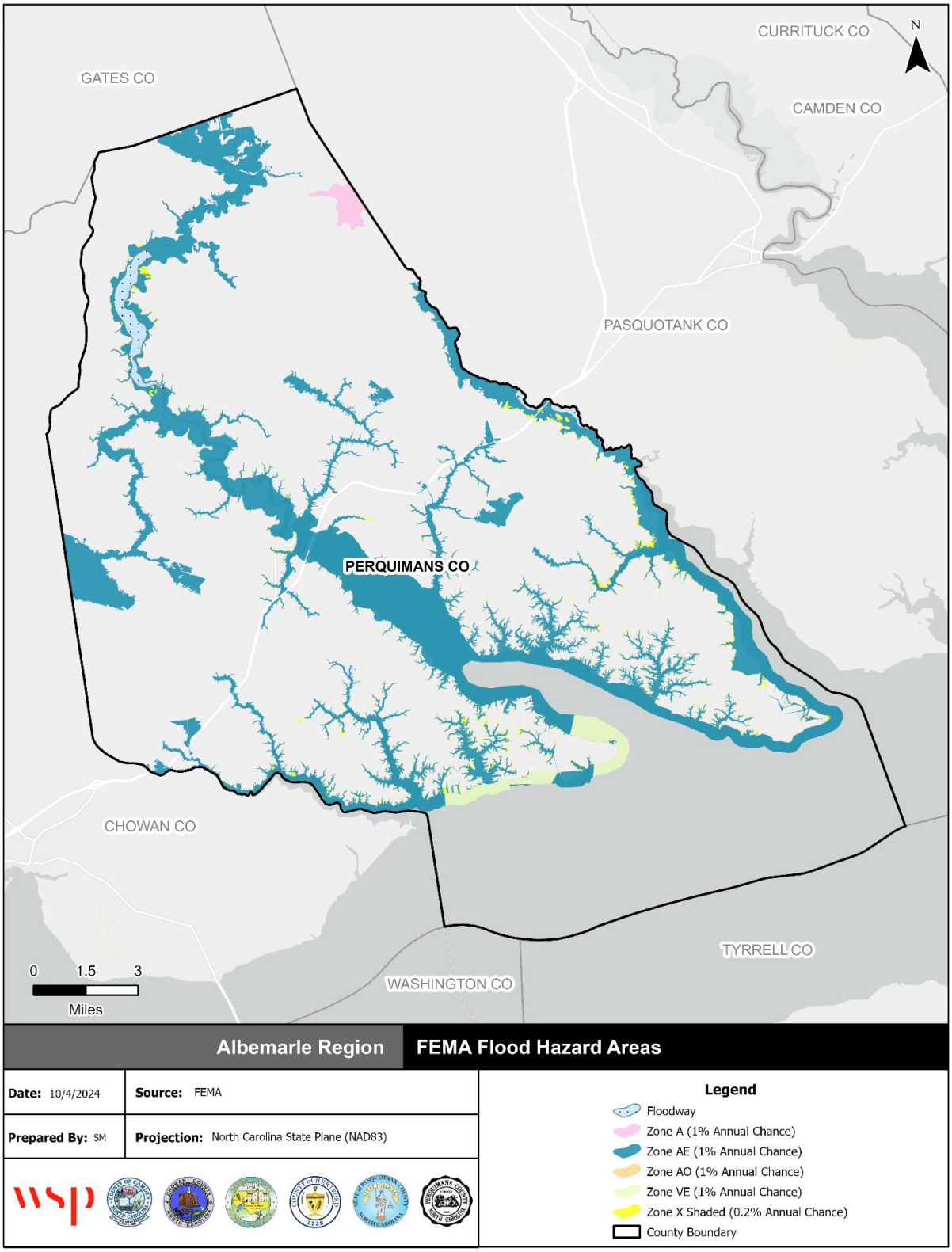


Figure 4.30 – FEMA Flood Hazard Areas in Perquimans County



EXTENT

Flood extent can be defined by the amount of land in the floodplain and the potential magnitude of flooding as measured by flood height and velocity. FEMA Flood Insurance Studies define the probability of flooding by flood events of a magnitude which are expected to be equaled or exceeded once on the average during a specific time period, or recurrence interval.

Table 4.40 summarizes acreage of the Region's total area by flood zone on the effective flood maps. Approximately 27% of the Region falls within the SFHA. Camden County has the greatest proportion of total area in the SFHA, at 46.8 percent, while Chowan County has the smallest relative SFHA at just 18.6 percent of the county's total area.

Table 4.40 - Flood Zone Acreage in the Albemarle Region

Flood Zone	Acreage	Percent of Total (%)
Camden County		
Zone A	30,804.8	15.5
Zone AE	62,207.4	31.3
Zone AO	-	-
Zone VE	20.4	0.0
Zone X (500-year)	5,407.2	2.7
Zone X Unshaded	80,998.2	40.7
Open Water	19,427.0	9.8
Total	**198,864.9**	**100.0**
Chowan County		
Zone A	-	-
Zone AE	23,083.8	15.4
Zone AO	1.2	0.0
Zone VE	4,716.4	3.1
Zone X (500-year)	1,041.3	0.7
Zone X Unshaded	94,294.5	63.0
Open Water	26,606.3	17.8
Total	**149,743.4**	**100.0**
Gates County		
Zone A	22,870.2	10.3
Zone AE	48,661.1	21.9
Zone AO	-	-
Zone VE	-	-
Zone X (500-year)	1,313.4	0.6
Zone X Unshaded	148,867.1	67.1
Open Water	-	-
Total	**221,711.7**	**100.0**
Hertford County		
Zone A	-	-
Zone AE	45,982.4	19.9
Zone AO	-	-
Zone VE	-	-
Zone X (500-year)	1,376.0	0.6
Zone X Unshaded	184,049.4	79.5
Open Water	-	-
Total	**231,407.9**	**100.0**

Flood Zone	Acreage	Percent of Total (%)
Pasquotank County		
Zone A	7,355.9	4.0
Zone AE	38,419.4	21.0
Zone AO	19.8	0.0
Zone VE	624.8	0.3
Zone X (500-year)	7,164.7	3.9
Zone X Unshaded	107,954.4	59.0
Open Water	21,412.0	11.7
Total	**182,951.0**	**100.0**
Perquimans County		
Zone A	622.8	0.3
Zone AE	35,115.7	18.0
Zone AO	18.2	0.0
Zone VE	1,426.3	0.7
Zone X (500-year)	1,562.8	0.8
Zone X Unshaded	141,130.3	72.2
Open Water	15,650.1	8.0
Total	**195,526.2**	**100.0**
Albemarle Region Total		
Zone A	161,653.7	5.2
Zone AE	253,469.8	21.5
Zone AO	39.1	0.0
Zone VE	6,788.0	0.6
Zone X (500-year)	17,865.4	1.5
Zone X Unshaded	757,293.8	64.2
Open Water	83,095.3	7.0
Total	**1,180,205.2**	**100.0**

Source: FEMA Effective DFIRMs; GIS analysis

More detail on flood zone acreage by community is provided in the jurisdictional annexes. Nearly all participating communities have at least some area in the SFHA with the exception of Harrellsville. Less than 1 percent of the total area of Como and Cofield is within the SFHA.

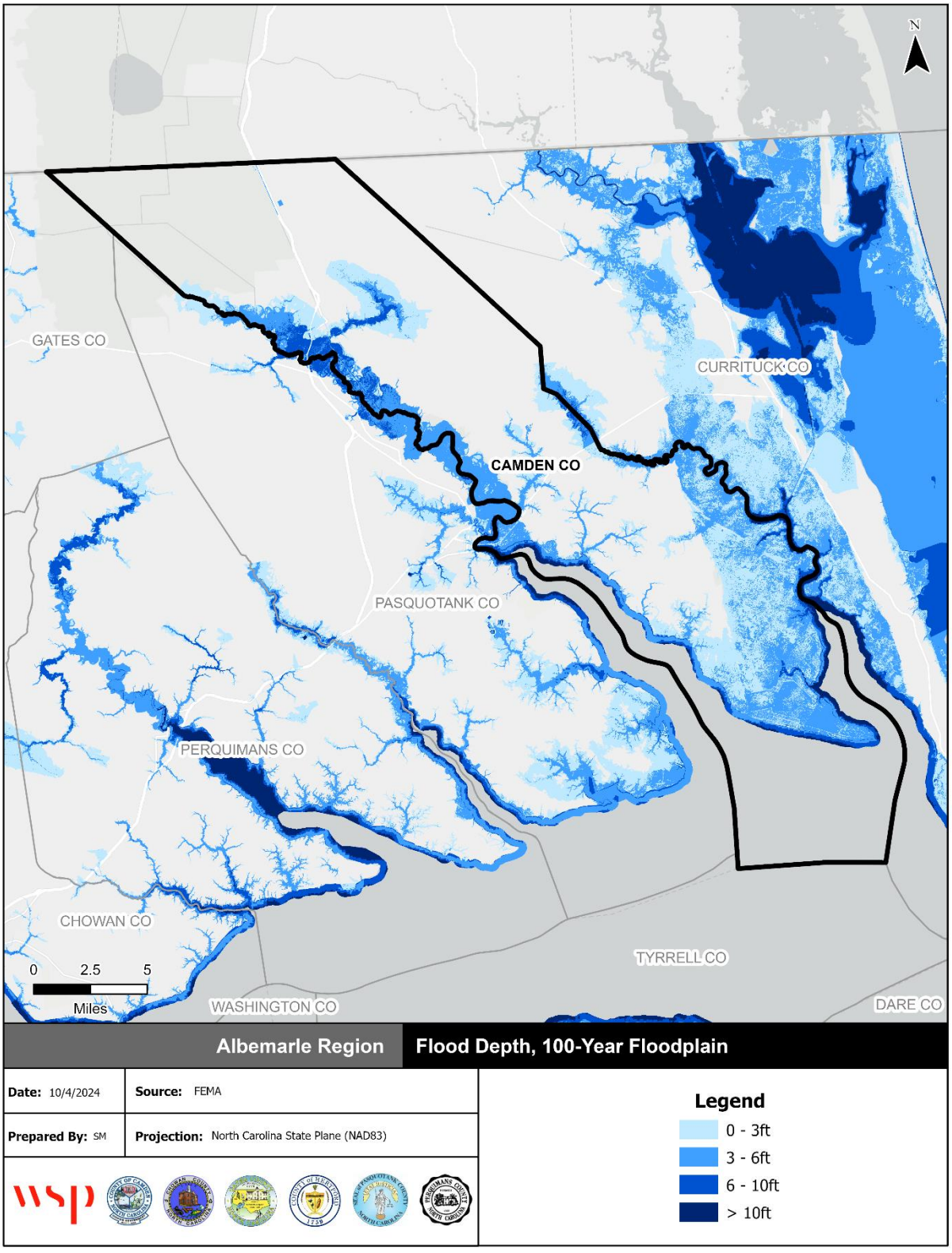
The NFIP utilizes the 100-year flood as a basis for floodplain management. The Flood Insurance Study (FIS) defines the probability of flooding as flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 100-year period (recurrence intervals). Or considered another way, properties within a 100-year flood zone have a one percent probability of being equaled or exceeded during any given year. Mortgage lenders require that owners of properties with federally-backed mortgages located within SFHAs purchase and maintain flood insurance policies on their properties. Consequently, newer and recently purchased properties in the community are typically insured against flooding.

Figure 4.31 through Figure 4.36 show flood depths by county in the Albemarle Region.

More than a third of the planning area is within areas of high flood risk, as defined by the SFHA on the current effective DFIRMs. However, while the 1-percent-annual-chance flood is the basis for floodplain management under the NFIP, that does not mean that properties outside the SFHA are not at risk of flooding. Floods of other magnitudes may occur. The remainder of the planning areas is subject to moderate and low flood risk.

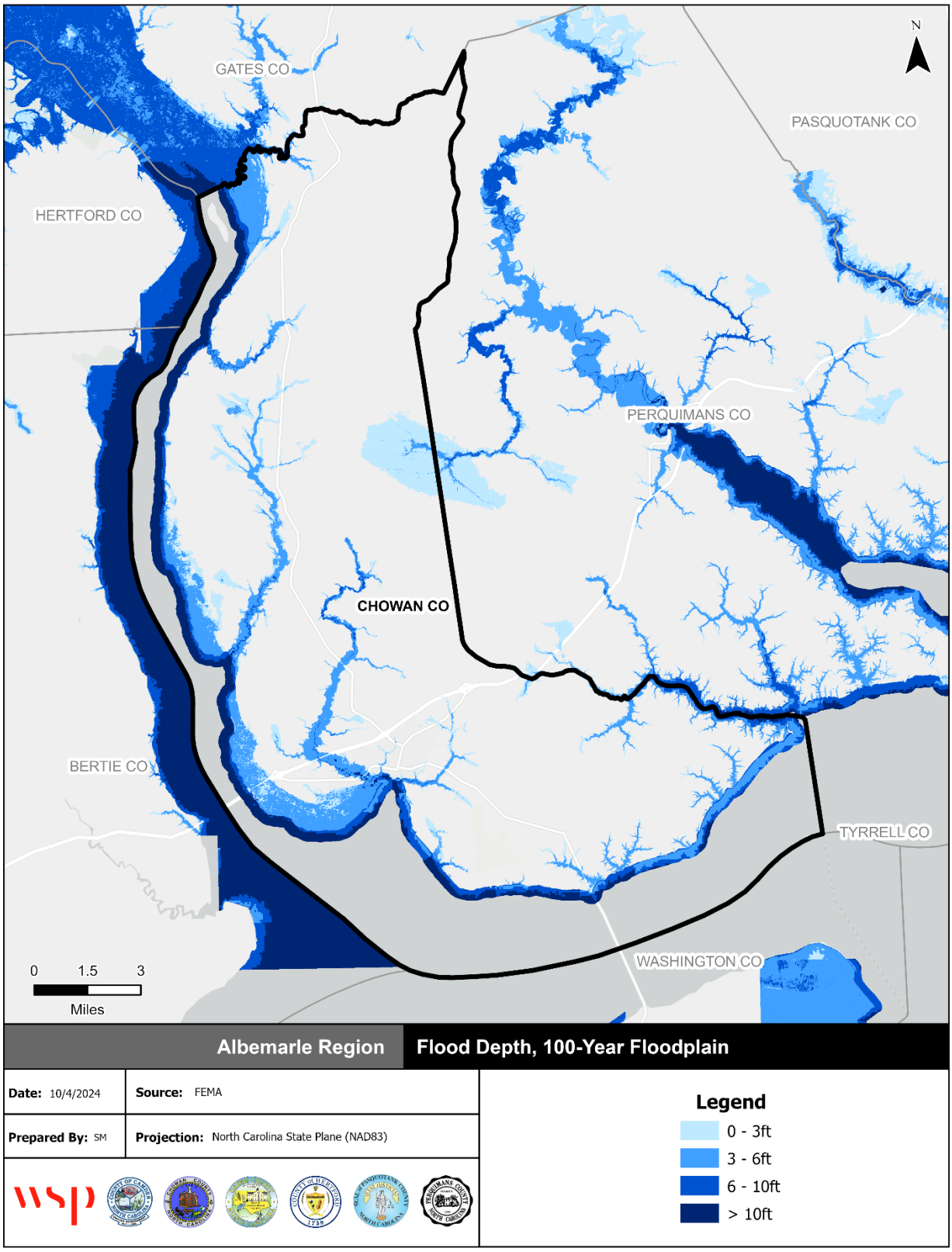
Impact: 3 – Critical

Figure 4.31 – Flood Depth, 100-Year Floodplain, Camden County



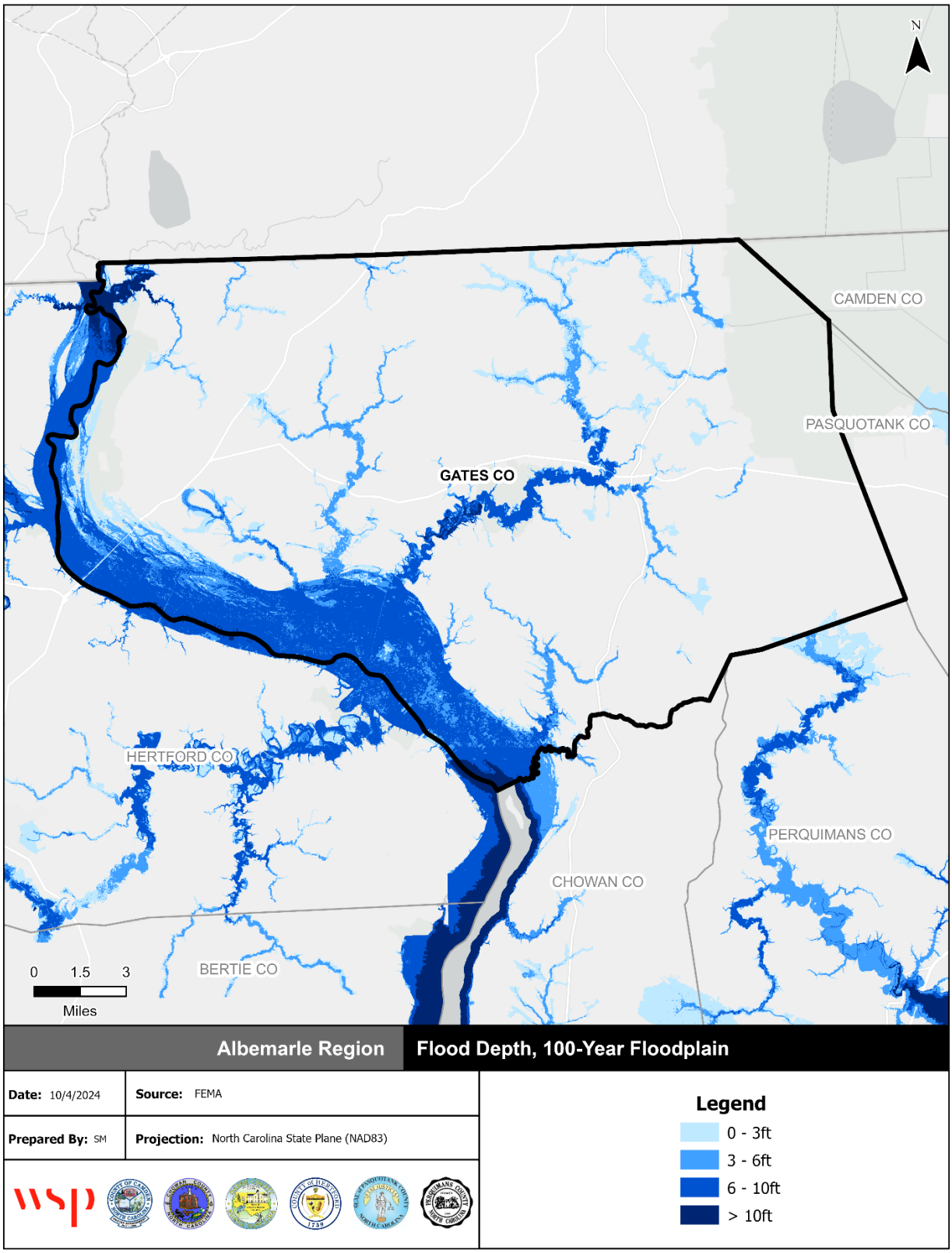
Source: FEMA Effective DFIRM

Figure 4.32 – Flood Depth, 100-Year Floodplain, Chowan County



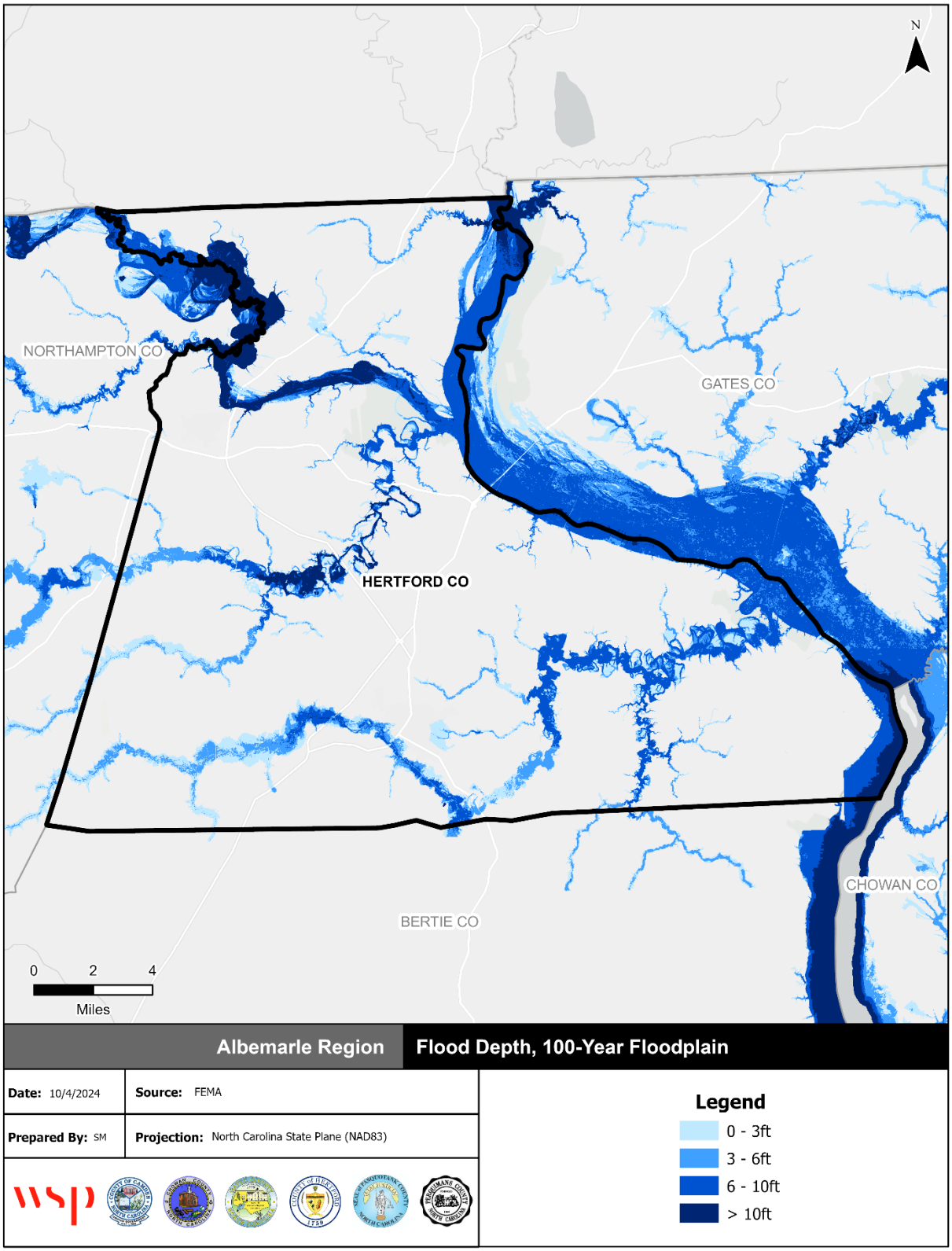
Source: FEMA Effective DFIRM

Figure 4.33 – Flood Depth, 100-Year Floodplain, Gates County



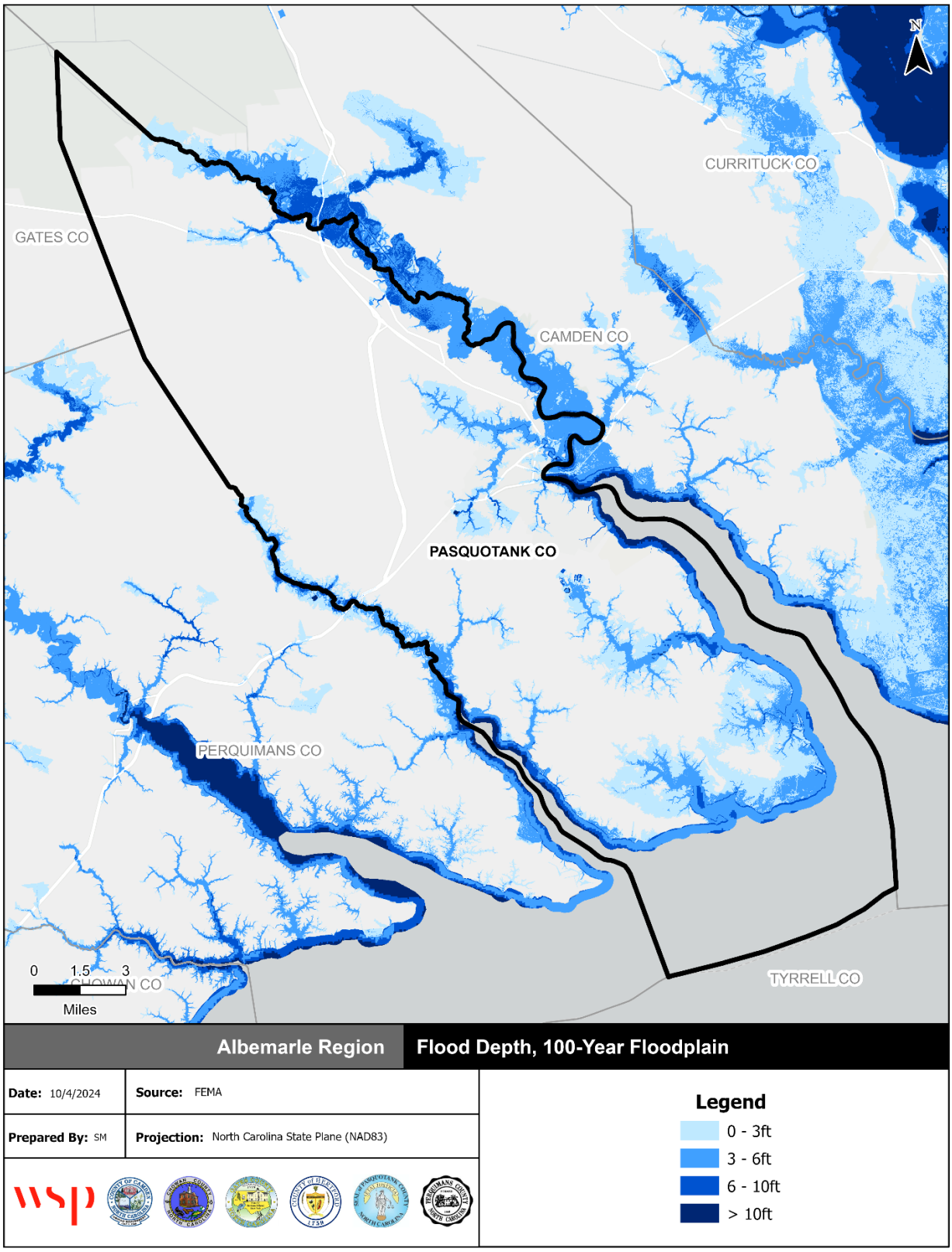
Source: FEMA Effective DFIRM

Figure 4.34 – Flood Depth, 100-Year Floodplain, Hertford County



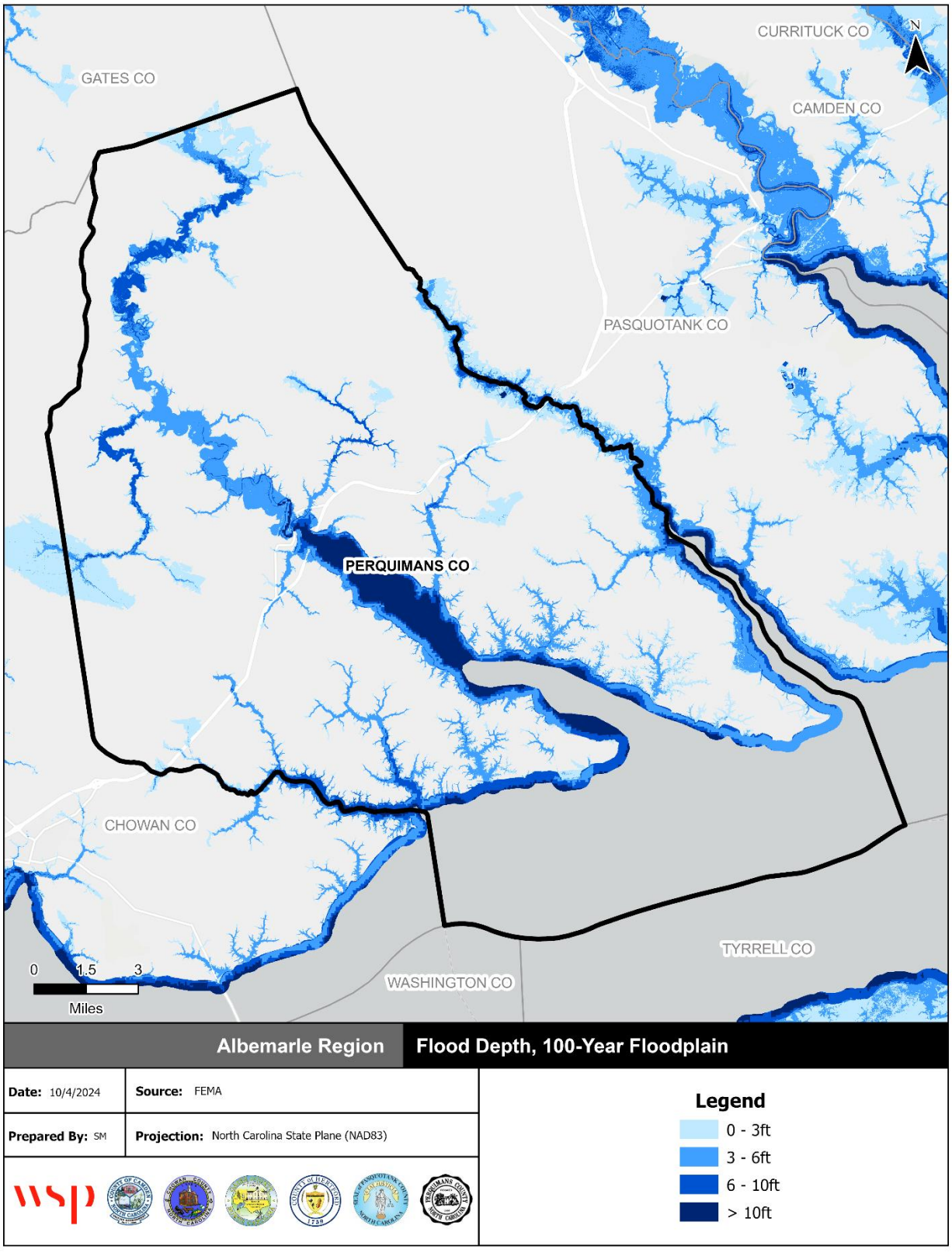
Source: FEMA Effective DFIRM

Figure 4.35 – Flood Depth, 100-Year Floodplain, Pasquotank County



Source: FEMA Effective DFIRM

Figure 4.36 – Flood Depth, 100-Year Floodplain, Perquimans County



Source: FEMA Effective DFIRM

HISTORICAL OCCURRENCES

According to NCEI Storm Events Database records, 248 flood-related events were reported during the 28-year period from 1996 through 2023, across 63 separate days. These events caused 1 death, $9,425,000 in property damages, and $18,400,000 in crop damages. Table 4.41 summarizes these historical occurrences of flooding by county and event type. It should be noted that only those historical occurrences listed in the NCEI database are shown here and that other, unrecorded or unreported events may have occurred within the planning area during this timeframe.

Table 4.41 - NCEI Records of Flooding, 1996-2023

Type	Event Count	Deaths/Injuries	Property Damage	Crop Damage
Camden				
Coastal Flood	2	0/0	$0	$0
Flash Flood	7	0/0	$5,000	$0
Flood	8	0/0	$500,000	$0
Heavy Rain	26	0/0	$0	$0
Chowan				
Coastal Flood	3	0/0	$0	$0
Flash Flood	5	0/0	$0	$0
Flood	5	0/0	$500,000	$0
Heavy Rain	23	0/0	$75,000	$0
Gates				
Coastal Flood	0	0/0	$0	$0
Flash Flood	11	1/0	$140,000	$5,900,000
Flood	4	0/0	$500,000	$0
Heavy Rain	20	0/0	$0	$0
Hertford				
Coastal Flood	0	0/0	$0	$0
Flash Flood	14	0/0	$7,000,000	$12,500,000
Flood	4	0/0	$250,000	$0
Heavy Rain	18	0/0	$0	$0
Pasquotank				
Coastal Flood	3	0/0	$0	$0
Flash Flood	14	0/0	$5,000	$0
Flood	6	0/0	$250,000	$0
Heavy Rain	31	0/0	$0	$0
Perquimans				
Coastal Flood	3	0/0	$0	$0
Flash Flood	8	0/0	$0	$0
Flood	5	0/0	$200,000	$0
Heavy Rain	28	0/0	$0	$0
Region Total				
Coastal Flood	11	0/0	$0	$0
Flash Flood	59	1/0	$7,150,000	$18,400,000
Flood	32	0/0	$2,200,000	$0
Heavy Rain	146	0/0	$75,000	$0
Total	**248**	**1/0**	**$9,425,000**	**$18,400,000**

Source: NCEI

The following historical flood elevations are reported in NCEI records for the region, and illustrate the potential for flooding and flash flooding across the region:

September 15, 1999 – Very heavy rain from Hurricane Floyd fell on soils saturated by previous weeks of heavy rain produced widespread flooding and flash flooding across northeast North Carolina, from the Roanoke River eastward to the sea. Rainfall amounts ranged from near six inches in southeast Gates County to as much as 18 inches in southwest Bertie County. Numerous roads were washed out due to flooding, and a number of high water rescues occurred. Fortunately, only one person perished due to the flash flooding. The flooding impacted Gates, Camden, Chowan, Herford, Pasquotank and Perquimans counties in the region. Enormous structural/housing and agriculture/crop losses were recorded during this incident, including $8.34 million in property damage and $38.7 million in crop damage.

July 6, 2008 – Heavy rains from thunderstorms produced flash flooding across portions of northeast North Carolina. Five to six inches of water covered business Route 17 north of Elizabeth City in Pasquotank County. Old Highway 17 was also flooded, and numerous vehicles were pulled off the road in several feet of water. A rain gauge in Lamb's Corner in Camden County reported seven inches of rain in three hours, and several roads closed due to high water. The NCEI reported $10,000 in property damages and no crop damages in the Camden and Pasquotank counties due to this storm.

October 8, 2016 – The combination of a cold front moving through the region and post-tropical Cyclone Matthew tracking northeast of the North Carolina coast produced heavy rain which caused flooding across much of the northeast region of the state. The rain caused an extended period of significant flooding across the Albemarle Region. Numerous roads were impassable or closed for several days, and many homes and business were impacted. NCEI recorded $2.2 million in property damages and no crop damages caused by this incident.

September 6, 2019 – Hurricane Dorian tracking northeast along the North Carolina coast and just off the Virginia coast produced heavy rain which caused flash flooding across portions of northeast North Carolina. Rainfall total of 7.33 inches was reported at Mesonet Station EMWN7 Mariner's Wharf Park.

December 18, 2023 – Strong low pressure moving northward along the coast produced heavy rain which caused flash flooding across portions of northeast North Carolina. High water was reported across Paradise Road north of Edenton.

PROBABILITY OF FUTURE OCCURRENCE

By definition, SFHAs are those areas that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. Properties located in these areas have a 26 percent chance of flooding over the life of a 30-year mortgage. The Shaded X Zone indicates areas that are estimated to be inundated by the flood event having a 0.2-percent chance of being equaled or exceeded in any given year. The SFHA and the Shaded X zone indicate areas of high and moderate risk according to FEMA guidelines; however, this does not mean that flood risk is limited to these areas. The Region is also at risk to other magnitudes of flooding and other types of flooding, such as stormwater floods, storm surge, and other tidal flooding, which have varying probabilities.

According to past records, all counties in the region have 100% annual probability of experiencing flood related events in any given year. While exposure to flood hazards varies by jurisdiction, with the exception of Harrellsville, all communities in the region have at least some land area in FEMA flood hazard areas; therefore, the probability of flooding is considered likely.

Probability: 3 – Likely

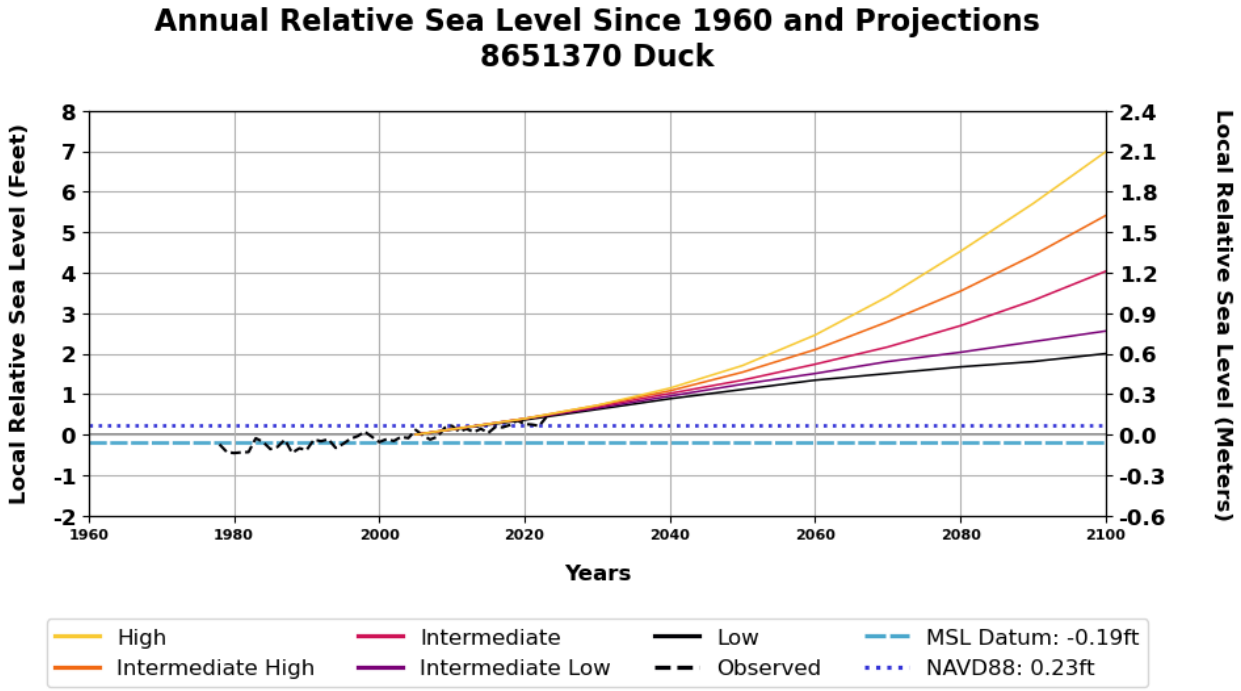
CLIMATE CHANGE

According to the 2023 North Carolina Hazard Mitigation Plan, changing climate and weather patterns, environmental conditions, and urban and rural development may affect the frequency and intensity of

flash flooding. The increased likelihood of extreme precipitation events due to climate change will result in greater risks of flash flooding and impacts from stormwater runoff. The plan notes that even though there may be less precipitation overall in the long-term leading to more frequent drought events, the rainfall that does occur will likely be during more intense events that may lead to flash flooding, and flooding impacts may intensify as a result.

Additionally, sea level rise will inundate low-lying coastal areas and exacerbate other flood risks, especially storm surge and coastal flooding. Projections of sea level rise at the Duck, NC tidal gage station, which is the nearest station to the Albemarle Region, are shown in Figure 4.37. Under the intermediate sea level change scenario, over 1.5 feet of sea level rise is projected to occur by 2060, and approximately four feet of sea level rise is projected by 2100.

Figure 4.37 – Relative Sea Level Change Projections, Duck, NC



VULNERABILITY ASSESSMENT

METHODOLOGIES AND ASSUMPTIONS

Population and property at risk to flooding was estimated using data from the NCEM IRISK database, which was compiled in NCEM's Risk Management Tool.

As a subset of the building vulnerability analysis, exposure of pre-FIRM structures was also estimated. Table 4.42 below provides the NFIP entry date for each participating jurisdiction, which was used to determine which buildings were constructed pre-FIRM. Pre-FIRM structures were built prior to the adoption of flood protection building standards and are therefore assumed to be at greater risk to the flood hazard.

Table 4.42 – NFIP Entry Dates

Jurisdiction	NFIP Entry Date
Camden County	
Camden County (Unincorporated Area)	12/04/85
City of Elizabeth City	04/03/78
Chowan County	
Chowan County (Unincorporated Area)	07/03/85
Town of Edenton	09/15/77
Gates County	
Gates County (Unincorporated Area)	07/16/91
Town of Gatesville	05/13/77
Hertford County	
Hertford County (Unincorporated Area)	11/01/99
Town of Ahoskie	05/01/87
Town of Como	08/03/09
Town of Harrellsville	08/03/09
Town of Murfreesboro	06/01/87
Town of Winton	07/01/87
Village of Cofield	08/03/09
City of Elizabeth City	04/03/78
Pasquotank County	
Pasquotank County (Unincorporated Area)	12/04/85
Perquimans County	
Perquimans County (Unincorporated Area)	07/03/85
Town of Hertford	07/03/85
Town of Winfall	07/03/85

Source: Federal Emergency Management Agency Community Status Book Report: Communities Participating in the National Flood Program, August 2020

If the NFIP entry date for a given community is between January and June, buildings constructed the same year as the entry date are considered post-FIRM (e.g., if the NFIP entry date is 02/01/1991, buildings constructed in 1990 and before are pre-FIRM. Buildings constructed from 1991 to the present are post-FIRM.). If the NFIP entry date is between July and December, then the following year applies for the year built cut-off (e.g., if the NFIP entry date is 12/18/2007, buildings constructed in the year 2007 and before are pre-FIRM, 2008 and newer are post-FIRM).

Effective FEMA DFIRM data was used to identify flood hazard areas. Flood zones used in the analysis consist of Zone AE (1-percent-annual-chance flood), Zone AE Floodway, and the 0.2-percent-annual-chance flood hazard area.

PEOPLE

Flood events pose many threats to public health and safety. While such problems are often not reported, three general types of health hazards accompany floods: physical hazards from the water itself, environmental hazards in the aftermath of the flood, and long-term psychological hazards. These common health and safety hazards are detailed below:

- **Contaminated water**: Floodwaters carry anything that was on the ground that the upstream runoff picked up, including dirt, oil, animal waste, and lawn, farm and industrial chemicals. Pastures and areas where farm animals are kept or where their wastes are stored can contribute polluted waters to the receiving streams. Floodwaters also saturate the ground, which leads to infiltration into sanitary sewer lines, or wastewater treatment plants may be flooded or over loaded. When wastewater treatment plants are flooded, there is nowhere for the sewage to flow. Infiltration and lack of treatment can lead to overloaded sewer lines that can back up into low-lying areas and homes. Even when it is diluted by flood waters, raw sewage can be a breeding ground for bacteria such as E.coli and other disease causing agents. Private sewer and septic systems may also introduce pollutants into floodwaters. Private wells may become contaminated through infiltration of polluted water. Given the many potential sources of contamination, direct or indirect contact with floodwaters poses a significant health risk for contraction of infectious disease.
- **Debris**: During a flood, debris carried by floodwaters can cause physical injury from impact. During the recovery process, people may often need to clear debris out of their properties but may encounter dangers such as sharp materials or rusty nails that pose a risk of tetanus.
- **Unsafe food**: If floodwaters come into contact with food items, that food may no longer be safe for consumption due to the potential contaminants in the floodwaters. Foods stored in cardboard, plastic bags, jars, bottles, and paper packaging may all be subject to contamination. Even if foods don't come into direct contact with floodwaters, the introduction of mold and mildew from flooding may cause foods to spoil faster. Additionally, power outages may cause refrigerated and frozen foods to spoil.
- **Mosquitos and animals**: After most of the water has receded, stagnant pools can become breeding grounds for mosquitoes, which may carry infectious diseases such as West Nile virus or St. Louis encephalitis. Wild animals such as snakes or rodents may carried by floodwaters or lose their habitat and seek shelter in buildings. Snakes may also be swimming in floodwaters seeking higher ground. People may be at risk for bites or disease if they come in contact with these animals or animal carcasses.
- **Mold and mildew**: Areas of a building that were exposed to excessive moisture can breed mold and mildew. Molds can start to grow in only 24 to 48 hours and will continue to grow without steps to dry out and disinfect the affected surface. Some molds are allergens, while others can produce harmful mycotoxins. Exposure to mold can cause respiratory problems; nasal and sinus congestion; eye, nose, and throat irritation; aches and pains; and effects on the nervous system. Infants, children, immunocompromised individuals, elderly adults, pregnant women, and individuals with respiratory conditions are all at higher risk.
- **Reentering a flooded building**: Health hazards may occur when heating ducts in a forced air system are not properly cleaned after inundation. When the furnace or air conditioner is turned on, the sediments left in the ducts are circulated throughout the building and breathed in by the occupants. If the public water systems lose pressure, public water supplies may be contaminated, and a boil order may be issued to protect people and animals from contaminated water.
- **Mental stress**: Long-term psychological impacts can result after having been through a flood and seeing one's home damaged and personal belongings destroyed. The cost and labor needed to repair a flood-damaged home can also put a severe strain on people, especially individuals who were unprepared and uninsured. There is also a long-term problem for those who know that their homes can be flooded again. The resulting stress on floodplain residents takes its toll in the form of aggravated physical and mental health problems.

Floods can also result in fatalities. Individuals face particularly high risk when driving through flooded streets. According to NCEI records, there has been one flood-related death in the Albemarle Region, which was caused by flash flooding in Gates County.

Table 4.43 details the population at risk from the 1% annual chance flood event, according to data from the NCEM IRISK database. Note that development and population growth have occurred since the original analysis for the IRISK dataset was performed, therefore actual population at risk is likely higher.

Table 4.43 – Population Impacted by the 100 Year Flood Event

Jurisdiction	Total Population	Total Population at Risk		All Elderly Population	Elderly Population at Risk		All Children Population	Children at Risk	
		Number	Percent		Number	Percent		Number	Percent
Camden	10,647	2,562	24%	1,882	453	24%	554	133	24%
Chowan	9,526	251	3%	2,329	61	3%	421	11	3%
Edenton	4,616	131	3%	1,190	34	3%	343	10	3%
Gates	10,620	243	2%	2,224	51	2%	388	9	2%
Gatesville	23	0	0%	4	0	0%	1	0	0%
Hertford	18,867	470	2%	3,764	94	2%	818	20	2%
Ahoskie	1,835	27	1%	402	6	1%	89	1	1%
Como	115	0	0%	24	0	0%	5	0	0%
Harrellsville	7	0	0%	2	0	0%	0	0	0%
Murfreesboro	719	7	1%	150	1	1%	20	0	0%
Winton	47	0	0%	8	0	0%	4	0	0%
Cofield	75	0	0%	20	0	0%	2	0	0%
Pasquotank	26,547	5,239	20%	4,851	957	20%	1,600	316	20%
Elizabeth City	15,444	4,417	29%	2,241	641	29%	1,087	311	29%
Perquimans	12,696	794	6%	3,556	222	6%	557	35	6%
Hertford	466	11	2%	121	3	2%	27	1	4%
Winfall	166	1	1%	32	0	0%	10	0	0%
Total	**112,416**	**14,153**	**13%**	**22,800**	**2,523**	**11%**	**5,926**	**847**	**14%**

Source: NCEM Risk Management Tool

PROPERTY

Residential, commercial, and public buildings, as well as critical infrastructure such as transportation, water, energy, and communication systems may be damaged or destroyed by flood waters. The increased number of flood days and general encroachment of shoreline associated with sea level rise will likely cause additional flood-related property damage, although it is unclear exactly what this will look like. Homes, businesses, and vehicles will be susceptible to increased water damage. Homes within the areas that may be inundated will potentially be uninhabitable. Additionally, rising seas, and associated increased flood days, can overwhelm and undermine the effectiveness of stormwater drainage system and other infrastructure, such as roads and bridges.

Properties within the SFHA are estimated to have a one percent probability of being exposed to flooding equaling or exceeding the base flood during any given year. Mortgage lenders require that owners of properties with federally backed mortgages located within SFHAs maintain flood insurance policies on their properties. Consequently, newer and recently purchased properties in the community are typically insured against flooding. Regardless of insurance status, pre-FIRM properties, those built before the community's first FIRM, may be more vulnerable to flood damage because they were built prior to the

enforcement of flood damage prevention regulations. These properties may be a priority for mitigation. Another mitigation priority is critical facilities located in high risk flood zones.

Table 4.44 provides counts of critical facilities by FEMA lifeline located in the SFHA and the Shaded X Zone. Details on critical facility vulnerability can be found in the community annexes.

Table 4.44 – Critical Facility Exposure to 1%-Annual-Chance Flood by Flood Zone

Facility Type	Critical Facility Count by Flood Zone		Total Facilities at Risk
	AE Zone	Shaded X Zone	
Communications	0	0	0
Food, Hydration, Shelter	7	2	9
Health and Medical	1	1	2
Safety and Security	3	7	10
Transportation	0	0	0
Water Systems	3	1	4
Total	**14**	**11**	**25**

Table 4.45 summarizes critical facility exposure to storm surge by FEMA lifeline and storm category according to NOAA SLOSH inundation mapping. Facilities are counted according the lowest category storm that could cause impacts based on inundation extent. There are 311 critical facilities that do not fall within any storm surge inundation area. Note that this exposure analysis does not account for facility finished floor elevation. A facility might be located within an estimated storm surge extent without being damaged by flooding.

Table 4.45 – Critical Facility Exposure to Storm Surge by Storm Category

FEMA Lifeline	Storm Intensity				
	Category 1	Category 2	Category 3	Category 4	Category 5
Communications	0	0	2	0	0
Food, Hydration, Shelter	0	13	22	53	34
Health and Medical	1	2	4	2	2
Safety and Security	2	9	17	7	5
Transportation	0	0	0	1	0
Water Systems	1	2	3	3	3
Total	**4**	**26**	**48**	**66**	**44**

Critical facility exposure to direct inundation from sea level rise is limited in the Region. None of the identified critical facilities are within the flood extent of one or two feet of sea level rise. Two critical facilities, the Elizabeth City Wastewater Plant and Weeksville Volunteer Fire Department, both in Pasquotank County, are within the flood extent of three feet of sea level rise.

Table 4.46 provides building counts and estimated damages for Critical Infrastructure and Key Resources (CIKR) buildings across all jurisdictions, by sector and flood event. Vulnerability of CIKR as well as High Potential Loss Properties, where applicable, can be found by jurisdiction in each community's annex to this plan.

Table 4.47 details the property at risk from the 1% annual chance flood event, according to data from the NCEM IRISK database. As with population vulnerability data, actual property at risk is likely higher due to development that has occurred since the original analysis for the IRISK dataset was performed.

Table 4.46 – Critical Infrastructure and Key Resources Buildings at Risk to 100-Year Flood by Sector

Sector	Number of Buildings at Risk	Estimated Damages
Banking and Finance	4	$78,552
Commercial Facilities	51	$469,491
Communications	0	$0
Critical Manufacturing	13	$218,453
Defense Industrial Base	0	$0
Food and Agriculture	24	$77,838
Government Facilities	1	$1,880
Healthcare and Public Health	3	$32,097
Transportation Systems	1	$204,202
Total	97	$1,082,513

Source: NCEM Risk Management Tool

The damage estimates for the 100-year flood event total $1,082,513, which equates to a loss ratio of less than 1 percent. The loss ratio is the damage estimate divided by the total potential exposure (i.e., total value of all buildings in the planning area), displayed as a percentage of value at risk. FEMA considers loss ratios greater than 10% to be significant and an indicator a community may have more difficulties recovering from an event.

Table 4.47 – Buildings Impacted by the 100-Year Flood Event

County	All Buildings	Number of Pre-FIRM Buildings at Risk		Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden	5,675	586	10%	1,151	20%	$3,257,250	21	0%	$44,476	3	0%	$37,614	1,175	21%	$3,339,340
Chowan	6,944	68	1%	146	2%	$590,590	6	0%	$73,680	0	0%	$0	152	2%	$664,270
Edenton	3,110	31	1%	73	2%	$256,024	6	0%	$30,476	0	0%	$0	79	3%	$286,500
Gates	6,637	23	0%	107	2%	$1,638,472	5	0%	$7,285	0	0%	$0	112	2%	$1,645,757
Gatesville	204	0	0%	0	0%	$0	3	1%	$7,499	0	0%	$0	3	1%	$7,499
Hertford	8,307	134	2%	165	2%	$2,593,407	4	0%	$84,433	0	0%	$0	169	2%	$2,677,840
Ahoskie	2,744	31	1%	34	1%	$339,064	1	0%	$8,475	0	0%	$0	35	1%	$347,539
Como	91	0	0%	0	0%	$0	0	0%	$0	0	0%	$0	0	0%	$0
Harrellsville	100	0	0%	0	0%	$0	0	0%	$0	0	0%	$0	0	0%	$0
Murfreesboro	2,275	18	1%	19	1%	$299,797	1	0%	$204,202	0	0%	$0	20	1%	$503,998
Winton	479	0	0%	0	0%	$0	0	0%	$0	0	0%	$0	0	0%	$0
Cofield	287	0	0%	0	0%	$0	0	0%	$0	0	0%	$0	0	0%	$0
Pasquotank	10,739	911	8%	1,849	17%	$4,480,840	7	0%	$8,105	2	0%	$4,763	1,858	17%	$4,493,708
Elizabeth City	8,843	1,492	17%	2,192	25%	$4,370,776	30	0%	$515,980	0	0%	$0	2,222	25%	$4,886,756
Perquimans	6,399	186	3%	377	6%	$703,193	0	0%	$0	0	0%	$0	377	6%	$703,193
Hertford	1,246	24	2%	25	2%	$108,946	1	0%	$1,464	0	0%	$0	26	2%	$110,410
Winfall	428	5	1%	3	1%	$4,705	2	0%	$9,781	0	0%	$0	5	1%	$14,486
Total	**64,508**	**3509**	**5.4%**	**6,141**	**9.5%**	**$18,643,064**	**87**	**0.1%**	**$995,856**	**5**	**0.0%**	**$42,377**	**6,233**	**9.6%**	**$19,681,296**

Source: NCEM Risk Management Tool

REPETITIVE LOSS ANALYSIS

A repetitive loss property is a property for which two or more flood insurance claims of more than $1,000 have been paid by the NFIP within any 10-year period since 1978. A severe repetitive loss property is classified as such if it has four or more separate claim payments of more than $5,000 each (including building and contents payments) or two or more separate claim payments (building only) where the total of the payments exceeds the current value of the property. Repetitive loss properties and severe repetitive loss properties are a priority for mitigation because they have a known flood risk and are a drain on the NFIP. An analysis of repetitive loss was completed to examine flood vulnerability within the Region.

According to February 2024 FEMA Open Data records, there are a total of 176 repetitive loss properties within the Albemarle Region, of which 50 percent are insured. As of each property's first claim, 150 properties were residential and 26 were non-residential. There are 12 properties on the list classified as severe repetitive loss properties.

Table 4.48 summarizes repetitive loss properties by jurisdiction as identified by FEMA through the NFIP. Jurisdictions without any repetitive losses are not listed in the table.

Table 4.48 – Repetitive Loss Properties by Jurisdiction, February 2024

Jurisdiction	Total RL Properties	Total Number of Losses	Percent Insured	Occupancy Type		Count of SRL Properties
				Residential	Non-Residential	
Camden						
Unincorporated Camden County	23	61	74%	22	1	1
Chowan						
Unincorporated Chowan County	12	29	67%	12	0	1
Edenton	25	62	80%	22	3	2
Gates						
Unincorporated Gates County	2	6	100%	2	0	0
Gatesville	1	3	100%	0	1	0
Hertford						
Unincorporated Hertford County	10	25	30%	9	1	1
Ahoskie	10	26	30%	8	2	0
Pasquotank						
Unincorporated Pasquotank County	52	143	52%	44	8	4
Elizabeth City	35	97	49%	25	10	3
Perquimans						
Unincorporated Perquimans County	4	10	75%	4	0	0
Hertford	2	5	50%	2	0	0
Total Region	**176**	**467**	**50%**	**150**	**26**	**12**

Source: FEMA, February 2024

Note: RL = Repetitive Loss; SRL = Severe Repetitive Loss

ENVIRONMENT

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

Floods can also cause significant erosion, which can alter streambanks and deposit sediment, changing the flow of streams and rivers and potentially reducing the drainage capacity of those waterbodies.

CONSEQUENCE ANALYSIS

Table 4.49 summarizes the potential detrimental consequences of flood.

Table 4.49 – Consequence Analysis - Flood

Category	Consequences
Public	Localized impact expected to be severe for incident areas and moderate to light for other adversely affected areas.
Responders	First responders are at risk when attempting to rescue people from their homes. They are subject to the same health hazards as the public. Flood waters may prevent access to areas in need of response or the flood may prevent access to the critical facilities themselves which may prolong response time. Damage to personnel will generally be localized to those in the flood areas at the time of the incident and is expected to be limited.
Continuity of Operations (including Continued Delivery of Services)	Floods can severely disrupt normal operations, especially when there is a loss of power. Damage to facilities in the affected area may require temporary relocation of some operations. Localized disruption of roads, facilities, and/or utilities caused by incident may postpone delivery of some services.
Property, Facilities and Infrastructure	Residential, commercial, and public buildings, as well as critical infrastructure such as transportation, water, energy, and communication systems may be damaged or destroyed by flood waters. Impacts are expected to be localized to the area of the incident. Severe damage is possible.
Environment	During a flood event, chemicals and other hazardous substances may end up contaminating local water bodies. Flooding kills animals and in general disrupts the ecosystem. Snakes and insects may also make their way to the flooded areas. The localized impact is expected to be severe for incident areas and moderate to light for other areas affected by the flood or HazMat spills.
Economic Condition of the Jurisdiction	Local economy and finances will be adversely affected, possibly for an extended period of time. During floods (especially flash floods), roads, bridges, farms, houses and automobiles are destroyed. Additionally, the local government must deploy firemen, police and other emergency response personnel and equipment to help the affected area. It may take years for the affected communities to be re-built and business to return to normal.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response, and recovery are not timely and effective.

HAZARD SUMMARY BY JURISDICTION

The following table summarizes flood hazard risk by jurisdiction. Warning time and duration are inherent to the hazard. Impact was rated as critical for all jurisdictions. Spatial extent was assigned according to the amount of area within the SFHA, adjusted in some cases based on the understanding that other sources of flooding and other levels of flooding may occur beyond the SFHA. Communities were assigned a probability of likely unless they have no area in any flood hazard areas, in which case probability was lowered to possible.

Jurisdiction	Probability	Impact	Spatial Extent	Warning Time	Duration	Score	Priority
Camden County	3	3	3	3	3	3.0	H
Chowan County	3	3	3	3	3	3.0	H
Edenton	3	3	3	3	3	3.0	H
Gates County	3	3	3	3	3	3.0	H
Gatesville	3	3	3	3	3	3.0	H
Hertford County	3	3	3	3	3	3.0	H
Ahoskie	3	3	3	3	3	3.0	H
Como	3	3	1	3	3	2.6	M
Harrellsville	2	3	1	3	3	2.3	M
Murfreesboro	3	3	2	3	3	2.8	M
Winton	3	3	2	3	3	2.8	M
Cofield	3	3	1	3	3	2.6	M
Pasquotank County	3	3	3	3	3	3.0	H
Elizabeth City	3	3	3	3	3	3.0	H
Perquimans County	3	3	3	3	3	3.0	H
Hertford	3	3	3	3	3	3.0	H
Winfall	3	3	3	3	3	3.0	H

4.5.6 HURRICANES AND COASTAL HAZARDS

HAZARD BACKGROUND

HURRICANES & NOR'EASTERS

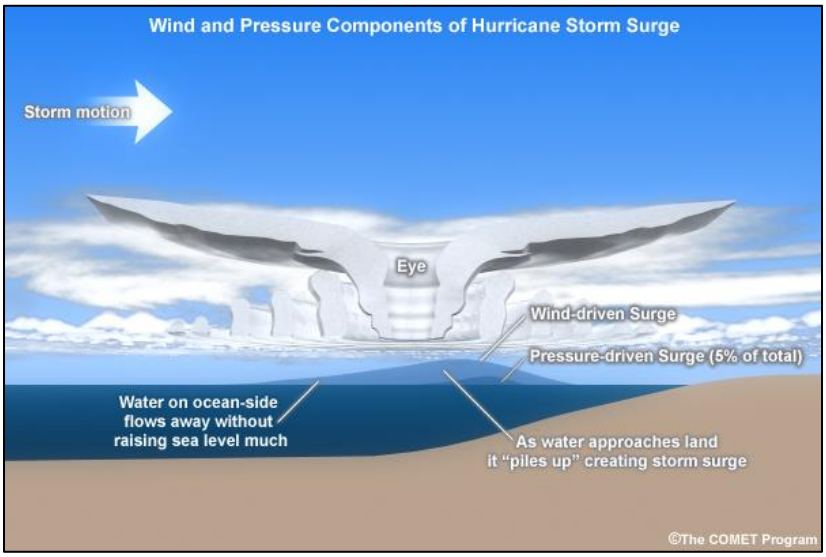
Hurricanes and tropical storms are classified as cyclones and defined as any closed circulation developing around a low-pressure center in which the winds rotate counter-clockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and whose diameter averages 10 to 30 miles across. A 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.

The greatest potential for loss of life related to a hurricane is from the storm surge. Storm surge is water that is pushed toward the shore by the force of the winds swirling around the storm as shown in Figure 4.38. This advancing surge combines with the normal tides to create the hurricane storm tide, which can increase the mean water level to heights impacting roads, homes and other critical infrastructure. In addition, wind driven waves are superimposed on the storm tide. This rise in water level can cause severe flooding in coastal areas, particularly when the storm tide coincides with the normal high tides.

The maximum potential storm surge for a location depends on several different factors. Storm surge is a very complex phenomenon because it is sensitive to the slightest changes in storm intensity, forward speed, size (radius of maximum winds-RMW), angle of approach to the coast, central pressure (minimal contribution in comparison to the wind), and the shape and characteristics of coastal features such as bays and estuaries. Other factors which can impact storm surge are the width and slope of the continental shelf and the depth of the ocean bottom. A narrow shelf, or one that drops steeply from the shoreline and subsequently produces deep water close to the shoreline, tends to produce a lower surge but higher and more powerful storm waves. Much of the North Carolina coast has a narrow continental shelf, with mile-deep waters generally only 20-30 miles off the coast.

Figure 4.38 – Components of Hurricane Storm Surge



Source: NOAA/The COMET Program

Damage during hurricanes may also result from inland flooding from associated heavy rainfall. For example, Hurricane Floyd, which made landfall as a Category 2 storm, caused the worst inland flooding disaster in North Carolina's history. Rainfall amounts exceeded 20 inches in certain locales and 67 counties sustained damages.

Similar to hurricanes, nor'easters are ocean storms capable of causing substantial damage to coastal areas in the Eastern United States due to their strong winds and heavy surf. Nor'easters are named for the winds that blow in from the northeast and drive the storm up the East Coast along the Gulf Stream. 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 that causes severe beach erosion and coastal flooding. There are two main components to a nor'easter: (1) a Gulf Stream low-pressure system (counter-clockwise winds) generated off the southeastern U.S. coast, gathering warm air and moisture from the Atlantic, and pulled up the East Coast by strong northeasterly winds at the leading edge of the storm; and (2) an Arctic high-pressure system (clockwise winds) which meets the low-pressure system with cold, arctic air blowing down from Canada. When the two systems collide, the moisture and cold air produce a mix of precipitation and can produce dangerously high winds and heavy seas. As the low-pressure system deepens, the intensity of the winds and waves increases and can cause serious damage to coastal areas as the storm moves northeast.

Warning Time: 1 – More than 24 hours

Duration: 3 – Less than 1 week

EROSION

Coastal erosion is a process whereby large storms, flooding, strong wave action, sea level rise, and human activities, such as inappropriate land use, alterations, and shore protection structures, wear away the beaches and bluffs along the coast. Erosion undermines and often destroys homes, businesses, and public infrastructure and can have long-term economic and social consequences. According to NOAA, coastal erosion is responsible for approximately $500 million per year in coastal property loss in the United States, including damage to structures and loss of land. To mitigate coastal erosion, the federal

government spends an average of $150 million every year on beach nourishment and other shoreline erosion control measures.

Coastal erosion has both natural causes and causes related to human activities. Gradual coastal erosion/replenishment results naturally from the impacts of tidal longshore currents. Severe coastal erosion can occur over a very short period of time when the state is impacted by hurricanes, tropical storms and other weather systems. Sand is continually removed by longshore currents in some areas but it is also continually replaced by sand carried in by the same type of currents. Structures such as piers or sea walls, jetties, and navigational inlets may interrupt the movement of sand. Sand can become "trapped" in one place by these types of structures. The currents will, of course, continue to flow, though depleted of sand trapped elsewhere. With significant amounts of sand trapped in the system, the continuing motion of currents (now deficient in sand) results in erosion. In this way, human construction activities that result in the unnatural trapping of sand have the potential to result in significant coastal erosion.

Erosion rates and potential impacts are highly localized. In undeveloped areas, these high erosion rates may not be likely to cause significant concern, but in some heavily populated locations, one or two feet of erosion may be considered catastrophic (NOAA, 2014).

Estuaries are partially enclosed, coastal water bodies where freshwater meats saltwater from the ocean. They are influenced by tides but still protected from the full force of ocean waves. Estuaries are often referred to as bays or sounds. Estuarine coastlines can experience erosion through short-term processes, such as tides, storms, wind, and boat wakes, as well as long-term processes, such as sea level rise. Many variables determine the rate of estuarine erosion including shoreline type, geographic location and size of the associated estuary, the type and abundance of vegetation, and the frequency and intensity of storms. Estuarine erosion is problematic as more development occurs along estuarine shorelines. Unfortunately, data on estuarine erosion rates is not available, which makes it difficult to identify and address problem areas.

Warning Time: 1 – More than 24 hours

Duration: 1 – Less than 6 hours

LOCATION

HURRICANES AND NOR'EASTERS

Hurricanes and tropical storm winds can impact the entire Albemarle region. Storm surge impacts are more limited, affecting areas along coastal and estuarine shorelines and reaching further inland depending on the height of the surge. Figure 4.39 through Figure 4.43 show the estimated extent of surge by storm category according to NOAA SLOSH data. As shown in these maps, Camden, Pasquotank, and Perquimans Counties are most vulnerable to storm surge impacts.

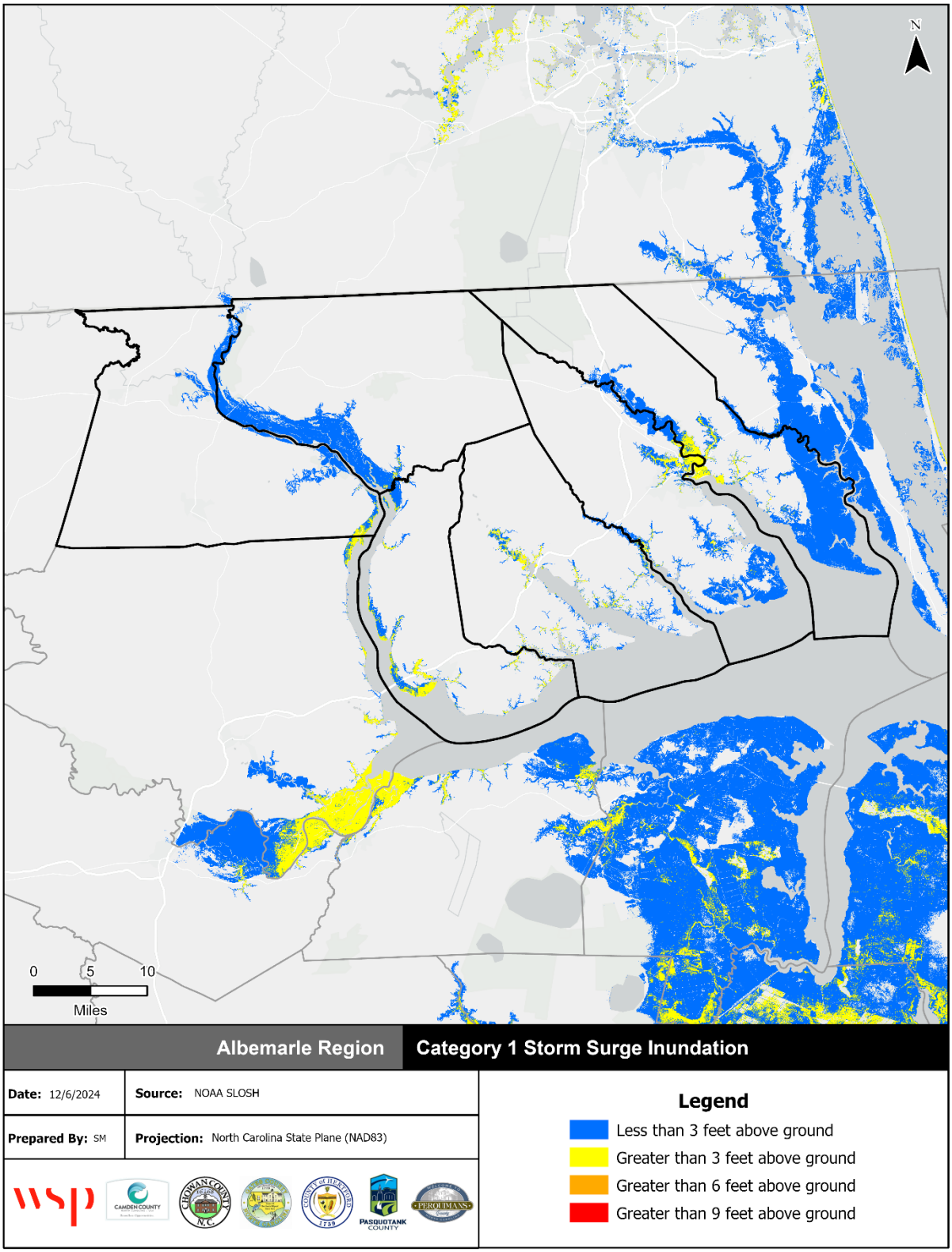
Spatial Extent: 4 – Large

EROSION

Erosion can occur along any shoreline in the region. While erosion is likely to be more frequent and severe along the Atlantic coast in neighboring regions, erosion of the estuarine shoreline can also occur. Per an NC Sea Grant report on estuarine erosion, "erosion is ubiquitous and can be locally severe with many areas showing recession far in excess of the average for North Carolina estuaries." The estuarine coastline in the Albemarle Region consists of areas along the Albemarle Sound. The Region may also experience erosion along its rivers, which include the Chowan River, Perquimans River, Pasquotank River, and North River. However, the primary focus of the HMPC was on estuarine areas.

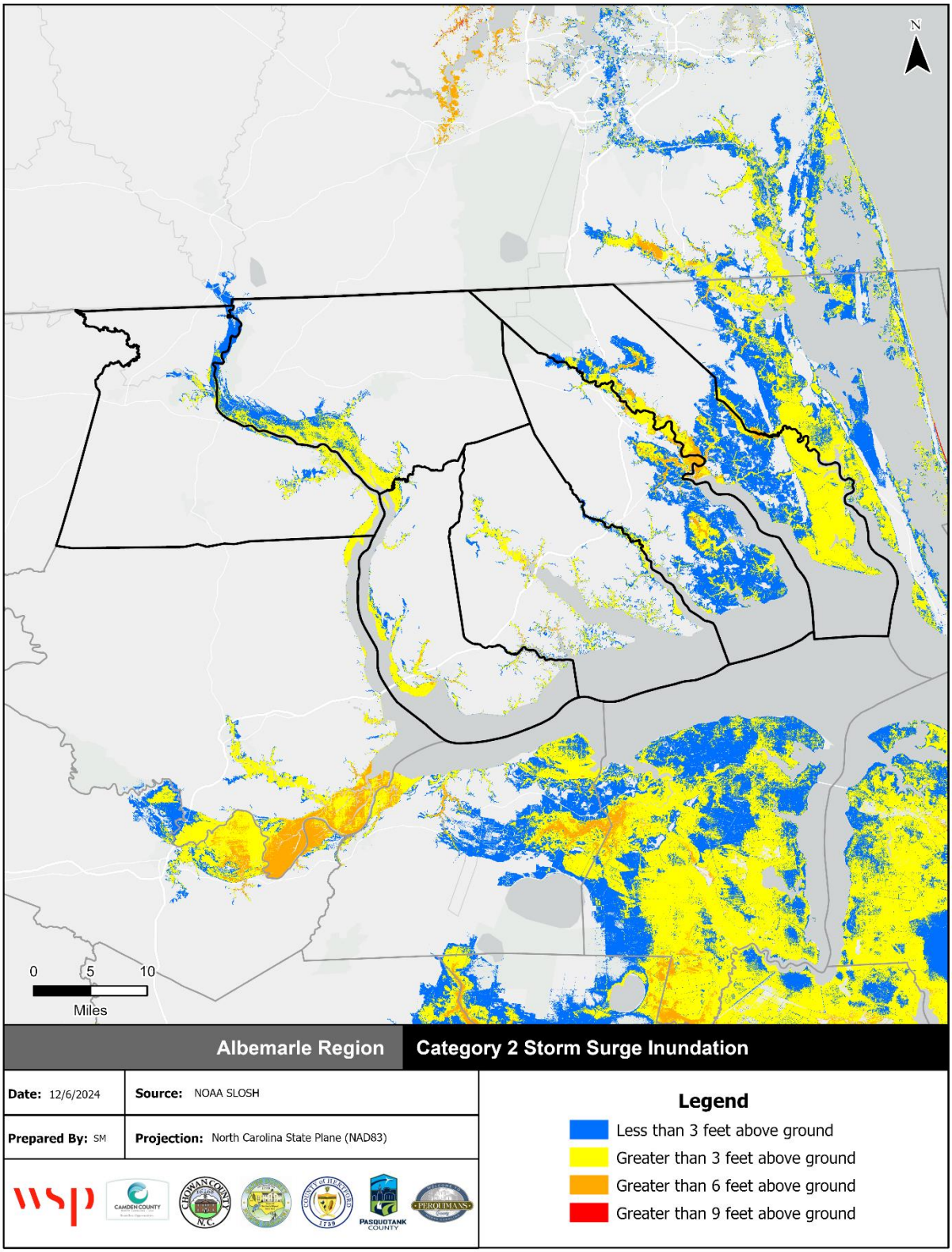
Spatial Extent: 1 – Negligible

Figure 4.39 – Category 1 Storm Surge Inundation



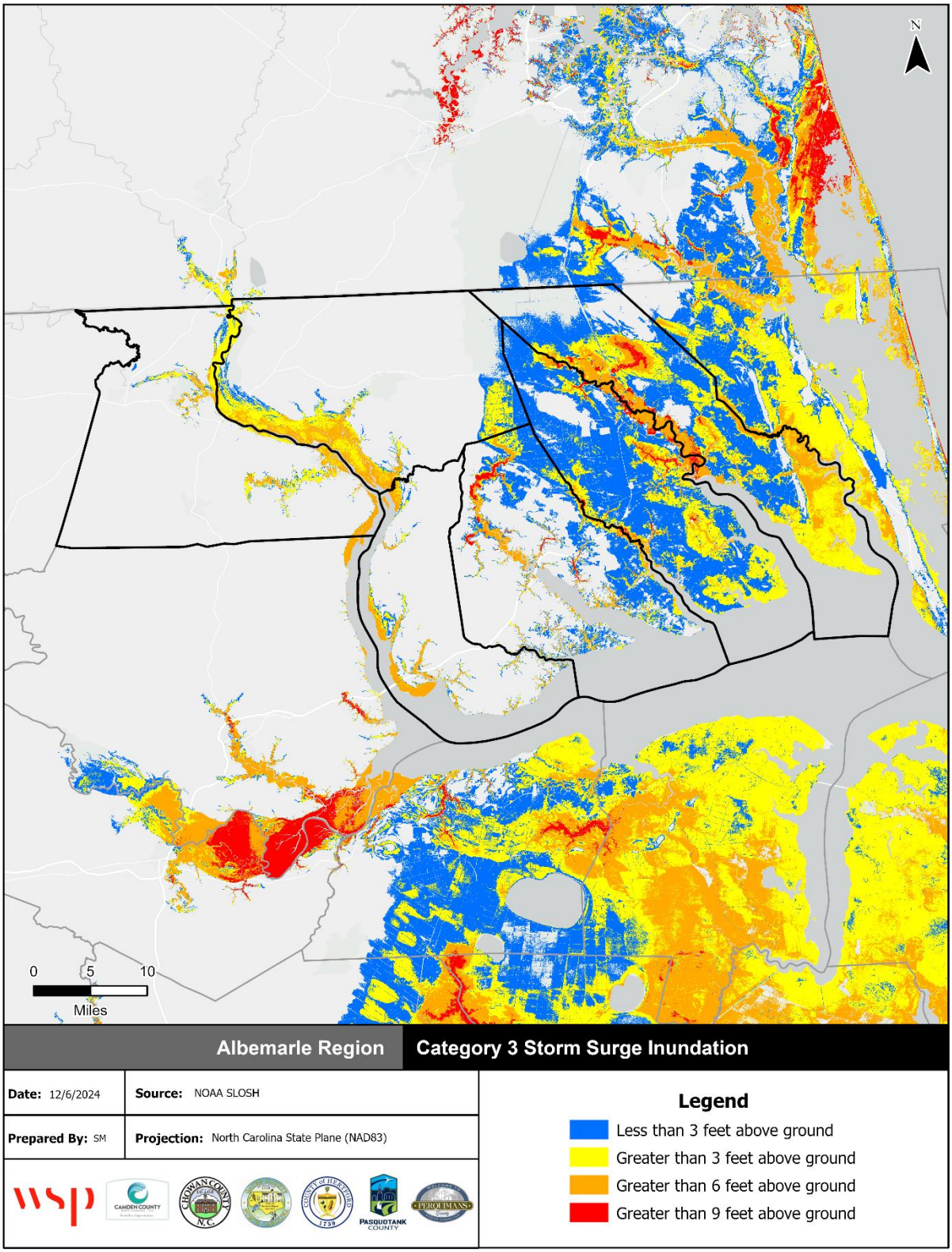
Source: NOAA National Storm Surge Hazard Maps - Version 2

Figure 4.40 – Category 2 Storm Surge Inundation



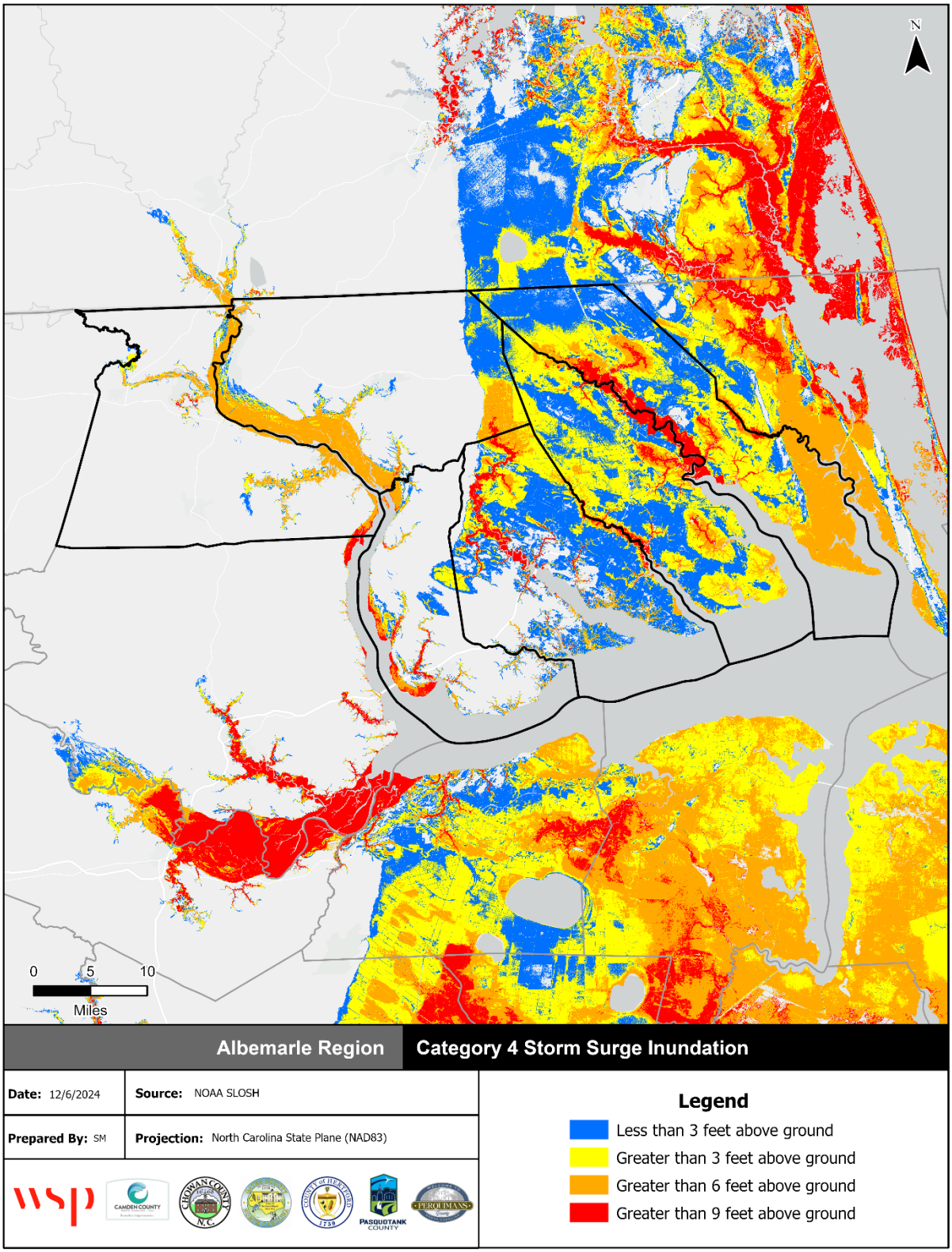
Source: NOAA National Storm Surge Hazard Maps – Version 2

Figure 4.41 – Category 3 Storm Surge Inundation



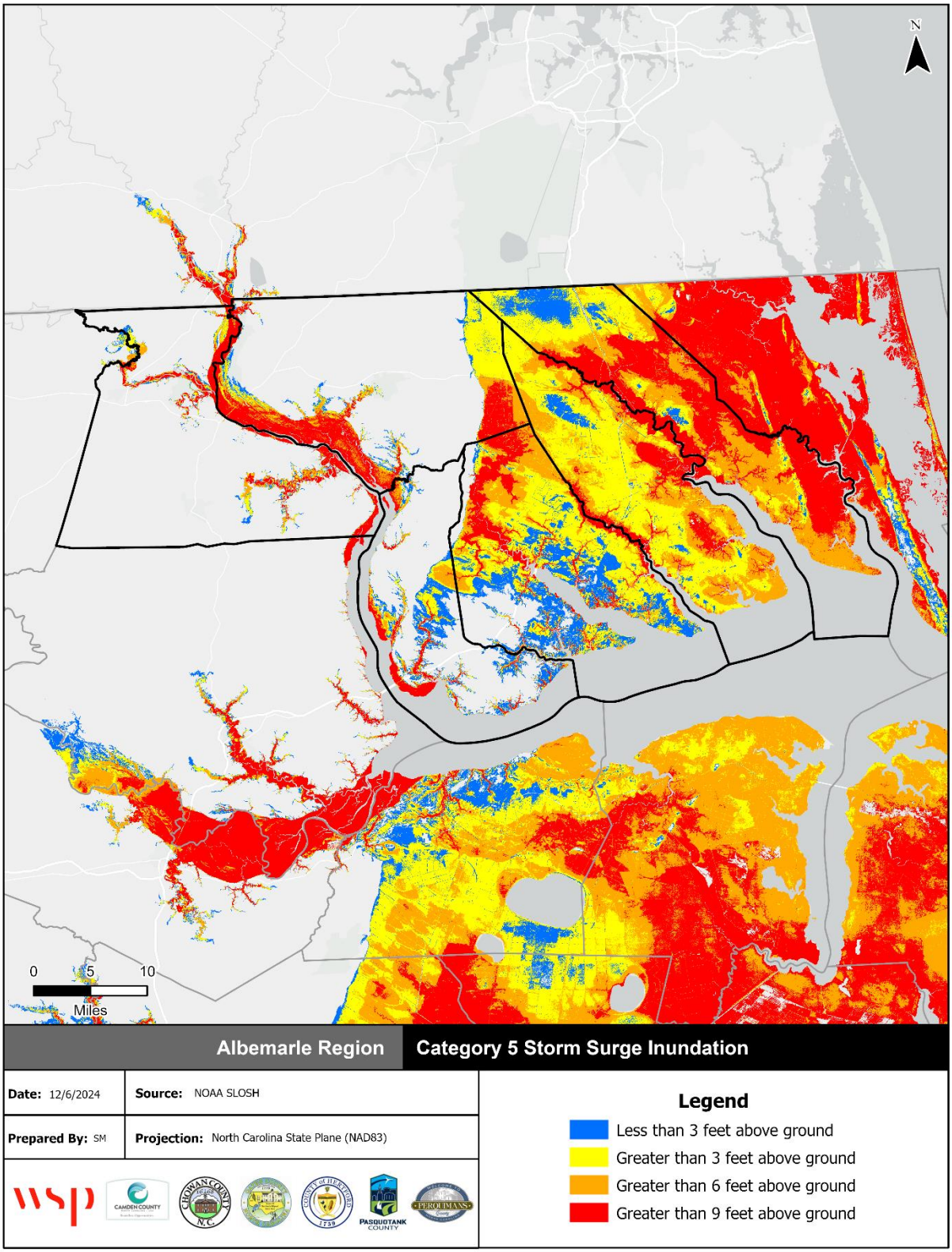
Source: NOAA National Storm Surge Hazard Maps – Version 2

Figure 4.42 – Category 4 Storm Surge Inundation



Source: NOAA National Storm Surge Hazard Maps – Version 2

Figure 4.43 – Category 5 Storm Surge Inundation



Source: NOAA National Storm Surge Hazard Maps – Version 2

EXTENT

HURRICANES & NOR'EASTERS

As an incipient hurricane develops, barometric pressure (measured in millibars or inches) at its center falls and winds increase. If the atmospheric and oceanic conditions are favorable, it can intensify into a tropical depression. When maximum sustained winds reach or exceed 39 miles per hour, the system is designated a tropical storm, given a name, and is closely monitored by the National Hurricane Center in Miami, Florida. When sustained winds reach or exceed 74 miles per hour the storm is deemed a hurricane. Hurricane intensity is further classified by the Saffir-Simpson Scale (Table 4.50), which rates hurricane intensity on a scale of 1 to 5, with 5 being the most intense.

Table 4.50 – Saffir-Simpson Scale

Category	Maximum Sustained Wind Speed (MPH)	Types of Damage
1	74–95	Very dangerous winds will produce some damage; Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96–110	Extremely dangerous winds will cause extensive damage; Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3	111–129	Devastating damage will occur; Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4	130–156	Catastrophic damage will occur; Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5	157 +	Catastrophic damage will occur; A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

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 4.51 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 4.51 – Hurricane Damage Classifications

Storm Category	Damage Level	Description of Damages	Photo Example
1	MINIMAL	No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal flooding and minor pier damage.	
2	MODERATE	Some roofing material, door, and window damage. Considerable damage to vegetation, mobile homes, etc. Flooding damages piers and small craft in unprotected moorings may break their moorings.	
3	EXTENSIVE	Some structural damage to small residences and utility buildings, with a minor amount of curtainwall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures, with larger structures damaged by floating debris. Terrain may be flooded well inland.	
4	EXTREME	More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Terrain may be flooded well inland.	
5	CATASTROPHIC	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Flooding causes major damage to lower floors of all structures near the shoreline. Massive evacuation of residential areas may be required.	

Source: National Hurricane Center; Federal Emergency Management Agency

The Saffir-Simpson scale provides a measure of extent of a hurricane. Each county in the region is susceptible to the full force of every category of hurricane.

Nor'easters can also be measured by their wind speeds; however, there is no designated scale for classifying the severity of nor'easters.

Located near the coast and along estuarine areas, the Albemarle Region is susceptible to every category of hurricane.

Impact: 4 – Catastrophic

EROSION

The magnitude of erosion can be measured as a rate of change from a measured previous condition. As part of their Digital Shoreline Analysis System version 4.3, USGS has developed short and long-term linear regression rate calculations as a metric for oceanfront shoreline change, measured in meters per year. However, this data is not available for estuarine shorelines. Despite data limitations, the HMPC recognized that erosion is a general hazard of concern for the Region's coastlines. Table 4.52 details

shoreline length as well as shoreline access structure and stabilization structures along the shoreline in each county in the Region per the North Carolina Division of Coastal Management.

Table 4.52 – Shoreline Length and Shoreline Structures

County	Estuarine Shoreline (miles)	Count of Shoreline Access Structures	Count of Stabilization Structures
Camden	210.5	266	260
Chowan	116.0	563	374
Gates	121.3	17	15
Hertford	187.0	194	117
Pasquotank	164.9	581	436
Perquimans	186.9	908	599

Source: NC Division of Coastal Management Estuarine Shoreline Mapping Project, 2012

Per this data, Camden County has the greatest length of shoreline but Perquimans County has the most structures along the shoreline. Overall, the HMPC considered the impact erosion would have on these structures to be minor and the total area at risk negligible relative to the planning area as a whole.

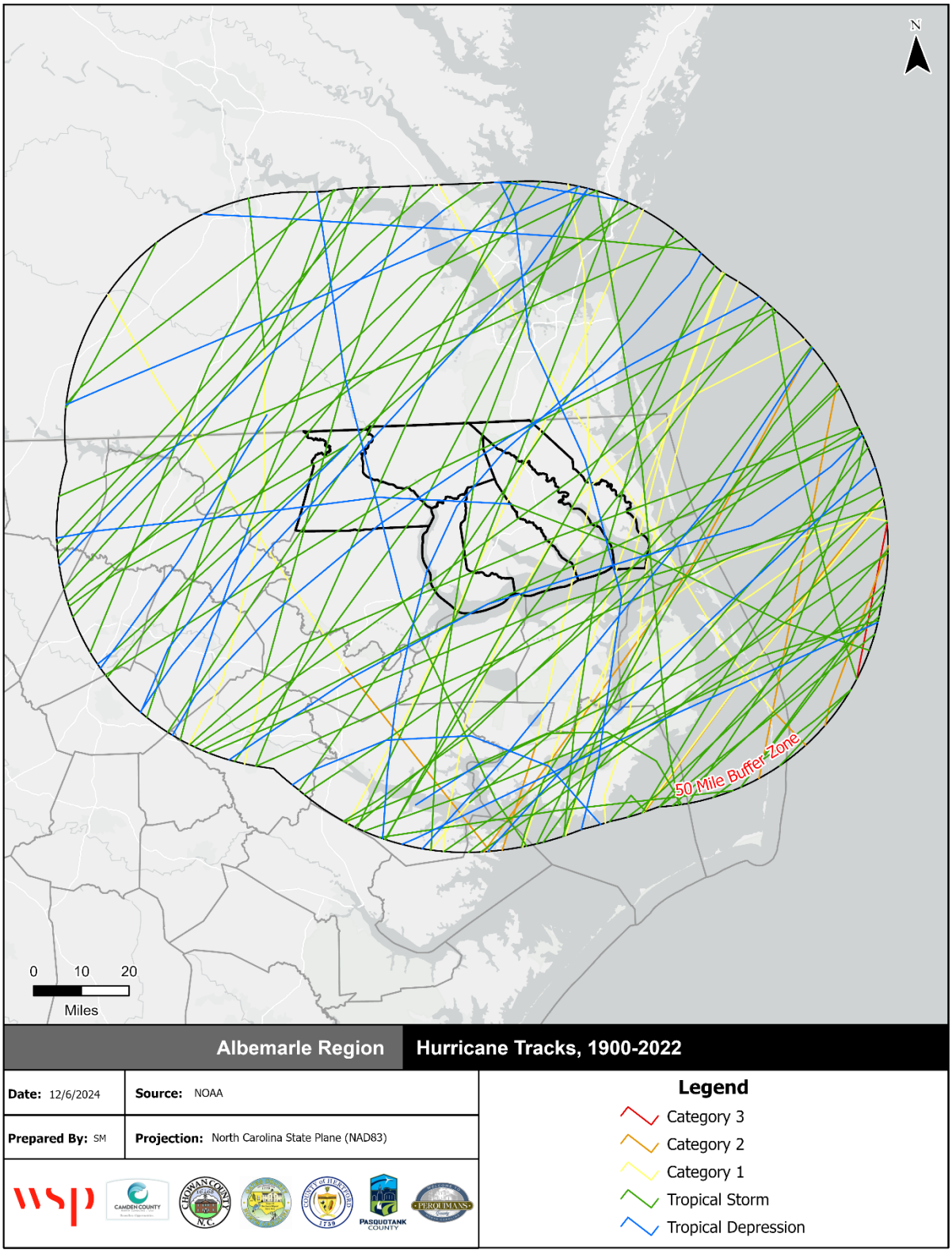
Impact: 1 – Minor

HISTORICAL OCCURRENCES

HURRICANES & NOR'EASTERS

According to the Office of Coastal Management's Tropical Cyclone Storm Segments data, which is a subset of the International Best Track Archive for Climate Stewardship (IBTrACS) dataset, 90 hurricanes and tropical storms have passed within 50 miles of the Albemarle Region since 1900. These storm tracks are shown in Figure 4.44. The date, storm name, storm category, and maximum wind speed of each event are detailed in Table 4.53.

Figure 4.44 – Hurricane/Tropical Storm Tracks within 50 miles of the Albemarle Region, 1900-2022



Source: NOAA Office of Coastal Management

Table 4.53 – Hurricane/Tropical Storm Tracks within 50 Miles of Albemarle Region, 1900-2022

Date	Name	Category*	Maximum Sustained Wind (knots)*
10/13/1900	Not_Named	Tropical Storm	35
7/11/1901	Not_Named	Category 1	70
6/16/1902	Not_Named	Tropical Storm	40
9/14-9/15/1904	Not_Named	Tropical Storm	57
6/29-6/30/1907	Not_Named	Tropical Storm	47
9/1/1908	Not_Named	Tropical Storm	45
8/28-8/29/1910	Not_Named	Tropical Storm	37
6/15/1912	Not_Named	Tropical Storm	37
5/16-5/17/1916	Not_Named	Tropical Storm	40
9/6/1916	Not_Named	Tropical Depression	32
8/25/1918	Not_Named	Tropical Storm	60
9/30/1924	Not_Named	Tropical Storm	62
12/2-12/3/1925	Not_Named	Tropical Storm	62
9/19/1928	Not_Named	Category 1	70
10/2/1929	Not_Named	Tropical Storm	50
9/16/1932	Not_Named	Tropical Storm	50
8/23/1933	Not_Named	Category 2	85
9/16/1933	Not_Named	Category 2	90
9/3/1934	Not_Named	Tropical Storm	40
9/6/1935	Not_Named	Tropical Storm	57
10/12/1942	Not_Named	Tropical Storm	40
9/14/1944	Not_Named	Category 3	110
10/20-10/21/1944	Not_Named	Tropical Storm	45
6/26/1945	Not_Named	Category 1	65
7/6-7/7/1946	Not_Named	Tropical Storm	45
10/9-10/10/1946	Not_Named	Tropical Depression	32
9/25/1947	Not_Named	Tropical Storm	37
9/14/1949	Not_Named	Tropical Depression	25
8/14/1953	Barbara	Category 1	80
8/12-8/13/1955	Connie	Category 2	85
9/19-9/20/1955	Ione	Category 1	82
9/27-9/28/1956	Flossy	Tropical Storm	50
10/18/1956	Not_Named	Tropical Storm	45
7/10/1959	Cindy	Tropical Storm	40
7/30/1960	Brenda	Tropical Storm	55
9/12/1960	Donna	Category 2	85
9/14/1961	Not_Named	Tropical Storm	45
6/30/1962	Not_Named	Tropical Storm	55
6/3/1963	Not_Named	Tropical Storm	50
7/23-7/24/1964	Not_Named	Tropical Depression	27
8/31-9/1/1964	Cleo	Tropical Storm	40
9/13-9/14/1964	Dora	Tropical Storm	60
6/16/1965	Not_Named	Tropical Storm	40
6/18-6/19/1967	Not_Named	Tropical Depression	30

Date	Name	Category*	Maximum Sustained Wind (knots)*
9/16-9/17/1967	Doria	Tropical Storm	60
6/13/1968	Abby	Tropical Depression	30
8/20/1969	Camille	Tropical Storm	37
5/26/1970	Alma	Tropical Storm	35
8/17/1970	Not_Named	Tropical Storm	55
8/27-8/28/1971	Doria	Tropical Storm	55
10/3/1971	Ginger	Tropical Depression	30
6/21-6/22/1972	Agnes	Tropical Storm	45
7/15/1979	Bob	Tropical Depression	20
6/19/1982	Not_Named	Tropical Storm	60
9/14/1984	Diana	Tropical Storm	52
8/18-8/19/1985	Danny	Tropical Depression	25
9/27/1985	Gloria	Category 2	90
8/17-8/18/1986	Charley	Category 1	70
9/25/1992	Danielle	Tropical Storm	55
6/6-6/7/1995	Allison	Tropical Storm	40
6/20/1996	Arthur	Tropical Storm	35
7/13/1996	Bertha	Category 1	65
10/8/1996	Josephine	Tropical Storm	45
7/24/1997	Danny	Tropical Storm	40
8/27-8/28/1998	Bonnie	Category 1	75
9/4/1998	Earl	Tropical Storm	50
9/16/1999	Floyd	Category 1	80
9/23-9/24/2000	Helene	Tropical Storm	42
6/15-6/16/2001	Allison	Tropical Depression	25
10/12/2002	Kyle	Tropical Storm	40
9/18-9/19/2003	Isabel	Category 2	85
8/13/2004	Bonnie	Tropical Depression	25
8/14-8/15/2004	Charley	Tropical Storm	60
8/30-8/31/2004	Gaston	Tropical Storm	35
6/14/2006	Alberto	Tropical Storm	40
9/1-9/2/2006	Ernesto	Tropical Storm	40
6/4/2007	Barry	Tropical Storm	40
9/9-9/10/2007	Gabrielle	Tropical Storm	45
9/6/2008	Hanna	Tropical Storm	45
8/27-8/28/2011	Irene	Category 1	70
6/7/2013	Andrea	Tropical Storm	40
7/4/2014	Arthur	Category 2	85
5/11/2015	Ana	Tropical Depression	30
9/3/2016	Hermine	Tropical Storm	60
9/20-9/21/2016	Julia	Tropical Depression	25
10/11-10/12/2018	Michael	Tropical Storm	55
10/20/2019	Nestor	Tropical Storm	40
8/4/2020	Isaias	Tropical Storm	60
6/21/2021	Claudette	Tropical Storm	40

Date	Name	Category*	Maximum Sustained Wind (knots)*
7/8-7/9/2021	Elsa	Tropical Storm	45

*Reports the most intense category and wind speed that occurred within 50 miles of the Pamlico Sound Region, not for the storm event overall.

Source: Office of Coastal Management, 2024.

The above table of storms is not an exhaustive list of hurricanes that have affected the Albemarle Region. Several storms have passed further than 50 miles away from the Region yet had strong enough wind or rain impacts to cause impacts. NCEI records hurricane and tropical storm events across the region by county and zone; therefore, one event that impacts all six counties in the region is recorded six times. During the 26-year period from 1996 through 2023, NCEI records 85 hurricane and tropical storm reports across 18 separate days. These events are summarized in Table 4.54 by storm. Where property damage estimates were broken out by type, NCEI reports only the value of wind-related damages. Damage estimates provided here are summed where appropriate to reflect the total reported damages per event. Event narratives following this table provide a fuller scope of the impacts from selected events.

Table 4.54 – Recorded Hurricanes and Typhoons in the Albemarle Region, 1996-2023

County	Date	Storm	Deaths/ Injuries	Property Damage	Crop Damage
Ca, Ch, G, H, Pa, Pe	7/12/1996	Hurricane Bertha	0/0	$0	$0
Ca, Ch, G, H, Pa, Pe	9/5/1996	Hurricane Fran	0/0	$0	$0
Ca, Ch, G, H, Pa, Pe	10/7/1996	Tropical Storm Josephine	0/0	$0	$0
Ca, Ch, Pa, Pe	8/26/1998	Hurricane Bonnie	0/0	$8,000,000	$0
Ca, Ch, Pa, Pe	9/1/1999	Hurricane Dennis	0/0	$20,000	$0
Ca, Ch, Pa, Pe	9/15/1999	Hurricane Floyd	0/0	$2,895,000	$42,500,000
Ca, Ch, Pa, Pe	10/17/1999	Hurricane Irene	0/0	$20,000	$0
Ca, Ch, G, H, Pa, Pe	9/18/2003	Hurricane Isabel	1/0	$15,999,000	$0
Ca, Ch, Pa, Pe	8/14/2004	Tropical Storm Charley	0/0	$0	$0
Ca, Ch, Pa, Pe	9/6/2008	Tropical Storm Hanna	0/0	$20,000	$0
Ca, Ch, G, H, Pa, Pe	8/27/2011	Hurricane Irene	0/0	$3,000,000	$22,000,000
Ca, Ch, Pa, Pe	7/4/2014	Hurricane Arthur	0/0	$0	$0
Ca, Ch, G, H, Pa, Pe	9/2/2016	Tropical Storm Hermine	0/0	$25,000	$0
Ca, Ch, G, Pa, Pe	9/5/2019	Hurricane Dorian	0/0	$105,000	$0
Ca, Ch, G, H, Pa, Pe	8/4/2020	Tropical Storm Isaias	0/0	$2,750,000	$0
G, Ch, H, Pe	7/8/2021	Tropical Storm Elsa	0/0	$100,000	$0
Ca, Ch, Pa, Pe	9/22-9/23/2023	Tropical Storm Ophelia	0/0	$0	$0
		Total	**1/0**	**$32,909,000**	**$64,500,000**

Source: NCEI

*County code: Ca = Camden, Ch = Chowan, G = Gates, H = Hertford, Pa = Pasquotank, Pe = Perquimans

August 26-28th, 1998 – Hurricane Bonnie moved along the coast of northeast North Carolina on August 27th. Very strong winds and heavy rains associated with Bonnie's spiral bands hammered northeast North Carolina Thursday afternoon into early Friday morning. The highest sustained wind speed recorded at the Elizabeth City Coast Guard Station (ECG) was 59 mph with gusts to 73 mph. The Currituck County EOC reported a gust to 93 mph. Numerous trees and power lines blown down resulted in scattered property

damage and widespread power outages. A 12-year-old girl was killed when a large tree fell on her home. Coastal Pasquotank and Camden counties in North Carolina experienced approximately a 6-foot surge in the Albemarle Sound flooding coastal sections of those counties including the business district of downtown Elizabeth City. Chowan County experienced a 5-to-6-foot surge from the Albemarle Sound causing some flooding in Edenton. Rainfall amounts generally ranged from 1 to 3 inches and caused some street flooding. The lowest sea level pressure recorded at the Elizabeth City Coast Guard Station (ECG) was 995.7 mb.

September 1-5th, 1999 – Hurricane and Tropical Storm Dennis produced one of the most prolonged periods of tropical cyclone related conditions across northeast North Carolina, from August 30th through September 5th. The highest sustained wind speed recorded at the Elizabeth City Coast Guard Station (ECG) was 39 mph with gusts to 52 mph. A few trees and power lines were blown down across northeast North Carolina resulting in scattered power outages. Pasquotank, Camden and Chowan counties experienced approximately a 2-to-3-foot surge in the Albemarle Sound with some flooding in coastal sections of those counties. Also, several roads were flooded in Camden County, and the fire department was inundated for a time. Rainfall amounts generally ranged from 5 to 7 inches across northeast North Carolina and caused some street flooding. The lowest sea level pressure recorded at the Elizabeth City Coast Guard Station (ECG) was 1003.8 mb.

September 15th-16th, 1999 – Hurricane Floyd was a Category 1 hurricane as it crossed the Wakefield WFO County warning area. Sustained tropical storm force winds with gusts to near hurricane force occurred over the northwest quadrant of the storm over interior portions of northeast North Carolina and along the coastal waters of the Wakefield marine area. The center of the storm crossed the county warning area along an Elizabeth City to Currituck County to Sandbridge Virginia Beach axis. The highest sustained wind speed recorded at the Elizabeth City Coast Guard Station (ECG) was 39 mph with gusts to 64 mph. Two confirmed tornadoes occurred in association with Floyd, both in northeast North Carolina. There were approximately several thousand persons evacuated and housed in several shelters from coastal jurisdictions. Hundreds of trees and power lines were blown down across northeast North Carolina, resulting in widespread power outages. Coastal Pasquotank and Camden counties experienced approximately a 5-to-6-foot surge in the Albemarle Sound, flooding coastal sections of those counties including the business district of downtown Elizabeth City. Chowan county experienced a 5-to-6-foot surge from the Albemarle Sound causing some flooding in Edenton. The lowest sea level pressure recorded at the Elizabeth City Coast Guard Station (ECG) was 968.5 mb.

October 17-18th, 1999 – Hurricane Irene was an intensifying Category 1 hurricane at the time of closest approach to the Wakefield County warning area during the overnight hours of Monday October 18th. Irene was the third tropical system of the 1999 hurricane season to affect the Wakefield County warning area, and brought another round of very heavy rain into northeast North Carolina. The very heavy rainfall, locally up to 5 to 9 inches, resulted in widespread street flooding and small stream and tributary flooding in portions of northeast North Carolina. The highest sustained wind speed recorded at the Elizabeth City Coast Guard Station (ECG) was 30 mph with gusts to 38 mph. A storm surge of approximately 2 to 3 feet was observed in the Albemarle Sound, with minor flooding in coastal sections of those counties. The lowest sea level pressure recorded at the Elizabeth City Coast Guard Station (ECG) was 995.1 mb.

September 18-19th, 2003 – Hurricane Isabel was a Category 1 hurricane as it crossed the Wakefield WFO County warning area. Sustained tropical storm force winds with frequent gusts to hurricane force occurred over coastal northeast North Carolina. Isabel made landfall near Ocracoke Inlet in North Carolina, tracked northwest into central Virginia just west of Richmond, then continued northward into western Pennsylvania. The highest sustained wind speed recorded was 73 mph at Duck (DUCN7). Other sustained wind speed was 59 mph at Elizabeth City (ECG). The highest gusts recorded were 97 mph at Elizabeth City (from Clemson University observation site in Elizabeth City), 92 mph at Duck (DUCN7), and 74 mph at Elizabeth City (ECG). Mandatory evacuations were ordered for parts of Currituck County, with approximately several thousand persons evacuated and housed in numerous shelters across coastal

northeast North Carolina. The unusually large wind field uprooted many thousands of trees, downed many power lines, damaged hundreds of houses, and snapped thousands of telephone poles and cross arms. Hundreds of roads, including major highways, were blocked by fallen trees. Local power companies reported many thousands of customers were without power. Duck water levels peaked at 7.8 feet MLLW before data was lost. On the Albemarle Sound, storm surge values around 7 feet occurred at Edenton, with a surge around 5 feet observed on the Pasquotank River in Elizabeth City. Isabel will be remembered for the greatest wind and storm surge in the region since Hazel in 1954, and the 1933 Chesapeake-Potomac Hurricane. Also, Isabel will be remembered for the extensive power outages in northeast North Carolina, and permanent change to the landscape from all the fallen trees and storm surge. Rainfall amounts ranged from 2 to 5 inches across coastal northeast North Carolina. Inland flooding due to heavy rainfall occurred over parts of coastal northeast North Carolina. Eight deaths can be directly attributed to Isabel in the Wakefield area of responsibility, with 1 in North Carolina. There were more than 15 deaths indirectly attributed to the storm.

August 27-28th, 2003 – Hurricane Irene moving northward over the outer banks of North Carolina and just off the Virginia coast produced tropical storm force winds across portions of northeast North Carolina from early Saturday morning, August 27th into Sunday morning, August 28th. Tropical storm force winds knocked down several trees and power lines, with heavy rains also causing significant crop damage. Storm total rainfall generally ranged from eight to fourteen inches.

July 8, 2021 – The center of Tropical Storm Elsa tracked north just inland of the Middle Atlantic Coast from Thursday morning through Thursday night, July 8th. Tropical storm winds downed several trees and power lines, produced minor structural damage, and caused scattered power outages across the county. Wind gusts averaged between 35 and 45 knots. Wind gust of 37 knots (43 mph) was measured at Hertford and Chapanoke.

September 22-23, 2023 – Tropical Storm Ophelia tracked northward across east central North Carolina and up through central Virginia from early Saturday morning, September 23 into early Sunday morning, September 24. The combination of high pressure to the north and Ophelia resulted in strong northeast, east and then southeast winds. The Elizabeth City Airport ASOS measured a maximum gust of 43 knots (49 miles per hour) at 10:01 PM EST on September 22. Tropical storm force winds of 34 to 43 knots occurred between 5 PM EST on September 22 and 12:20 PM on September 23.

EROSION

Though it can be exacerbated by major storms, erosion is an ongoing occurrence. Pasquotank and Camden Counties have primarily low-bank shorelines for which erosion is typically very severe. High-bank shorelines are more common in Chowan and Perquimans Counties for which erosion rates are high.

PROBABILITY OF FUTURE OCCURRENCE

HURRICANES & NOR'EASTERS

In the 28-year period from 1996 through 2023, 17 hurricanes and tropical storms have impacted the Albemarle Region according to records in NCEI, which equates to a 61 percent annual probability of hurricane winds impacting the planning area in any given year. This probability does not account for impacts from hurricane rains and storm surge, which may also be severe in the region. The probability of a hurricane or tropical storm impacting the Albemarle Region is likely.

Probability: 3 – Likely

EROSION

Erosion and accretion are natural processes that are likely to continue to occur. The likelihood of significant instances of erosion will likely be tied to the occurrence of hurricane, tropical storm, and nor'easter events. Based on the likely probability of these storm events, erosion can be considered likely to occur as well.

Probability: 3 – Likely

CLIMATE CHANGE

Changing climate and weather conditions may increase the number and frequency of future hurricane events. Hurricanes and other coastal storms may result in increased flooding, injuries, deaths, and extreme property loss. According to the US Government Accountability Office, national storm losses from changing frequency and intensity of storms is projected to increase anywhere from $4-6 billion in the near future.

According to NOAA, weather extremes will likely cause more frequent, stronger storms in the future due to rising surface temperatures. NOAA models predict that while there may be less frequent, low-category storm events (Tropical Storms, Category 1 Hurricanes), there will be more high-category storm events (Category 4 and 5 Hurricanes) in the future. This means that there may be fewer hurricanes overall in any given year, but when hurricanes do form, it is more likely that they will become large storms that can create massive damage.

Given that climate change is expected to make heavy rain events and tropical storms and hurricanes more frequent and intense, the erosion typically caused by these storms can be expected to occur more frequently. Additionally, sea level rise along the North Carolina coast will likely result in an increase in storm surge flooding and eroded shorelines.

VULNERABILITY ASSESSMENT

METHODOLOGIES AND ASSUMPTIONS

Property at risk to hurricanes was estimated using data from the NCEM IRISK database, which was compiled in NCEM's Risk Management Tool. The vulnerability data displayed below is for wind-related damages. Hurricanes may also cause substantial damages from heavy rains and subsequent flooding, which is addressed in Section 4.5.5 Flooding.

PEOPLE

The very young, the elderly and individuals with disabilities are especially vulnerable to harm from hurricanes. For those who are unable to evacuate for medical reasons, there should be provision to take care of special-needs patients and those in hospitals and nursing homes. Many of these patients are either oxygen- dependent, insulin-dependent, or in need of intensive medical care. There is a need to provide ongoing treatment for these vulnerable citizens, either on the coast or by air evacuation to upland hospitals. The stress from disasters such as a hurricane can result in immediate and long-term physical and emotional health problems among victims.

Erosion is unlikely to have any direct impact on the health or safety of individuals. However, it may cause indirect harm by weakening structures and by changing landscapes in ways that increase risk of other hazard impacts. For example, streambank erosion can cause sedimentation that decreases the stream's capacity and forces floodwaters to overtop the banks.

PROPERTY

Hurricanes can cause catastrophic damage to coastlines and several hundred miles inland. Hurricanes can produce winds exceeding 157 mph as well as tornadoes and microbursts. Additionally, hurricanes often bring intense rainfall that can result in flash flooding. Floods and flying debris from the excessive winds are often the deadly and most destructive results of hurricanes.

Hurricanes and tropical storms can also cause agricultural damages. For the counties in the Albemarle Region, USDA RMA reports losses of nearly $4.8 million from 2014 through 2023 due to hurricanes and tropical storms. This equates to an average annual loss of $479,312. Total losses by county and year are summarized in Table 4.55. Losses were greatest in Hertford County, which accounts for over half the crop indemnity amount in the region during this period.

Table 4.55 – Crop Losses Due to Hurricanes and Tropical Storms, 2014-2023

Year	Camden	Chowan	Gates	Hertford	Pasquotank	Perquimans	Total
2016		$26,557	$17,502	$112,977	$36,116	$13,826	$206,977
2017		$175,540					$175,540
2018		$5,135	$1,822	$910,562		$36,509	$954,027
2019				$35,514	$146,446	$71,079	$253,039
2020	$86,662	$90,840	$73,754	$1,305,598	$161,439	$634,521	$2,352,814
2022			$2,645		$79,950	$15,383	$97,978
2023	$12,707	$139,163	$20,326	$52,252	$303,743	$224,553	$752,743
Total	**$99,369**	**$437,234**	**$116,048**	**$2,416,903**	**$727,693**	**$995,870**	**$4,793,117**

Source: USDA Risk Management Agency

Table 4.56 through Table 4.60 detail the estimated building damages from varying magnitudes of hurricane events.

Table 4.56 – Estimated Buildings Impacted by 25-Year Hurricane Wind Event

Jurisdiction	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden Co.	5,675	4,568	80.5%	$2,086,555	629	11.1%	$27,644	156	2.7%	$35,624	5,353	94.3%	$2,149,823
Chowan Co.	6,944	5,491	79.1%	$1,921,346	1,287	18.5%	$317,261	81	1.2%	$38,459	6,859	98.8%	$2,277,066
Edenton	3,110	2,541	81.7%	$1,210,317	453	14.6%	$464,126	94	3.0%	$81,653	3,088	99.3%	$1,756,096
Gates Co.	6,637	4,648	70.0%	$1,407,288	1,816	27.4%	$227,798	157	2.4%	$267,657	6,621	99.8%	$1,902,743
Gatesville	204	132	64.7%	$67,582	44	21.6%	$46,585	28	13.7%	$16,575	204	100.0%	$130,741
Hertford Co.	8,307	6,596	79.4%	$813,536	1,519	18.3%	$256,596	126	1.5%	$144,174	8,241	99.2%	$1,214,306
Ahoskie	2,744	2,313	84.3%	$466,187	313	11.4%	$102,808	102	3.7%	$28,923	2,728	99.4%	$597,919
Como	91	62	68.1%	$2,888	25	27.5%	$175	3	3.3%	$971	90	98.9%	$4,034
Harrellsville	100	85	85.0%	$21,280	8	8.0%	$192	6	6.0%	$338	99	99.0%	$21,809
Murfreesboro	2,275	2,003	88.0%	$154,756	183	8.0%	$11,015	76	3.3%	$10,233	2,262	99.4%	$176,004
Winton	479	398	83.1%	$25,205	33	6.9%	$6,909	43	9.0%	$12,646	474	99.0%	$44,759
Cofield	287	233	81.2%	$34,990	47	16.4%	$4,812	3	1.0%	$123	283	98.6%	$39,925
Pasquotank Co.	10,739	9,045	84.2%	$4,266,371	1,110	10.3%	$807,621	200	1.9%	$348,500	10,355	96.4%	$5,422,493
Elizabeth City	8,843	7,433	84.1%	$2,801,685	889	10.1%	$685,937	273	3.1%	$468,953	8,595	97.2%	$3,956,575
Perquimans Co.	6,399	5,758	90.0%	$3,258,917	209	3.3%	$680,259	137	2.1%	$363,479	6,104	95.4%	$4,302,656
Hertford	1,246	973	78.1%	$462,211	128	10.3%	$46,213	75	6.0%	$217,046	1,176	94.4%	$725,469
Winfall	428	346	80.8%	$215,363	32	7.5%	$17,788	28	6.5%	$127,549	406	94.9%	$360,701
Total	**64,508**	**52,625**	**81.58%**	**$19,216,477**	**8,725**	**13.53%**	**$3,703,739**	**1,588**	**2.46%**	**$2,162,903**	**62,938**	**97.57%**	**$25,083,119**

Table 4.57 – Estimated Buildings Impacted by 50-Year Hurricane Wind Event

County	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden Co.	5,675	4,568	80.5%	$7,111,374	629	11.1%	$134,755	156	2.7%	$170,233	5,353	94.3%	$7,416,363
Chowan Co.	6,944	5,491	79.1%	$4,809,076	1,287	18.5%	$1,086,776	81	1.2%	$150,827	6,859	98.8%	$2,277,066
Edenton	3,110	2,541	81.7%	$3,096,985	453	14.6%	$1,620,918	94	3.0%	$322,338	3,088	99.3%	$1,756,096
Gates Co.	6,637	4,648	70.0%	$4,125,926	1,816	27.4%	$717,675	157	2.4%	$822,813	6,621	99.8%	$5,666,414
Gatesville	204	132	64.7%	$154,106	44	21.6%	$130,682	28	13.7%	$66,726	204	100.0%	$351,514
Hertford Co.	8,307	6,596	79.4%	$2,440,557	1,519	18.3%	$622,777	126	1.5%	$443,602	8,241	99.2%	$3,506,936
Ahoskie	2,744	2,313	84.3%	$1,091,349	313	11.4%	$366,548	102	3.7%	$101,147	2,728	99.4%	$1,559,045
Como	91	62	68.1%	$15,192	25	27.5%	$849	3	3.3%	$2,542	90	98.9%	$18,583
Harrellsville	100	85	85.0%	$49,337	8	8.0%	$803	6	6.0%	$1,470	99	99.0%	$51,611
Murfreesboro	2,275	2,003	88.0%	$527,629	183	8.0%	$35,050	76	3.3%	$28,154	2,262	99.4%	$590,833
Winton	479	398	83.1%	$97,387	33	6.9%	$21,461	43	9.0%	$84,541	474	99.0%	$203,388
Cofield	287	233	81.2%	$88,904	47	16.4%	$14,194	3	1.0%	$291	283	98.6%	$103,389
Pasquotank Co.	10,739	9,045	84.2%	$16,052,451	1,110	10.3%	$4,118,952	200	1.9%	$1,295,033	10,355	96.4%	$21,466,436
Elizabeth City	8,843	7,433	84.1%	$7,535,830	889	10.1%	$2,367,297	273	3.1%	$1,498,679	8,595	97.2%	$11,401,807
Perquimans Co.	6,399	5,758	90.0%	$9,256,846	209	3.3%	$1,765,417	137	2.1%	$1,646,575	6,104	95.4%	$12,668,838
Hertford	1,246	973	78.1%	$1,204,321	128	10.3%	$182,215	75	6.0%	$712,987	1,176	94.4%	$2,099,523
Winfall	428	346	80.8%	$562,485	32	7.5%	$66,541	28	6.5%	$379,504	406	94.9%	$1,008,530
Total	**64,508**	**52,625**	**81.58%**	**$58,219,755**	**8,725**	**13.53%**	**$13,252,910**	**1,588**	**2.46%**	**$7,727,462**	**62,938**	**97.57%**	**$72,146,372**

Table 4.58 – Estimated Buildings Impacted by 100-Year Hurricane Wind Event

County	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden Co.	5,675	4,568	80.5%	$16,906,642	629	11.1%	$454,134	156	2.7%	$631,158	5,353	94.3%	$17,991,934
Chowan Co.	6,944	5,491	79.1%	$11,698,976	1,287	18.5%	$3,004,723	81	1.2%	$557,488	6,859	98.8%	$15,261,187
Edenton	3,110	2,541	81.7%	$8,315,456	453	14.6%	$4,954,231	94	3.0%	$1,164,210	3,088	99.3%	$14,433,897
Gates Co.	6,637	4,648	70.0%	$9,034,551	1,816	27.4%	$1,431,329	157	2.4%	$1,846,575	6,621	99.8%	$12,312,454
Gatesville	204	132	64.7%	$387,895	44	21.6%	$287,646	28	13.7%	$212,282	204	100.0%	$887,824
Hertford Co.	8,307	6,596	79.4%	$4,721,552	1,519	18.3%	$1,293,879	126	1.5%	$990,171	8,241	99.2%	$7,005,602
Ahoskie	2,744	2,313	84.3%	$1,596,835	313	11.4%	$598,986	102	3.7%	$138,601	2,728	99.4%	$2,334,422
Como	91	62	68.1%	$48,510	25	27.5%	$5,250	3	3.3%	$6,118	90	98.9%	$59,878
Harrellsville	100	85	85.0%	$100,505	8	8.0%	$3,987	6	6.0%	$7,732	99	99.0%	$112,223
Murfreesboro	2,275	2,003	88.0%	$1,235,193	183	8.0%	$102,304	76	3.3%	$85,320	2,262	99.4%	$1,422,817
Winton	479	398	83.1%	$215,474	33	6.9%	$57,909	43	9.0%	$125,045	474	99.0%	$398,428
Cofield	287	233	81.2%	$88,904	47	16.4%	$14,194	3	1.0%	$291	283	98.6%	$103,389
Pasquotank Co.	10,739	9,045	84.2%	$35,533,703	1,110	10.3%	$7,166,790	200	1.9%	$3,191,173	10,355	96.4%	$45,891,665
Elizabeth City	8,843	7,433	84.1%	$21,452,369	889	10.1%	$6,537,174	273	3.1%	$4,122,034	8,595	97.2%	$32,111,577
Perquimans Co.	6,399	5,758	90.0%	$26,046,391	209	3.3%	$3,802,578	137	2.1%	$2,405,559	6,104	95.4%	$32,254,528
Hertford	1,246	973	78.1%	$3,592,157	128	10.3%	$616,833	75	6.0%	$1,920,920	1,176	94.4%	$6,129,910
Winfall	428	346	80.8%	$1,709,587	32	7.5%	$199,247	28	6.5%	$848,734	406	94.9%	$2,757,568
Total	**64,508**	**52,625**	**81.58%**	**$142,684,700**	**8,725**	**13.53%**	**$30,531,194**	**1,588**	**2.46%**	**$18,253,411**	**62,938**	**97.57%**	**$191,469,303**

Table 4.59 – Estimated Buildings Impacted by 300-Year Hurricane Wind Event

County	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden Co.	5,675	4,568	80.5%	$65,470,377	629	11.1%	$2,249,038	156	2.7%	$2,953,419	5,353	94.3%	$70,672,834
Chowan Co.	6,944	5,491	79.1%	$44,135,287	1,287	18.5%	$9,775,510	81	1.2%	$2,119,183	6,859	98.8%	$56,029,981
Edenton	3,110	2,541	81.7%	$26,992,280	453	14.6%	$15,303,264	94	3.0%	$4,317,914	3,088	99.3%	$46,613,458
Gates Co.	6,637	4,648	70.0%	$31,511,212	1,816	27.4%	$4,359,293	157	2.4%	$5,166,129	6,621	99.8%	$41,036,634
Gatesville	204	132	64.7%	$1,120,997	44	21.6%	$575,124	28	13.7%	$608,520	204	100.0%	$2,304,641
Hertford Co.	8,307	6,596	79.4%	$18,247,101	1,519	18.3%	$3,617,081	126	1.5%	$4,057,493	8,241	99.2%	$25,921,675
Ahoskie	2,744	2,313	84.3%	$5,328,663	313	11.4%	$2,966,293	102	3.7%	$879,574	2,728	99.4%	$9,174,529
Como	91	62	68.1%	$284,746	25	27.5%	$80,742	3	3.3%	$51,776	90	98.9%	$417,264
Harrellsville	100	85	85.0%	$227,496	8	8.0%	$17,063	6	6.0%	$35,341	99	99.0%	$279,899
Murfreesboro	2,275	2,003	88.0%	$6,594,859	183	8.0%	$934,610	76	3.3%	$976,833	2,262	99.4%	$8,506,302
Winton	479	398	83.1%	$1,100,787	33	6.9%	$310,373	43	9.0%	$723,972	474	99.0%	$2,135,133
Cofield	287	233	81.2%	$418,826	47	16.4%	$214,724	3	1.0%	$2,811	283	98.6%	$636,361
Pasquotank Co.	10,739	9,045	84.2%	$166,925,029	1,110	10.3%	$34,291,650	200	1.9%	$15,030,489	10,355	96.4%	$216,247,168
Elizabeth City	8,843	7,433	84.1%	$156,388,995	889	10.1%	$39,067,117	273	3.1%	$23,212,130	8,595	97.2%	$218,668,243
Perquimans Co.	6,399	5,758	90.0%	$123,372,579	209	3.3%	$13,669,602	137	2.1%	$10,902,058	6,104	95.4%	$147,944,239
Hertford	1,246	973	78.1%	$10,997,350	128	10.3%	$1,873,137	75	6.0%	$4,417,908	1,176	94.4%	$17,288,395
Winfall	428	346	80.8%	$4,804,925	32	7.5%	$508,083	28	6.5%	$1,701,390	406	94.9%	$7,014,398
Total	**64,508**	**52,625**	**81.58%**	**$663,921,509**	**8,725**	**13.53%**	**$129,812,704**	**1,588**	**2.46%**	**$77,156,940**	**62,938**	**97.57%**	**$870,891,154**

Table 4.60 – Estimated Buildings Impacted by 700-Year Hurricane Wind Event

County	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden Co.	5,675	4,568	80.5%	$136,864,082	629	11.1%	$4,820,768	156	2.7%	$6,694,268	5,353	94.3%	$148,379,118
Chowan Co.	6,944	5,491	79.1%	$80,932,694	1,287	18.5%	$17,303,317	81	1.2%	$4,961,291	6,859	98.8%	$103,197,303
Edenton	3,110	2,541	81.7%	$56,108,885	453	14.6%	$31,474,504	94	3.0%	$9,568,159	3,088	99.3%	$97,151,548
Gates Co.	6,637	4,648	70.0%	$77,598,869	1,816	27.4%	$9,828,567	157	2.4%	$11,991,953	6,621	99.8%	$99,419,389
Gatesville	204	132	64.7%	$2,888,941	44	21.6%	$1,124,410	28	13.7%	$1,521,901	204	100.0%	$5,535,253
Hertford Co.	8,307	6,596	79.4%	$40,134,237	1,519	18.3%	$7,379,966	126	1.5%	$9,394,279	8,241	99.2%	$56,908,482
Ahoskie	2,744	2,313	84.3%	$13,114,428	313	11.4%	$8,053,162	102	3.7%	$2,294,062	2,728	99.4%	$23,461,652
Como	91	62	68.1%	$284,746	25	27.5%	$80,742	3	3.3%	$51,776	90	98.9%	$417,264
Harrellsville	100	85	85.0%	$535,714	8	8.0%	$51,631	6	6.0%	$109,445	99	99.0%	$696,790
Murfreesboro	2,275	2,003	88.0%	$7,056,112	183	8.0%	$1,049,491	76	3.3%	$1,024,405	2,262	99.4%	$9,130,007
Winton	479	398	83.1%	$2,682,188	33	6.9%	$666,741	43	9.0%	$1,720,545	474	99.0%	$5,069,474
Cofield	287	233	81.2%	$1,037,262	47	16.4%	$745,208	3	1.0%	$8,769	283	98.6%	$1,791,239
Pasquotank Co.	10,739	9,045	84.2%	$284,105,161	1,110	10.3%	$60,275,153	200	1.9%	$28,366,343	10,355	96.4%	$372,746,657
Elizabeth City	8,843	7,433	84.1%	$289,090,542	889	10.1%	$77,257,306	273	3.1%	$45,158,171	8,595	97.2%	$411,506,019
Perquimans Co.	6,399	5,758	90.0%	$223,438,314	209	3.3%	$21,264,318	137	2.1%	$18,393,476	6,104	95.4%	$263,096,108
Hertford	1,246	973	78.1%	$26,450,765	128	10.3%	$4,628,577	75	6.0%	$8,937,284	1,176	94.4%	$40,016,626
Winfall	428	346	80.8%	$10,172,502	32	7.5%	$1,077,616	28	6.5%	$3,119,972	406	94.9%	$14,370,090
Total	**64,508**	**52,625**	**81.58%**	**$1,252,495,442**	**8,725**	**13.53%**	**$247,081,477**	**1,588**	**2.46%**	**$153,316,099**	**62,938**	**97.57%**	**$1,652,893,019**

The damage estimates for the 100-year hurricane wind event total $191,469,303, which equates to a loss ratio of 2.3 percent. These damage estimates account for only wind impacts and actual damages would likely be higher due to flooding. Therefore, the Region would likely experience a higher overall loss ratio from the 100-year hurricane event and may face difficulty recovering from such an event.

Property damage due to erosion typically only results in conjunction with large storm events which also bring wind and water damages. These events can cause scour and weaken foundations, which may undermine affected buildings' structural integrity.

ENVIRONMENT

Hurricane winds can cause massive damage to the natural environment, uprooting trees and other debris within the storm's path. Animals can be killed directly by the storm or impacted indirectly through changes in habitat and food availability caused by high winds, storm surge and intense rainfall. Endangered species can be dramatically impacted. Forests can be completely defoliated by strong winds.

Erosion can change the shape and characteristics of coastal shorelines and riverine floodplains. Eroded material may clog waterways and decrease drainage capacity. Erosion can also negatively impact water quality by increasing sediment loads in waterways.

CONSEQUENCE ANALYSIS

Table 4.61 summarizes the potential negative consequences of hurricanes and coastal hazards.

Table 4.61 – Consequence Analysis – Hurricane and Coastal Hazards

Category	Consequences
Public	Impacts include injury or death, loss of property, outbreak of diseases, mental trauma and loss of livelihoods. Power outages and flooding are likely to displace people from their homes. Water can become polluted such that if consumed, diseases and infection can be easily spread. Residential, commercial, and public buildings, as well as critical infrastructure such as transportation, water, energy, and communication systems may be damaged or destroyed, resulting in cascading impacts on the public. Erosion is unlikely to impact public health and safety.
Responders	Localized impact expected to limit damage to personnel in the inundation area at the time of the incident. Erosion is unlikely to require immediate response or rescue operations.
Continuity of Operations (including Continued Delivery of Services)	Damage to facilities/personnel from flooding or wind may require temporary relocation of some operations. Operations may be interrupted by power outages. Disruption of roads and/or utilities may postpone delivery of some services. Regulatory waivers may be needed locally. Fulfillment of some contracts may be difficult. Impact may reduce deliveries. Erosion is unlikely to impact public continuity of operations.
Property, Facilities and Infrastructure	Structural damage to buildings may occur; loss of glass windows and doors by high winds and debris; loss of roof coverings, partial wall collapses, and other damages requiring significant repairs are possible in a major (category 3 to 5) hurricane. Erosion can result in property damage if it is severe enough or if scour occurs that undermines the integrity of structural foundations.

Category	Consequences
Environment	Hurricanes can devastate wooded ecosystems and remove all the foliation from forest canopies, and they can change habitats so drastically that the indigenous animal populations suffer as a result. Specific foods can be taken away as high winds will often strip fruits, seeds and berries from bushes and trees. Secondary impacts may occur; for example, high winds and debris may result in damage to an above-ground fuel tank, resulting in a significant chemical spill. Erosion can increase sediment loads in waterbodies and change riverine and coastal topography
Economic Condition of the Jurisdiction	Local economy and finances adversely affected, possibly for an extended period of time, depending on damages. Intangible impacts also likely, including business interruption and additional living expenses. Severe erosion can negatively impact tourist economies. Dredging projects to counter sedimentation buildup from erosion are costly.
Public Confidence in the Jurisdiction's Governance	Likely to impact public confidence due to possibility of major event requiring substantial response and long-term recovery effort. Erosion is unlikely to impact public confidence.

HAZARD SUMMARY BY JURISDICTION

The following table summarizes hurricane and tropical storm hazard risk by jurisdiction. Most aspects of hurricane risk do not vary substantially by jurisdiction. While hurricanes have the possibility of being catastrophic across all jurisdictions, certain areas may be even more vulnerable. Mobile home units are more vulnerable to wind damage; therefore, Gates County, Cofield, and Perquimans County, which have higher rates of mobile homes, may experience more severe impacts.

Jurisdiction	Probability	Impact	Spatial Extent	Warning Time	Duration	Score	Priority
Camden County	3	4	4	1	3	3.3	H
Chowan County	3	4	4	1	3	3.3	H
Edenton	3	4	4	1	3	3.3	H
Gates County	3	4	4	1	3	3.3	H
Gatesville	3	4	4	1	3	3.3	H
Hertford County	3	4	4	1	3	3.3	H
Ahoskie	3	4	4	1	3	3.3	H
Como	3	4	4	1	3	3.3	H
Harrellsville	3	4	4	1	3	3.3	H
Murfreesboro	3	4	4	1	3	3.3	H
Winton	3	4	4	1	3	3.3	H
Cofield	3	4	4	1	3	3.3	H
Pasquotank County	3	4	4	1	3	3.3	H
Elizabeth City	3	4	4	1	3	3.3	H
Perquimans County	3	4	4	1	3	3.3	H
Hertford	3	4	4	1	3	3.3	H
Winfall	3	4	4	1	3	3.3	H

The following table summarizes erosion risk by jurisdiction. Risk to erosion varies based on the presence and type of coastal areas. Potential impact may be greater for jurisdictions coastlines along tidally influenced waterbodies and where wind-driven surge may exacerbate erosion.

Jurisdiction	Probability	Impact	Spatial Extent	Warning Time	Duration	Score	Priority
Camden County	3	2	1	1	1	1.9	L
Chowan County	3	2	1	1	1	1.9	L
Edenton	3	2	1	1	1	1.9	L
Gates County	3	1	1	1	1	1.6	L
Gatesville	3	1	1	1	1	1.6	L
Hertford County	3	2	1	1	1	1.9	L
Ahoskie	3	1	1	1	1	1.6	L
Como	3	1	1	1	1	1.6	L
Harrellsville	3	1	1	1	1	1.6	L
Murfreesboro	3	1	1	1	1	1.6	L
Winton	3	2	1	1	1	1.9	L
Cofield	3	1	1	1	1	1.6	L
Pasquotank County	3	2	1	1	1	1.9	L
Elizabeth City	3	2	1	1	1	1.9	L
Perquimans County	3	2	1	1	1	1.9	L
Hertford	3	2	1	1	1	1.9	L
Winfall	3	2	1	1	1	1.9	L

4.5.7 TORNADOES & THUNDERSTORMS

HAZARD BACKGROUND

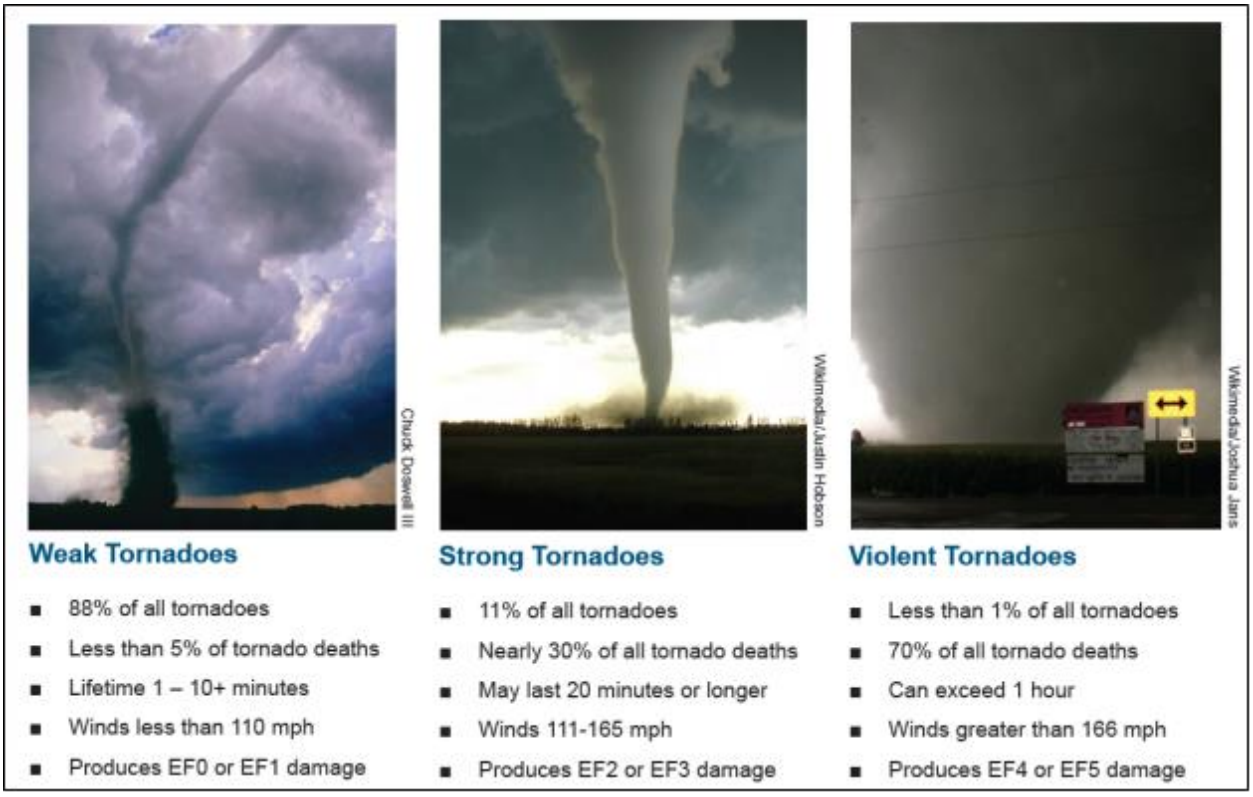
TORNADOES

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

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

Tornados have the potential to produce winds in excess of 200 mph (EF5 on the Enhanced Fujita Scale) and can be very expansive – some in the Great Plains have exceeded two miles in width. Tornados associated with tropical cyclones, however, tend to be of lower intensity (EF0 to EF2) and much smaller in size than ones that form in the Great Plains. Figure 4.45 provides a description and breakdown of tornadoes by severity. Violent tornadoes, as described below, are unlikely in the Albemarle Region.

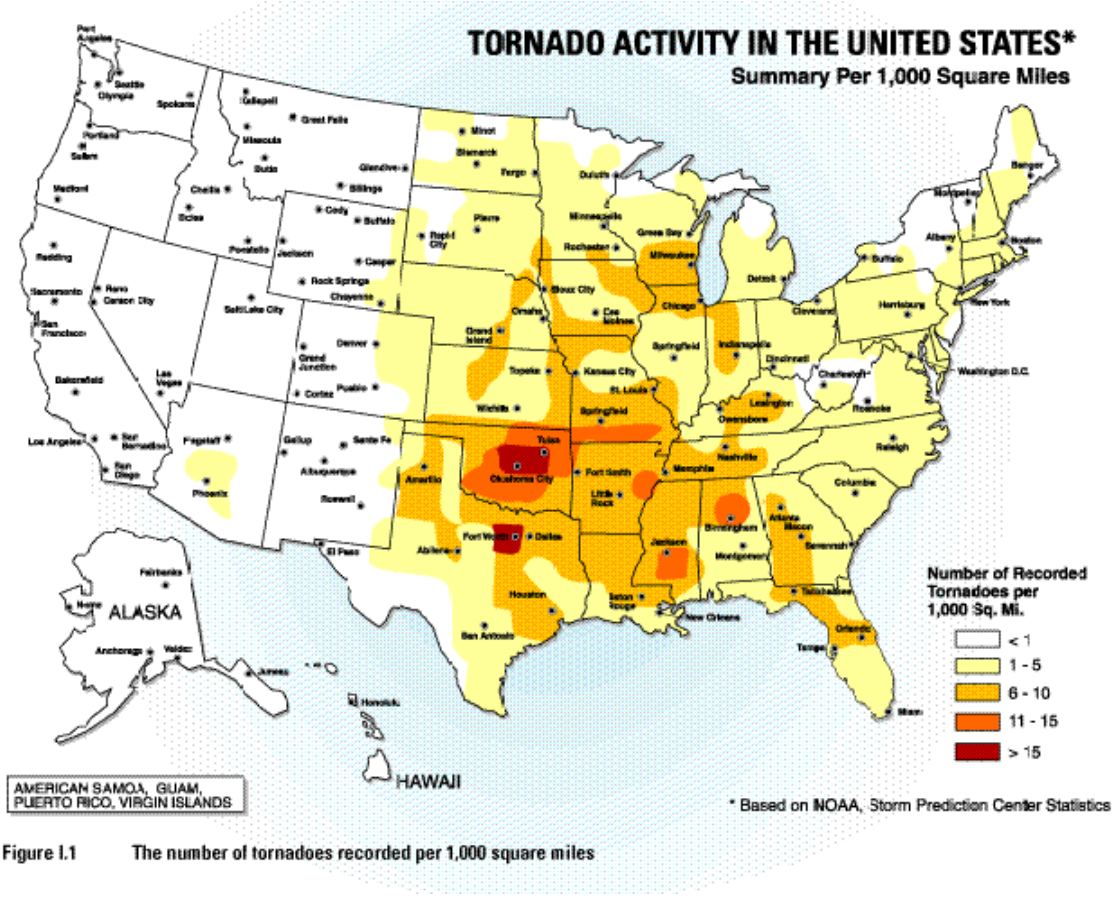
Figure 4.45 – Tornadoes by Severity



Source: NOAA National Weather Service

Figure 4.46 shows tornado activity in the United States based on the number of recorded tornados per 1,000 square miles. North Carolina has averaged 1 to 5 tornados per 1,000 square miles.

Figure 4.46 – Tornado Activity in the U.S.



Source: American Society of Civil Engineers

THUNDERSTORM WINDS

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

There are four ways thunderstorms can organize: single cell, multi-cell cluster, multi-cell lines (squall lines), and supercells. Even though supercell thunderstorms are most frequently associated with severe weather, thunderstorms most frequently organize into clusters or lines. Warm, humid conditions are favorable for the development of thunderstorms. The average single cell thunderstorm is approximately 15 miles in diameter and lasts less than 60 minutes at a single location. However, thunderstorms, especially when organized into clusters or lines, can travel intact for distances exceeding 600 miles.

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

Stronger thunderstorms are capable of producing tornadoes and waterspouts. While conditions for thunderstorm conditions may be anticipated within a few hours, severe conditions are difficult to predict. Regardless of severity, storms generally pass within a few hours.

Warning Time: 4 – Less than six hours

Duration: 1 – less than six hours

LIGHTNING

Lightning is a sudden electrical discharge released from the atmosphere that follows a course from cloud to ground, cloud to cloud, or cloud to surrounding air, with light illuminating its path. Lightning's unpredictable nature causes it to be one of the most feared weather elements.

All thunderstorms produce lightning, which often strikes outside of the area where it is raining and is known to fall more than 10 miles away from the rainfall area. When lightning strikes, electricity shoots through the air and causes vibrations creating the sound of thunder. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Nationwide, lightning kills 75 to 100 people each year. Lightning strikes can also start building fires and wildland fires, and damage electrical systems and equipment.

The watch/warning time for a given storm is usually a few hours. There is no warning time for any given lightning strike, as strikes are instantaneous. Storms that cause lightning usually pass within a few hours.

Warning Time: 4 – Less than six hours

Duration: 1 – Less than six hours

HAIL

According to NOAA, hail is precipitation that is formed when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere causing them to freeze. The raindrops form into small frozen droplets and then continue to grow as they come into contact with super-cooled water which will freeze on contact with the frozen rain droplet. This frozen rain droplet can continue to grow and form hail. As long as the updraft forces can support or suspend the weight of the hailstone, hail can continue to grow.

At the time when the updraft can no longer support the hailstone, it will fall down to the earth. For example, a ¼" diameter or pea sized hail requires updrafts of 24 mph, while a 2 ¾" diameter or baseball sized hail requires an updraft of 81 mph. The largest hailstone recorded in the United States was found in Vivian, South Dakota on July 23, 2010; it measured eight inches in diameter, almost the size of a soccer ball. While soccer-ball-sized hail is the exception, but even small pea sized hail can do damage.

Hailstorms in North Carolina cause damage to property, crops, and the environment, and kill and injure livestock. In the United States, hail causes more than $1 billion in damage to property and crops each year. Much of the damage inflicted by hail is to crops. Even relatively small hail can shred plants to ribbons in a matter of minutes. Vehicles, roofs of buildings and homes, and landscaping are the other things most commonly damaged by hail. Hail has been known to cause injury to humans; occasionally, these injuries can be fatal. Table 4.66 describes typical damage impacts of the various sizes of hail.

The onset of thunderstorms with hail is generally rapid. However, advancements in meteorological forecasting allow for some advance warning. Storms usually blow through in a few hours.

Warning Time: 4 – Less than six hours

Duration: 1 – Less than six hours

LOCATION

TORNADOES

Tornados and thunderstorms can occur anywhere in the region. Tornados typically impact a small area, but damage may be extensive. Tornado locations are completely random, meaning risk to tornado isn't increased in one area of the county versus another. Tornados can be spawned by tropical cyclones; however, these tornados typically occur up to 2 days before and as many as 3 days after landfall of the tropical cyclone.

Spatial Extent: 2 – Small

THUNDERSTORM WINDS

Thunderstorm winds, lightning, and hail events do not have a defined vulnerability zone. The average single cell thunderstorm is approximately 15 miles in diameter and lasts less than 30 minutes at a single location. However, thunderstorms can travel intact for distances exceeding 600 miles, especially when organized into clusters or lines. Any given thunderstorm event may be expected to impact a large portion of the Albemarle Region.

Spatial Extent: 3 – Moderate

LIGHTNING AND HAIL

The scope of lightning and hail is generally defined to the footprint of its associated thunderstorm. However, large-scale hail tends to occur in a more localized area within the storm, and lightning strikes and associated damages are highly localized. It should be noted that while lightning is most often affiliated with severe thunderstorms, it may also strike outside of heavy rain and might occur as far as 10 miles away from any rainfall. The entire Albemarle Region is uniformly exposed to each of these hazards.

Spatial Extent: 1 – Negligible

EXTENT

TORNADOES

Prior to February 1, 2007, tornado intensity was measured by the Fujita (F) scale. This scale was revised and is now the Enhanced Fujita (EF) scale. Both scales are sets of wind estimates (not measurements) based on damage. The EF scale provides more damage indicators (28) and associated degrees of damage, allowing for more detailed analysis with better correlation between damage and wind speed. It is also more precise because it considers the materials affected and the construction of structures damaged by a tornado. Table 4.62 shows the wind speeds associated with the Enhanced Fujita scale ratings and the damage that could result at different levels of intensity.

Table 4.62 – Enhanced Fujita Scale

EF Number	3 Second Gust (mph)	Damage
0	65-85	**Light damage**. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
1	96-110	**Moderate damage**. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.

EF Number	3 Second Gust (mph)	Damage
2	111-135	**Considerable damage**. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
3	136-165	**Severe damage**. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
4	166-200	**Devastating damage**. Well-constructed houses and whole frame houses completely leveled; cars thrown, and small missiles generated.
5	Over 200	**Incredible damage**. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m; high-rise buildings have significant structural deformation; incredible phenomena will occur.

The most intense tornadoes on record to pass through the Albemarle Region were three F3 tornadoes; one in September 1952, one in March 1984 that caused two fatalities, 10 injuries, and $2.5 million in property damage, and one in November 1992 that caused 21 injuries and $2.5 million in property damage. However, the most property damage attributed to a tornado in the region was from an F2 in March 1984, which caused five injuries and an estimated $25 million in damages. Most tornadoes that occur in the region are EF1 or lesser magnitude, causing limited damages.

Impact: 3 – Critical

THUNDERSTORM WINDS

The magnitude of a thunderstorm event can be defined by the storm's maximum wind speed and its impacts. NCEI divides wind events into several types including High Wind, Strong Wind, Thunderstorm Wind, Tornado and Hurricane. For this severe weather risk assessment, High Wind, Strong Wind and Thunderstorm Wind data was collected. Hurricane Wind and Tornadoes are addressed as individual hazards. The following definitions come from the NCEI Storm Data Preparation document.

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

The Beaufort Wind Force Scale is an empirical measure that relates wind speed to observed conditions at sea or on land. In the United States, winds of force 6 to 7 are designated as "strong;" 8 to 9 "gale force;" 10 to 11 "usually results in a storm warning or tropical storm warning; and force 12 results in a hurricane warning.

Table 4.63 – Beaufort Wind Force Scale

Rating	(MPH)	Name	Appearance of Wind Effects	
			On Water	On Land
0	<1	Calm	Sea surface smooth and mirror-like	Calm, smoke rises vertically

Rating	(MPH)	Name	Appearance of Wind Effects	
			On Water	On Land
1	1-3	Light Air	Scaly ripples, no foam crests	Smoke drift indicates wind direction, still wind vanes
2	4-7	Light Breeze	Small wavelets, crests glassy, no breaking	Wind felt on face, leaves rustle, vanes begin to move
3	8-12	Gentle Breeze	Large wavelets, crests begin to break, scattered whitecaps	Leaves and small twigs constantly moving, light flags extended
4	13-18	Moderate Breeze	Small waves 1-4 ft, becoming longer, numerous whitecaps	Dust, leaves, and loose paper lifted, small tree branches move
5	19-24	Fresh Breeze	Moderate waves 4-8 ft taking longer to form, many whitecaps, some spray	Small trees in leaf begin to sway
6	25-31	Strong Breeze	Larger waves 8-13 ft, whitecaps common, more spray	Larger tree branches moving, whistling in wires
7	32-38	Near Gale	Sea heaps up, waves 13-19 ft, white foam streaks of breakers	Whole trees moving, resistance felt walking against wind
8	39-46	Gale	Moderately high (18-25 ft) waves of greater length, edges of crests begin to break into spindrift, foam blown in streaks	Twigs breaking off trees, generally impedes progress
9	47-54	Strong Gale	High waves (23-32 ft), sea begins to roll, dense streaks of foam, spray may reduce visibility	Slight structural damage occurs, slate blows off roofs
10	55-63	Storm	Very high waves (29-41 ft) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, “considerable structural damage”
11	64-72	Violent Storm	Exceptionally high (37-52 ft) waves, foam patches cover sea, visibility more reduced	Very rarely experienced; widespread damage
12	73+	Hurricane	Air filled with foam, waves over 45 ft, sea completely white with driving spray, visibility greatly reduced	Devastation

Source: NOAA Storm Prediction Center

The strongest recorded wind event across the region occurred on January 7, 2009 with peak thunderstorm wind gusts of 83 mph and 81 mph between Corapeake and Savage.

Impact: 2 – Limited

LIGHTNING

Lightning is measured by the Lightning Activity Level (LAL) scale, created by the National Weather Service to define lightning activity into a specific categorical scale. The LAL is a common parameter that is part of fire weather forecasts nationwide.

Table 4.64 – Lightning Activity Level Scale

Lightning Activity Level Scale	
LAL 1	No thunderstorms
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground lightning strikes in a five minute period
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a five minute period
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, 11 to 15 cloud to ground strikes in a five minute period
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a five minute period
LAL 6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag warning

Source: National Weather Service

With the right conditions in place, the entire region is susceptible to each lightning activity level as defined by the LAL. Most lightning strikes cause limited damage to specific structures in a limited area, and cause very few injuries or fatalities, and minimal disruption on quality of life.

While the total area vulnerable to a lightning strike corresponds to the footprint of a given thunderstorm, a specific lightning strike is usually a localized event and occurs randomly. It should be noted that while lightning is most often affiliated with severe thunderstorms, it may also strike outside of heavy rain and might occur as far as 10 miles away from any rainfall. The entire planning area is uniformly exposed to the threat of lightning.

Impact: 1 – Minor

HAIL

The NWS classifies hail by diameter and corresponding everyday objects to help relay scope and severity to the population. Table 4.65 indicates the hailstone measurements utilized by the NWS.

Table 4.65 – Hailstone Measurement Comparison Chart

Average Diameter	Corresponding Household Object
.25 inch	Pea
.5 inch	Marble/Mothball
.75 inch	Dime/Penny
.875 inch	Nickel
1.0 inch	Quarter
1.5 inch	Ping-pong ball
1.75 inch	Golf ball
2.0 inch	Hen egg
2.5 inch	Tennis ball
2.75 inch	Baseball
3.00 inch	Teacup
4.00 inch	Grapefruit
4.5 inch	Softball

Source: National Weather Service

The Tornado and Storm Research Organization (TORRO) has further described hail sizes by their typical damage impacts. Table 4.66 describes typical intensity and damage impacts of the various sizes of hail, based on the TORRO Hailstorm Intensity Scale.

Table 4.66 – TORRO Hailstorm Intensity Scale

Intensity Category	Diameter (mm)	Diameter (inches)	Size Description	Typical Damage Impacts
Hard Hail	5-9	0.2-0.4	Pea	No damage
Potentially Damaging	10-15	0.4-0.6	Mothball	Slight general damage to plants, crops
Significant	16-20	0.6-0.8	Marble, grape	Significant damage to fruit, crops, vegetation
Severe	21-30	0.8-1.2	Walnut	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
Severe	31-40	1.2-1.6	Pigeon's egg > squash ball	Widespread glass damage, vehicle bodywork damage
Destructive	41-50	1.6-2.0	Golf ball > Pullet's egg	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
Destructive	51-60	2.0-2.4	Hen's egg	Bodywork of grounded aircraft dented, brick walls pitted
Destructive	61-75	2.4-3.0	Tennis ball > cricket ball	Severe roof damage, risk of serious injuries
Destructive	76-90	3.0-3.5	Large orange > softball	Severe damage to aircraft bodywork
Super Hailstorms	91-100	3.6-3.9	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
Super Hailstorms	>100	4.0+	Melon	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Source: Tornado and Storm Research Organization (TORRO), Department of Geography, Oxford Brookes University
Notes: In addition to hail diameter, factors including number and density of hailstones, hail fall speed and surface wind speeds affect severity.

The average hailstone size recorded between 1996 and 2024 in the Albemarle Region had a diameter of just over 1"; the largest stones recorded in the region were baseball to softball size, reported as 4", on May 31, 2019.

Hailstorms frequently accompany thunderstorms, so their locations and spatial extents coincide. The counties in the Albemarle Region are uniformly exposed to severe thunderstorms; therefore, the entire planning area is equally exposed to hail which may be produced by such storms. However, large-scale hail tends to occur in a more localized area within the storm.

Impact: 1 – Minor

HISTORICAL OCCURRENCES

TORNADOES

NCEI maintains records of tornadoes and their impacts since 1950. According to the NCEI, the counties in the Albemarle Region have experienced 76 tornado incidents between 1950 and 2024, which have

caused 5 fatalities, 56 injuries, over $42.1 million in property damage and over $2 million in crop damage. Table 4.67 summarizes historical tornadoes in the region during this time period. Figure 4.47 reflects the tracks of past tornadoes that passed through the Albemarle Region from 1950 through 2023 according to data from the NOAA/NWS Storm Prediction Center.

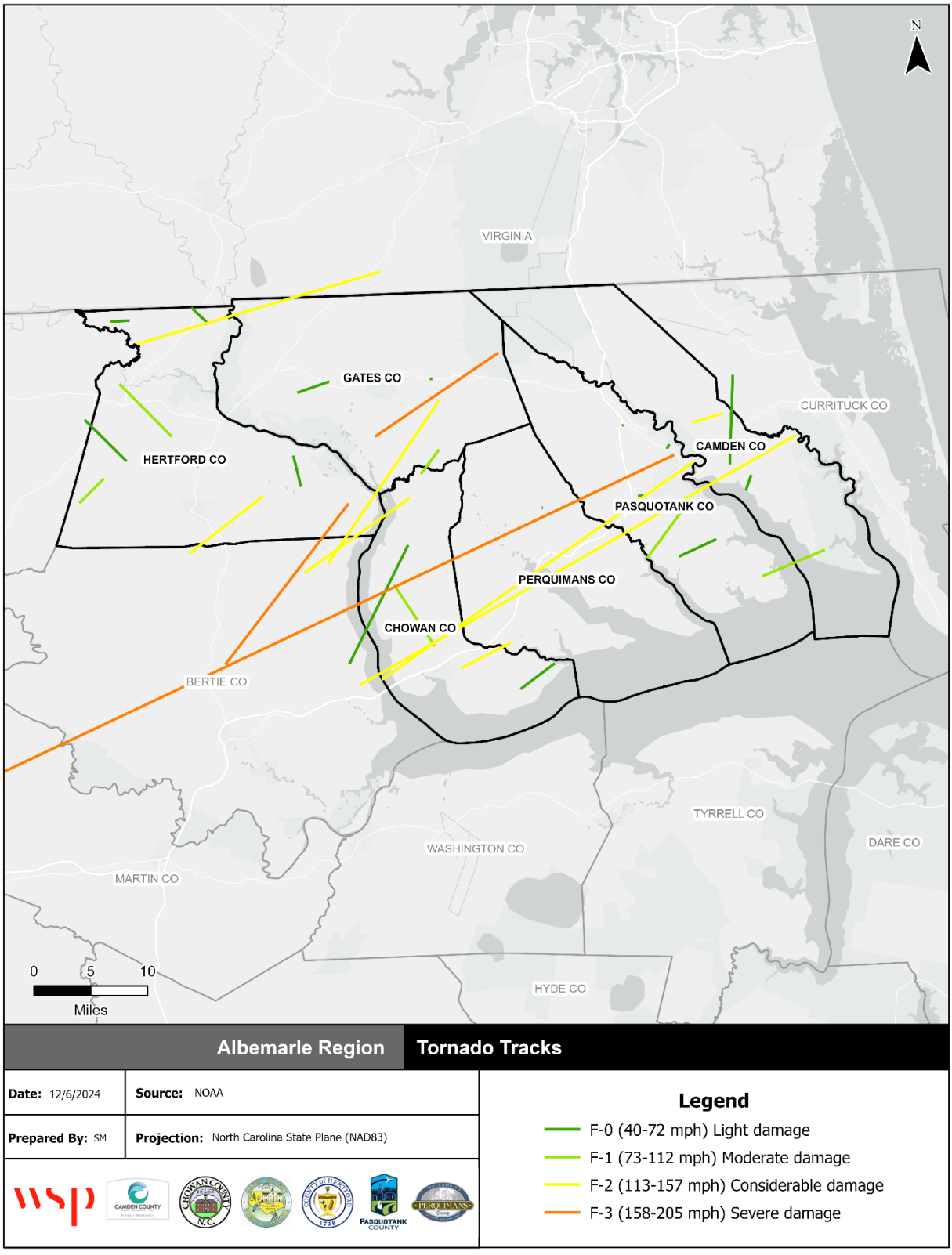
Table 4.67 – Recorded Tornadoes in the Albemarle Region, 1988-2023

County	Total Recorded Occurrences	Recorded Deaths	Recorded Injuries	Total Reported Property Damage	Total Reported Crop Damage
Camden	5	0	0	$135,000	$0
Chowan	14	1	1	$1,090,250	$0
Gates	6	2	10	$2,681,000	$0
Hertford	18	1	14	$30,530,250	$2,017,000
Pasquotank	20	0	30	$5,195,000	$0
Perquimans	13	1	1	$2,502,500	$15,000
Total	**76**	**5**	**56**	**$42,134,000**	**$2,032,000**

Source: NCEI

Of the 76 tornadoes recorded by NCEI, 33 were categorized as F0 or EF0, 19 were categorized as F1 or EF1, and 21 were categorized as F2 or EF2, and 3 were categorized as F3. The average tornado caused $554,395 in recorded property damage, while average crop damage was $26,737, though there were only five incidents with recorded crop damage and amounts of damage varied widely.

Figure 4.47 – Tornado Paths Through the Albemarle Region, 1950-2023



Source: NOAA/NWS Storm Prediction Center

Specific tornado incidents with some level of impact reported in NCEI are summarized below:

November 11, 1995 – Small tornado skipped across an area about two and one-quarter miles long and 100-yards wide which straddled the Chowan/Gates County line. Path extended from about one-quarter mile WSW of Gliden east-northeastward to about one-half mile east of Joppa. Several barns damaged. Scattered trees were downed or snapped off above the ground. One shed was destroyed. Damaged occurred in a rural area dominated by farms. Another small tornado downed several trees, snapped off others and produced structural damage to several homes in the Newland area of northern Pasquotank County. One mobile home was also destroyed. A barn and two grain silos were also destroyed.

October 17, 1999 – A tornado associated with Hurricane Irene touched down one mile north of Weeksville. Two trailers were destroyed, as well as other structure and property damage. The storm caused one injury, cause unrecorded.

June 1, 2001 – A tornado touched down near Menotal and Ahoskie Tri County Airport in Hertford County. There were reports of trees down and several buildings damaged; 3 injuries were recorded.

April 16, 2011 –An EF2 tornado tracked from northeast Bertie County into southeast Hertford County. Many homes were destroyed, and several others suffered various degrees of damage. Poultry houses and other farm equipment were also damaged. The tornado caused $1.8 million in property damage, and $2 million in crop damage to the Newsome Store area in Hertford County. In addition, an EF1 tornado caused $40,000 in Harbinger in Currituck County, and an EF1 tornado caused $30,000 in damage in Vivian in Gates County.

April 25, 2014 – A localized tornado outbreak struck Camden, Chowan, Pasquotank and Perquimans counties, killing one person and injuring 27 others. A total of 327 homes were damaged or destroyed. Two long-track tornadoes crossed the Albemarle Region, resulting in one fatality in Edenton. Reports indicated damage to trees, homes and outbuildings associated with these storm cell and resulted in a declared state of emergency for the areas impacted but did not result in a FEMA disaster declaration.

July 8, 2021 – As Tropical Storm Elsa moved through northeast North Carolina, a band of showers and thunderstorms pushed across Hertford County. Within that band of storms, a brief tornado touched down near Harrellsville. The tornado tracked from Highway 45 north northwest across Wiccacon Road and Bazemore Road. Damage was limited to a few downed trees and numerous trees limbs down. In Camden County, a tornado developed as the storms crossed the Pasquotank River and the tornado moved ashore near Sunset Avenue and tracked northeast about 1.3 miles to near Areneuse Creek and Route 343. The tornado snapped numerous trees, ripped the roof off of a boat house on the river, and destroyed an outbuilding when a large pine tree fell on it.

No tornados above EF0 or with significant damages beyond isolated areas were reported for the period of 2019 through 2023 in the Albemarle Region.

THUNDERSTORM WINDS

Between 1996 and 2024, the NCEI recorded 374 separate incidents of thunderstorm winds, strong winds and high winds across the six counties, occurring on 169 separate days. These events caused $2,360,000 in recorded property damage, 1 injury and 2 fatalities. The recorded gusts averaged 50 knots, with the highest gusts recorded at 72 knots.

Of these wind events, 356 caused property damage. Wind gusts with property damage recorded averaged over $6,600 in damage, with two gusts causing a reported $400,000 in damage each. Table summarizes all recorded wind events from 1996 through 2023 by county.

Table 4.68 – Winds Summary by County, 1996-2023

Location	Wind Incidents	Average Wind Speed (kts)	Top Wind Speed (kts)	Recorded Fatalities	Recorded Injuries	Recorded Property Damage
Camden	49	49.5	54	0	0	$239,000
Chowan	48	50.3	60	0	0	$621,000
Gates	71	50.7	72	1	0	$192,000
Hertford	74	50.1	52	0	1	$280,000
Pasquotank	77	50.4	60	0	0	$772,000
Perquimans	55	50.5	60	1	0	$256,000

Source: NCEI

Two incidents caused fatalities, and one incident caused injuries. These incidents are recorded below:

Table 4.69 – Recorded Thunderstorm Winds with Injuries and/or Fatalities, 1998-2017

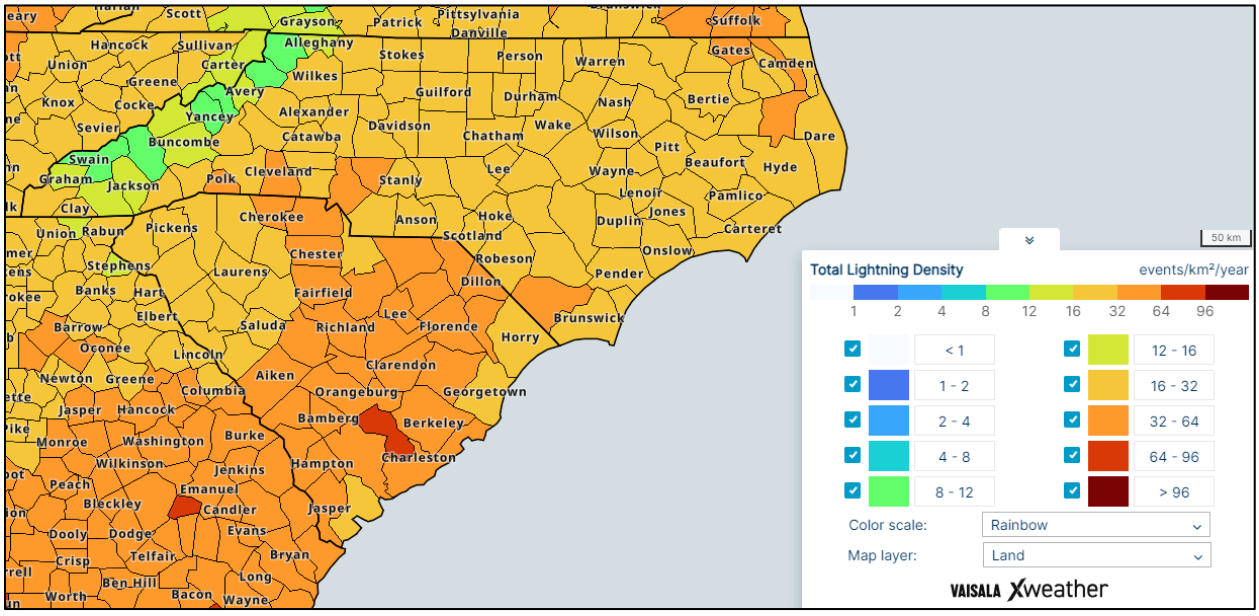
Location	Date	Time	Wind Speed (kts)	Fatalities	Injuries	Property Damage
Murfreesboro	6/22/2000	14:30	50	0	1	$3,000
Belvidere	4/2/2005	17:05	50	1	0	$5,000
Eason Xrds	5/1/2012	18:15	50	1	0	$2,000

Source: NCEI

LIGHTNING

According to the Vaisala Interactive Global Lightning Density Map, shown in Figure 4.43, the Outer Banks Region is located in an area that experiences 16 to 32 lightning flashes per square kilometer per year. Future lightning occurrences may exceed these figures.

Figure 4.48 – Total Lightning Density (2016-2023)



Source: Vaisala Interactive Global Lightning Density Map

NCEI maintains records of lightning strikes that cause injuries, deaths, or property damage. NCEI records 12 lightning strikes reported between 1996 and 2024 in the Albemarle region. Of these, 10 strikes caused property damage totaling $123,000. Two lightning strikes directly caused four injuries. As these are only the events with reported impacts on people and property, it is certain that additional lightning incidents have occurred in the Albemarle Region. Table 4.70 details NCEI-recorded lightning strikes from 1996 through 2023.

Table 4.70 – Recorded Lightning Strikes in Albemarle Region, 1996-2023

County	Location	Date	Deaths	Injuries	Property Damage
Perquimans Co.	Belvidere	6/24/1996	0	0	$50,000
Gates Co.	Willeyton	7/18/1997	0	2	$0
Perquimans Co.	Beach Spg	8/1/1999	0	0	$15,000
Pasquotank Co.	Elizabeth City	8/1/2004	0	2	$0
Gates Co.	Corapeake	8/10/2008	0	0	$5,000
Perquimans Co.	Delight Nixon Xrds	6/9/2009	0	0	$1,000
Pasquotank Co.	Elizabeth City	6/19/2014	0	0	$5,000
Perquimans Co.	Woodsville	6/26/2015	0	0	$5,000
Perquimans Co.	Hertford	6/20/2018	0	0	$20,000
Camden Co.	Shiloh	7/3/2023	0	0	$10,000
Pasquotank Co.	ECG Cst Grd Air Stn	7/3/2023	0	0	$10,000
Camden Co.	Indian Town	7/3/2023	0	0	$2,000
		Total	**0**	**4**	**$123,000**

Source: NCEI

The following are a selection of narrative descriptions recorded in NCEI for lightning events that occurred in the Albemarle Region:

August 1, 1999 – Church completely destroyed by a lightning fire.

August 1, 2004 – Two golfers injured on the golf course by lightning strike. One was critical.

July 3, 2023 – Lighting strikes caused three house fires, one off Carolina Highway 343 South, one off of Bayshore Drive, and one on Sandy Hook Road.

HAIL

NCEI records 132 separate hail incidents across 78 days between 1996 and 2024 in the Albemarle Region. These events were reported to have caused an estimate $107,000 in property damage and $105,000 in crop damage. No associated injuries or fatalities were reported.

Table 4.71 – Summary of Hail Occurrences by County

Location	Number of Occurrences	Average Hail Diameter
Camden	17	0.88”
Chowan	28	1.14”
Gates	22	1.07”
Hertford	24	1.18”
Perquimans	21	1.01”
Pasquotank	20	0.96”

Source: NCEI

The following narratives provide detail on select hailstorms from the above list of NCEI recorded events:

May 22, 2000 – Hail up to 3.00 inches in diameter was reported in Arrowhead Beach adjacent to the Chowan River.

June 11, 2004 – Major agricultural damage reported as a result of hail.

May 4, 2009 – Isolated severe thunderstorm along a frontal boundary produced large hail across portions of Gates county. Golf ball size hail was reported just east of Sunbury. The hail put dents in several cars and a mobile home.

May 31, 2019 – Scattered severe thunderstorms in advance of low pressure and its associated cold front produced damaging winds and large hail across portions of northeast North Carolina. Baseball to softball size hail was reported. Multiple cars and homes with broken windows were reported due to the large hail.

PROBABILITY OF FUTURE OCCURRENCE

TORNADOES

In the 74-year span from 1950 through 2023, the Albemarle Region experienced 76 separate tornado incidents over 51 separate days. This correlates to more than one tornado per year on average. However, looking at tornadoes of a magnitude EF2 or greater; the probability of occurrence is much lower. There have been 24 EF2 or stronger tornadoes in the region since 1950, which equates to a 32 percent annual probability. Probability is assumed to be uniform across the county.

Probability: 3 – Likely

THUNDERSTORMS

Based on historical occurrences recorded by NCEI for the 28-year period from 1996 through 2023, the Albemarle Region averages 13.4 thunderstorm wind events per year. Of these events, 356 had some amount of associate property damages, equating to 12.7 damaging thunderstorm wind events per year.

Over this same period, 12 lightning events were reported as having caused death, injury, or property damage, which equates to a damaging lightning strike every 2.3 years.

The average hailstorm in the Albemarle Region occurs in the afternoon and has a hail stone with a diameter of just under one inch. Over the 28-year period from 1996 through 2023, the region experienced 132 reported hail incidents, averaging 4.7 reported incidents per year somewhere in the planning area. This equates to a 100% chance that the region will experience a hail incident in any given year.

Based on these historical occurrences, there is a 100% chance that the Albemarle Region will experience thunderstorms each year. The probability of damaging impacts is highly likely.

Probability: 4 – Highly Likely

CLIMATE CHANGE

According to the National Aeronautics and Space Administration (NASA), thunderstorm events in the future are likely to become more frequent in the southeast as a result of weather extremes. Thunderstorm potential is measured by an index that NASA created called the Convective Available Potential Energy (CAPE) index. This measures how warm and moist the air is, which is a major contributing factor in thunderstorm/tornado formation. NASA projects that by the period of 2072-2099, the CAPE in the southeastern United States will increase dramatically. Parts of North Carolina are in an area that will likely experience the greatest increase in CAPE in the United States and all of the state is likely to experience at least some increase. This indicates that there will potentially be even more frequent thunderstorms in the state going forward.

According to NOAA and NWS, the number of annual tornado days is decreasing, but the number of tornadoes that occur on tornado days is increasing. Research suggests there is a greater risk of more off-season tornadoes in a warmer future climate, which could mean more tornadic activity at a time of year when people are least expecting it. Results are inconclusive for whether tornadoes frequency could change during the traditional severe weather season. Based on studies from NASA's Earth Observatory, meteorologists are unsure why some thunderstorms generate tornados and others don't, beyond knowing that they require a certain type of wind shear. Tornadoes spawn from approximately one percent of thunderstorms, usually supercell thunderstorms that are in a wind shear environment that promotes rotation. Some studies show a potential for a decrease in wind shear in mid-latitude areas. Many tornadoes along the coast are spawned by tropical cyclones; therefore, climate change impacts on tropical cyclones may affect tornado activity in the Albemarle Region. The potential influence of climate change on tornadoes will continue to be revisited over time.

VULNERABILITY ASSESSMENT

METHODOLOGIES AND ASSUMPTIONS

Population and property at risk to wind events was estimated using data from the North Carolina Emergency Management (NCEM) IRISK database, which was compiled in NCEM's Risk Management Tool.

PEOPLE

People and populations exposed to the elements are most vulnerable to severe weather. A common hazard associated with wind events is falling trees and branches. Risk of being struck by lightning is greater in open areas, at higher elevations, and on the water.

Lightning can also cause cascading hazards, including power loss. Loss of power could critically impact those relying on energy to service, including those that need powered medical devices. Additionally, the ignition of fires is always a concern with lightning strikes.

People and populations exposed to the elements are most vulnerable to tornadoes. The availability of sheltered locations such as basements, buildings constructed using hail-resistant materials and methods, and public storm shelters, all reduce the exposure of the population. According to 2022 data from the U.S. Census American Community Survey, 10,521 housing units in the Albemarle Region are classified as "mobile homes," which is 20.8% of homes across the region. Based on an average estimate of household size across the region, there are over 25,600 people living in mobile homes. Table 4.72 shows total mobile housing units and potential populations impacted by jurisdiction. Note that county data is representative of incorporated and unincorporated areas.

Table 4.72 – Mobile Home Units in the Albemarle Region

Jurisdiction	Total Mobile Housing Units	Percentage of Total Housing	Estimated Average Household	Population at Risk
Camden County	**583**	**14.0%**	**2.82**	**1,645**
Chowan County	**1,581**	**22.1%**	**2.36**	**3,732**
Edenton	305	11.4%	1.92	586
Gates County	**2,012**	**41.8%**	**2.51**	**5,051**
Gatesville	28	17.9%	2.80	79
Hertford County	**2,173**	**22.0%**	**2.37**	**5,151**
Ahoskie	81	3.4%	2.30	187

Jurisdiction	Total Mobile Housing Units	Percentage of Total Housing	Estimated Average Household	Population at Risk
Como	0	0.0%	2.83	0
Harrellsville	2	2.9%	3.20	7
Murfreesboro	45	4.1%	2.22	100
Winton	91	23.9%	2.28	208
Cofield	67	30.2%	2.22	149
Pasquotank County	**2,474**	**14.2%**	**2.55**	**6,309**
Elizabeth City	265	3.2%	2.39	634
Perquimans County	**1,698**	**24.6%**	**2.28**	**3,468**
Hertford	82	7.4%	2.37	195
Winfall	95	21.1%	2.39	228
Region Total	**10,521**	**20.8%**	**--**	**25,670**

Source: 2022 American Community Survey

Individuals who work outdoors may also face increased risk; data on outdoor workers is limited.

Since 1996, NCEI records three fatalities and three injuries due to thunderstorm winds, high winds, and strong winds events. NCEI records four injuries attributed to lightning. No fatalities were attributed to lightning or hail, and no injuries were attributed to hail.

PROPERTY

Property damage caused by lightning usually occurs in one of two ways – either by direct damages through fires ignited by lightning, or by secondary impacts due to power loss. According to data collected on lightning strikes in the Region, most recorded property damage was due to structure fires, though NCEI also records damage to a vehicle in Pasquotank County and a herd of cattle killed while standing under a tree struck by lightning.

NCEI recorded lightning impacts over 28 years (1996-2023) report $123,000 in property damages. Historically, this has resulted in $4,393 in annualized losses across the region. The average impact from lightning per incident in the Region is $10,250.

General damages to property from hail are direct, including destroyed windows, dented cars, and building, roof and siding damage in areas exposed to hail. Hail can also cause enough damage to cars to cause them to be totaled. The level of damage is commensurate with both a material's ability to withstand hail impacts, and the size of the hailstones that are falling. Construction practices and building codes can help maximize the resistance of the structures to damage. Large amounts of hail may need to be physically cleared from roadways and sidewalks, depending on accumulation. Hail can cause other cascading impacts, including power loss.

During the 28-year period from 1996 through 2023, NCEI reports $107,000 in property damage as a direct result of hail in the Albemarle Region. This equates to annualized loss of $3,821. It should be noted that property damage due to hail is usually insured loss, with damages covered under most major comprehensive insurance plans. Because of this, hail losses are notoriously underreported by NCEI.

When strong enough, wind events can cause significant direct damage to buildings and infrastructure. NCEM's IRISK database estimates damages from tornadoes and thunderstorms by storm magnitude. Table 4.77 through Table 4.80 detail the estimated buildings impacted and losses incurred from tornado events of magnitudes ranging from EF0 to EF3. Damages from increasing magnitudes of thunderstorm wind events are detailed in Table 4.81 through Table 4.84. Note that all of these tables provide an

estimate of building damages should all exposed property be impacted by an event of the stated magnitude. Actual damages resulting from a tornado or thunderstorm event of each magnitude would be lower because any one event would impact only a portion of the region. These tables should only be used to understand the range of damage potential relative to storms of varying degrees of severity.

Table 4.73 – Estimated Buildings Impacted by EF0 Tornado

County/Area	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden	5,675	4,611	81%	$39,191,397	629	11%	$2,935,653	156	3%	$2,786,171	5,396	95%	$44,913,222
Chowan	6,944	5,521	80%	$44,913,662	1,288	19%	$16,842,637	81	1%	$3,400,420	6,890	99%	$65,156,719
Edenton	3,110	2,542	82%	$24,150,582	453	15%	$16,900,464	94	3%	$3,699,987	3,089	99%	$44,751,032
Gates	6,637	4,662	70%	$44,783,010	1,816	27%	$15,882,468	157	2%	$5,772,236	6,635	100%	$66,437,715
Gatesville	204	132	65%	$1,432,123	44	22%	$834,718	28	14%	$972,239	204	100%	$3,239,081
Hertford	8,307	6,618	80%	$35,790,585	1,519	18%	$15,435,905	126	2%	$2,971,372	8,263	99%	$54,197,861
Ahoskie	2,744	2,313	84%	$13,935,054	313	11%	$9,880,649	102	4%	$2,112,808	2,728	99%	$25,928,512
Como	91	62	68%	$324,659	25	27%	$73,197	3	3%	$15,775	90	99%	$413,631
Harrellsville	100	85	85%	$445,551	8	8%	$29,644	6	6%	$25,762	99	99%	$500,957
Murfreesboro	2,275	2,009	88%	$10,883,821	183	8%	$2,901,804	76	3%	$2,374,809	2,268	100%	$16,160,435
Winton	479	399	83%	$1,992,800	33	7%	$2,272,528	43	9%	$821,265	475	99%	$5,086,593
Cofield	287	233	81%	$1,032,694	47	16%	$1,132,308	3	1%	$12,871	283	99%	$2,177,873
Pasquotank	10,739	9,117	85%	$77,803,719	1,111	10%	$22,892,234	200	2%	$9,853,781	10,428	97%	$110,549,734
Elizabeth City	8,843	7,523	85%	$62,724,758	895	10%	$27,221,600	273	3%	$10,926,465	8,691	98%	$100,872,823
Perquimans	6,399	5,911	92%	$68,794,537	211	3%	$8,807,927	139	2%	$4,361,062	6,261	98%	$81,963,526
Hertford	1,246	1,014	81%	$9,009,045	135	11%	$3,589,900	75	6%	$3,274,613	1,224	98%	$15,873,558
Winfall	428	358	84%	$3,178,549	33	8%	$752,317	28	7%	$1,126,987	419	98%	$5,057,853
Total	**64,508**	**53,110**	**82%**	**$440,386,546**	**8743**	**14%**	**$148,385,953**	**1590**	**3%**	**$54,508,623**	**63,443**	**98%**	**$643,281,125**

Source: NCEM Risk Management Tool

Table 4.74 – Estimated Buildings Impacted by EF1 Tornado

County/Area	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden	5,675	4,611	81%	$285,213,187	629	11%	$19,570,425	156	3%	$16,452,381	5,396	95%	$321,235,993
Chowan	6,944	5,521	80%	$321,559,784	1,288	19%	$114,825,758	81	1%	$17,617,520	6,890	99%	$454,003,062
Edenton	3,110	2,542	82%	$173,197,393	453	15%	$102,720,650	94	3%	$20,323,714	3,089	99%	$296,241,757
Gates	6,637	4,662	70%	$321,352,566	1,816	27%	$106,816,354	157	2%	$34,307,852	6,635	100%	$462,476,772
Gatesville	204	132	65%	$10,338,803	44	22%	$5,230,863	28	14%	$5,256,811	204	100%	$20,826,476
Hertford	8,307	6,618	80%	$254,557,896	1,519	18%	$104,413,546	126	2%	$23,284,622	8,263	99%	$382,256,064
Ahoskie	2,744	2,313	84%	$99,932,385	313	11%	$60,149,277	102	4%	$11,393,911	2,728	99%	$171,475,573
Como	91	62	68%	$2,369,827	25	27%	$485,416	3	3%	$127,184	90	99%	$2,982,427
Harrellsville	100	85	85%	$3,254,089	8	8%	$141,120	6	6%	$207,707	99	99%	$3,602,916
Murfreesboro	2,275	2,009	88%	$77,850,923	183	8%	$16,865,785	76	3%	$15,434,626	2,268	100%	$110,151,334
Winton	479	399	83%	$14,115,616	33	7%	$16,123,789	43	9%	$5,777,124	475	99%	$36,016,529
Cofield	287	233	81%	$7,375,872	47	16%	$8,474,043	3	1%	$103,773	283	99%	$15,953,688
Pasquotank	10,739	9,117	85%	$557,714,213	1,111	10%	$146,186,895	200	2%	$59,426,292	10,428	97%	$763,327,400
Elizabeth City	8,843	7,523	85%	$443,612,720	895	10%	$161,609,473	273	3%	$66,266,581	8,691	98%	$671,488,774
Perquimans	6,399	5,911	92%	$483,118,221	211	3%	$62,162,496	139	2%	$33,298,740	6,261	98%	$578,579,457
Hertford	1,246	1,014	81%	$63,724,115	135	11%	$22,645,120	75	6%	$18,018,385	1,224	98%	$104,387,620
Winfall	428	358	84%	$23,053,575	33	8%	$4,785,157	28	7%	$6,191,662	419	98%	$34,030,394
Total	**64,508**	**53,110**	**82%**	**$3,142,341,185**	**8,743**	**13%**	**$953,206,167**	**1590**	**2%**	**$333,488,885**	**63,443**	**98%**	**$4,429,036,236**

Source: NCEM Risk Management Tool

Table 4.75 – Estimated Buildings Impacted by EF2 Tornado

County/Area	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden	5,675	4,611	81%	$528,474,465	629	11%	$40,923,564	156	3%	$53,017,556	5,396	95%	$622,415,586
Chowan	6,944	5,521	80%	$569,593,867	1,288	19%	$202,985,535	81	1%	$53,649,640	6,890	99%	$826,229,042
Edenton	3,110	2,542	82%	$338,180,613	453	15%	$238,185,700	94	3%	$63,747,603	3,089	99%	$640,113,915
Gates	6,637	4,662	70%	$574,748,019	1,816	27%	$215,450,952	157	2%	$111,523,827	6,635	100%	$901,722,798
Gatesville	204	132	65%	$19,289,275	44	22%	$11,830,988	28	14%	$16,357,008	204	100%	$47,477,271
Hertford	8,307	6,618	80%	$444,738,285	1,519	18%	$198,253,772	126	2%	$83,571,901	8,263	99%	$726,563,958
Ahoskie	2,744	2,313	84%	$197,062,479	313	11%	$149,468,495	102	4%	$35,407,120	2,728	99%	$381,938,094
Como	91	62	68%	$4,354,566	25	27%	$1,205,352	3	3%	$460,274	90	99%	$6,020,192
Harrellsville	100	85	85%	$6,069,887	8	8%	$455,054	6	6%	$751,683	99	99%	$7,276,624
Murfreesboro	2,275	2,009	88%	$140,405,504	183	8%	$38,169,766	76	3%	$52,022,373	2,268	100%	$230,597,644
Winton	479	399	83%	$26,278,562	33	7%	$36,775,911	43	9%	$20,034,966	475	99%	$83,089,439
Cofield	287	233	81%	$12,910,394	47	16%	$18,807,732	3	1%	$375,552	283	99%	$32,093,678
Pasquotank	10,739	9,117	85%	$1,007,332,738	1,111	10%	$337,149,854	200	2%	$193,865,508	10,428	97%	$1,538,348,100
Elizabeth City	8,843	7,523	85%	$854,748,877	895	10%	$396,183,093	273	3%	$217,815,912	8,691	98%	$1,468,747,881
Perquimans	6,399	5,911	92%	$817,875,026	211	3%	$109,300,249	139	2%	$107,570,223	6,261	98%	$1,034,745,498
Hertford	1,246	1,014	81%	$125,283,281	135	11%	$50,514,971	75	6%	$54,139,517	1,224	98%	$229,937,769
Winfall	428	358	84%	$42,305,955	33	8%	$11,250,906	28	7%	$18,405,288	419	98%	$71,962,149
Total	**64,508**	**53,110**	**82%**	**$5,709,651,793**	**8743**	**13%**	**$2,056,911,894**	**1590**	**2%**	**$1,082,715,951**	**63,443**	**98%**	**$8,849,279,638**

Source: NCEM Risk Management Tool

Table 4.76 – Estimated Buildings Impacted by EF3 Tornado

County/Area	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden	5,675	4,611	81%	$619,678,032	629	11%	$47,842,917	156	3%	$82,894,894	5,396	95%	$750,415,844
Chowan	6,944	5,521	80%	$660,463,045	1,288	19%	$228,305,347	81	1%	$83,075,746	6,890	99%	$971,844,139
Edenton	3,110	2,542	82%	$430,078,946	453	15%	$297,857,644	94	3%	$99,205,818	3,089	99%	$827,142,408
Gates	6,637	4,662	70%	$672,049,791	1,816	27%	$250,853,728	157	2%	$174,570,505	6,635	100%	$1,097,474,025
Gatesville	204	132	65%	$23,291,997	44	22%	$14,646,129	28	14%	$25,421,549	204	100%	$63,359,674
Hertford	8,307	6,618	80%	$517,377,919	1,519	18%	$215,375,017	126	2%	$132,782,828	8,263	99%	$865,535,764
Ahoskie	2,744	2,313	84%	$254,673,099	313	11%	$200,403,648	102	4%	$55,016,649	2,728	99%	$510,093,396
Como	91	62	68%	$5,046,388	25	27%	$1,502,815	3	3%	$732,161	90	99%	$7,281,364
Harrellsville	100	85	85%	$7,144,604	8	8%	$665,124	6	6%	$1,195,708	99	99%	$9,005,437
Murfreesboro	2,275	2,009	88%	$166,920,611	183	8%	$48,770,166	76	3%	$81,893,021	2,268	100%	$297,583,798
Winton	479	399	83%	$32,979,822	33	7%	$40,206,472	43	9%	$31,674,312	475	99%	$104,860,606
Cofield	287	233	81%	$14,897,539	47	16%	$20,268,238	3	1%	$597,394	283	99%	$35,763,171
Pasquotank	10,739	9,117	85%	$1,179,637,919	1,111	10%	$416,025,061	200	2%	$303,149,347	10,428	97%	$1,898,812,327
Elizabeth City	8,843	7,523	85%	$1,064,706,474	895	10%	$526,767,107	273	3%	$340,188,375	8,691	98%	$1,931,661,955
Perquimans	6,399	5,911	92%	$945,667,192	211	3%	$125,382,735	139	2%	$166,579,107	6,261	98%	$1,237,629,034
Hertford	1,246	1,014	81%	$163,389,160	135	11%	$63,869,102	75	6%	$83,137,178	1,224	98%	$310,395,440
Winfall	428	358	84%	$48,935,096	33	8%	$14,842,646	28	7%	$27,942,492	419	98%	$91,720,234
Total	**64,508**	**53,110**	**82%**	**$6,806,937,634**	**8,743**	**13%**	**$2,513,583,896**	**1,590**	**2%**	**$1,690,057,084**	**63,443**	**99%**	**$11,010,578,616**

Source: NCEM Risk Management Tool

Table 4.77 – Estimated Buildings Impacted by 50-Year Thunderstorm Winds

Jurisdiction	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden	5,675	4,568	80%	$12,167,327	629	11%	$361,503	156	3%	$449,797	5,353	94%	$12,978,627
Chowan	6,944	5,491	79%	$7,466,228	1,287	19%	$1,868,331	81	1%	$303,124	6,859	99%	$9,637,682
Edenton	3,110	2,541	82%	$5,046,641	453	15%	$2,932,593	94	3%	$634,081	3,088	99%	$8,613,315
Gates	6,637	4,662	70%	$7,692,891	1,816	27%	$1,255,947	157	2%	$1,368,533	6,635	100%	$10,317,370
Gatesville	204	132	65%	$240,057	44	22%	$199,239	28	14%	$122,590	204	100%	$561,886
Hertford	8,307	6,611	80%	$4,003,483	1,519	18%	$952,140	126	2%	$981,312	8,256	99%	$5,936,935
Ahoskie	2,744	2,313	84%	$1,294,831	313	11%	$437,435	102	4%	$109,872	2,728	99%	$1,842,137
Como	91	62	68%	$77,716	25	27%	$12,168	3	3%	$10,449	90	99%	$100,333
Harrellsville	100	85	85%	$70,699	8	8%	$1,877	6	6%	$3,529	99	99%	$76,105
Murfreesboro	2,275	2,009	88%	$1,235,193	183	8%	$102,304	76	3%	$85,320	2,268	100%	$1,422,817
Winton	479	399	83%	$315,132	33	7%	$90,750	43	9%	$197,627	475	99%	$603,509
Cofield	287	233	81%	$126,437	47	16%	$26,830	3	1%	$501	283	99%	$153,768
Pasquotank	10,739	9,045	84%	$28,782,321	1,110	10%	$6,570,683	200	2%	$3,100,714	10,355	96%	$38,453,718
Elizabeth City	8,843	7,433	84%	$21,452,369	889	10%	$6,537,174	273	3%	$4,122,034	8,595	97%	$32,111,577
Perquimans	6,399	5,758	90%	$19,860,074	209	3%	$3,190,691	137	2%	$2,201,693	6,104	95%	$25,252,458
Hertford	1,246	973	78%	$2,060,696	128	10%	$348,956	75	6%	$1,217,832	1,176	94%	$3,627,485
Winfall	428	346	81%	$1,451,908	32	7%	$148,404	28	7%	$796,529	406	95%	$2,396,840
Total	**64,508**	**52,661**	**81%**	**$113,344,003**	**8,725**	**13%**	**$25,037,025**	**1,588**	**2%**	**$15,705,537**	**62,974**	**97%**	**$154,086,562**

Source: NCEM Risk Management Tool

Table 4.78 – Estimated Buildings Impacted by 100-Year Thunderstorm Winds

Jurisdiction	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden	5,675	4,568	80%	$20,831,271	629	11%	$675,400	156	3%	$871,532	5,353	94%	$22,378,204
Chowan	6,944	5,491	79%	$11,737,686	1,287	19%	$3,004,723	81	1%	$557,488	6,859	99%	$15,299,897
Edenton	3,110	2,541	82%	$8,315,456	453	15%	$4,954,231	94	3%	$1,164,210	3,088	99%	$14,433,897
Gates	6,637	4,662	70%	$13,369,470	1,816	27%	$2,005,663	157	2%	$2,295,187	6,635	100%	$17,670,319
Gatesville	204	132	65%	$387,895	44	22%	$287,646	28	14%	$212,282	204	100%	$887,824
Hertford	8,307	6,611	80%	$6,528,512	1,519	18%	$1,469,238	126	2%	$1,624,189	8,256	99%	$9,621,939
Ahoskie	2,744	2,313	84%	$2,271,130	313	11%	$1,033,970	102	4%	$308,102	2,728	99%	$3,613,203
Como	91	62	68%	$118,979	25	27%	$24,131	3	3%	$18,090	90	99%	$161,199
Harrellsville	100	85	85%	$100,505	8	8%	$3,987	6	6%	$7,732	99	99%	$112,223
Murfreesboro	2,275	2,009	88%	$1,843,997	183	8%	$180,474	76	3%	$156,246	2,268	100%	$2,180,717
Winton	479	399	83%	$462,295	33	7%	$134,715	43	9%	$298,935	475	99%	$895,945
Cofield	287	233	81%	$180,342	47	16%	$51,780	3	1%	$849	283	99%	$232,971
Pasquotank	10,739	9,045	84%	$49,409,972	1,110	10%	$11,317,751	200	2%	$5,205,858	10,355	96%	$65,933,581
Elizabeth City	8,843	7,433	84%	$38,139,261	889	10%	$10,811,316	273	3%	$6,786,381	8,595	97%	$55,736,958
Perquimans	6,399	5,758	90%	$38,112,465	209	3%	$5,126,958	137	2%	$3,596,427	6,104	95%	$46,835,850
Hertford	1,246	973	78%	$5,218,497	128	10%	$1,004,115	75	6%	$2,832,551	1,176	94%	$9,055,162
Winfall	428	346	81%	$3,010,304	32	7%	$332,327	28	7%	$1,235,702	406	95%	$4,578,333
Total	**64,508**	**52,661**	**81%**	**$200,038,037**	**8,725**	**13%**	**$42,418,425**	**1,588**	**2%**	**$27,171,761**	**62,974**	**97%**	**$269,628,222**

Source: NCEM Risk Management Tool

Table 4.79 – Estimated Buildings Impacted by 300-Year Thunderstorm Winds

Jurisdiction	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden	5,675	4,568	80%	$55,388,416	629	11%	$1,918,159	156	3%	$2,647,258	5,353	94%	$59,953,833
Chowan	6,944	5,491	79%	$31,105,351	1,287	19%	$7,580,686	81	1%	$1,838,549	6,859	99%	$40,524,586
Edenton	3,110	2,541	82%	$23,449,472	453	15%	$13,771,695	94	3%	$3,706,122	3,088	99%	$40,927,289
Gates	6,637	4,662	70%	$31,509,059	1,816	27%	$4,359,293	157	2%	$5,166,129	6,635	100%	$41,034,481
Gatesville	204	132	65%	$1,120,997	44	22%	$575,124	28	14%	$608,520	204	100%	$2,304,641
Hertford	8,307	6,611	80%	$12,986,272	1,519	18%	$3,058,112	126	2%	$2,680,774	8,256	99%	$18,725,158
Ahoskie	2,744	2,313	84%	$3,478,415	313	11%	$1,806,856	102	4%	$539,515	2,728	99%	$5,824,786
Como	91	62	68%	$187,003	25	27%	$47,347	3	3%	$32,447	90	99%	$266,797
Harrellsville	100	85	85%	$227,496	8	8%	$17,063	6	6%	$35,341	99	99%	$279,899
Murfreesboro	2,275	2,009	88%	$4,491,375	183	8%	$601,834	76	3%	$569,993	2,268	100%	$5,663,202
Winton	479	399	83%	$714,720	33	7%	$209,228	43	9%	$475,214	475	99%	$1,399,162
Cofield	287	233	81%	$273,123	47	16%	$200,865	3	1%	$1,593	283	99%	$475,581
Pasquotank	10,739	9,045	84%	$129,487,395	1,110	10%	$29,282,233	200	2%	$13,170,863	10,355	96%	$171,940,491
Elizabeth City	8,843	7,433	84%	$105,803,039	889	10%	$27,316,525	273	3%	$16,507,841	8,595	97%	$149,627,405
Perquimans	6,399	5,758	90%	$79,628,846	209	3%	$8,617,017	137	2%	$6,869,614	6,104	95%	$95,115,477
Hertford	1,246	973	78%	$10,958,188	128	10%	$1,873,137	75	6%	$4,417,908	1,176	94%	$17,249,232
Winfall	428	346	81%	$4,804,925	32	7%	$508,083	28	7%	$1,701,390	406	95%	$7,014,398
Total	**64,508**	**52,661**	**81%**	**$495,614,092**	**8,725**	**13%**	**$101,743,257**	**1,588**	**2%**	**$60,969,071**	**62,974**	**97%**	**$658,326,418**

Source: NCEM Risk Management Tool

Table 4.80 – Estimated Buildings Impacted by 700-Year Thunderstorm Winds

Jurisdiction	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden	5,675	4,568	80%	$81,599,986	629	11%	$2,776,800	156	3%	$3,913,437	5,353	94%	$88,290,223
Chowan	6,944	5,491	79%	$51,405,489	1,287	19%	$12,133,184	81	1%	$3,304,490	6,859	99%	$66,843,162
Edenton	3,110	2,541	82%	$38,299,251	453	15%	$22,529,312	94	3%	$6,463,423	3,088	99%	$67,291,986
Gates	6,637	4,662	70%	$59,478,888	1,816	27%	$7,499,805	157	2%	$8,948,230	6,635	100%	$75,926,924
Gatesville	204	132	65%	$1,900,816	44	22%	$827,395	28	14%	$1,021,598	204	100%	$3,749,809
Hertford	8,307	6,611	80%	$24,490,290	1,519	18%	$4,855,469	126	2%	$5,774,293	8,256	99%	$35,120,052
Ahoskie	2,744	2,313	84%	$8,343,933	313	11%	$4,976,685	102	4%	$1,485,419	2,728	99%	$14,806,037
Como	91	62	68%	$447,337	25	27%	$136,013	3	3%	$81,870	90	99%	$665,220
Harrellsville	100	85	85%	$360,576	8	8%	$33,814	6	6%	$71,294	99	99%	$465,684
Murfreesboro	2,275	2,009	88%	$7,056,112	183	8%	$1,049,491	76	3%	$1,024,405	2,268	100%	$9,130,007
Winton	479	399	83%	$1,774,720	33	7%	$478,608	43	9%	$1,184,393	475	99%	$3,437,721
Cofield	287	233	81%	$675,225	47	16%	$450,108	3	1%	$5,279	283	99%	$1,130,613
Pasquotank	10,739	9,045	84%	$187,931,413	1,110	10%	$40,904,973	200	2%	$18,537,021	10,355	96%	$247,373,408
Elizabeth City	8,843	7,433	84%	$156,388,995	889	10%	$39,067,117	273	3%	$23,212,130	8,595	97%	$218,668,243
Perquimans	6,399	5,758	90%	$156,321,040	209	3%	$15,659,945	137	2%	$11,907,807	6,104	95%	$183,888,791
Hertford	1,246	973	78%	$26,422,055	128	10%	$4,628,577	75	6%	$8,869,606	1,176	94%	$39,920,237
Winfall	428	346	81%	$10,172,502	32	7%	$1,077,616	28	7%	$3,119,972	406	95%	$14,370,090
Total	**64,508**	**52,661**	**81%**	**$813,068,628**	**8,725**	**13%**	**$159,084,912**	**1,588**	**2%**	**$98,924,667**	**62,974**	**97%**	**$1,071,078,207**

Source: NCEM Risk Management Tool

Severe weather can also cause significant agricultural losses. Table 4.81 summarizes crop losses that occurred in the Albemarle Region from 2014 through 2023 due to the identified impacts of wind and hail as reported in the USDA RMA system. There were no losses reported due to tornado. Per this data, the region suffered over $745,000 in crop losses due to severe weather, which equates to an annualized loss of $74,500. Losses were greatest in Chowan County and Hertford County during this period.

Table 4.81 – Crop Losses Caused by Wind and Hail, 2014-2023

Year	Camden	Chowan	Gates	Hertford	Pasquotank	Perquimans	Total
2014				$3,026			$3,026
2015		$36,761	$42,807			$51,394	$130,961
2016		$67,600			$3,427		$71,027
2017	$996		$44,627	$44,771			$90,394
2018		$21,472	$2,125				$23,597
2019	$12,181	$97,052		$206,500		$6,384	$322,117
2020		$1,277		$36,488			$37,764
2021		$4,434		$2,331		$1,559	$8,324
2022		$9,656		$37,845			$47,501
2023	$372	$1,617				$8,593	$10,581
Total	**$13,548**	**$239,869**	**$89,559**	**$330,961**	**$3,427**	**$67,929**	**$745,293**

Source: USDA Risk Management Agency

ENVIRONMENT

The main environmental impact from wind is damage to trees or crops. Wind events can also bring down power lines, which could cause a fire and result in even greater environmental impacts. Lightning may also result in the ignition of wildfires. This is part of a natural process, however, and the environment will return to its original state in time.

Hail can cause extensive damage to the natural environment, pelting animals, trees and vegetation with hailstones. Melting hail can also increase both river and flash flood risk.

CONSEQUENCE ANALYSIS

Table 4.82 summarizes the potential negative consequences of severe weather.

Table 4.82 – Consequence Analysis – Severe Weather (Thunderstorm Winds, Lightning, and Hail)

Category	Consequences
Public	Injuries; fatalities
Responders	Injuries; fatalities; potential impacts to response capabilities due to storm impacts
Continuity of Operations (including Continued Delivery of Services)	Potential impacts to continuity of operations due to storm impacts; delays in providing services
Property, Facilities and Infrastructure	Possibility of structure fire ignition; potential for disruptions in power and communications infrastructure; destruction and/or damage to any exposed property, especially windows, cars and siding; mobile homes see increased risk
Environment	Potential fire ignition from lightning; hail damage to wildlife and foliage

Category	Consequences
Economic Condition of the Jurisdiction	Lightning damage contingent on target; can severely impact/destroy critical infrastructure and other economic drivers
Public Confidence in the Jurisdiction's Governance	Public confidence is not generally affected by severe weather events.

HAZARD SUMMARY BY JURISDICTION

The following tables summarize tornado and thunderstorm hazard risks by jurisdiction. Most aspects of severe weather risk do not vary substantially by jurisdiction; however, the impact of these severe weather hazards may vary based on each community's property exposure. Communities with a higher proportion of mobile homes may be disproportionately impacted by thunderstorm winds. Mobile home units comprise approximately 25% or more of the housing mix of Gates County, Cofield, and Perquimans County; therefore, these areas may face more severe impacts from wind.

TORNADO

Jurisdiction	Probability	Impact	Spatial Extent	Warning Time	Duration	Score	Priority
All jurisdictions	3	3	2	4	1	2.7	M

THUNDERSTORM WIND

Jurisdiction	Probability	Impact	Spatial Extent	Warning Time	Duration	Score	Priority
Camden County	4	2	3	4	1	2.9	M
Chowan County	4	2	3	4	1	2.9	M
Edenton	4	2	3	4	1	2.9	M
Gates County	4	3	3	4	1	3.2	H
Gatesville	4	2	3	4	1	2.9	M
Hertford County	4	2	3	4	1	2.9	M
Ahoskie	4	2	3	4	1	2.9	M
Como	4	2	3	4	1	2.9	M
Harrellsville	4	2	3	4	1	2.9	M
Murfreesboro	4	2	3	4	1	2.9	M
Winton	4	2	3	4	1	2.9	M
Cofield	4	3	3	4	1	3.2	H
Pasquotank County	4	2	3	4	1	2.9	M
Elizabeth City	4	2	3	4	1	2.9	M
Perquimans County	4	3	3	4	1	3.2	H
Hertford	4	2	3	4	1	2.9	M
Winfall	4	2	3	4	1	2.9	M

LIGHTNING AND HAIL

Jurisdiction	Probability	Impact	Spatial Extent	Warning Time	Duration	Score	Priority
All jurisdictions	4	1	1	4	1	2.2	M

4.5.8 SEVERE WINTER WEATHER

HAZARD BACKGROUND

A winter storm can range from a 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 damages, such as roof collapses on older buildings.

All winter storm 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 of 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 3 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 storms with significant amounts of freezing rain and are a result of cold air damming (CAD). CAD is a shallow, surface-based layer of cold, stably-stratified air entrenched against the eastern slopes of the Appalachian Mountains. With warmer air above, falling snow melts, then becomes either freezing rain or sleet. Freezing rain is liquid that freezes on impact, creating a sheet of ice on the roadways and other surfaces. Sleet is partially frozen raindrops or refrozen snowflakes that form into small ice pellets before reaching the ground. Sleet typically bounces when it hits the ground and does not stick to the surface but accumulates like snow, posing similar problems and has the potential to accumulate into a layer of ice on surfaces.

All winter weather elements – snow, low temperatures, sleet, ice, etcetera – have the potential to cause significant hazard to a community. Even small accumulations can down power lines and trees limbs and create hazardous driving conditions. Furthermore, communication and power may be disrupted for days.

Advancements in meteorology and forecasting usually allow for mostly accurate forecasting a few days in advance of an impending storm. Most storms have a duration of a few hours. Impacts can last a few days after the initial incident until cleanup is completed.

Warning Time: 1 – More than 24 hours

Duration: 3 – Less than 1 week

LOCATION

The entirety of North Carolina 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. Severe winter weather is usually a countywide or regional hazard, impacting a large portion of the planning area at the same time. The risk of severe winter storm occurring is uniform across the Region.

Spatial Extent: 4 – Large

EXTENT

Severe winter weather often involves a mix of hazardous weather conditions. The magnitude of an event can be defined based on the severity of each of the involved factors, including precipitation type, precipitation accumulation amounts, temperature, and wind.

NOAA uses the Regional Snowfall Index (RSI) to assess the societal impact of winter storms in the six easternmost regions in the United States. The index makes use of population and regional differences to

assess the impact of snowfall. For example, areas which receive very little snowfall on average may be more adversely affected than other regions, resulting in a higher severity.

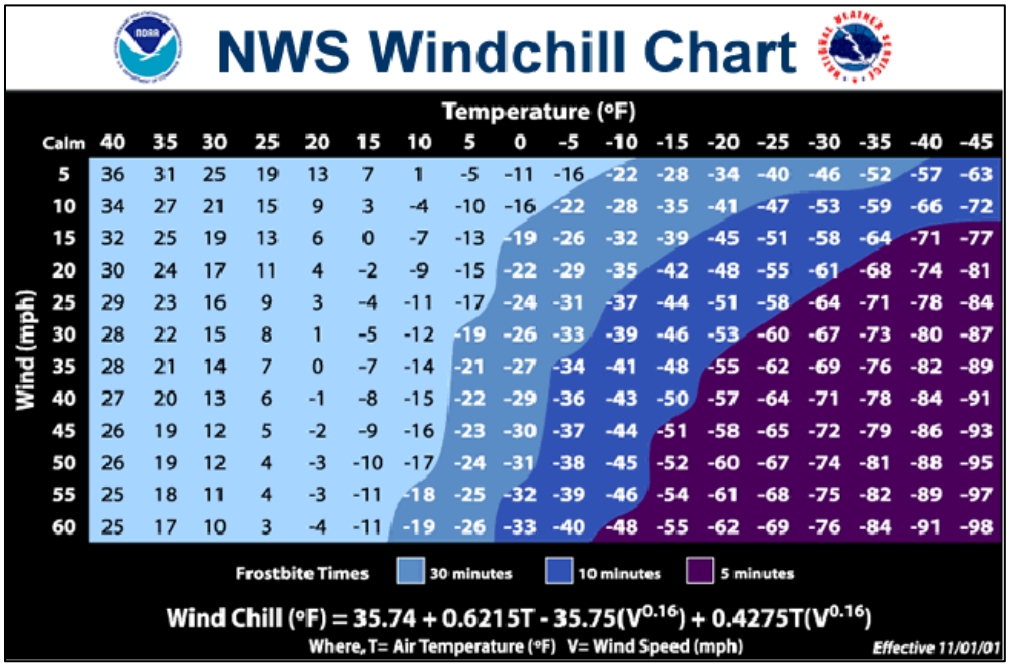
Table 4.83 – Regional Snowfall Index (RSI) Values

Category	RSI Value	Description
1	1-3	Notable
2	3-6	Significant
3	6-10	Major
4	10-18	Crippling
5	18+	Extreme

Source: NOAA

The NWS Wind Chill Temperature Index, shown in Figure 4.49, provides a formula for calculating the dangers of winter winds and freezing temperatures.

Figure 4.49 – NWS Wind Chill Temperature Index



Source: http://www.nws.noaa.gov/om/winter/windchill.shtml

Table 4.84 notes greatest one-day snowfall totals for each county in the Albemarle Region. Note that data was not available for Camden and Perquimans counties, due to no available weather stations.

Table 4.84 – Greatest One-Day Snowfall by County

County	Inches	Location	Date
Camden	*No weather stations with data in this county*		
Chowan	26.0 in	Edenton	Mar 1, 1927
Gates	12.0 in	Gatesville	Dec 12, 1958
Hertford	10.0 in	Murfreesboro	Dec 26, 2010
Pasquotank	15.0 in	Elizabeth City	Feb 10, 1948 & Mar 2, 1980
Perquimans	*No weather stations with data in this county*		

Source: North Carolina Climate Office

Winter weather impacts typically depend on the normal expected severity of local winter weather. The Albemarle Region is accustomed to smaller scale severe winter weather conditions and often receives winter weather during the winter months.

Impact: 2 – Limited

HISTORICAL OCCURRENCES

To get a full picture of the range of impacts of a severe winter storm, data for the following weather types as defined by the National Weather Service (NWS) Raleigh Forecast Office and tracked by NCEI were collected:

- **Blizzard** – A winter storm which produces the following conditions for 3 consecutive hours or longer: (1) sustained winds or frequent gusts 30 knots (35 mph) or greater, and (2) falling and/or blowing snow reducing visibility frequently to less than 1/4 mile.
- **Cold/Wind Chill** – Period of low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined advisory conditions of 0°F to -14°F with wind speeds 10 mph (9 kt) or greater.
- **Extreme Cold/Wind Chill** – A period of extremely low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined warning criteria, defined as wind chill -15°F or lower with wind speeds 10 mph (9 kt) or greater.
- **Frost/Freeze** – A surface air temperature of 32°F or lower, or the formation of ice crystals on the ground or other surfaces, for a period of time long enough to cause human or economic impact, during the locally defined growing season.
- **Heavy Snow** – Snow accumulation meeting or exceeding 12 and/or 24 hour warning criteria of 3 and 4 inches, respectively.
- **Ice Storm** – Ice accretion meeting or exceeding locally/regionally defined warning criteria of ¼ inch or greater resulting in significant, widespread power outages, tree damage and dangerous travel. Issued only in those rare instances where just heavy freezing rain is expected and there will be no "mixed bag" precipitation meaning no snow, sleet or rain.
- **Sleet** – Sleet accumulations meeting or exceeding locally/regionally defined warning criteria of ½ inch or more.
- **Winter Storm** – A winter weather event that has more than one significant hazard and meets or exceeds locally/regionally defined 12 and/or 24 hour warning criteria for at least one of the precipitation elements. Defined by NWS Raleigh Forecast Office as snow accumulations 3 inches or greater in 12 hours (4 inches or more in 24 hours); Freezing rain accumulations ¼ inch (6 mm) or greater; Sleet accumulations ½ inch (13 mm) or more. Issued when there is at least a 60% forecast confidence of any one of the three criteria being met.
- **Winter Weather** – A winter precipitation event that causes a death, injury, or a significant impact to commerce or transportation, but does not meet locally/regionally defined warning criteria.

Summarized counts of winter weather events from data collected for the years 1996 through 2023 are included in Table 4.85. In this timeframe, NCEI recorded no fatalities, injuries, property damage, or crop damage from the impacts of severe winter weather events in any of the counties in the Albemarle Region. However, this is likely a data limitation, and these types of impacts are possible in future events. No extreme cold/wind chill, heavy snow or sleet events were recorded during this timeframe.

Many of the storm event counts reported in Table 4.85 reflect a single event impacting multiple counties. To summarize the overall number of events that impact the region, the total column reports the number of separate days during the reporting period that each type of event occurred.

Table 4.85 – Historical Hazard Occurrence 1996-2023

Hazard	Camden	Chowan	Gates	Hertford	Pasquotank	Perquimans	Total Days Across Region with Event
Blizzard	1	0	0	0	1	0	1
Cold/Wind Chill	1	1	1	1	1	1	1
Frost/Freeze	3	3	4	4	3	3	4
Ice Storm	0	0	1	1	0	0	1
Winter Storm	22	23	22	23	22	24	29
Winter Weather	14	15	20	19	12	15	25
Total	**41**	**42**	**48**	**48**	**39**	**43**	**61**

Source: NCEI

Event narratives from NCEI are summarized below, providing an example of the types of impacts that can occur due to severe winter weather:

January 6, 1996 – A major winter storm (popularly known as the "Blizzard of "96) affected much of the mid-Atlantic region during the weekend of January 6-8, 1996. The storm dumped 10 to 14 inches of snow and sleet on Northampton, Hertford and Gates counties.

February 5, 1996 – An arctic airmass settled over the Mid Atlantic states resulting in record breaking cold across northeast North Carolina. The temperature dropped to 5 below zero at Gatesville, 2 below zero at Murfreesboro, and 2 degrees at Elizabeth City Airport.

December 23, 1998 – A major ice storm affected portions of northeast North Carolina from Wednesday, December 23rd into Friday, December 25th. A prolonged period of freezing rain and sleet resulted in ice accumulations of one quarter inch to one half inch in some locations. The ice accumulations on trees and power lines caused power outages across portions of the region. Some accidents occurred due to slippery road conditions, especially bridges and overpasses.

January 25, 2000 – A winter storm affected northeast North Carolina with a mixture of snow, sleet, rain, and freezing rain. Precipitation began early in the morning as wind-blown rain. Rain then mixed with snow, sleet, and freezing rain during the afternoon hours, with general accumulations of 2 to 4 inches reported. Winds gusting over 40 mph created some blowing snow and power outages. Specific county accumulations were: 3 to 4 inches of snow across Hertford county, and around 4 inches in Gates county, Chowan county 3 to 4 inches, Perquimans county 2 inches, Pasquotank county 2 to 3 inches, and Camden county 2 to 3 inches. Very cold air built in behind the storm system and preserved the snowpack for several days.

December 3, 2000 – A winter storm struck parts of northeast North Carolina. The storm struck a relatively small area, but the locations that had snow received impressive totals. Some specific snow totals were: Aulander 15"; Woodland, Winton and Murfreesboro 13"; Rich Square and Como 12"; Gatesville 11"; Windsor and Conway 10"; Eure and Milwaukee 9"; Edenton, Ahoskie and Moyock 8"; South Mills and Sunbury 7"; Severn 6"; and Weeksville and Seaboard 5". Local law enforcement reported numerous traffic accidents, but no injuries were recorded.

April 10, 2016 – Cold Canadian high pressure settled over the region on the morning of April 10, resulting in a widespread, damaging freeze. This was the second freeze in less than one week during the growing season. The average duration was between 4 hours. Additional widespread damage to fruit trees and bushes, winter wheat, barley, and hay grass was noted.

January 3, 2018 – Snowfall totals ranged between three inches and eight inches across the county. Very strong north to northwest winds of 30 to 45 mph affected the area, producing blowing snow and poor visibilities. Elizabeth City (2 SE) reported 8.0 inches of snow. Morgans Corner reported 6.5 inches of snow. Belcross (1 SSW) reported 6.0 inches of snow. Camden and Indiantown reported 3.0 inches of snow.

The counties in the Albemarle Region have received three separate FEMA disaster declarations for impacts from winter storms since 1968. Table 4.86 lists all declarations that have impacted the counties in the region. As a state, North Carolina received eight disaster declarations related to severe winter storms during this timeframe.

Table 4.86 – Disaster Declarations in Albemarle Region due to Severe Winter Weather

Disaster Number	Date	Disaster Type	Incident Start	Incident End	Declared Counties
234	2/10/1968	Severe Ice Storm	2/10/1968	2/10/1968	Chowan, Hertford, Pasquotank, Perquimans
1087	1/13/1996	Snow	1/6/1996	1/12/1996	Camden, Chowan, Gates, Hertford, Pasquotank
1103	2/23/1996	Snow	2/2/1996	2/9/1996	Gates, Hertford

Source: FEMA Disaster Declarations, October 2024

PROBABILITY OF FUTURE OCCURRENCE

According to the NCEI records, the Albemarle Region experienced 61 separate severe winter weather-related incidents from 1996 through 2023. This averages to over two incidents per year somewhere in the Region. Based on this historical analysis, there is a 100% chance of experiencing a severe winter weather incident in an average year.

Probability: 4 – Highly Likely

CLIMATE CHANGE

According to the 2023 North Carolina Hazard Mitigation Plan, there is uncertainty associated with climate change impacts on future severe winter storms. Global temperature rise could cause shorter and warmer winters in many areas; however, the likelihood of dangerously low temperatures may increase due to continuing trends of temperature extremes. Warmer winters, however, mean that precipitation that would normally fall as snow may begin to fall as rain or freezing rain instead.

VULNERABILITY ASSESSMENT

PEOPLE

Winter storms are considered deceptive killers because most deaths are indirectly related to the storm event. The leading cause of death during winter storms is from automobile or other transportation accidents due to poor visibility and/or slippery roads. Additionally, exhaustion and heart attacks caused by overexertion may result from winter storms.

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

PROPERTY

According to reported data of storm impacts recorded by the NCEI, between 1996 and 2024 the Region didn't experience any recorded property or property damage related to the impacts of severe winter storm. Losses due to severe weather may not have been reported but should be expected during severe winter weather incidents.

Potential losses associated with winter storms include the cost of the removal of snow from roadways, debris cleanup, and indirect losses from power outages, lost productivity, and other factors. Additionally, severe ice is often associated with winter storms; and an icy roadway on a bridge or at a busy intersection, for example, threatens the safety of residents and visitors. Ice accumulation can also cause power outages and have a significant impact on public utilities.

ENVIRONMENT

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

CONSEQUENCE ANALYSIS

Table 4.87 summarizes the potential negative consequences of severe winter storm.

Table 4.87 – Consequence Analysis – Severe Winter Weather

Category	Consequences
Public	Localized impact expected to be severe for affected areas and moderate to light for other less affected areas.
Responders	Adverse impact expected to be severe for unprotected personnel and moderate to light for trained, equipped, and protected personnel.
Continuity of Operations (including Continued Delivery of Services)	Localized disruption of roads and/or utilities caused by incident may postpone delivery of some services.
Property, Facilities and Infrastructure	Localized impact to facilities and infrastructure in the areas of the incident. Power lines and roads most adversely affected.
Environment	Environmental damage to trees, bushes, etc.
Economic Condition of the Jurisdiction	Local economy and finances may be adversely affected, depending on damage.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response, and recovery not timely and effective.

HAZARD SUMMARY BY JURISDICTION

The following table summarizes severe winter weather risk, which does not vary substantially by jurisdiction because these events are typically regional in nature and there is not significant variation in local vulnerability to impacts.

Jurisdiction	Probability	Impact	Spatial Extent	Warning Time	Duration	Score	Priority
All jurisdictions	*4*	*2*	*4*	*1*	*3*	*3.0*	*H*

4.5.9 WILDFIRE

HAZARD BACKGROUND

Wildfire is defined as a highly destructive fire or any instance of uncontrolled burning in the environment. Wildfires have the ability to consume vast areas, including infrastructure, property, and natural resources. In cases where wildfires grow near populated areas, evacuations may be necessary. Beyond the direct impact on the environment, the significant volumes of smoke generated under certain atmospheric conditions can also pose health risks to nearby populations. The following three general types are as followed:

- **Ground fires**: these fires burn organic material in the soil beneath surface litter and are sustained by smoldering combustion.
- **Surface fires**: these are spread by a flaming front and burn leaf litter, fallen branches, and other ground-level fuels.
- **Crown fires**: ignite from the to layer of foliage on trees, known as the canopy. Crown fires are the most intense type of wildfire and are often the most challenging to contain. They require strong winds, steep slopes, and a heavy fuel load to sustain their burning.

Fuels to wildfires are subject to a variety of ignition sources, both natural and human-caused. Generally, wildfires are started by humans, either through arson or carelessness. Fire intensity is controlled by both short-term weather conditions and longer-term vegetation conditions. During intense fires, understory vegetation, such as leaves, small branches, and other organic materials that accumulate on the ground, can become additional fuel for the fire. The most explosive conditions occur when dry, gusty winds blow across dry vegetation. Historically, fire starts have been contained quickly with minimal loss to property and structures.

Weather plays a major role in the birth, growth and death of a wildfire. Weather conditions favorable to wildfire include drought, which increases flammability of surface fuels, and winds, which aid a wildfire's progress. The combination of wind, temperature, and humidity affects how fast wildland fires can spread. Rapid response can contain wildfires and limit their threat to property. In support of forecasting for fire weather, the NWS Fire Weather Program emerged. This service is provided to federal and state land management agencies for the prevention, suppression, and management of forest and rangeland fires. The NWS Wakefield, Virginia Forecast Office provides year-round fire weather forecasts for the Albemarle Region.

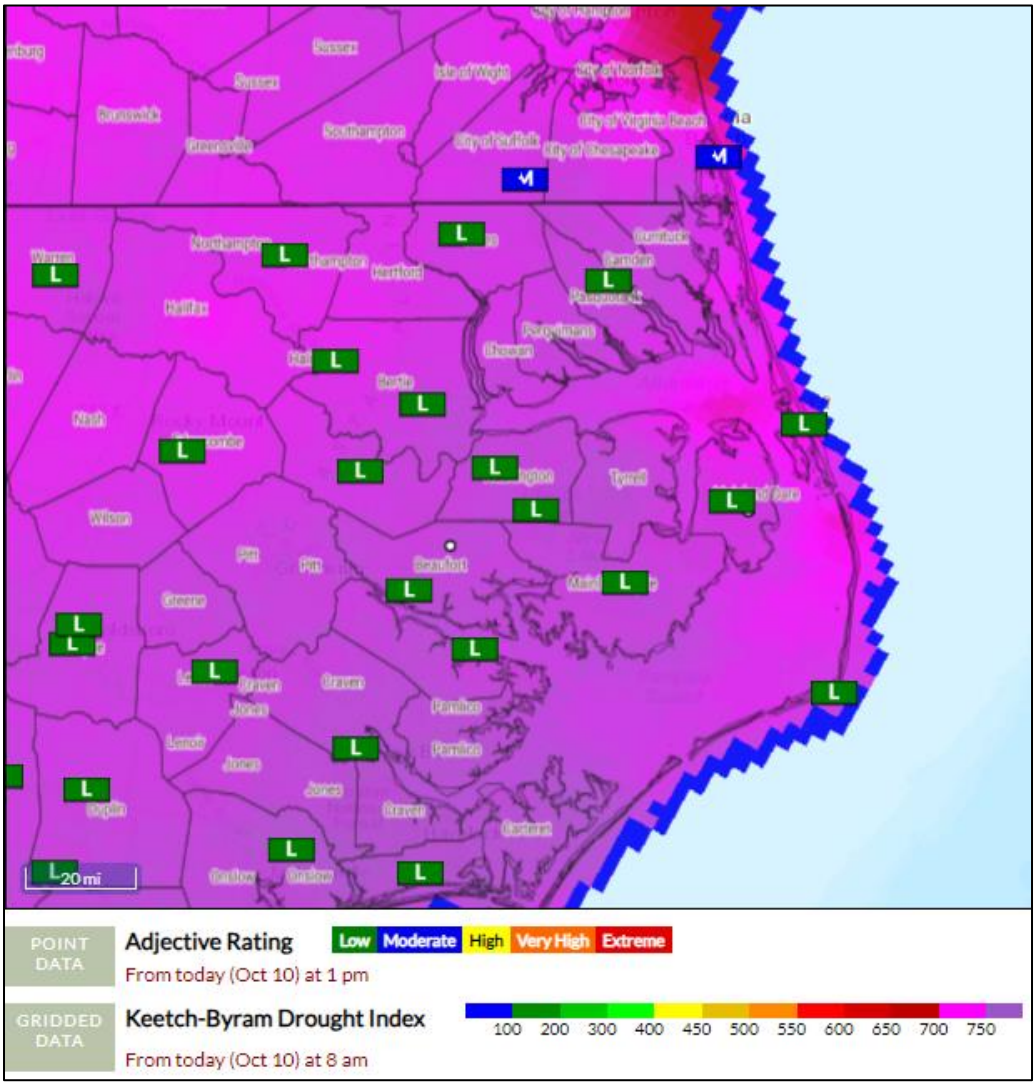
The Albemarle Region experiences a variety of wildfire conditions found in the Keetch-Byram Drought Index, which is described in Table 4.88. The Keetch-Byram Drought Index (KBDI) for October 10, 2024 is shown in Figure 4.50 along with a Daily Fire Danger Estimate Adjective Rating for certain points across the east coast of the state. The KBDI for across the Albemarle Region at this time was between 700 and 750, and the Fire Danger Estimate for the nearby area was "Low."

Table 4.88 – Keetch-Byram Drought Index Fire Danger Rating System

KBDI	Description
0-200	Soil and fuel moisture are high. Most fuels will not readily ignite or burn. However, with sufficient sunlight and wind, cured grasses and some light surface fuels will burn in sports and patches.
200-400	Fires more readily burn and will carry across an area with no gaps. Heavier fuels will still not readily ignite and burn. Also, expect smoldering and the resulting smoke to carry into and possibly through the night.

KBDI	Description
400-600	Fire intensity begins to significantly increase. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days creating possible smoke and control problems.
600-800	Fires will burn to mineral soil. Stumps will burn to the end of underground roots and spotting will be a major problem. Fires will burn through the night and heavier fuels will actively burn and contribute to fire intensity.

Figure 4.50 – Keetch-Byram Drought Index, October 2024



Source: USFS Wildland Fire Assessment System

Warning Time: 4 – Less than 6 hours

Duration: 3 – Less than 1 week

LOCATION

The location of wildfire risk can be defined by the acreage of Functional Wildland Urban Interface (WUI). The Functional WUI is described as the classification of the land near buildings into zones that describe the wildfire risk mitigation activities appropriate for each zone. Buildings used in producing the

Functional WUI are defined as greater than 40 square meters. There are five Functional WUI categories recognized.

- **Direct Exposure:** Burnable land cover within 75 m of a building. Buildings in this zone are exposed to ignition from convective and radiative heat from a wildfire, embers, and adjacent burning structures/outbuildings.
- **Indirect Exposure:** Nonburnable land cover within 75 m of a building and less than 1530 m from a 500-ha contiguous block of wildland fuel. Buildings in this zone are exposed to ignition from embers and/or adjacent burning structures
- **Critical Fireshed:** The burnable land cover from which a wildfire can reach a significant number of buildings within a single burning period.
- **Little-to-no Exposure:** Nonburnable land cover within 75 m of a building and more than 1530 m from a 500-ha contiguous block of wildland fuel. Buildings in this zone are relatively safe from ember ignition and building-to-building spread.
- **Sources of Ember Load to Buildings:** Burnable land cover more than 75 m from a building that produces embers capable of reaching nearby buildings. Ember production is a function of fire type and intensity; ember travel is a function of wind speed and direction. Ember modeling is based on fire modeling based on gridded historical climatology.

The Southern Wildfire Risk Assessment (SWRA) estimates that over 72 percent of the Albemarle Region's population lives within the critical fireshed and 4.3 percent live in direct exposure to the Functional WUI. The expansion of residential development from urban centers out into rural landscapes increases the potential for wildland fire threat to public safety and the potential for damage to forest resources and dependent industries. Population growth within the WUI substantially increases the risk of wildfire.

Spatial Extent: 3 – Moderate

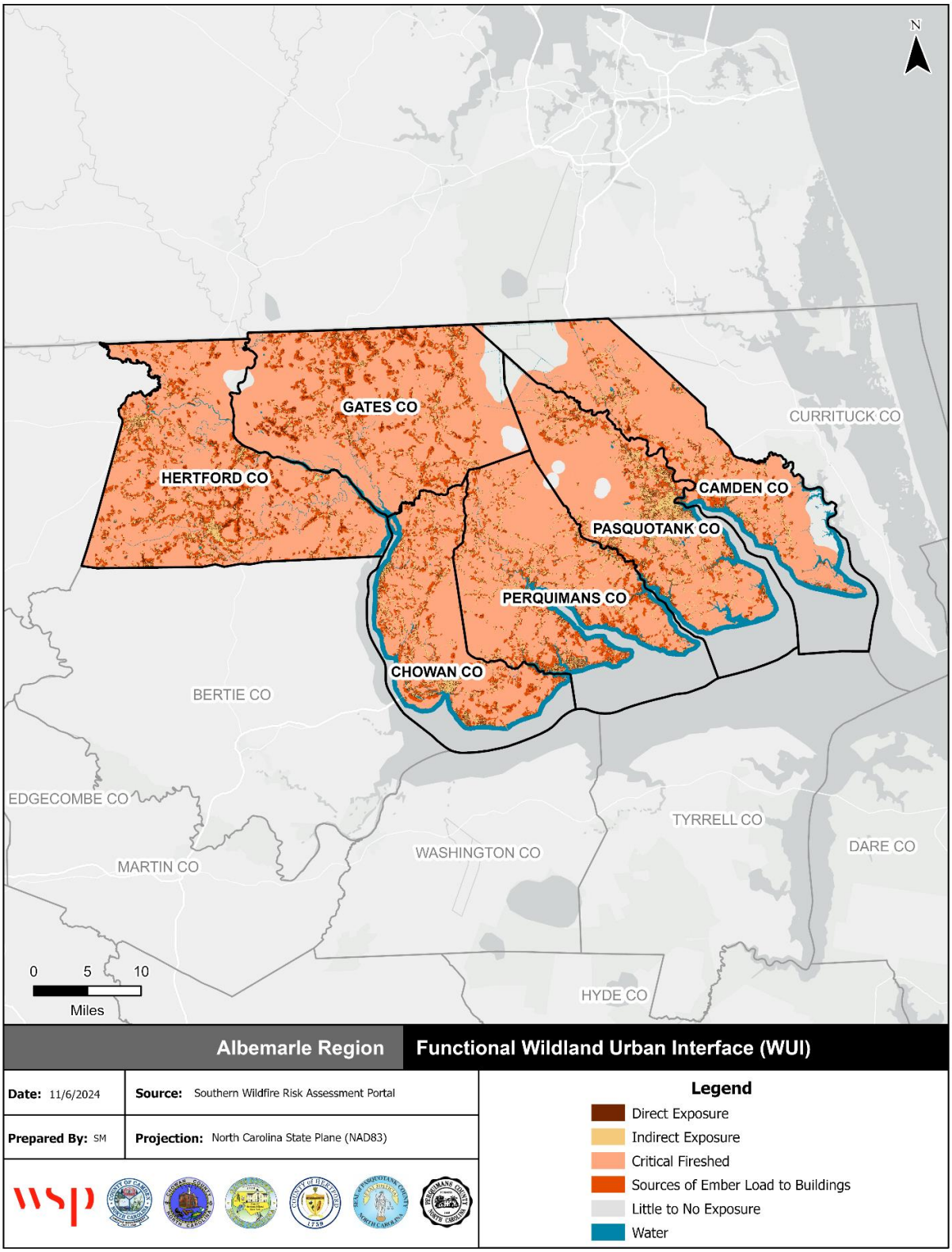
Table 4.89 details the extent of the Functional WUI in the Albemarle Region, and Figure 4.51 maps the Functional WUI.

Table 4.89 – Functional Wildland Urban Interface, Albemarle Region

	Functional Wildland Urban Interface (WUI) Category	Acres	Percent
	Direct Exposure	44,587	4.30%
	Indirect Exposure	61,093	5.90%
	Critical Fireshed	743,697	72.40%
	Sources of Ember Load to Buildings	115,995	11.30%
	Little to No Exposure	0	0.00%
	Water	62,320	6.10%
	Total	**1,027,692**	**100.00%**

Source: Southern Wildfire Risk Assessment

Figure 4.51 – Functional Wildland Urban Interface, Albemarle Region



Source: Southern Wildfire Risk Assessment

EXTENT

The extent of a wildfire can be quantified by assessing its intensity, which refers to the energy output or heat released by the fire as it burns. One of the most commonly used tools to measure wildfire intensity is the Characteristic Fire Intensity Scale (CFIS). This scale is instrumental in identifying areas where significant fuel hazards exit- those regions with a high potential to support dangerous and uncontrollable fires. The CFIS now only measures the current intensity of a wildfire but also helps to predict the potential for severe fires by analyzing the available fuel, topography, and weather conditions.

Fire intensity ratings provide critical information about the potential for extreme fire behavior by accounting for a range of factors that influence how a fire will behave. These factors include the type, amount, and arrangement of fuels (such as vegetation or trees), the slope and layout of the land (topography), and weather patterns, including wind speed, humidity, and temperature. The ratings are determined using a weighted average of four percentile weather categories, which represent different levels of fire weather conditions, from relatively mild to extreme. The Fire Intensity Scale consists of five classes, as defined by Southern Wildfire Risk Assessment and is shown in Table 4.90.

Table 4.91 and Figure 4.52 shows the potential fire intensity within the WUI across the Albemarle Region.

Table 4.90 – Fire Intensity Scale

Class	Description
1, Very Low	Very small, discontinuous flames, usually less than 1 foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and non-specialized equipment.
2, Low	Small flames, usually less than two feet long; small amount of very short range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.
3, Moderate	Flames up to 9 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.
4, High	Large Flames, up to 40 feet in length; short-range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property.
5, Very High	Flames exceeding 200 feet in length; expect extreme fire behavior.

Source: Southern Wildfire Risk Assessment

Table 4.91 – Characteristic Fire Intensity, Albemarle Region

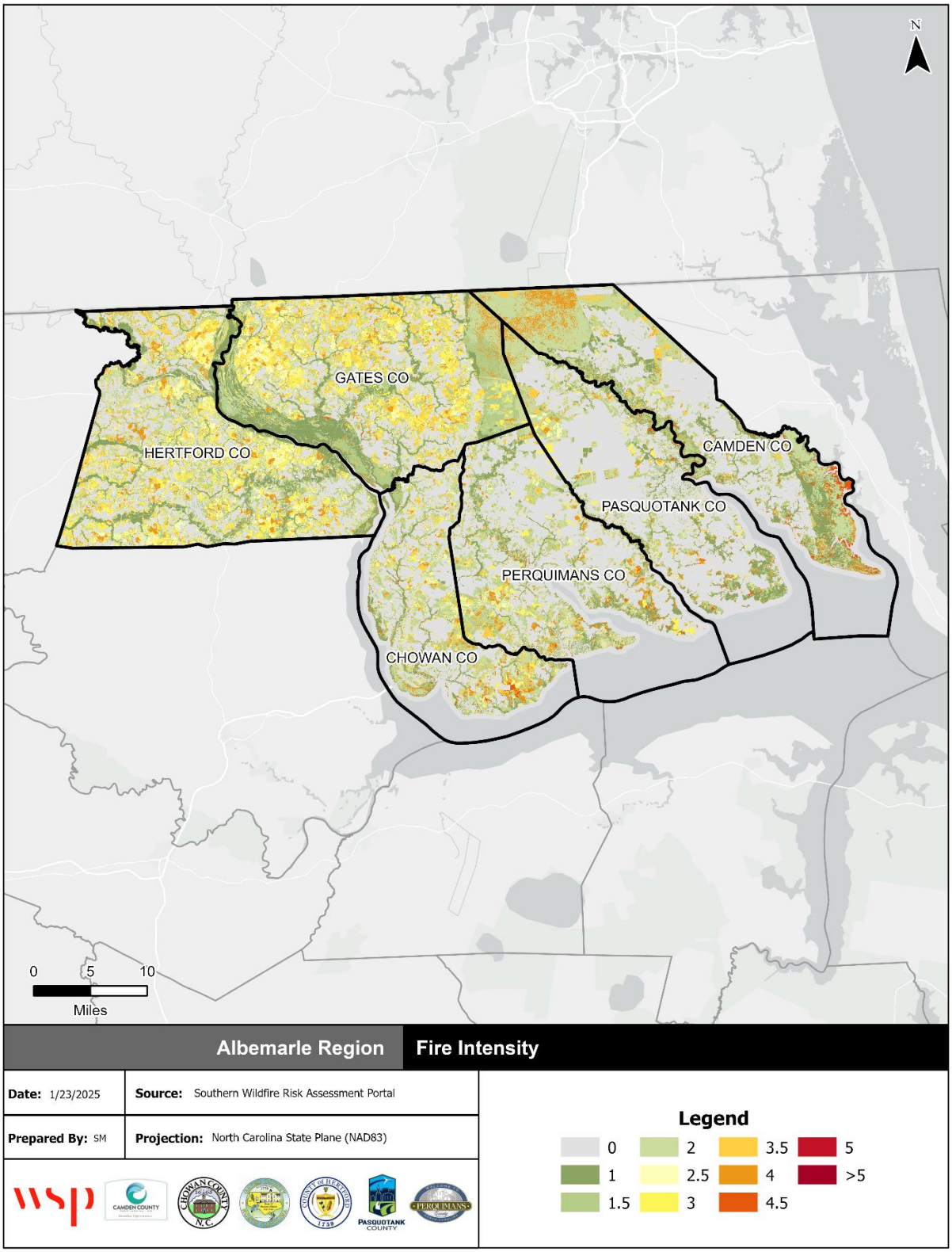
	Characteristic Fire Intensity Scale Category	Acres	Percent
	0	455,236	42.63%
	1	112,254	10.51%
	1.5	90,563	8.48%
	2	178,769	16.74%
	2.5	49,249	4.61%
	3	80,396	7.53%
	3.5	42,367	3.97%
	4	51,714	4.84%
	4.5	7,257	0.68%
	5	0	0.00%
	> 5	0	0.00%
	Total	**1,067,805**	**100.00%**

Source: Southern Wildfire Risk Assessment

A small portion, approximately 4.8 percent, of the Albemarle Region may experience up to a Class 4 Fire Intensity, which poses significant harm or damage to life and property. 7.5 percent of the Albemarle Region may experience Class 3 Fire Intensity, which has potential for harm to life and property but is easier to suppress with dozer and plows. The remainder of the region is either non-burnable (42%) or would face a Class 1 or Class 2 Fire Intensity (40%), which are easily suppressed.

Impact: 2 – Limited

Figure 4.52 – Fire Intensity, Albemarle Region



Source: Southern Wildfire Risk Assessment

HISTORICAL OCCURRENCES

The North Carolina Forest Service (NCFS) began keeping records of fire occurrence on private and state-owned lands in 1928. Since this time, there has been an average of approximately 4,063 fires burning more than 104,000 acres annually. Recently, within the last 10 years, the State has averaged closer to 4,300 fires per year and 14,000 acres burned annually.

Table 4.92 lists past occurrences of wildfire in the Albemarle Region since 1999 as provided by the North Carolina Forest Service (NCFS). This data only accounts for occurrences under the NCFS jurisdiction, as well as larger events in incorporated areas where local fire departments requested NCFS support for fire suppression. Actual number of fires and acreage burned may be higher than what can be reported here.

Based on NCFS records, over the 24-year period from 1999 through 2023, the Albemarle Region experienced 2,384 wildfire events that have burned 9,860 acres of land, or approximately 4.1 acres per fire on average. Total fire counts and acreage burned by county are reported in each county's jurisdictional annex.

Table 4.92 – Records for Wildfire in Albemarle Region, 1999-2023

Year	Wildfire Count	Acres Burned	Average Acreage Burned
1999	74	184.3	2.49
2000	73	294.0	4.03
2001	161	517.5	3.21
2002	83	444.1	5.35
2003	34	34.8	1.02
2004	89	484.2	5.44
2005	88	389.5	4.43
2006	122	204.6	1.68
2007	155	805.3	5.20
2008	158	4,089.0	25.88
2009	71	221.9	3.13
2010	94	223.8	2.38
2011	119	314.0	2.64
2012	64	149.5	2.34
2013	78	162.4	2.08
2014	66	121.5	1.84
2015	45	22.0	0.49
2016	78	48.64	0.62
2017	82	91.0	1.11
2018	78	35.6	0.46
2019	93	115.9	1.24
2020	68	56.2	0.82
2021	94	81.8	0.87
2022	138	239.5	1.73
2023	179	529.1	2.95
Total	**2,384**	**9,860.14**	**4.13**

Source: NC Forest Service

PROBABILITY OF FUTURE OCCURRENCE

The Southern Wildfire Risk Assessment provides a Burn Probability analysis which signifies the likelihood of a wildfire burning a specific location within a set time frame - commonly represented as the

chance of burning during one calendar year or wildfire season. According to the SWRA, Burn Probability can be expressed as a fraction (ex. 0.005) or odds (1-in-200) and is based on fire behavior modeling across thousands of simulations of possible fire seasons. In each simulation, factors contributing to the probability of a fire occurring, including weather and ignition likelihood are varied based on patterns derived from observations in recent decades. It is not predictive and does not reflect any currently forecasted weather or fire danger conditions. Burn Probability does not say anything about the intensity of a fire if it occurs. The Burn Probability for the Albemarle Region is presented in Table 4.93 and illustrated in Figure 4.53

Table 4.93 – Burn Probability, Albemarle Region

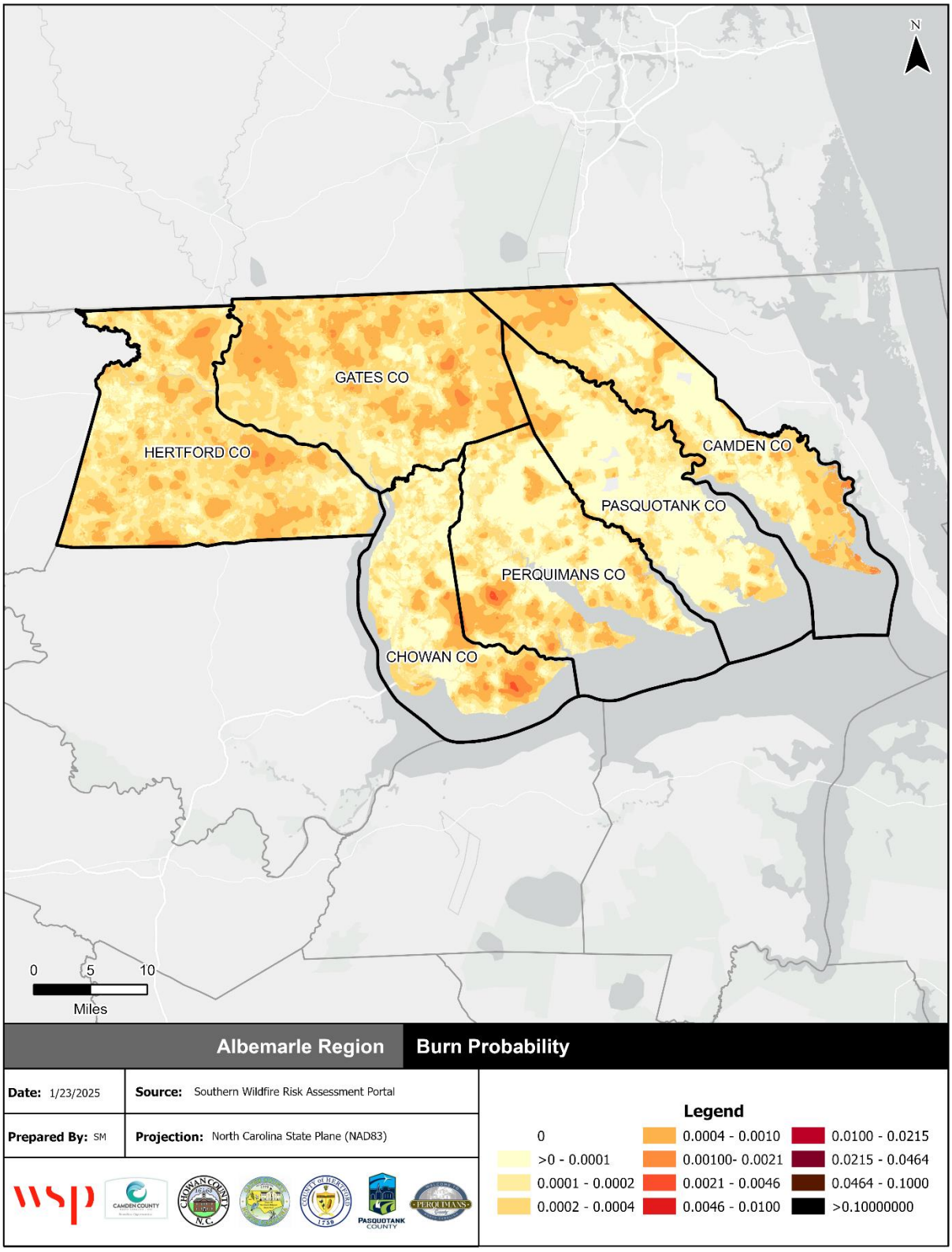
	Burn Probability Category	Acres	Percent
	0	64,276	6.00%
	>0 - 0.0001000	259,959	24.30%
	0.0001000 - 0.0002154	220,753	20.70%
	0.0002154 - 0.0004642	355,399	33.30%
	0.0004642 - 0.0010000	155,981	14.60%
	0.0010000 - 0.0021544	10,944	1.00%
	0.0021544 - 0.0046416	493	0.00%
	0.0046416 - 0.0100000	0	0.00%
	0.0100000 - 0.0215443	0	0.00%
	0.0215443 - 0.0464159	0	0.00%
	0.0464159 - 0.1000000	0	0.00%
	>0.10000000	0	0.00%
	Total	**1,067,805**	**100.00%**

Source: Southern Wildfire Risk Assessment

All of the Albemarle Region has a relatively low burn probability, with the highest probabilities reaching moderate burn probability. The areas of relatively higher burn probability are located primarily in northern Camden County, western Gates County, and southwestern Chowan and Perquimans Counties. The probability of wildfire across the region is considered possible, defined as between a 1% and 10% annual chance of occurrence. While all jurisdictions fall within this threshold, the communities containing moderate burn probability, noted above, have a comparatively higher probability of occurrence.

Probability: 2 – Possible

Figure 4.53 – Burn Probability, Albemarle Region



Source: Southern Wildfire Risk Assessment

CLIMATE CHANGE

Climate change is expected to have far-reaching effects on various environmental processes, including the frequency an intensity of extreme heat and drought events, both of which could profoundly influence wildfire behavior. As global temperatures rise, the likelihood of more frequent and prolonged periods of extreme heat increase, which can dry out vegetation, soil, and organic matter, making them more susceptible to ignition. Additionally, the intensification of drought conditions means that water availability for plants and ecosystems could become increasingly scarce, leading to a reduction in the moisture content of vegetation, soils, and decomposing organic material, all of which play a critical tole in wildfire dynamics. Moreover, the unpredictability of climate change means that both seasons could become more extreme in their respective ways, amplifying the impacts on wildfire behavior.

VULNERABILITY ASSESSMENT

METHODOLOGIES AND ASSUMPTIONS

Population and property at risk to wildfire was estimated using data from the NCEM IRISK database, which was compiled in NCEM's Risk Management Tool.

Within IRISK, wildfire hazard areas were determined using the Wildland Fire Susceptibility Index (WFSI). The following parameters were applied:

- Areas with a WFSI value of 0.01 – 0.05 were considered to be at moderate risk.
- Areas with a WFSI value greater than 0.05 were considered to be at high risk.
- Areas with a WFSI value less than 0.01 were considered to not be at risk.

The WFSI integrates the probability of an acre igniting and the expected final fire size based on the rate of spread in four weather percentile categories into a single measure of wildland fire susceptibility. Due to some necessary assumptions, mainly fuel homogeneity, it is not the true probability. But since all areas of the state have this value determined consistently, it allows for comparison and ordination of areas of the state as to the likelihood of an acre burning.

Critical facility vulnerability was estimated using SWRA Functional WUI data.

PEOPLE

Wildfire can cause fatalities and potentially cascade into health issues among the population. Ensuring procedures are in place for rapid warning and evacuation are essential to reducing vulnerability. Table 4.94 shows the potential regional population impacted by wildfire in identified risk zones.

Table 4.94 – Potential Population Impacted by Wildfire

County	Total Population	Population at Risk		All Elderly Population	Elderly Population at Risk		All Child Population	Child Population at Risk	
		Number	Percent		Number	Percent		Number	Percent
Camden	10,647	5,979	56%	1,882	1,057	56%	554	311	56%
Chowan	14,142	8,852	63%	3519	2190	62%	764	450	59%
Gates	10,643	8,936	84%	2228	1870	84%	389	327	84%
Hertford	21,665	9,962	46%	4370	2022	46%	938	434	46%
Pasquotank	41,991	20,443	49%	7092	3553	50%	2687	1281	48%
Perquimans	13,328	8,685	65%	3709	2421	65%	594	384	65%
Total	112,416	62,857	56%	22800	13113	58%	5926	3187	54%

Source: NCEM Risk Management Tool

PROPERTY

Wildfire can result in direct property damage, encompassing harm to buildings, vehicles, landscaped areas, agricultural lands, and livestock. Employing construction methods and adhering to building codes an enhance the fire resistance and safety of structures. Strategies aimed at mitigating vulnerability to wildfires involve incorporating street design for improved fire truck access, integrating fire-resistant materials in construction, and adopting landscaping techniques to minimize flammability and limit the spread of fire.

Regarding structure vulnerability and wildfire-resistant construction techniques, a report from Headwaters Economics outlines key components of structure vulnerabilities and indicates that a new home can be built to wildfire-resistant construction standards for roughly the same cost as a typical home. The roof is the most vulnerable area of a home because of its large surface area. Embers can ignite vegetative debris that has accumulated on the roof surface or in gutters. Embers also can enter the attic through roof and under-eave vents. Exterior walls are vulnerable from exposure to flames or prolonged exposure to radiant heat, such as from burning vegetation or a neighboring home, which can ignite combustible siding. Decks and near-home landscaping are also vulnerable to embers and burning vegetation and can expose the rest of a structure if ignited.

Per Headwaters Economics, wildfire-resistant modifications to roofing, vents, fascia, soffits, and gutters add approximately 27% to the cost of the typical roof. Wildfire-resistant fiber-cement siding as compared to cedar plank siding is about 25% less expensive. Mitigation techniques to make a deck wildfire-resistant include using wildfire-resistant materials for walking surface, using foil-faced bitumen tape on the top surface of the support joists, and creating a noncombustible zone underneath the deck.

The sectors facing the greatest risk to wildfire in the Albemarle Region are banking and finance, critical manufacturing, commercial facilities, energy, government facilities, water and transportation systems. Table 4.96 shows potential buildings impacted by wildfire across the region according to the IRISK methodology. Table 4.95 provides a count of critical facility exposure by Functional WUI category.

Table 4.95 – Critical Facilities at Risk to Wildfire

FEMA Lifeline	Direct Exposure	Indirect Exposure	Critical Fireshed
Communications	0	3	0
Food, Hydration, Shelter	111	391	7
Health and Medical	2	10	1
Safety and Security	5	46	0
Transportation	0	1	1
Water Systems	12	28	7
Total	**130**	**479**	**16**

Source: Southern Wildfire Risk Assessment, GIS analysis

Table 4.96 – Potential Buildings Impacted by Wildfire

County	All Buildings	Residential Buildings at Risk			Commercial Buildings at Risk			Public Buildings at Risk			Total Buildings at Risk		
	Num	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages	Num	% of Total	Estimated Damages
Camden	5,675	2,686	47%	$373,587,648	321	6%	$26,237,875	90	2%	$58,791,437	3,097	55%	$458,616,959
Chowan	6,944	4,008	58%	$471,267,312	777	11%	$124,494,845	59	1%	$65,941,549	4,844	70%	$661,703,706
Edenton	3,110	1,086	35%	$191,080,290	167	5%	$119,479,553	34	1%	$48,883,627	1,287	41%	$359,443,469
Gates	6,637	3,914	59%	$561,613,333	1,447	22%	$198,362,259	135	2%	$171,777,918	5,496	83%	$931,753,510
Gatesville	204	115	56%	$19,669,858	38	19%	$13,044,218	24	12%	$26,062,140	177	87%	$58,776,216
Hertford	8,307	2,854	34%	$224,766,830	471	6%	$137,702,146	69	1%	$53,133,384	3,394	41%	$415,602,361
Ahoskie	2,744	1,802	66%	$202,385,288	154	6%	$140,521,852	58	2%	$39,175,043	2,014	73%	$382,082,183
Como	91	0	0%	$0	0	0%	$0	0	0%	$0	0	0%	$0
Harrellsville	100	0	0%	$0	0	0%	$0	0	0%	$0	0	0%	$0
Murfreesboro	2,275	838	37%	$70,071,903	32	1%	$12,103,756	33	1%	$50,396,187	903	40%	$132,571,846
Winton	479	246	51%	$20,979,061	21	4%	$38,704,006	21	4%	$16,175,586	288	60%	$75,858,654
Cofield	287	217	76%	$13,957,621	30	10%	$12,703,079	3	1%	$618,804	250	87%	$27,279,504
Pasquotank	10,739	5,504	51%	$739,060,736	542	5%	$163,491,570	72	1%	$59,723,842	6,118	57%	$962,276,148
Elizabeth City	8,843	2,394	27%	$369,135,252	245	3%	$134,388,646	62	1%	$132,220,481	2,701	31%	$635,744,378
Perquimans	6,399	4,016	63%	$643,988,512	161	3%	$96,025,885	95	1%	$127,236,018	4,272	67%	$867,250,414
Hertford	1,246	239	19%	$45,213,561	46	4%	$26,371,307	24	2%	$24,989,982	309	25%	$96,574,850
Winfall	428	246	57%	$35,036,148	15	4%	$8,268,260	10	2%	$13,467,793	271	63%	$56,772,200
Total	**64,508**	**30,165**	**46%**	**$3,981,813,353**	**4,467**	**6%**	**$1,251,899,257**	**789**	**1%**	**$888,593,791**	**35,421**	**54%**	**$6,122,306,398**

Source: NCEM Risk Management Tool

ENVIRONMENT

Wildfires have the potential to destroy forest and forage resources and damage natural habitats. Wildfires can also result in the contamination of drinking water sources, both surface level and in-wells, as well as damaging agricultural crops on private land. Wildfires are part of a natural process and the environment will return to its original state in time.

CONSEQUENCE ANALYSIS

Table 4.97 summarizes the potential detrimental consequences of wildfire.

Table 4.97 – Consequence Analysis - Wildfire

Category	Consequences
Public	In addition to the potential for fatalities, the subsequent decline in air quality from wildfires, present health hazards among the region. Community exposure to wildfire smoke can lead to severe health complications. Particularly vulnerable groups comprise children the elderly, individual with respiratory issues, or those with heart disease. Even individuals in good health may encounter minor symptoms like sore throats and itchy eyes.
Responders	Ensuring public and firefighter safety remain the foremost concern in all wildland fire management endeavors. Wildfires pose genuine threats to the well-being and safety of emergency responders. In rural regions many firefighters are “retained”, signifying their part-time status and their readiness to be called away from their regular occupations to respond to fires.
Continuity of Operations (including Continued Delivery of Services)	Wildfire incidents can lead to power outages that may disrupt operations. Fallen trees, damaged power lines, and impaired road conditions can hinder access to vital facilities and emergency equipment.
Property, Facilities and Infrastructure	Wildfires can have significant repercussions on community infrastructure, ranging from structural harm or compete destruction to endangering individuals within these facilities, disrupting transportation, shipping, and evacuation operations, and halting facility operations and essential services. Restoring basic services is critical and is costly. Direct impacts to municipal water supply may occur through contamination of ash and debris during the fire, destruction of aboveground distribution lines, and soil erosion or debris deposits into waterways after the fire. Utilities and communications repairs are also necessary for equipment damaged by a fire. This includes power lines, transformers, cell phone towers, and phone lines.
Environment	Wildfires inflict harm on the natural environment by destroying vegetation and animal habitats. Subsequently, the risk of floods and debris flows escalates as wildfires expose bare ground and eliminate vegetation cover. Moreover, the secondary repercussions of wildfires, such as erosion, landslides, the introduction of invasive species, and alterations in water quality, frequently surpass the initial damage cause by fire itself.

Category	Consequences
Economic Condition of the Jurisdiction	Wildfires can have significant short-term and long-term effects on the local economy. This hazard can potentially diminish recreation and tourism in areas affected by the extreme fire danger. Extensive damage to trees can significantly disrupt the timber supply, resulting in a short-term surplus due to timber salvage operations and a longer-term decrease as the trees regenerate. However, wildfires can have positive effects on local economies. Economic activity generated during fire suppression and post-fire rebuilding efforts can contribute positively to the community. This may include forestry work, such as constructing fire lines and other defense, as well as providing firefighting teams with essential supplied like food, ice, temporary shelters, and laundry facilities.
Public Confidence in the Jurisdiction's Governance	Wildfire incidents can undermine public confidence due to their highly visible impact son the community.

HAZARD SUMMARY BY JURISDICTION

The following table summarizes wildfire hazard risk by jurisdiction. Wildfire warning time and duration do not vary by jurisdiction. Spatial extent ratings were based on the proportion of area within the WUI. Impact ratings were based on damage potential data from SWRA. Jurisdictions with significant clusters of moderate to high damage potential were assigned an impact rating of 3; all others were assigned a rating of 2. Probability ratings were determined based on burn probability data from SWRA. Jurisdictions with clusters of moderate burn probability were assigned a rating of 3; all others were assigned a probability of 2.

Jurisdiction	Probability	Impact	Spatial Extent	Warning Time	Duration	Score	Priority
Camden County	3	3	3	4	3	3.1	H
Chowan County	3	3	3	4	3	3.1	H
Edenton	2	2	3	4	3	2.5	M
Gates County	3	2	3	4	3	2.8	M
Gatesville	2	2	3	4	3	2.5	M
Hertford County	3	2	3	4	3	2.8	M
Ahoskie	2	2	3	4	3	2.5	M
Como	3	3	3	4	3	3.1	H
Harrellsville	2	2	3	4	3	2.5	M
Murfreesboro	2	2	3	4	3	2.5	M
Winton	2	2	3	4	3	2.5	M
Cofield	3	3	3	4	3	3.1	H
Pasquotank County	2	3	3	4	3	2.5	M
Elizabeth City	2	2	3	4	3	2.5	M
Perquimans County	3	2	3	4	3	2.8	M
Hertford	2	2	3	4	3	2.5	M
Winfall	2	2	3	4	3	2.5	M

4.5.10 RADIOLOGICAL INCIDENT

HAZARD BACKGROUND

A radiological incident is an occurrence resulting in the release of radiological material at a fixed facility (such as power plants, hospitals, laboratories, etc.) or in transit.

Radiological incidents related to transportation are described as an incident resulting in a release of radioactive material during transportation. Transportation of radioactive materials through North Carolina over the interstate highway system is considered a radiological hazard. The transportation of radioactive material by any means of transport is licensed and regulated by the federal government. As a rule, there are two categories of radioactive materials that are shipped over the interstate highways:

- Low level waste consists of primarily of materials that have been contaminated by low level radioactive substances but pose no serious threat except through long-term exposure. These materials are shipped in sealed drums within placarded trailers. The danger to the public is no more than a wide array of other hazardous materials.
- High level waste, usually in the form of spent fuel from nuclear power plants, is transported in specially constructed casks that are built to withstand a direct hit from a locomotive.

Radiological emergencies at nuclear power plants are divided into classifications. Table 4.98 shows these classifications, as well as descriptions of each.

Table 4.98 – Radiological Emergency Classifications

Emergency Classification	Description
Notification of Unusual Event (NOUE)	Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.
Alert	Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) Protective Action Guides (PAGs).
Site Area Emergency (SAE)	Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public. Any radiological releases not expected to exceed EPA PAG exposure levels except the site boundary.
General Emergency	Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Radiological releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.

Warning Time: 4 – Less than six hours

Duration: 4 – More than one week

LOCATION

The Nuclear Regulatory Commission defines two emergency planning zones around nuclear plants:

- **Emergency Planning Zone (EPZ)** – The EPZ is a 10-mile radius around nuclear facilities. It is also known as the Plume Exposure Pathway. Areas located within this zone are considered to be at highest

risk of exposure to radioactive materials. Within this zone, the primary concern is exposure to and inhalation of radioactive particles. Predetermined action plans within the EPZ are designed to avoid or reduce dose from such exposure. Residents within this zone would be expected to evacuate in the event of an emergency. Other actions such as sheltering, evacuation, and the use of potassium-iodide must be taken to avoid or reduce exposure in the event of a nuclear incident.

— **Ingestion Pathway Zone (IPZ)** – The IPZ is delineated by a 50-mile radius around nuclear facilities as defined by the federal government. Also known as the Ingestion Exposure Pathway, the IPZ has been designated to mitigate contamination in the human food chain resulting from a radiological accident at a nuclear power facility. Contamination to fresh produce, water supplies, and other food products may occur when radionuclides are deposited on surfaces.

The Surry Power Station is located in Surry, Virginia, about 17 miles away from Newport News. Its license of operation was issued in 1972 and is currently operating under a renewed license until 2032. The plant generates enough power for 420,000 homes. It is operated by Dominion Generation and owned by Dominion Resource, Inc. Camden, Gates, Hertford and Pasquotank counties are all located within the 50-mile radius EPZ for this plant and could see impacts if there was a failure at the plant. Figure 4.54 shows nuclear power plants located in or impacting portions of the state, as well as their ingestion pathways. Figure 4.55 shows the location of Surry Power Station and the area that falls within the EPZ and IPZ of the plant.

Spatial Extent: 3 – Moderate

Figure 4.54 – Nuclear Power Plants in North Carolina

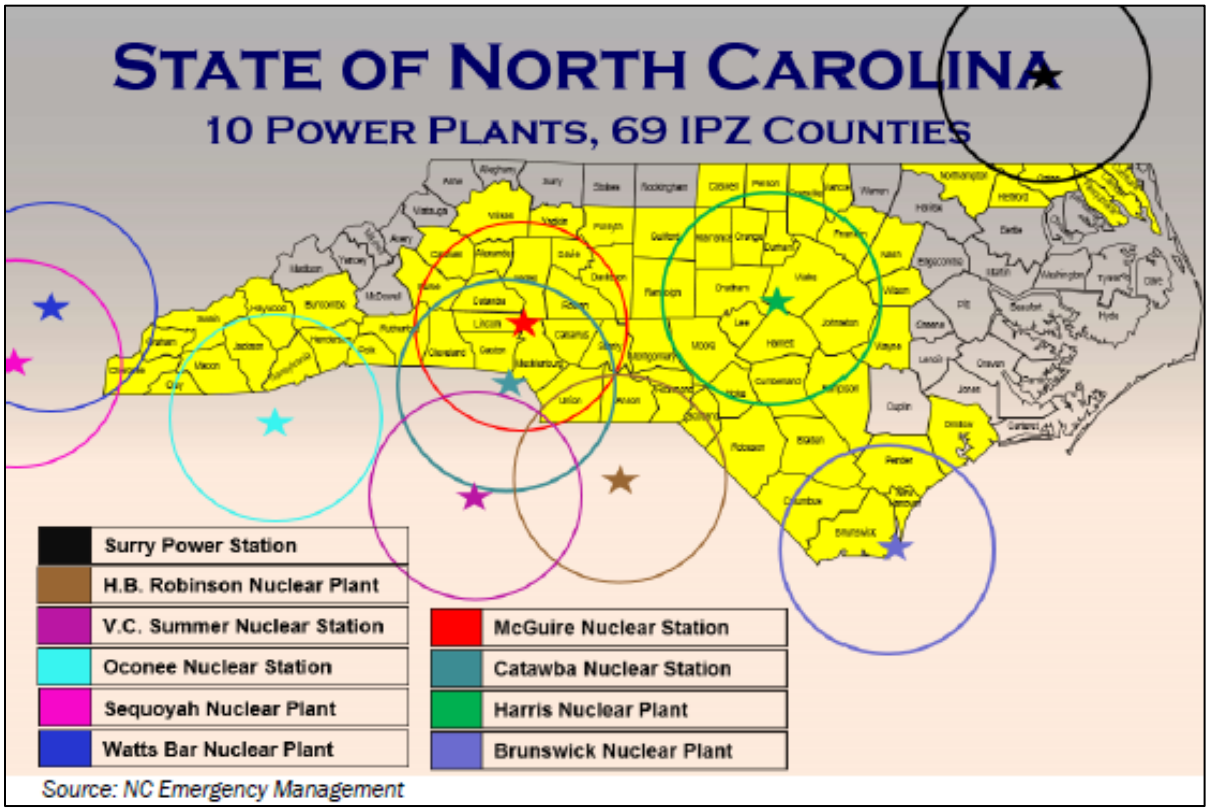
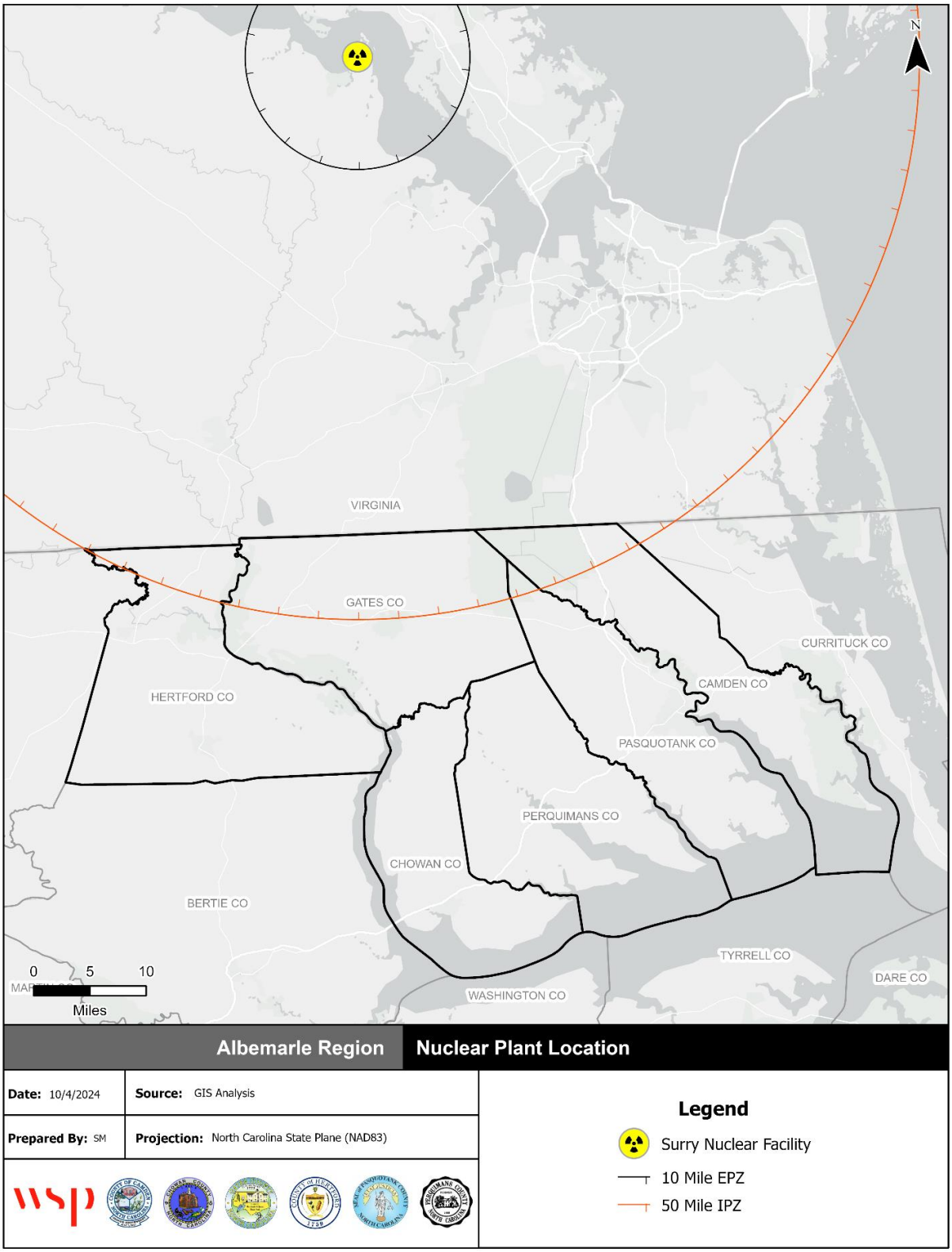


Figure 4.55 – Surry Power Station EPZ and IPZ Range

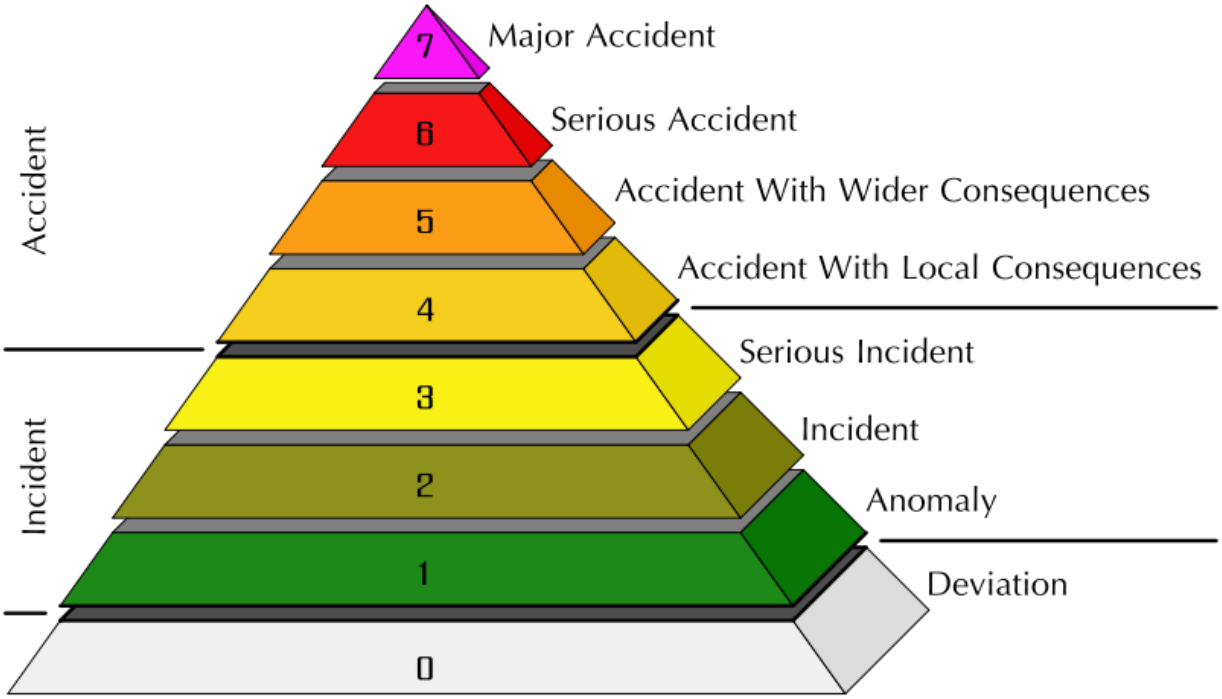


Source: GIS analysis

EXTENT

The International Atomic Energy Association (IAEA) developed the International Nuclear and Radiological Event Scale to quantify the magnitude of radiological events. This scale is logarithmic, meaning each increasing level represents a 10-fold increase in severity compared to the previous level.

Figure 4.56 – International Nuclear and Radiological Event Scale



Source: International Atomic Energy Association

Impact: 3 – Critical

HISTORICAL OCCURRENCES

As reported in the 2018 State Hazard Mitigation Plan, there have been no major release events in North Carolina nuclear facilities; there was one situation in 2008 where the nuclear material was being monitored for criticality that occurred within the fuel rod fabrication facility.

On August 23rd, 2011, an Earthquake occurred in central Virginia. Dominion Energy's North Anna reactors automatically shut down. The earthquake was felt at the Surry Power Station, but not as strongly. Dominion Energy declared a Notification of Unusual Event but exited it later the same day. The station was built to seismic standards appropriate for the region.

PROBABILITY OF FUTURE OCCURRENCE

Radiological hazards are highly unpredictable. Nuclear reactors present the possibility of catastrophic damages, yet the industry is highly regulated, and historical precedence suggests an incident is unlikely.

Probability: 1 – Unlikely

CLIMATE CHANGE

An increase in severe weather which include flooding and high wind events could cause damage to a nuclear facility and spread contamination within a nuclear site. Sever droughts could threated the water supply needed to maintain cooling capacity. Continuous monitoring is critically important at radiological facilities in North Carolina.

VULNERABILITY ASSESSMENT

PEOPLE

People within the 50-mile IPZ are at risk of exposure through ingestion of contaminated food and water. Camden, Gates, Hertford and Pasquotank counties are all located within a 50-mile radius, or within the IPZ of Surry Power Station.

Low levels of radiation are not considered harmful, but a high exposure to radiation can cause serious illness or death.

PROPERTY

A radiological incident could cause severe damage to the power station itself but would not cause direct property damage outside the station. However, property values could drop substantially if a radiological incident resulted in contamination of nearby areas.

ENVIRONMENT

A radiological incident could result in the spread of radioactive material into the environment, which could contaminate water and food sources and harm animal and plant life.

CONSEQUENCE ANALYSIS

Table 4.99 summarizes the potential detrimental consequences of radiological incident.

Table 4.99 – Consequence Analysis – Radiological Incident

Category	Consequences
Public	High levels of radiation could cause serious illness or death. Those living and working closest to the nuclear station would face the greatest risk of exposure.
Responders	Responders face potential for heightened exposure to radiation, which could cause severe chronic illness and death.
Continuity of Operations (including Continued Delivery of Services)	An incident at the nuclear station could interrupt power generation and cause power shortages. Regular operations would likely be affected by the response effort an event would require.
Property, Facilities and Infrastructure	The plant itself could be damaged by a radiological incident. Nearby property and facilities could be affected by contamination.
Environment	Water supplies, food crops, and livestock within 50 miles of the nuclear station could be contaminated by radioactive material in the event of a major incident.
Economic Condition of the Jurisdiction	The local economy could be affected if a radiological incident caused contamination of nearby areas. Property values and economic activity could decline as a result.
Public Confidence in the Jurisdiction's Governance	A radiological incident would likely cause severe loss of public confidence given that the hazard is human-caused and highly regulated.

4.5.11 INFECTIOUS DISEASE

Public health emergencies can take many forms—disease epidemics, large-scale incidents of food or water contamination, or extended periods without adequate water and sewer services. There can also be harmful exposure to chemical, radiological, or biological agents, and largescale infestations of disease-carrying insects or rodents. The first part of this section focuses on emerging public health concerns and potential pandemics, while the second part addresses natural and human-caused air and water pollution.

Public health emergencies can occur as primary events by themselves, or they may be secondary to another disaster or emergency, such as tornado, flood, or hazardous material incident. For more information on those particular incidents, see 4.5.7 (Tornadoes & Thunderstorms), 4.5.5 (Flooding), and 4.5.12 (Hazardous Substances). The common characteristic of most public health emergencies is that they adversely impact, or have the potential to adversely impact, a large number of people. Public health emergencies can be worldwide or localized in scope and magnitude.

The primary communicable, or infectious, disease addressed within this plan is influenza:

Influenza - Whether natural or manmade, health officials say the threat of a dangerous new strain of influenza (flu) virus in pandemic proportions is a very real possibility in the years ahead. Unlike most illnesses, the flu is especially dangerous because it is spread through the air. A classic definition of influenza is a respiratory infection with fever. Each year, flu infects humans and spreads around the globe. There are three types of influenza virus: Types A, B, and C. Type A is the most common, most severe, and the primary cause of flu epidemics. Type B cases occur sporadically and sometimes as regional or widespread epidemics. Type C cases are quite rare and hence sporadic, but localized outbreaks have occurred. Seasonal influenza usually is treatable, and the mortality rate remains low. Each year, scientists estimate which particular strain of flu is likely to spread, and they create a vaccine to combat it. A flu pandemic occurs when the virus suddenly changes or mutates and undergoes an ―antigenic shift, permitting it to attach to a person's respiratory system and leave the body's immune system defenseless against the invader.

Additional diseases of public health concern include tuberculosis, Smallpox, St. Louis Encephalitis, Meningitis, Lyme disease, West Nile, SARS, Zika, and Ebola. These communicable diseases are introduced within this plan, but full vulnerability analyses are not included at this time.

Tuberculosis - Tuberculosis, or TB, is the leading cause of infectious disease worldwide. It is caused by a bacteria called Mycobacterium tuberculosis that most often affects the lungs. TB is an airborne disease spread by coughing or sneezing from one person to another. The World Health Organization (WHO) estimates that one-third of the world's population, approximately two billion people, has latent TB, which means people have been infected by TB bacteria but are not yet ill with the disease and cannot transmit the disease. In 2022, an estimated 10.6 million people fell ill with TB and 1.3 million died from the disease (including 167,000 people with HIV). Over 80% of TB deaths occur in low- and middle- income countries.

Smallpox - Smallpox is a contagious, sometimes fatal, infectious disease. There is no specific treatment for smallpox disease, and the only prevention is vaccination. Smallpox is caused by the variola virus that emerged in human populations thousands of years ago. It is generally spread by face- to-face contact or by direct contact with infected bodily fluids or contaminated objects (such as bedding or clothing). A person with smallpox is sometimes contagious with onset of fever, but the person becomes most contagious with the onset of rash. The rash typically develops into sores that spread over all parts of the body. The infected person remains contagious until the last smallpox scab is gone. Smallpox outbreaks have occurred periodically for thousands of years, but the disease is now largely eradicated after a worldwide vaccination program was implemented. After the disease was eliminated, routine vaccination among the general public was stopped. The last case of smallpox in the United States was in 1949.

St. Louis Encephalitis - In the United States, the leading type of epidemic flaviviral Encephalitis is St. Louis encephalitis (SLE), which is transmitted by mosquitoes that become infected by feeding on birds infected with the virus. SLE is the most common mosquito-transmitted pathogen in the United States. There is no evidence to suggest that the virus can be spread from person to person.

Meningitis- Meningitis is an infection of fluid that surrounds a person's spinal cord and brain. High fever, headache, and stiff neck are common symptoms of meningitis, which can develop between several hours to one to two days after exposure. Meningitis can be caused by either a viral or bacterial infection; however, a correct diagnosis is critically important, because treatments for the two varieties differ. Meningitis is transmitted through direct contact with respiratory secretions from an infected carrier. Primary risk groups include infants and young children, household contact with patients, and refugees. In the United States, periodic outbreaks continue to occur, particularly among adolescents and young adults. About 2,600 people in the United States get the disease each year. Generally, 10 to 14 percent of cases are fatal, and 11 to 19 percent of those who recover suffer from permanent hearing loss, mental retardation, loss of limbs, or other serious effects. Two vaccines are available in the United States.

Lyme Disease - Lyme disease was named after the town of Lyme, Connecticut, where an unusually large frequency of arthritis-like symptoms was observed in children in 1977. It was later found that the problem was caused by bacteria transmitted to humans by infected deer ticks, causing an average of more than 16,000 reported infections in the United States each year (however, the disease is greatly under-reported). Lyme disease bacteria are not transmitted from person to person. Following a tick bite, 80 percent of patients develop a red ―bullseye rash accompanied by tiredness, fever, headache, stiff neck, muscle aches, and joint pain. If untreated, some patients may develop arthritis, neurological abnormalities, and cardiac problems, weeks to months later. Lyme disease is rarely fatal. During early stages of the disease, oral antibiotic treatment is generally effective, while intravenous treatment may be required in more severe cases.

West Nile Virus - West Nile virus is a flavivirus spread by infected mosquitoes and is commonly found in Africa, West Asia, and the Middle East. It was first documented in the United States in 1999. Although it is not known where the U.S. virus originated, it most closely resembles strains found in the Middle East. It is closely related to St. Louis encephalitis and can infect humans, birds, mosquitoes, horses, and other mammals.

Most people who become infected with West Nile virus will have either no symptoms or only mild effects. However, on rare occasions, the infection can result in severe and sometimes fatal illness. There is no evidence to suggest that the virus can be spread from person to person.

An abundance of dead birds in an area may indicate that West Nile virus is circulating between the birds and mosquitoes in that area. Although birds are particularly susceptible to the virus, most infected birds survive. The continued expansion of West Nile virus in the United States indicates that it is permanently established in the Western Hemisphere.

Coronaviruses – Coronaviruses are a large family of viruses found in both animals and humans and are known to cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS), Severe Acute Respiratory Syndrome (SARS), and Novel Coronavirus (COVID- 19). Coronaviruses can cause respiratory infections and can lead to serious illnesses, like pneumonia, and can be deadly. Typical coronavirus symptoms include fever, cough, headache, runny nose, and sore throat. MERS was first reported in 2012 in Saudi Arabia and spread to more than 25 countries. It produced symptoms that often progressed to pneumonia and 30-40 percent of cases were fatal. SARS emerged in 2002 and spread to more than two dozen countries. It caused acute respiratory distress and had a mortality rate of about 10 percent.

The most significant recent coronavirus, COVID-19, first emerged in Wuhan, China in 2019 and rapidly spread across the world. According to CDC data, as of February 2022, there had been over 78.5 million

cases of COVID-19 reported in the United States. COVID-19 spreads when an infected person breathes out droplets and very small particles that contain the virus. These droplets and particles can be breathed in by other people or land on their eyes, noses, or mouth. Symptoms include fever, cough, shortness of breath, fatigue, loss of taste and smell, and more. Symptoms range from mild to severe illness and typically appear between 2-14 days after exposure to the virus.

Severe Acute Respiratory Syndrome - Severe acute respiratory syndrome (SARS) is a respiratory illness that has recently been reported in Asia, North America, and Europe. Although the cause of SARS is currently unknown, scientists have detected in SARS patients a previously unrecognized coronavirus that appears to be a likely source of the illness. In general, humans infected with SARS exhibit fevers greater than 100.4 F, headaches, an overall feeling of discomfort, and body aches. Some people also experience mild respiratory symptoms. After two to seven days, SARS patients may develop a dry cough and have trouble breathing. The primary way that SARS appears to spread is by close person-to-person contact; particularly by an infected person coughing or sneezing contaminated droplets onto another person, with a transfer of those droplets to the victim's eyes, nose, or mouth.

Zika Virus - Discovered in the Zika forest of Uganda in 1947, the Zika virus is a member of the flavivirus family. It is transmitted to humans through the bite of an infected Aedes species mosquito (Ae. aegypti and Ae. albopictus). Zika virus can also be transmitted from an infected pregnant woman to her baby during pregnancy and can result in serious birth defects, including microcephaly. Less commonly, the virus can be spread through intercourse or blood transfusion. However, most people infected with the Zika virus do not become sick.

Ebola - Previously known as Ebola hemorrhagic fever, is a rare and deadly disease caused by infection with one of the Ebola virus species. It was first discovered in 1976 near the Ebola River in what is now the Democratic Republic of the Congo. Since then, outbreaks have appeared sporadically in Africa.

Warning Time: 1 – More than 24 hours

Duration: 4 – More than one week

LOCATION

Infectious disease outbreaks can occur anywhere in the planning area, especially where there are groups of people in close quarters.

Spatial Extent: 4 – Large

EXTENT

When on an epidemic scale, diseases can lead to high infection rates in the population causing isolation, quarantine, and potential mass fatalities. An especially severe influenza pandemic or other major disease outbreak could lead to high levels of illness, death, social disruption, and economic loss. Impacts could range from school and business closings to the interruption of basic services such as public transportation, health care, and the delivery of food and essential medicines.

Table 4.100 describes the World Health Organization's six main phases to a pandemic flu as part of their planning guidance.

Table 4.100 – World Health Organization's Pandemic Flu Phases

Phase	Description
1	No animal influenza virus circulating among animals have been reported to cause infection in humans.
2	An animal influenza virus circulating in domesticated or wild animals is known to have caused infection in humans and is therefore considered a specific potential pandemic threat.

Phase	Description
3	An animal or human-animal influenza reassortant virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level breakouts.
4	Human-to-human transmission of an animal or human-animal influenza reassortant virus able to sustain community-level breakouts has been verified.
5	The same identified virus has caused sustained community-level outbreaks in two or more countries in one WHO region.
6	In addition to the criteria defined in Phase 5, the same virus has caused sustained community-level outbreaks in at least one other country in another WHO region.
Post-Peak Period	Levels of pandemic influenza in most countries with adequate surveillance have dropped below peak levels.
Post-Pandemic Period	Levels of influenza activity have returned to levels seen for seasonal influenza in most countries with adequate surveillance.

Source: World Health Organization

Impact: 3 – Critical

HISTORICAL OCCURRENCES

PUBLIC HEALTH EMERGENCIES – INFLUENZA PANDEMICS

Since the early 1900s, four lethal pandemics have swept the globe: Spanish Flu of 1918-1919; Asian Flu of 1957-1958; Hong Kong Flu of 1968-1969; and Swine Flu of 2009-2010. The Spanish Flu was the most severe pandemic in recent history. The number of deaths was estimated to be 50-100 million worldwide and 675,000 in the United States. Its primary victims were mostly young, healthy adults. The 1957 Asian Flu pandemic killed about 70,000 people in the United States, mostly the elderly and chronically ill. The 1968 Hong Kong Flu pandemic killed 34,000 Americans. The 2009 Swine Flu caused 12,469 deaths in the United States. These historic pandemics are further defined in the following paragraphs along with several "pandemic scares".

SPANISH FLU (H1N1 VIRUS) OF 1918-1919

In 1918, when World War I was in its fourth year, another threat began that rivaled the war itself as the greatest killer in human history. The Spanish Flu swept the world in three waves during a two-year period, beginning in March 1918 with a relatively mild assault.

The first reported case occurred at Camp Funston (Fort Riley), Kansas, where 60,000 soldiers trained to be deployed overseas. Within four months, the virus traversed the globe, as American soldiers brought the virus to Europe. The first wave sickened thousands of people and caused many deaths (46 died at Camp Funston), but it was considered mild compared to what was to come. The second and deadliest wave struck in the autumn of 1918 and killed millions. At Camp Funston alone, there were 14,000 cases and 861 deaths reported during the first three weeks of October 1918.

Outbreaks caused by a new variant exploded almost simultaneously in many locations including France, Sierra Leone, Boston, and New York City, where more than 20,000 people died that fall. The flu gained its name from Spain, which was one of the hardest hit countries. From there, the flu went through the Middle East and around the world, eventually returning to the United States along with the troops.

Of the 57,000 Americans who died in World War I, 43,000 died as a result of the Spanish Flu. At one point, more than 10 percent of the American workforce was bedridden. By a conservative estimate, a fifth of the human race suffered the fever and aches of influenza between 1918 and 1919 and 20 million people

died. At the height of the flu outbreak during the winter of 1918-1919, at least 20% of North Carolinians were infected by the disease. Ultimately, 10,000 citizens of the state succumbed to this disease.

ASIAN FLU (H2N2 VIRUS) OF 1957-1958

This influenza pandemic was first identified in February 1957 in the Far East. Unlike the Spanish Flu, the 1957 virus was quickly identified, and vaccine production began in May 1957. A number of small outbreaks occurred in the United States during the summer of 1957, with infection rates highest among school children, young adults, and pregnant women; however, the elderly had the highest rates of death. A second wave of infections occurred early the following year, which is typical of many pandemics.

HONG KONG FLU (H3N2 VIRUS) OF 1968-1969

This influenza pandemic was first detected in early 1968 in Hong Kong. The first cases in the United States were detected in September 1968, although widespread illness did not occur until December. This became the mildest pandemic of the twentieth century, with those over the age of 65 the most likely to die. People infected earlier by the Asian Flu virus may have developed some immunity against the Hong Kong Flu virus. Also, this pandemic peaked during school holidays in December, limiting student-related infections.

PANDEMIC FLU THREATS: SWINE FLU OF 1976, RUSSIAN FLU OF 1977, AND AVIAN FLU OF 1997 AND 1999

Three notable flu scares occurred in the twentieth century. In 1976, a swine-type influenza virus appeared in a U.S. military barracks (Fort Dix, New Jersey). Scientists determined it was an antigenically drifted variant of the feared 1918 virus. Fortunately, a pandemic never materialized, although the news media made a significant argument about the need for a Swine Flu vaccine.

In May 1977, influenza viruses in northern China spread rapidly and caused epidemic disease in children and young adults. By January 1978, the virus, subsequently known as the Russian Flu, had spread around the world, including the United States. A vaccine was developed for the virus for the 1978–1979 flu season. Because illness occurred primarily in children, this was not considered a true pandemic.

In March 1997, scores of chickens in Hong Kong‘s rural New Territories began to die—6,800 on three farms alone. The Avian Flu virus was especially virulent, and made an unusual jump from chickens to humans. At least 18 people were infected, and six died in the outbreak. Chinese authorities acted quickly to exterminate over one million chickens and successfully prevented further spread of the disease. In 1999, a new avian flu virus appeared. The new virus caused illness in two children in Hong Kong. Neither of these avian flu viruses started pandemics.

SWINE FLU (H1N1 VIRUS) OF 2009–2010

This influenza pandemic emerged from Mexico in 2009. The first U.S. case of H1N1, or Swine Flu, was diagnosed on April 15, 2009. The U.S. government declared H1N1 a public health emergency on April 26. By June, approximately 18,000 cases of H1N1 had been reported in the United States. A total of 74 countries were affected by the pandemic.

The CDC estimates that 43 million to 89 million people were infected with H1N1 between April 2009 and April 2010. There were an estimated 8,870 to 18,300 H1N1 related deaths. On August 10, 2010, the World Health Organization (WHO) declared an end to the global H1N1 flu pandemic.

CORONAVIRUS DISEASE (COVID-19), 2019-2024

COVID-19 was caused by severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2). First identified in Wuhan, China in December 2019, the virus quickly spread throughout China and then globally. In the United States, COVID-19 was first identified in late January in Washington State and rapidly spread throughout the Country, with large epicenters on both the east and west coasts. On March 13, 2020 the U.S. enters a nationwide emergency and by March 15, 2020 U.S. states begin to shut down to prevent the spread of COVID-19. Almost a year later the U.S. has administered over 100 million

vaccinations. In June 2021 the first major variant, the Delta variant, becomes dominant in the U.S. which kicks off a third wave of infections during the summer of 2021. By December 20, 2021, Omicron, the second and most dominant variant in the U.S., had been detected in most U.S. states and territories. The Omicron variant spread more easily than the original virus that caused COVID-19 and the Delta variant.

According to the Johns Hopkins Coronavirus Resource Center, from the start of the pandemic to March 2023, there were over 103 million confirmed cases of COVID-19 in the U.S. resulting in over 1.1 million deaths. In North Carolina, there were over 3.4 million confirmed cases and 28,432 deaths due to COVID-19. Johns Hopkins stopped collecting data as of March 10, 2023. The COVID-19 virus has transitioned to endemic but maintains dual seasonality, with cases peaking twice a year.

PUBLIC HEALTH EMERGENCIES – OTHER PANDEMICS

ST. LOUIS ENCEPHALITIS, 1964-2005

Between 1964 and 2005, there were 4,651 confirmed cases of SLE in the United States. It should be noted, however, that less than 1 percent of SLE infections are clinically apparent, so the vast majority of infections remain undiagnosed. Illnesses range from mild headaches and fever to convulsions, coma, and paralysis. The last major outbreak of SLE occurred in the Midwest from 1974 to 1977, when over 2,500 cases were reported in 35 states. The most recent outbreak of St. Louis encephalitis was in 1999 in New Orleans, Louisiana, with 20 reported cases. The disease is generally milder in children than in adults, with the elderly at highest risk for severe illness and death. Approximately 3 to 30 percent of cases are fatal; no vaccine against SLE exists. In 2014, two U.S. cases were reported and were the first human cases since 2002.

MENINGITIS, 1996-1997, 2005

During 1996 and 1997, 213,658 cases of meningitis were reported, with 21,830 deaths, in Africa. According to the North Carolina Division of Public Health, an average of 20 reported cases of Meningitis occurred annually between 2005-2013 following the initial outbreak. In 2023, the CDC confirmed 438 cases of meningitis across the U.S. which is the largest number of cases reported since 2013.

LYME DISEASE, 2015

In the United States, Lyme disease is mostly found in the northeastern, mid-Atlantic, and upper north-central regions, and in several counties in northwestern California. In 2019, 93-percent of confirmed Lyme Disease cases were reported from 14 states: Connecticut, Delaware, Maine, Maryland, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia, and Wisconsin. Lyme disease is the most commonly reported vector-borne illness in the United States. According to the CDC, recent estimates based on insurance records suggest that approximately 476,000 Americans are diagnosed and treated with Lyme disease each year. This disease does not occur nationwide and is concentrated heavily in the northeast and upper Midwest. Between 2018 to 2022 the average incidence rate of Lyme disease in North Carolina was 2.82 confirmed and probable cases per 100,000 residents, which is significantly lower than the national average. According to CDC reports, the most recent confirmed cases of Lyme Disease occurred in Pasquotank County, two confirmed cases in 2020 and one confirmed case in 2019. No additional cases of Lyme Disease have been confirmed in the Albemarle Region in recent years.

SEVERE ACUTE RESPIRATORY SYNDROME, 2003

During November 2002-July 2003, a total of 8,098 probable SARS cases were reported to the World Health Organization (WHO) from 29 countries. In the United States, only 8 cases had laboratory evidence of infection. Since July 2003, when SARS transmission was declared contained, active global surveillance for SARS disease has detected no person-to-person transmission. CDC has therefore archived the case

report summaries for the 2003 outbreak. Across North Carolina, there was one confirmed SARS case – a man in Orange County tested positive in June 2003.

ZIKA VIRUS, 2015

In May 2015, the Pan American Health Organization issued an alert noting the first confirmed case of a Zika virus infection in Brazil. Since that time, Brazil and other Central and South America countries and territories, as well as the Caribbean, Puerto Rico, and the U.S. Virgin Islands have experienced ongoing Zika virus transmission. In August 2016, the Centers for Disease Control and Prevention (CDC) issued guidance for people living in or traveling to a 1-square-mile area Miami, Florida, identified by the Florida Department of Health as having mosquito-borne spread of Zika. In October 2016, the transmission area was expanded to include a 4.5-square-mile area of Miami Beach and a 1-squre mile area of Miami-Dade County. In addition, all of Miami-Dade County was identified as a cautionary area with an unspecified level of risk. As of the end of 2018, the CDC reported 74 cases of Zika across the United States. As of November 2024, there are no current local transmission of Zika virus in the continental U.S. or territories. The last cases of local Zika transmission by mosquitos in the continental U.S. were in Florida and Texas in 2016-17 and no reported cases from U.S. territories since 2019.

EBOLA, 2014-2016

Most recently, in March 2014, West Africa experienced the largest outbreak of Ebola in history. Widespread transmission was found in Liberia, Sierra Leone, and Guinea with the number of cases totaling 28,616 and the number of deaths totaling 11,310. In the United States, four cases of Ebola were confirmed in 2014 including a medical aid worker returning to New York from Guinea, two healthcare workers at Texas Presbyterian Hospital who provided care for a diagnosed patient, and the diagnosed patient who traveled to Dallas, Texas from Liberia. All three healthcare workers recovered. The diagnosed patient passed away in October 2014. In March 2016, the WHO terminated the public health emergency for the Ebola outbreak in West Africa.

PROBABILITY OF FUTURE OCCURRENCE

It is impossible to predict when the next pandemic will occur or its impact. The CDC continually monitors and assesses pandemic threats and prepares for an influenza pandemic. Novel influenza A viruses with pandemic potential include Asian lineage avian influenza A (H5N1) and (H7N9) viruses. These viruses have all been evaluated using the Influenza Risk Assessment Tool (IRAT) to assess their potential pandemic risk. Because the CDC cannot predict how severe a future pandemic will be, advance planning is needed at the national, state and local level; this planning is done through public health partnerships at the national, state and local level.

Today, a much larger percentage of the world's population is clustered in cities, making them ideal breeding grounds for epidemics. Additionally, the explosive growth in air travel means the virus could literally be spread around the globe within hours. Under such conditions, there may be very little warning time. Most experts believe we will have just one to six months between the time that a dangerous new influenza strain is identified and the time that outbreaks begin to occur in the United States. Outbreaks are expected to occur simultaneously throughout much of the nation, preventing shifts in human and material resources that normally occur with other natural disasters. These and many other aspects make influenza pandemic unlike any other public health emergency or community disaster.

Probability: 2 – Possible

CLIMATE CHANGE

According to the U.S. Global Change Research Program, the influences of climate change on public health is significant and varied. The influences range from the clear threats of temperature extremes and severe storms to less obvious connections related to insects. Climate and weather can also affect water and food quality in particular areas, with implications for public health.

Hot days can be unhealthy—even dangerous. High air temperatures can cause heat stroke and dehydration, and affect people's cardiovascular and nervous systems. Midwestern cities like St. Louis are vulnerable to heat waves, because many houses and apartments lack air conditioning, and urban areas are typically warmer than their rural surroundings. In recent decades, severe heat waves have killed hundreds of people across the Midwest. Heat stress is expected to increase as climate change brings hotter summer temperatures and more humidity. Certain people are especially vulnerable, including children, the elderly, the sick, and the poor.

Higher temperatures and wetter conditions tend to increase mosquito and tick activity, leading to an increased risk of zoonotic diseases. Mosquitos are known to carry diseases such as West Nile virus (WNV), La Crosse/California encephalitis, Jamestown Canyon virus, St. Louis encephalitis, and Eastern equine encephalitis. The two major concerns associated with warmer and wetter conditions are that the mosquito species already found in North Carolina and the diseases that they carry will become more prevalent, and that new species carrying unfamiliar diseases will start to appear for the first time.

Warmer winters with fewer hard freezes in areas that already see WNV-carrying mosquitos are likely to observe both a higher incidence of WNV and a longer WNV season, ultimately leading to an increase in human cases. Non-native mosquito species may move into North Carolina if the climate becomes more suitable for them, bringing with them diseases such as Jamestown Canyon virus, Chikungunya, and Dengue Fever.

Ticks are also well-known disease vectors in North Carolina, carrying pathogens such as Lyme disease, anaplasmosis, Ehrlichiosis, Powassan virus, and Babesiosis. Warmer, wetter weather can lead to an increase in algal blooms and declining beach health. An increase in flood events may also be associated with an increased incidence of mold problems in homes and businesses, as well as contamination of wells and surface waters due to sewer overflows and private septic system failures.

If these predictions come true, communities must contend with the human health impacts related to the increased prevalence of infectious diseases, heat waves, and changes in air and water quality. Public health officials will need to focus on spreading information and enacting pest and disease reduction. Floodprone communities will need to focus on continuously improving flood controls and mitigation strategies, including restricting building and chemical storage in floodplains, upgrading well and septic requirements, and providing water testing kits to residents.

VULNERABILITY ASSESSMENT

METHODOLOGIES AND ASSUMPTIONS

Vulnerability to infectious disease was assessed based on past occurrences nationally and internationally as well as publicly available information on these vulnerabilities, as well as attacks occurring in the region.

PEOPLE

Disease spread and mortality is affected by a variety of factors, including virulence, ease of spread, aggressiveness of the virus and its symptoms, resistance to known antibiotics and environmental factors. While every pathogen is different, diseases normally have the highest mortality rate among the very young, the elderly or those with compromised immune systems. As an example, the unusually deadly 1918 H1N1 influenza pandemic had a mortality rate of 20%. If an influenza pandemic does occur, it is likely that many age groups would be seriously affected. The greatest risks of hospitalization and death—as seen during the last two pandemics in 1957 and 1968 as well as during annual outbreaks of influenza—will be to infants, the elderly, and those with underlying health conditions. However, in the 1918

pandemic, most deaths occurred in young adults. Few people, if any, would have immunity to a new virus.

Approximately twenty percent of people exposed to West Nile Virus through a mosquito bite develop symptoms related to the virus; it is not transmissible from one person to another. Preventive steps can be taken to reduce exposure to mosquitos carrying the virus; these include insect repellent, covering exposed skin with clothing and avoiding the outdoors during twilight periods of dawn and dusk, or in the evening when the mosquitos are most active.

PROPERTY

For the most part, property itself would not be impacted by a human disease epidemic or pandemic. However, as concerns about contamination increase, property may be quarantined or destroyed as a precaution against spreading illness. Furthermore, staffing shortages could affect the function of critical facilities.

ENVIRONMENT

A widespread pandemic would not have an impact on the natural environment unless the disease was transmissible between humans and animals. However, affected areas could result in denial or delays in the use of some areas, and may require remediation.

CONSEQUENCE ANALYSIS

Table 4.101 summarizes the potential consequences of infectious disease.

Table 4.101 - Consequence Analysis – Infectious Disease

Category	Consequences
Public	Adverse impact expected to be severe for unprotected personnel and moderate to light for protected personnel.
Responders	Adverse impact expected to be severe for unprotected personnel and uncertain for trained and protected personnel, depending on the nature of the incident.
Continuity of Operations (including Continued Delivery of Services)	Danger to personnel in the area of the incident may require relocation of operations and lines of succession execution. Disruption of lines of communication and destruction of facilities may extensively postpone delivery of services.
Property, Facilities and Infrastructure	Access to facilities and infrastructure in the area of the incident may be denied until decontamination completed.
Environment	Incident may cause denial or delays in the use of some areas. Remediation needed.
Economic Condition of the Jurisdiction	Local economy and finances adversely affected, possibly for an extended period of time.
Public Confidence in the Jurisdiction's Governance	Ability to respond and recover may be questioned and challenged if planning, response, and recovery not timely and effective.

4.5.12 HAZARDOUS SUBSTANCES

Generally, a hazardous material is a substance or combination of substances which, because of quantity, concentration, or physical, chemical, or infectious characteristics, may either cause or significantly contribute to an increase in mortality or serious illness. Hazardous materials may also pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Hazardous material incidents can occur while a hazardous substance is stored at a fixed facility, or while the substance is being transported along a road corridor or railroad line or via an enclosed pipeline or other linear infrastructure.

The U.S. Department of Transportation (DOT), U.S. Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA) all have responsibilities relating to the transportation, storage, and use of hazardous materials and waste. The EPA's Toxic Release Inventory (TRI), is a primary source of information on the use and storage of hazardous materials, as well as data regarding spills and releases.

Hazardous materials are typically divided into the following classes:

- Explosives
- Compressed gases: flammable, non-flammable compressed, poisonous
- Flammable or combustible liquids
- Flammable solids: spontaneously combustible, dangerous when wet
- Oxidizers and organic peroxides
- Toxic materials: poisonous material, infectious agents
- Radioactive material
- Corrosive material: destruction of human skin, corrodes steel

It is common to see hazardous materials releases as escalating incidents resulting from other hazards such as floods, wildfires, and earthquakes that may cause containment systems to fail or affect transportation infrastructure. The release of hazardous materials can greatly complicate or even eclipse the response to the natural hazards disaster that caused the spill.

FIXED HAZARDOUS MATERIALS INCIDENT

A fixed hazardous materials incident is the accidental release of chemical substances or mixtures during production or handling at a fixed facility. While these incidents can sometimes involve large quantities of materials, their locations can be more easily predicted and monitored.

TRANSPORTATION HAZARDOUS MATERIALS INCIDENT

A transportation hazardous materials incident is the accidental release of chemical substances or mixtures during transport. Transportation Hazardous Materials Incidents in the Albemarle Region can occur during highway or air transport. Highway accidents involving hazardous materials pose a great potential for public exposures. Both nearby populations and motorists can be impacted and become exposed by accidents and releases. If airplanes carrying hazardous cargo crash, or otherwise leak contaminated cargo, populations and the environment in the impacted area can become exposed.

PIPELINE INCIDENT

A pipeline transportation incident occurs when a break in a pipeline creates the potential for an explosion or leak of a dangerous substance (oil, gas, etc.) possibly requiring evacuation. An underground pipeline incident can be caused by environmental disruption, accidental damage, or sabotage. Incidents can range from a small, slow leak to a large rupture where an explosion is possible. Inspection and maintenance of the pipeline system along with marked gas line locations and an early warning and response procedure can lessen the risk to those near the pipelines.

Warning Time: 4 – Less than six hours

Duration: 2 – Less than 24 hours

LOCATION

The Toxics Release Inventory (TRI) Program run by the U.S. Environmental Protection Agency (EPA) maintains a database of industrial facilities across the country and the type and quantity of toxic chemicals they release. The program also tracks pollution prevention activities and which facilities are reducing toxic releases. The Toxic Release Inventory reports 8 total sites with hazardous materials in the planning area, 2 in Chowan County, 2 in Hertford County, 3 in Pasquotank County, and 1 in Perquimans County. These sites are listed in Table 4.102 with locations shown in Figure 4.57 through Figure 4.60.

The U.S. Department of Transportation (USDOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) maintains an inventory of the location of all gas transmission and hazardous liquid pipelines as well as liquid natural gas plants and hazardous liquid breakout tanks. The location of pipelines and pipeline infrastructure in the Albemarle Region are shown in Figure 4.61 through Figure 4.66.

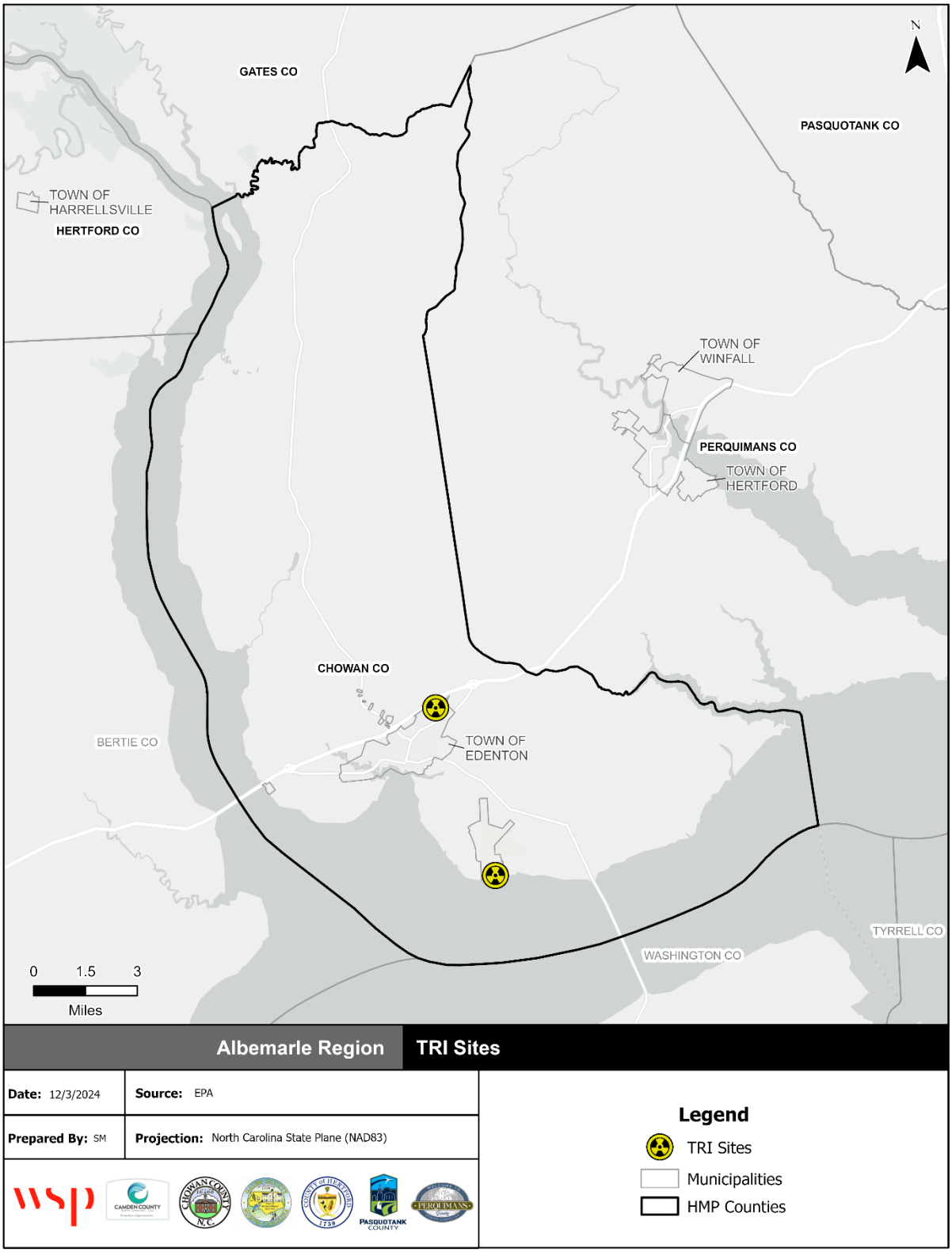
Spatial Extent: 1 – Negligible

Table 4.102 – Toxic Release Inventory Sites

Facility Name	City	Industry Sector	Chemicals Present
Chowan County			
Edenton Boatworks LLC	Edenton	Transportation Equipment	Styrene
Regulator Marine Inc	Edenton	Transportation Equipment	Styrene
Hertford County			
Nucor Steel	Cofield	Primary Metals	Barium compounds, Zinc compounds, Copper, Nickel, Lead, Sodium nitrite, Chromium, Mercury, Manganese, Dioxin, Cadmium compounds
Perdue Agribusiness LLC – Cofield NC	Cofield	Food	n-Hexane, Manganese compounds, Zinc compounds, Copper compounds
Pasquotank County			
UFP Elizabeth City LLC	Elizabeth City	Wood Products	Copper compounds
112 Corporate Drive E-City	Elizabeth City	Computers and Electronic Products	Lead
Fortress Wood Products Inc	Elizabeth City	Wood Products	Copper compounds
Perquimans County			
Harvey Point Defense Testing Activity	Hertford	Other	Lead

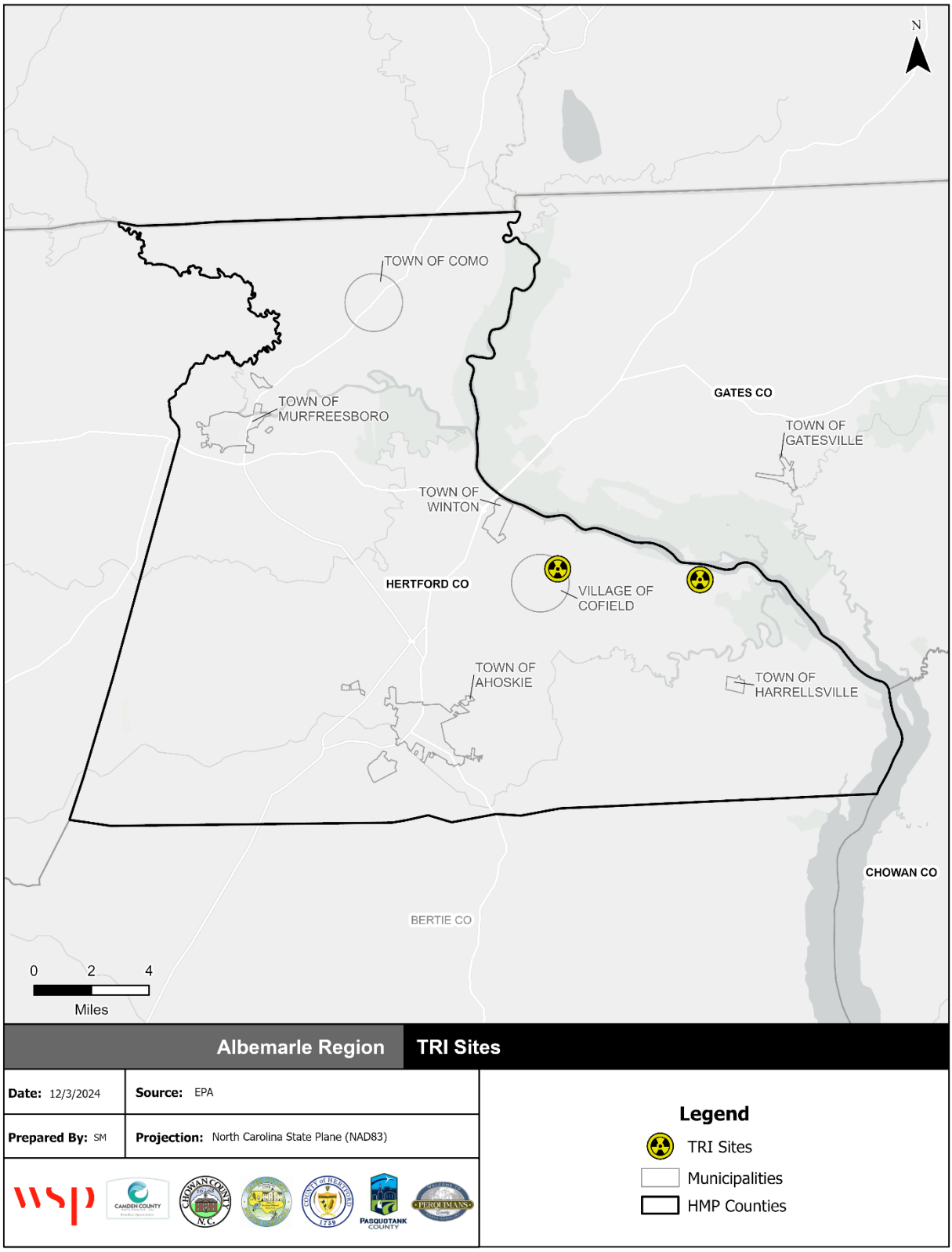
Source: US EPA Toxic Release Inventory

Figure 4.57 – Toxic Release Inventory Sites in Chowan County



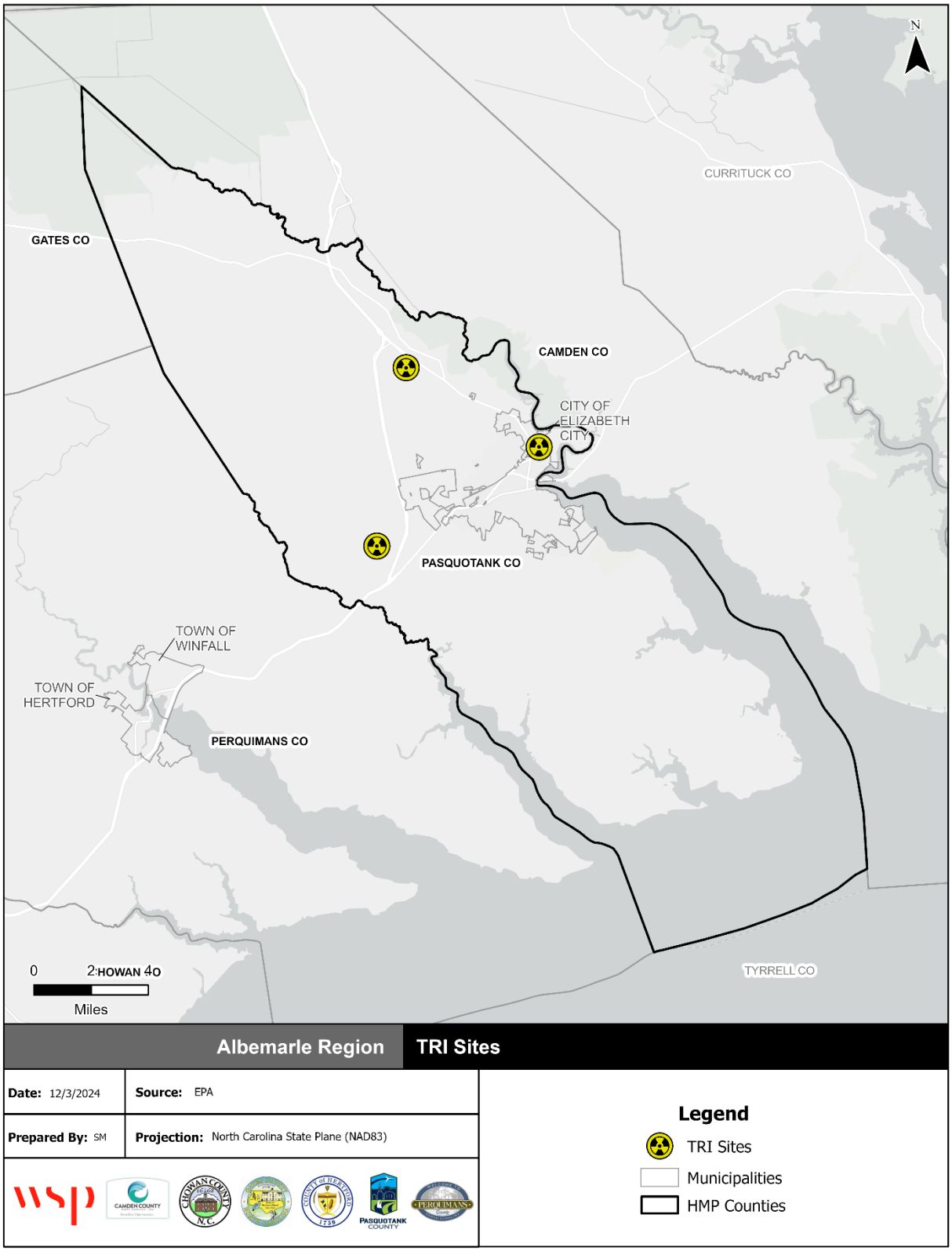
Source: EPA Toxic Release Inventory

Figure 4.58 – Toxic Release Inventory Sites in Hertford County



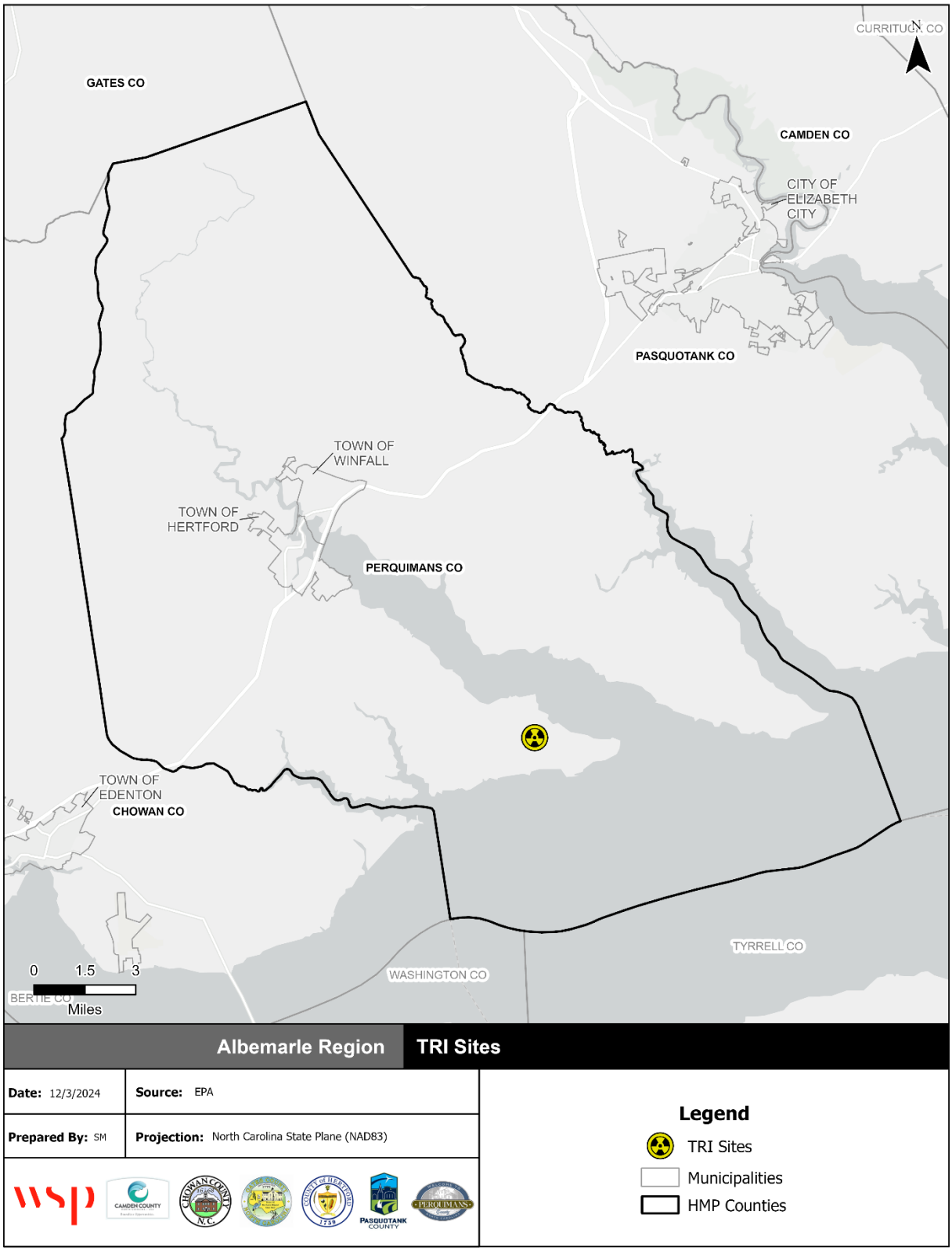
Source: EPA Toxic Release Inventory

Figure 4.59 – Toxic Release Inventory Sites in Pasquotank County



Source: EPA Toxic Release Inventory

Figure 4.60 – Toxic Release Inventory Sites in Perquimans County



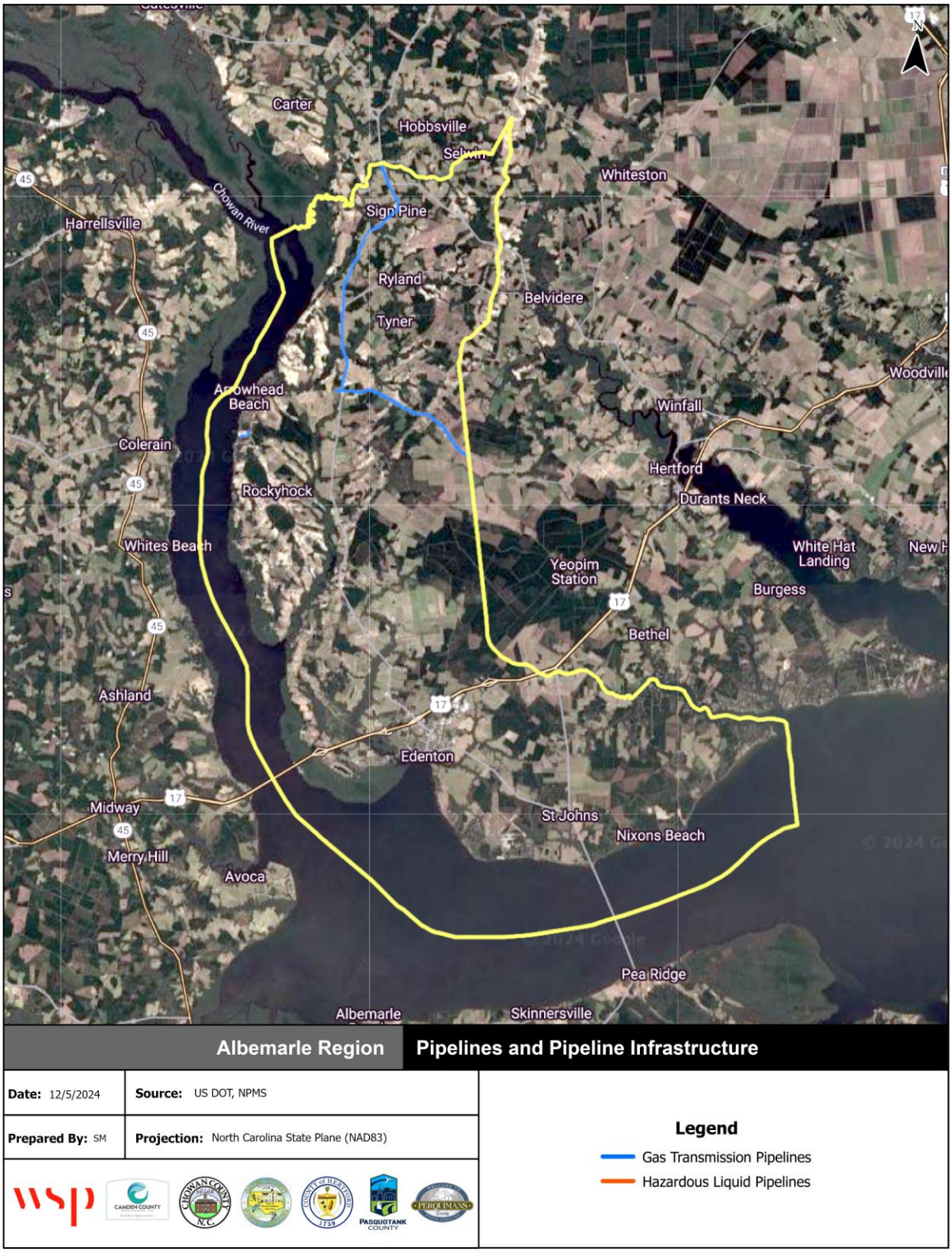
Source: EPA Toxic Release Inventory

Figure 4.61 – Pipelines and Pipeline Infrastructure in Camden County



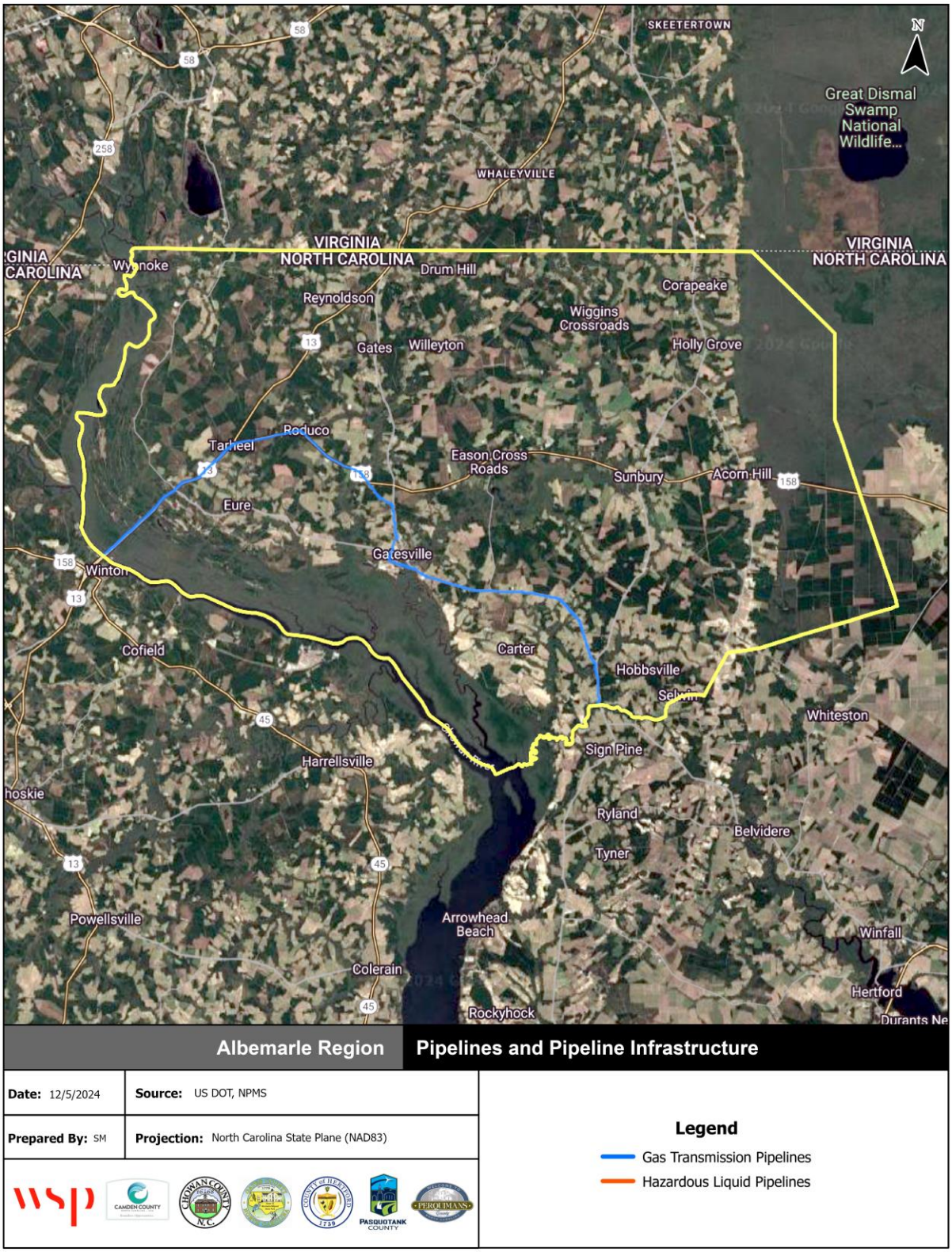
Source: US Department of Transportation, Pipeline and Hazardous Materials Safety Administration, National Pipeline Mapping System

Figure 4.62 – Pipelines and Pipeline Infrastructure in Chowan County



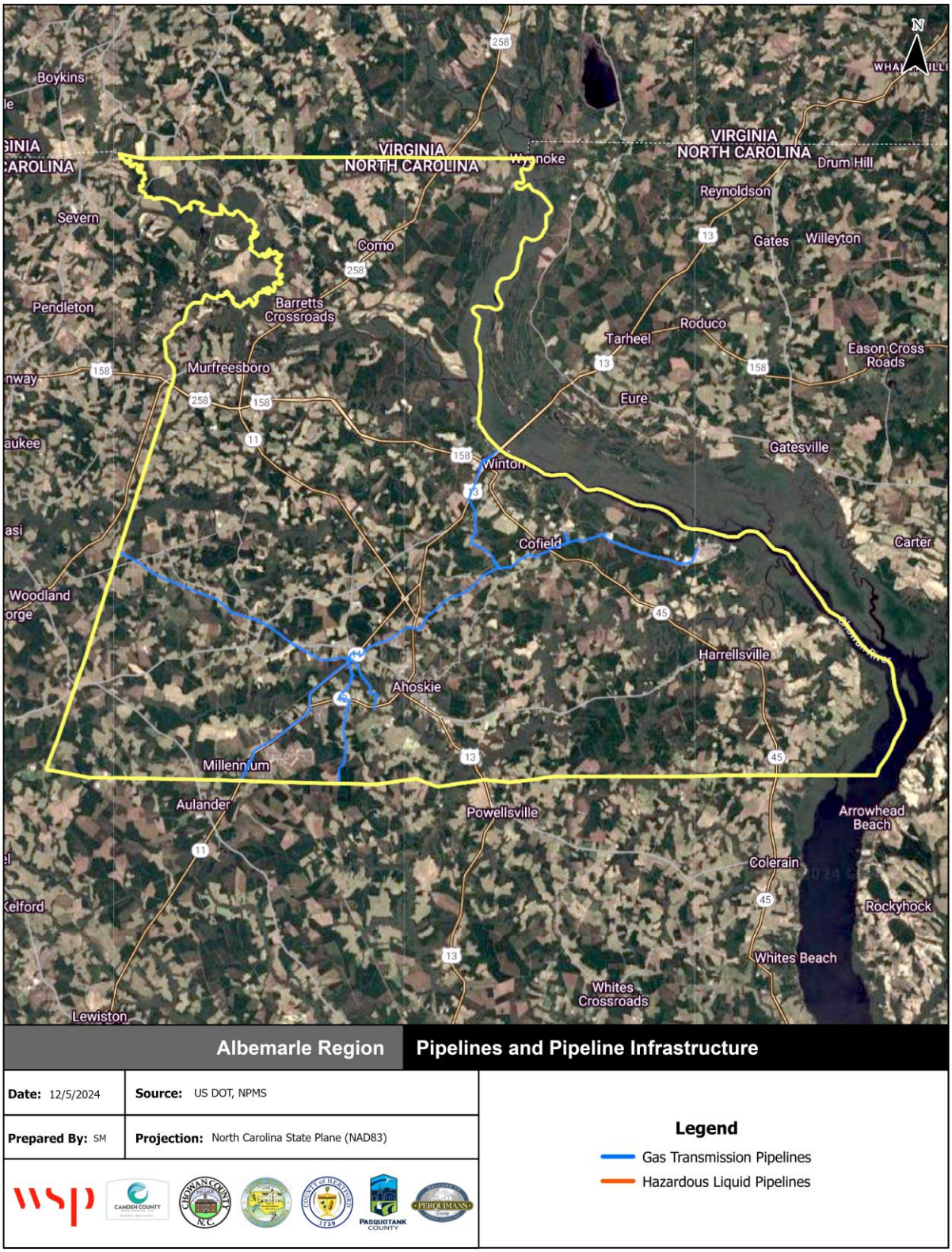
Source: US Department of Transportation, Pipeline and Hazardous Materials Safety Administration, National Pipeline Mapping System

Figure 4.63 – Pipelines and Pipeline Infrastructure in Gates County



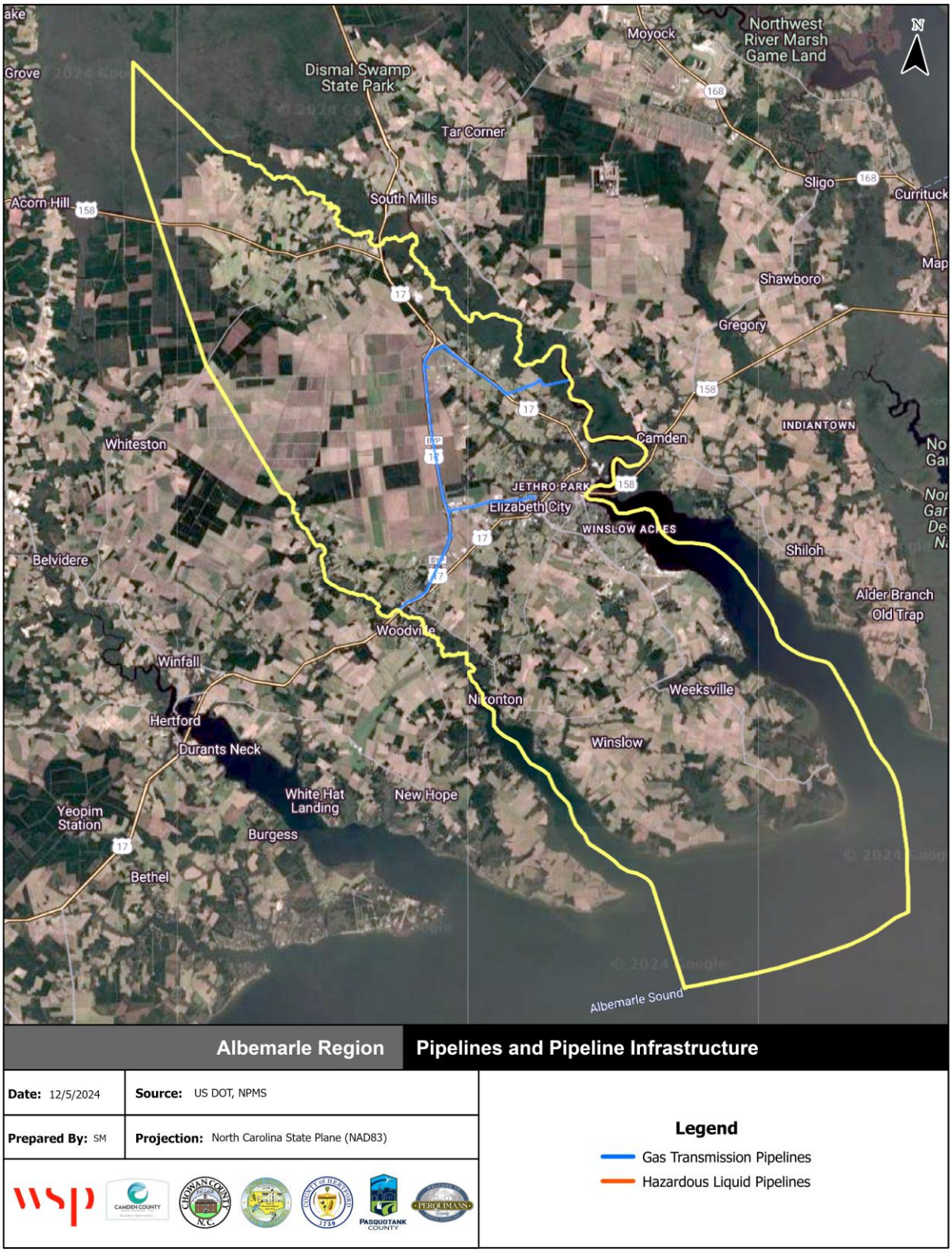
Source: US Department of Transportation, Pipeline and Hazardous Materials Safety Administration, National Pipeline Mapping System

Figure 4.64 – Pipelines and Pipeline Infrastructure in Hertford County



Source: US Department of Transportation, Pipeline and Hazardous Materials Safety Administration, National Pipeline Mapping System

Figure 4.65 – Pipelines and Pipeline Infrastructure in Pasquotank County



Source: US Department of Transportation, Pipeline and Hazardous Materials Safety Administration, National Pipeline Mapping System

Figure 4.66 – Pipelines and Pipeline Infrastructure in Perquimans County



Source: US Department of Transportation, Pipeline and Hazardous Materials Safety Administration, National Pipeline Mapping System

EXTENT

The magnitude of a hazardous materials incident can be defined by the material type, the amount released, and the location of the release. The U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA), which records hazardous material incidents across the country, defines a "serious incident" as a hazardous materials incident that involves:

- A fatality or major injury caused by the release of a hazardous material,
- The evacuation of 25 or more persons as a result of release of a 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.

Impact: 1 – Minor

HISTORICAL OCCURRENCES

The Albemarle Region experiences several hazardous materials incidents every year. The USDOT's PHMSA maintains a database of reported hazardous materials incidents since 1989. According to PHSMA records, there were 54 recorded releases in the Albemarle Region from 1990 to 2023 occurring only in Chowan, Hertford, Pasquotank, and Perquimans Counties. These releases are listed in Table 4.103. Of these events, only one was flagged as a serious incident. This incident occurred in November of 1995 near Murfreesboro in Hertford County. The incident occurred when a propane leak at an automotive shop led to a fire when exposed to an ignition source by an employee.

In total, these events caused an estimated $25, 226 in damages. Of the total incidents to occur in the Albemarle Region, 29.6 percent occurred in Chowan County, 18.5 percent in Hertford County, 5.6 percent in Pasquotank County, and 46.3 percent in Perquimans County.

Table 4.103 – Reported Hazardous Materials Incidents by County 1990-2023

Year	Chowan	Hertford	Pasquotank	Perquimans	Region Total
1990	0	1	0	0	**1**
1991	0	1	1	2	**4**
1992	2	0	0	3	**5**
1993	0	1	0	2	**3**
1994	0	0	0	2	**2**
1995	3	1	0	2	**6**
1996	0	0	0	0	**0**
1997	0	0	0	1	**1**
1998	1	0	0	0	**1**
1999	0	3	0	1	**4**
2000	1	3	0	0	**4**
2001	0	0	0	1	**1**
2002	1	0	0	1	**2**
2003	0	0	0	0	**0**
2004	1	0	1	0	**2**

Year	Chowan	Hertford	Pasquotank	Perquimans	Region Total
2005	0	0	0	3	**3**
2006	0	0	0	0	**0**
2007	1	0	0	0	**1**
2008	2	0	0	0	**2**
2009	0	0	0	1	**1**
2010	2	0	0	0	**2**
2011	0	0	0	0	**0**
2012	0	0	0	0	**0**
2013	1	0	0	1	**2**
2014	0	0	0	1	**1**
2015	0	0	1	2	**3**
2016	1	0	0	0	**1**
2017	0	0	0	0	**0**
2018	0	0	0	1	**1**
2019	0	0	0	0	**0**
2020	0	0	0	1	**1**
2021	0	0	0	0	**0**
2022	0	0	0	0	**0**
2023	0	0	0	0	**0**
Total	**16**	**10**	**3**	**25**	**54**
Avg/Year	**0.5**	**0.3**	**0.09**	**0.7**	**1.6**

Source: PHMSA Incident Reports, Office of Hazardous Materials Safety, Incident Reports Database Search
Note: No hazardous materials incidents were reported for Camden County and Gates County from 1990 to 2023

The most common materials spilled in the planning area are Class 3 (Flammable Combustible Liquids) and Class 8 (Corrosive). Figure 4.67 describes all nine hazard classes.

Figure 4.67 – Hazardous Materials Classes



Source: U.S. Department of Transportation

PROBABILITY OF FUTURE OCCURRENCE

Based on historical occurrences, there have been 20 serious incidents of hazardous materials releases in the 34-year period from 1990 through 2023. Based on this historical data, there is a 2.9% annual chance of the planning area experiencing a damaging hazardous materials incident.

Probability: 2 – Possible

VULNERABILITY ASSESSMENT

PEOPLE

People near facilities storing or transporting hazardous materials are at higher risk of exposure to a release incident. Additionally, any individuals working with or transporting hazardous materials are also at heightened risk. Depending on the materials, they may pose certain health hazards. If hazardous materials contaminate soils or water supply, people may be at risk of exposure through food or water.

PROPERTY

The property impacts of a fixed hazardous facility, such as a chemical processing facility is typically localized to the property where the incident occurs. The impact of a small spill (i.e. liquid spill) may also be limited to the extent of the spill and remediated if needed. While cleanup costs from major spills can be significant, they do not typically cause significant long-term impacts to property.

Impacts of hazardous material incidents on critical facilities are most often limited to the area or facility where they occurred, such as at a transit station, airport, fire station, hospital, or railroad. However, they can cause long-term traffic delays and road closures resulting in major delays in the movement of goods and services. These impacts can spread beyond the planning area to affect neighboring counties, or vice-versa. While cleanup costs from major spills can be significant, they do not typically cause significant long-term impacts to critical facilities.

ENVIRONMENT

Hazardous material incidents may affect a small area at a regulated facility or cover a large area outside such a facility. Widespread effects occur when hazards contaminate the groundwater and eventually the municipal water supply, or they migrate to a major waterway or aquifer. Impacts on wildlife and natural resources can also be significant.

CONSEQUENCE ANALYSIS

Table 4.104 summarizes the potential detrimental consequences of hazardous materials incident.

Table 4.104 – Consequence Analysis – Hazardous Materials Incident

Category	Consequences
Public	Contact with hazardous materials could cause serious illness or death. Those living and working closest to hazardous materials sites face the greatest risk of exposure. Exposure may also occur through contamination of food or water supplies.
Responders	Responders face similar risks as the general public but a heightened potential for exposure to hazardous materials.
Continuity of Operations (including	A hazardous materials incident may cause temporary road closures or other localized impacts but is unlikely to affect continuity of operations.

Category	Consequences
Continued Delivery of Services)	
Property, Facilities and Infrastructure	Some hazardous materials are flammable, explosive, and/or corrosive, which could result in structural damages to property. Impacts would be highly localized.
Environment	Consequences depend on the type of material released. Possible ecological impacts include loss of wildlife, loss of habitat, and degradation of air and/or water quality.
Economic Condition of the Jurisdiction	Clean up, remediation, and/or litigation costs may apply. Long-term economic damage is unlikely.
Public Confidence in the Jurisdiction's Governance	A hazardous materials incident may affect public confidence if the environmental or health impacts are enduring.

4.5.13 CYBER THREAT

The State of North Carolina Hazard Mitigation Plan defines cyber attacks as "deliberate attacks on information technology systems in an attempt to gain illegal access to a computer, or purposely cause damage." Cyber-attacks use malicious code to alter computer operations or data. The vulnerability of computer systems to attacks is a growing concern as people and institutions become more dependent upon networked technologies. The Federal Bureau of Investigation (FBI) reports that "cyber intrusions are becoming more commonplace, more dangerous, and more sophisticated," with implications for private- and public-sector networks.

There are many types of cyber-attacks. Among the most common is a direct denial of service, or DDoS attack. This is when a server or website will be queried or pinged rapidly with information requests, overloading the system and causing it to crash.

Malware, or malicious software, can cause numerous problems once on a computer or network, from taking control of users' machines to discreetly sending out confidential information. Ransomware is a specific type of malware that blocks access to digital files and demands a payment to release them. Hospitals, school districts, state and local governments, law enforcement agencies, businesses, and even individuals can be targeted by ransomware.

Cyber spying or espionage is the act of illicitly obtaining intellectual property, government secrets, or other confidential digital information, and often is associated with attacks carried out by professional agents working on behalf of a foreign government or corporation. According to cybersecurity firm Symantec, in 2016 "…the world of cyber espionage experienced a notable shift towards more overt activity, designed to destabilize and disrupt targeted organizations and countries."

Major data breaches - when hackers gain access to large amounts of personal, sensitive, or confidential information - have become increasingly common. The Symantec report says more than seven billion identities have been exposed in data breaches over the last eight years. In addition to networked systems, data breaches can occur due to the mishandling of external drives, as has been the case with losses of some state employee data.

Cyber crime can refer to any of the above incidents when motivated primarily by financial gain or other criminal intent.

The most severe type of attack is cyber terrorism, which aims to disrupt or damage systems in order to cause fear, injury, and loss to advance a political agenda.

The North Carolina State Bureau of investigation' Computer Crime Unit helps law enforcement across North Carolina solve sophisticated crimes involving digital evidence.

Warning Time: 4 – Less than six hours

Duration: 4 – More than one week

LOCATION

Cyber disruption events can occur and/or impact virtually any location in the state where computing devices are used. Incidents may involve a single location or multiple geographic areas. A disruption can have far-reaching effects beyond the location of the targeted system; disruptions that occur far outside the region can still impact people, businesses, and institutions within the region.

Spatial Extent: 2 – Small

EXTENT

The extent or magnitude/severity of a cyber disruption event is variable depending on the nature of the event. A disruption affecting a small, isolated system could impact only a few functions/processes. Disruptions of large, integrated systems could impact many functions/processes, as well as many individuals that rely on those systems.

There is no universally accepted scale to quantify the severity of cyber-attacks. The strength of a DDoS attack is sometimes explained in terms of a data transmission rate. One of the largest DDoS disruptions ever, which brought down some of the internet's most popular sites on October 21, 2016, peaked at 1.2 terabytes per second.

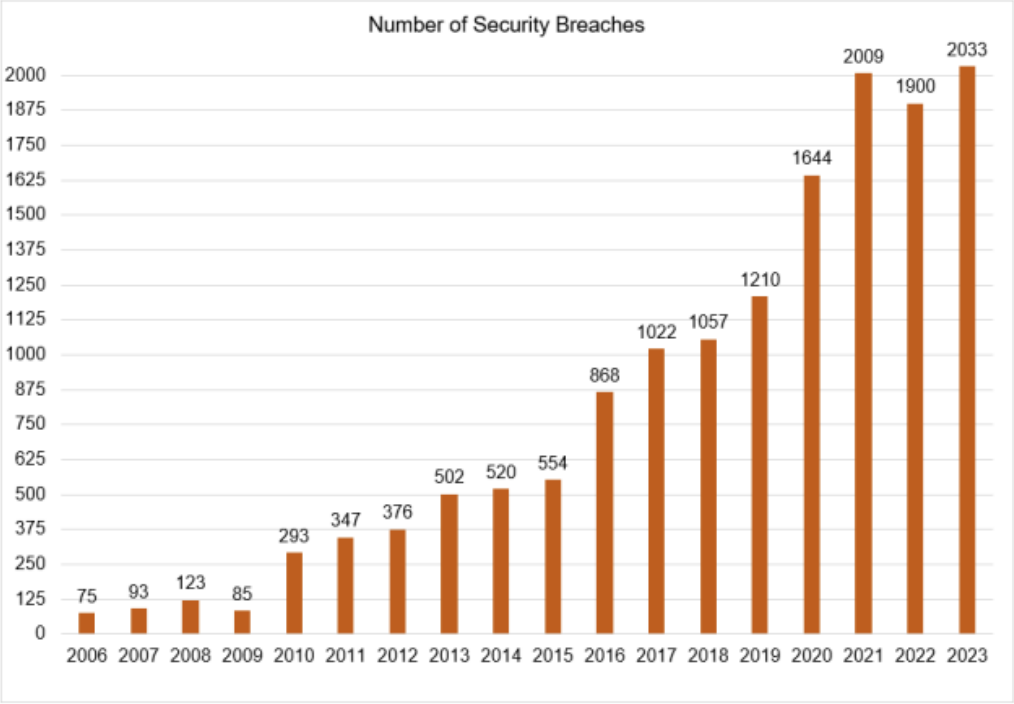
Data breaches are often described in terms of the number of records or identities exposed.

Impact: 2 – Limited

HISTORICAL OCCURRENCES

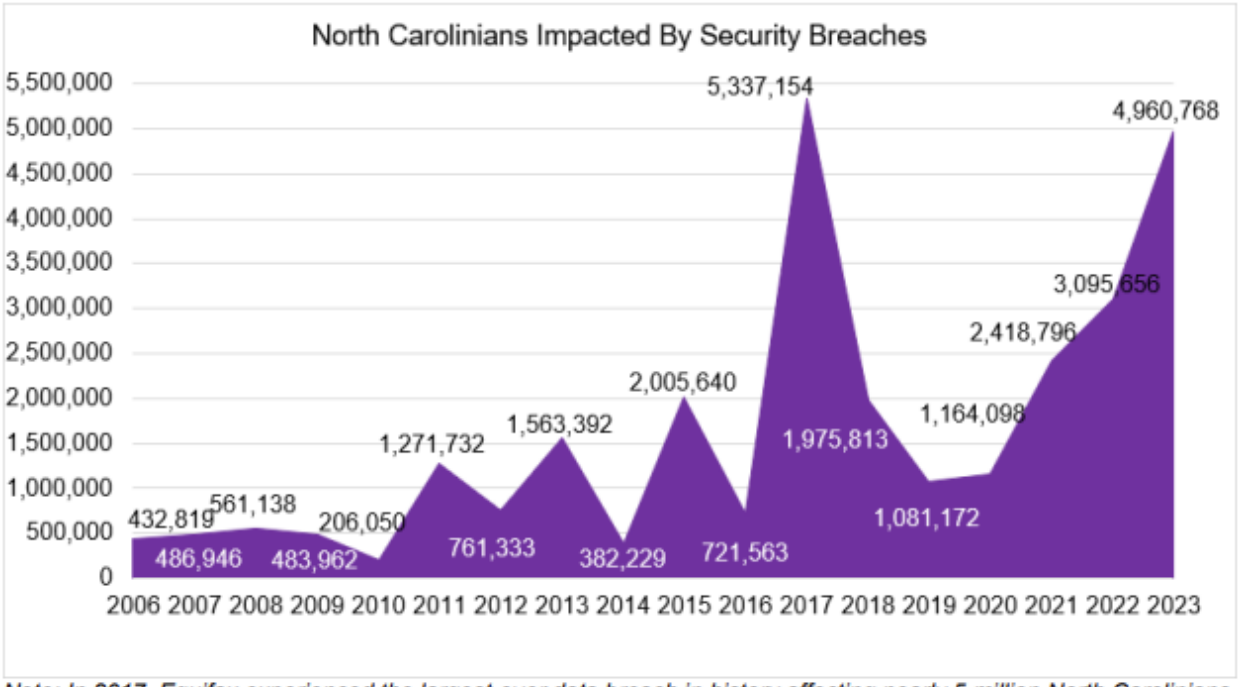
In North Carolina, businesses and organizations that experience data breaches are required to report the breach and the information that was compromised to the NC Department of Justice (DOJ). In 2023, the DOJ received 2,033 data breach notices from organizations according to their annual Data Breach Report. These breaches impacted more than 4.9 million North Carolinians – the second highest number of people impacted in a single year. Additionally, in 2023, hacking-related breaches were at a record high, causing 80 percent of all reported breaches. The report noted that most security breaches impacted general businesses (50%), healthcare industries (14%), and financial services/insurance (23%). It is common for these types of industries to collect many kinds of personal information, making them prime targets for hacking. Figure 4.68 and Figure 4.69 show the findings from the DOJ Annual Data Breach Report.

Figure 4.68 – Number of Security Breaches in North Carolina



Source: North Carolina Department of Justice

Figure 4.69 – North Carolinians Impacted by Security Breaches



Note: In 2017, Equifax experienced the largest-ever data breach in history affecting nearly 5 million North Carolinians, resulting in a high number of people having their information compromised that year.

Source: North Carolina Department of Justice

The Privacy Rights Clearinghouse, a nonprofit organization based in San Diego, maintains a timeline of 17,552 unique data breaches resulting from computer hacking incidents in the United States from 2002-2023. The database lists 359 data breaches on file in North Carolina, totaling 16,588,348 records breached since 2005.

PROBABILITY OF FUTURE OCCURRENCE

Cyber attacks occur daily, but most have negligible impacts at the local or regional level. The possibility of a larger disruption affecting systems within the region is a constant threat, but it is difficult to quantify the exact probability due to such highly variable factors as the type of attack and intent of the attacker. Minor attacks against business and government systems have become a commonplace occurrence but are usually stopped with minimal impact. Similarly, data breaches impacting the information of residents of the Albemarle Region are almost certain to happen in coming years. Overall, no significant data breaches have occurred in the Albemarle region, and local governments and businesses have restored their operating systems in a short period of time. Because minor breaches have occurred, major attacks or breaches are possible.

Probability: 2 – Possible

VULNERABILITY ASSESSMENT

As discussed above, the impacts from a cyber attack vary greatly depending on the nature, severity, and success of the attack.

METHODOLOGIES AND ASSUMPTIONS

Vulnerability to cyber attacks was assessed based on past occurrences nationally and internationally as well as publicly available information on these vulnerabilities, as well as attacks occurring in the region.

PEOPLE

Cyber-attacks can have a significant cumulative economic impact. According to the Internet Crime Complaint Center run by the Federal Bureau of Investigation, the U.S. experienced a loss of $27.6 billion between the years 2018 to 2022. A major cyber-attack has the potential to undermine public confidence and build doubt in their government's ability to protect them from harm.

Injuries or fatalities from cyber-attacks would generally only be possible from a major cyber terrorist attack against critical infrastructure.

PROPERTY

Short of a major cyber terrorist attack against critical infrastructure, property damage from cyber attacks is typically limited to computer systems.

ENVIRONMENT

Short of a major cyber terrorist attack against critical infrastructure, property damage from cyber attacks is typically limited to computer systems. A major cyber terrorism attack could potentially impact the environment by triggering a release of a hazardous materials, or by causing an accident involving hazardous materials by disrupting traffic-control devices.

CONSEQUENCE ANALYSIS

Table 4.105 summarizes the potential consequences of a cyber threat.

Table 4.105 – Consequence Analysis – Cyber Threat

Category	Consequences
Public	Cyber attacks can impact personal data and accounts. Injuries or fatalities could potentially result from a cyber attack against critical infrastructure.
Responders	Cyber attacks can impact personal data and accounts. Injuries or fatalities could potentially result from a cyber attack against critical infrastructure.
Continuity of Operations (including Continued Delivery of Services)	Agencies that rely on electronic backup of critical files are vulnerable. The delivery of services can be impacted since governments rely, to a great extent, upon electronic delivery of services.
Property, Facilities and Infrastructure	Rare. Most attacks affect only data and computer systems. Sabotage of utilities and infrastructure from a major cyber attack could result in system failures that damage property on a scale equal with natural disasters. Facilities and infrastructure may become unusable as a result of a cyber-attack.
Environment	Rare. A major attack could theoretically result in a hazardous materials release.
Economic Condition of the Jurisdiction	Could greatly affect the economy. In an electronic-based commerce society, any disruption to daily activities can have disastrous impacts to the economy. It is difficult to measure the true extent of the impact.
Public Confidence in the Jurisdiction's Governance	The government's inability to protect critical systems or confidential personal data could impact public confidence. An attack could raise questions regarding the security of using electronic systems for government services.

4.6 CONCLUSIONS ON HAZARD RISK

PRIORITY RISK INDEX

As discussed in Section 4.3 Risk Assessment Methodology and Assumptions, the Priority Risk Index was used to rate each hazard on a set of risk criteria and determine an overall standardized score for each hazard. The conclusions drawn from this process are summarized below.

Table 4.106 summarizes the degree of risk assigned to each identified hazard using the PRI method.

Table 4.106 – Summary of PRI Results

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Dam & Levee Failure[1]	Unlikely	Limited	Negligible	Less than 6 hrs	Less than 1 week	1.8
Drought[1]	Likely	Limited	Large	More than 24 hrs	More than 1 week	2.8
Earthquake	Unlikely	Minor	Large	Less than 6 hrs	Less than 6 hrs	1.9
Excessive Heat[1]	Highly Likely	Critical	Large	More than 24 hrs	Less than 1 week	3.3
Flooding	Likely	Critical	Moderate	6 to 12 hours	Less than 1 week	3.0
Hurricane & Coastal Hazards[2]	Likely	Catastrophic	Large	More than 24 hrs	Less than 1 week	3.3
Tornadoes & Thunderstorms[1]	Highly Likely	Limited	Moderate	Less than 6 hrs	Less than 6 hrs	2.9
Severe Winter Weather	Highly Likely	Limited	Large	More than 24 hrs	Less than 1 week	3.0
Wildfire	Possible	Limited	Moderate	Less than 6 hrs	Less than 1 week	2.5
Radiological Incident	Unlikely	Critical	Moderate	Less than 6 hrs	More than 1 week	2.6
Infectious Disease	Possible	Critical	Large	More than 24 hrs	More than 1 week	2.8
Hazardous Substance	Possible	Minor	Negligible	Less than 6 hrs	Less than 24 hrs	1.7
Cyber Threat	Possible	Limited	Small	Less than 6 hrs	More than 1 week	2.4

[1]Note: PRI ratings for this hazard vary by jurisdiction. The most typical ratings for the region are shown here.
[2]Note: This hazard encompasses several event types with differing PRI ratings. The most severe hazard's ratings are shown here.

The results from the PRI have been classified into three categories based on the assigned risk value which are summarized in Table 4.107:

- **High Risk** – Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread.
- **Moderate Risk** – Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **Low Risk** – Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal. This is not a priority hazard.

Table 4.107 – Summary of Hazard Risk Classification

High Risk (≥ 3.0)	Excessive Heat Hurricane & Coastal Hazards Flooding Severe Winter Weather
Moderate Risk (2.0 – 2.9)	Tornadoes & Thunderstorms Drought Radiological Incident Wildfire Infectious Disease Cyber Threat
Low Risk (< 2.0)	Earthquake Dam & Levee Failure Hazardous Substances

5 CAPABILITY ASSESSMENT

This section discusses the capability of the Albemarle Region to implement hazard mitigation activities. It consists of the following four subsections:

5.1 Overview
5.2 Conducting the Capability Assessment
5.3 Capability Assessment Findings
5.4 Conclusions on Local Capability

5.1 OVERVIEW

The purpose of conducting a capability assessment is to determine the ability of a local jurisdiction to implement a comprehensive mitigation strategy, and to identify potential opportunities for establishing or enhancing specific mitigation policies, programs, or projects. As in any planning process, it is important to try to establish which goals, objectives, and actions are feasible, based on an understanding of the organizational capacity of those agencies or departments tasked with their implementation. A capability assessment helps to determine which mitigation actions are practical and likely to be implemented over time given a local government's planning and regulatory framework, level of administrative and technical support, amount of fiscal resources, and current political climate.

A capability assessment has two primary components: 1) an inventory of a local jurisdiction's relevant plans, ordinances, and programs already in place; and 2) an analysis of its capacity to carry them out. Careful examination of local capabilities will detect any existing gaps, shortfalls, or weaknesses with ongoing government activities that could hinder proposed mitigation activities and possibly exacerbate community hazard vulnerability. The capability assessment also highlights the positive mitigation measures already in place or being implemented at the local government level, which should continue to be supported and enhanced through future mitigation efforts.

The capability assessment completed for the Albemarle Region serves as a critical planning step toward developing an effective mitigation strategy. Coupled with the risk assessment, the capability assessment helps identify and target effective goals, objectives, and mitigation actions that are realistically achievable under given local conditions.

5.2 CONDUCTING THE CAPABILITY ASSESSMENT

This capability assessment was originally developed using feedback from the HMPC through a detailed Local Capability Self-Assessment worksheet. The self-assessment requested information on a variety of "capability indicators" such as 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, and existing education and outreach programs that can be used to promote mitigation. Community representatives 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.

The survey results provided an extensive and consolidated inventory of existing local plans, ordinances, programs, and resources in place or under development. In completing the survey, local officials were also asked to rate their jurisdiction's specific capabilities. The survey instrument 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. Identified gaps, weaknesses, or conflicts can be recast as opportunities for specific actions to be proposed as part of the mitigation strategy.

The information provided in response to the survey questionnaire was incorporated into a database for further analysis. A general scoring methodology was then applied to quantify each jurisdiction's overall capability. According to the scoring system, each capability indicator was assigned a point value based on its relevance to hazard mitigation. Additional points were added based on the jurisdiction's self-assessment of their own planning and regulatory capability, administrative and technical capability, fiscal capability, education and outreach capability, and political capability.

Using this scoring methodology, a total score and an overall capability rating of "High," "Moderate," or "Limited" could be determined according to the total number of points received. These classifications are designed to provide nothing more than a general assessment of local government capability. In combination with the narrative responses provided by local officials, the results of this capability assessment provide critical information for developing an effective and meaningful mitigation strategy.

5.3 CAPABILITY ASSESSMENT FINDINGS

The findings of the capability assessment are summarized in this plan to provide insight into the relevant capacity of the Albemarle Region to implement hazard mitigation activities. All information is based upon the input provided by local government officials through the Local Capability Self-Assessment and subsequent updates by the planning team and the HMPC.

5.3.1 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. Regulatory capability also includes 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.

Table 5.1 provides a summary of the relevant local plans, ordinances, and programs already in place or under development for the Albemarle region. A checkmark (✓) indicates that the given item is currently in place and being implemented. A plus sign (+) indicates that a jurisdiction is covered for that item under a county-implemented version. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the Hazard Mitigation Plan. This information will help identify opportunities to address gaps, weaknesses, or conflicts with other initiatives and integrate the implementation of this plan with existing planning mechanisms where appropriate.

Table 5.1 – 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
Camden County	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Chowan County	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	
Town of Edenton	✓	✓	✓	✓	+	+	+	+	+	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓
Gates County	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓		✓	
Town of Gatesville	✓	✓	✓		✓	+	+	+	+	+						✓	✓	✓	✓			✓	✓		✓	
Hertford County	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	
Town of Ahoskie	✓	✓	✓		✓	+	+	+	+	+	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓		✓	
Village of Cofield	✓	+	✓			+	+	+	+	+	✓	✓			✓	✓	✓	✓	✓			✓	✓		✓	
Town of Como	✓	+				+	+	+	+	+						✓	✓	✓	✓			✓	✓		✓	
Town of Harrellsville	✓	+				+	+	+	+	+												✓	✓			
Town of Murfreesboro	✓	+				+	+	+	+	+	✓		✓	✓		✓	✓	✓	✓			✓	✓		✓	
Town of Winton	✓	+	✓			+	+	+	+	+	✓		✓	✓		✓	✓	✓	✓			✓	✓		✓	
Pasquotank County	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
City of Elizabeth City	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
Perquimans County	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓			✓	✓	✓	✓	
Town of Hertford	✓	✓				+	+	+	+	+		✓	✓		✓	✓	✓	✓	✓			✓	✓		✓	
Town of Winfall	✓	✓				+	+	+	+	+	✓					✓	✓	✓	✓			✓	✓		✓	

A more detailed discussion on the region's planning and regulatory capability follows, along with the incorporation of additional information based on the narrative comments provided by local officials in response to the survey questionnaire.

5.3.1.1 EMERGENCY MANAGEMENT

Hazard mitigation is widely recognized as one of the four primary phases of emergency management, as is shown in Figure 5.1. In reality, mitigation is interconnected with all other phases and is an essential component of effective preparedness, response, and recovery. Opportunities to reduce potential losses through mitigation practices are most often implemented before a disaster event, such as through the elevation of flood-prone structures or by regular enforcement of policies that regulate development. However, mitigation opportunities can also be identified during immediate preparedness or response activities, such as installing storm shutters in advance of a hurricane. Furthermore, incorporating mitigation during the long-term recovery and redevelopment process following a disaster event is what enables a community to become more resilient.

Figure 5.1 – 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.

HAZARD MITIGATION PLAN

A hazard mitigation plan is 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.

- All participating jurisdictions in this regional planning effort have previously been covered by the Albemarle Regional Hazard Mitigation Plan.
- In addition to the official local hazard mitigation plan, several communities have participated in mitigation and resilience planning efforts that involve risk and vulnerability assessment and mitigation or resilience action development. The Towns of Hertford, Ahoskie, Edenton, Elizabeth City, and Hertford County have participated in North Carolina Division of Coastal Management's Resilient Coastal Communities Program and developed Resilience Strategies through that program. The Albemarle Commission worked with NCORR's RISE Program to develop the Albemarle Regional Resilience Portfolio, which contains regional resilience projects relevant to the region.

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.

— 13 of the 17 participating jurisdictions have a disaster recovery plan in place.

EMERGENCY OPERATIONS PLAN

An emergency operations plan outlines responsibilities and how resources will be deployed during and following an emergency or disaster.

— All participating jurisdictions have an emergency operations plan either in place or are covered under a county plan (6 jurisdictions have one in place; 11 covered under a county plan).

— Hertford County has a Local Emergency Planning Committee which mange and update the Title III, SARA Emergency Response Plan.

CONTINUITY OF OPERATIONS PLAN

A continuity of operations plan establishes a chain of command, line of succession, and plans for backup or alternate emergency facilities in case of an extreme emergency or disaster event.

— All participating jurisdiction have a continuity of operations plan either in place or are covered under a county plan (6 jurisdictions have one in place; 11 covered under a county plan).

— Gates County Emergency Services Department has developed a Business Continuity Plan that outlines how the County will respond to events that significantly disrupt local businesses.

5.3.1.2 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 may not be designed as such.

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.

— 12 of the 17 participating jurisdictions have a comprehensive land use plan in place.

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.

— 9 of the 17 participating jurisdictions have a capital improvements plan in place.

HISTORIC PRESERVATION PLAN

A historic preservation plan is intended to preserve historic structures or districts within a community. An often-overlooked aspect of the historic preservation plan is the assessment of buildings and sites located in areas subject to natural hazards, and the identification of ways to reduce future damages. This may involve retrofitting or relocation techniques that account for the need to protect buildings that do not meet current building standards or are within a historic district that cannot easily be relocated out of harm's way.

— 9 of the 17 participating jurisdictions have an historic preservation plan in place.

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.

— 16 of the 17 participating jurisdictions have a zoning ordinance in place.

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.

— 16 of the 17 participating jurisdictions have a subdivision ordinance in place.

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.

— All participating jurisdictions have building codes in place.

The adoption and enforcement of building codes by local jurisdictions is routinely assessed through the Building Code Effectiveness Grading Schedule (BCEGS) program, developed by the Insurance Services Office, Inc. (ISO). In North Carolina, the North Carolina Department of Insurance assesses the building codes in effect in a particular community and how the community enforces its building codes, with special emphasis on mitigation of losses from natural hazards. North Carolina has limitations regarding building codes and mandates statewide code enforcement.

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 expectation 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. In North Carolina, the average BCEGS grade is 4 for both commercial and residential building.

5.3.1.3 FLOODPLAIN MANAGEMENT

Flooding represents the greatest natural hazard facing the nation, yet 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.

To participate in the NFIP, a county or municipality must adopt a local flood damage prevention ordinance that requires established minimum building standards in the floodplain. These standards require that all new buildings and substantial improvements to existing buildings be protected from damage by a 100-year flood event and that new development in the floodplain 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. 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. The current effective FIRM dates for the jurisdictions in the Albemarle Region are August 3, 2009 and December 21, 2018. A new pending FIRM will go effective on January 17, 2025 for Chowan County, Edenton, and Hertford County.

All but one jurisdiction in the Albemarle Region participate in the NFIP. Table 5.2 provides NFIP policy and claim information for each participating jurisdiction in the Albemarle region. The Town of Harrelsville does not participate in the NFIP; the town does not have any land in the SFHA.

All NFIP participating jurisdictions in the region will continue to comply with all required provisions of the program. Floodplain management is managed through zoning ordinances, building code restrictions, and county and local building inspection programs. The jurisdictions will coordinate with NCEM and FEMA to continue to develop maps and regulations related to SFHA within their jurisdictional boundaries. Communities will continue to design and improve their floodplain management programs in a way that reduces the risk of flooding to people and property. Additional details on Community Rating System (CRS) participation and substantial damage management procedures are provided below.

COMMUNITY RATING SYSTEM

An additional indicator of floodplain management capability is active participation in the CRS. The CRS is an incentive-based program that encourages communities to undertake defined flood mitigation activities that go beyond the minimum requirements of the NFIP. Each of the CRS mitigation activities is assigned a point value. As a community earns points and reaches identified thresholds, they can apply for an improved CRS class. Class ratings, which range from 10 to 1 and increase on 500-point increments, are tied to flood insurance premium reductions. Every class improvement earns an additional 5 percent discount for NFIP policyholders, with a starting discount of 5 percent for Class 9 communities and a maximum possible discount of 45 percent for Class 1 communities.

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, and extensive technical assistance is available for communities who request it.

— 2 of 17 participating jurisdictions in the Albemarle Region participate in the CRS. Camden County is a Class 8 and Edenton is a Class 7.

Table 5.2 – NFIP Policy and Claim Information

Jurisdiction	Date of First FHBM or FIRM	NFIP Entry Date	CRS Class	Current Effective Map Date	NFIP Policies in Force	Insurance in Force	Closed Losses	Total Payments
Camden County	12/20/74	12/4/85	8	12/21/2018	498	$132,223,000	281	$3,285,397
Chowan County	01/27/78	7/3/85	-	1/17/2025	140	$39,548,000	114	$1,503,490
Town of Edenton	02/15/74	9/15/77	7	1/17/2025	148	$45,417,000	165	$4,471,110
Gates County	02/14/75	7/16/91	-	12/21/2018	52	$12,816,000	23	$291,195
Town of Gatesville	02/22/74	5/13/77	-	8/3/2009	3	$466,000	3	$124,956
Hertford County	06/02/78	11/1/99	-	1/17/2025	43	$11,158,000	75	$1,420,165
Town of Ahoskie	02/22/74	5/1/87	-	8/3/2009	12	$3,792,000	69	$1,552,797
Village of Cofield	03/07/80	8/3/09	-	8/3/2009	1	$228,000	0	$0
Town of Como	11/01/99	8/3/09	-	8/3/2009	0	$0	0	$0
Town of Harrellsville	08/03/09	8/3/09	-	8/3/2009	0	$0	0	$0
Town of Murfreesboro	11/10/78	6/1/87	-	8/3/2009	2	$718,000	3	$0
Town of Winton	12/29/78	7/1/87	-	8/3/2009	0	$0	3	$31,123
Pasquotank County	12/20/74	12/4/85	-	12/21/2018	640	$166,655,000	218	$1,338,297
City of Elizabeth City	11/09/73	4/3/78	-	12/21/2018	734	$178,646,000	314	$5,302,872
Perquimans County	07/28/78	7/3/85	-	12/21/2018	324	$90,809,000	131	$590,949
Town of Hertford	02/15/74	7/3/85	-	12/21/2018	27	$6,842,000	30	$398,534
Town of Winfall	07/25/75	7/3/85	-	12/21/2018	7	$2,459,000	3	$61,684
Region Total	-	-	-	-	**2,631**	**$691,777,000**	**1,432**	**$20,372,569**

Source: FEMA NFIP Policy Statistics via FEMA Community Information System, December 2024

FHBM = Flood Hazard Boundary Map

Note: As of December 2024, Harrellsville is not participating in the NFIP. Harrellsville does not have any land in the SFHA.

Note: Chowan County, Edenton, and Hertford County had a new FIRM go effective during the planning process after the risk assessment was updated.

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 all but one municipality 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. Elizabeth City noted recently completing updates to their flood damage prevention ordinance.

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.

- 9 of the 17 participating jurisdictions have a floodplain management plan in place. Some communities may be referencing a stand-alone plan, but this hazard mitigation plan follows the 10 steps of the CRS Activity 510 Floodplain Management Plan process and provides a similar framework for flood mitigation; therefore, all jurisdictions have planned for floodplain management through this process.

SUBSTANTIAL DAMAGE PROCEDURES

The NFIP requires that participating communities regulate and enforce substantial damage and substantial improvement procedures such that, at a minimum, buildings that are damaged to 50 percent or more of their market value or improved by 50 percent or more of their market value are required to be brought into compliance with flood damage prevention regulations for new development, such as being elevated to the freeboard requirement. Procedures followed by the participating jurisdictions in the Albemarle Region are outlined below.

The communities' Floodplain Administrators are responsible for managing and enforcing substantial damage requirements and making substantial damage determinations for existing buildings and structures, as outlined in each communities' flood damage prevention ordinance. Below is a list of each communities' Floodplain Administrator.

- Camden County: Building Inspector
- Chowan County: Building Inspector
- Town of Edenton: Building Inspector
- Gates County: County Planner
- Town of Gatesville: Zoning Administrator
- Hertford County: Building Inspector
  - Hertford County also handles permitting for Cofield, Como, and Winton
- Town of Ahoskie: Building Inspector
- Town of Murfreesboro: Code Enforcement Officer
- Pasquotank County: Planning Director
- City of Elizabeth City: Zoning Administrator
- Perquimans County: County Manager
  - Perquimans County also handles permitting for Hertford and Winfall
- Town of Hertford: Zoning Administrator and Code Enforcement Officer

In these communities, substantial damage and substantial improvement determinations are made during the permitting process for repairs or improvements. For applications for building permits to improve buildings and structures, including alterations, movement, enlargement, replacement, repair, change of occupancy, additions, rehabilitations, renovations, substantial improvements, repairs of substantial damage, and any other improvement of or work on such buildings and structures, the Floodplain Administrator, in coordination with the Building Official, shall follow the procedures outlined below:

- Estimate the market value, or require the applicant to obtain an appraisal of the market value prepared by a qualified independent appraiser, of the building or structure before the start of construction of the

proposed work; in the case of repair, the market value of the building or structure shall be the market value before the damage occurred and before any repairs are made;

- Compare the cost to perform the improvement, the cost to repair a damaged building to its pre-damaged condition, or the combined costs of improvements and repairs, if applicable, to the market value of the building or structure;
- Determine and document whether the proposed work constitutes substantial improvement or repair of substantial damage; and
- Notify the applicant if it is determined that the work constitutes substantial improvement or repair of substantial damage and that compliance with the flood resistant construction requirements of the NC Building Code and the flood damage prevention ordinance is required.

In addition to following these procedures for substantial damage and substantial improvement enforcement during permitting, Hertford County has written procedures in the county Emergency Operations Plan for post-event identification and enforcement of substantial damage. An initial damage assessment will determine the severity and magnitude of the disaster. The Hertford County Tax Assessor serves as the Damage Assessment Officer and coordinates damage assessment teams who gather data via windshield surveys and door to door inspections. When possible, data is collected in computer-based forms and tracked through a database.

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.

- 6 of the 17 participating jurisdictions have an open space management plan in place.

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.

- 9 of the 17 participating jurisdictions have a stormwater management plan in place or are covered under a county plan (8 jurisdictions have one in place; 1 covered under a county plan).

5.3.2 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.

Table 5.3 provides a summary of relevant staff and personnel resources for each community. A checkmark (✓) indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill.

Table 5.3 – 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 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
Camden County	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
Chowan County	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
Town of Edenton	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
Gates County	✓			✓	✓	✓				✓			✓	✓
Town of Gatesville	✓					✓								✓
Hertford County	✓	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓
Town of Ahoskie	✓					✓							✓	✓
Village of Cofield	✓	✓				✓			✓				✓	✓
Town of Como														
Town of Harrellsville														✓
Town of Murfreesboro	✓		✓						✓				✓	
Town of Winton	✓	✓				✓			✓				✓	
Pasquotank County	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
City of Elizabeth City	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
Perquimans County	✓	✓		✓	✓	✓				✓	✓	✓	✓	✓
Town of Hertford	✓	✓	✓	✓		✓			✓	✓	✓	✓	✓	✓
Town of Winfall	✓	✓	✓						✓	✓			✓	

5.3.3 FISCAL CAPABILITY

The ability of a local government to implement mitigation actions is often dependent on the amount of money available. 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.

Table 5.4 provides a summary of the results for the 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).

Since the previous plan, Chowan County has established a capital improvement plan and committee. Hertford County has also received a grant to develop a capital improvement plan.

Table 5.4 – 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
Camden County	✓	✓			✓						
Chowan County	✓				✓						
Town of Edenton	✓			✓	✓						
Gates County		✓			✓						
Town of Gatesville											
Hertford County	✓				✓						
Town of Ahoskie					✓						
Village of Cofield				✓							
Town of Como											
Town of Harrellsville					✓						
Town of Murfreesboro											
Town of Winton											
Pasquotank County	✓	✓			✓				✓		
City of Elizabeth City	✓			✓	✓	✓	✓	✓	✓		
Perquimans County		✓			✓						
Town of Hertford	✓			✓	✓						
Town of Winfall											

5.3.4 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 5.5 provides a summary of the results for the region with regard to relevant education and outreach resources. A checkmark (✓) indicates that the given resource is locally available for hazard mitigation purposes.

Table 5.5 – Education and Outreach Resources

Jurisdiction	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Natural disaster or safety related school programs	StormReady certification	Firewise USA Site certification	Public-private partnership initiatives addressing disaster-related issues	Other
Camden County	✓	✓	✓	✓		✓	
Chowan County	✓	✓	✓	✓		✓	
Town of Edenton	✓	✓	✓			✓	
Gates County	✓	✓	✓				
Town of Gatesville							
Hertford County	✓	✓	✓				
Town of Ahoskie							
Village of Cofield							
Town of Como							
Town of Harrellsville							
Town of Murfreesboro							
Town of Winton							
Pasquotank County	✓	✓	✓	✓		✓	
City of Elizabeth City	✓			✓			
Perquimans County	✓	✓	✓	✓			
Town of Hertford	✓						
Town of Winfall							

5.3.5 MITIGATION CAPABILITY

This type of local capability refers to the mitigation strategies and actions that are developed by the communities in this plan.

Table 5.6 provides a summary of the results for the planning area with regard to relevant mitigation resources. A checkmark (✓) indicates that the given resource is locally available for hazard mitigation purposes.

Within the past five years Hazard Mitigation Assistance funds were awarded to Hertford County and Perquimans County for plan development efforts, and Pasquotank County for acquisition projects.

Table 5.6 – Mitigation Resources

Jurisdiction	Do you apply for mitigation grant funding?	Do you perform reconstruction projects?	Do you perform building elevations?	Do you perform acquisitions?
Camden County	✓	✓	✓	✓
Chowan County	✓	✓	✓	✓
Town of Edenton	✓	✓	✓	✓
Gates County	✓	✓	✓	✓
Town of Gatesville	✓	✓	✓	✓
Hertford County	✓	✓	✓	✓
Town of Ahoskie	✓	✓	✓	✓
Village of Cofield	✓	✓	✓	✓
Town of Como	✓	✓	✓	✓
Town of Harrellsville				
Town of Murfreesboro	✓	✓	✓	✓
Town of Winton	✓	✓	✓	✓
Pasquotank County	✓	✓	✓	✓
City of Elizabeth City	✓	✓	✓	✓
Perquimans County	✓	✓	✓	✓
Town of Hertford	✓	✓	✓	✓
Town of Winfall	✓	✓	✓	✓

5.3.6 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 it 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.

HMPC representatives from all participating jurisdictions are at least potentially willing to implement mitigation measures. Additionally, several participating jurisdictions have some local standards that exceed state requirements. For example, Camden County, Chowan County, Edenton, Gates County, Gatesville, and Pasquotank County have a two-foot freeboard requirement; Elizabeth City requires a three-foot freeboard.

5.3.7 LOCAL SELF-ASSESSMENT RATING

In addition to the inventory and analysis of specific local capabilities, the Staff representatives from each of the participating communities were asked to rate their community's perceived capability across each of the capability categories and overall, as either "limited," "moderate," or "high."

Table 5.7 summarizes the results of the self-assessment ratings for each community in the Albemarle Region.

Table 5.7 – 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
Camden County	High	High	High	High	High	High	High
Chowan County	High	High	High	High	High	High	High
Town of Edenton	High	High	High	High	High	High	High
Gates County	High	High	High	High	High	High	High
Town of Gatesville	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Hertford County	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Town of Ahoskie	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Village of Cofield	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Town of Como	Limited	Limited	Limited	Limited	Limited	Limited	Limited
Town of Harrellsville	Limited	Limited	Limited	Limited	Limited	Limited	Limited
Town of Murfreesboro	Limited	Limited	Limited	Limited	Limited	Limited	Limited
Town of Winton	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Pasquotank County	High	High	High	High	High	High	High
City of Elizabeth City	High	High	High	High	High	High	High
Perquimans County	High	High	High	High	High	High	High
Town of Hertford	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Town of Winfall	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate

Source: Local Capability Assessment Survey

5.4 CONCLUSIONS ON LOCAL CAPABILITY

In order to form meaningful conclusions on the assessment of local capability, a quantitative scoring methodology was designed and applied to results of this capability assessment. This methodology attempts to assess the overall level of capability of the Albemarle region to implement hazard mitigation actions.

Table 5.8 shows the results of the capability assessment using the designed scoring methodology. The capability score is based solely on the information provided by local officials in response to the previous Local Capability Self-Assessment and updates from the past five years. According to the assessment, the average local capability score for all responding jurisdictions is 148.

Table 5.8 – Capability Assessment Results

Jurisdiction	Overall Capability Score	Overall Capability Rating
Camden County	234	High
Chowan County	109	High
Town of Edenton	222	High
Gates County	182	High
Town of Gatesville	134	High
Hertford County	194	High
Town of Ahoskie	154	High
Village of Cofield	152	High
Town of Como	94	Moderate
Town of Harrellsville	60	Low
Town of Murfreesboro	124	High
Town of Winton	142	High
Pasquotank County	117	High
City of Elizabeth City	113	High
Perquimans County	202	High
Town of Hertford	158	High
Town of Winfall	128	High

Source: NCEM Risk Management Tool

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 7; therefore, each jurisdiction addresses their ability to expand on and improve their existing capabilities through the identification of their mitigation actions.

6 MITIGATION STRATEGY

Requirement §201.6(c)(3): [The plan shall include] a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section describes the process for developing the mitigation strategy for the Albemarle Regional Hazard Mitigation Plan. It describes how the Region met the requirements for Planning Step 6 (Set Goals), Planning Step 7 (Review Possible Activities), and Planning Step 8 (Draft an Action Plan). This section includes the following subsections:

6.1 Goals and Objectives
6.2 Identification & Analysis of Mitigation Activities

6.1 GOALS AND OBJECTIVES

Requirement §201.6(c)(3)(i): [The mitigation strategy section shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Goal setting builds upon the findings of Section 4, which documents the hazards and associated risks that threaten the Albemarle planning area, and Section 5, which evaluates the capacity of the Region to reduce the impact of those hazards. The intent of goal setting is to identify areas where feasible actions can be taken or improvements to existing capabilities can be made so that community vulnerability to hazards is reduced. Goals are also necessary to guide the review of possible mitigation measures. This plan needs to make sure that recommended actions are consistent with what is appropriate for the Region. Mitigation goals need to reflect community priorities and should be consistent with other local plans

- **Goals** are general guidelines that explain what is to be achieved. They are usually broad-based policy type statements, long term and represent global visions. Goals help define the benefits that the plan is trying to achieve.
- **Objectives** are short term aims that, when combined, form a strategy or course of action to meet a goal. Unlike goals, objectives are specific and measurable.

6.1.1 COORDINATION WITH OTHER PLANNING EFFORTS

The goals of this plan need to be consistent with and complement the goals of other local planning efforts. The primary planning documents that the goals of this plan should complement and be consistent with are the participating jurisdictions' comprehensive plans. Comprehensive plans are important because they are developed and designed to guide future growth within their communities so they encompass long-term strategies and can be critical to reducing long term vulnerabilities. Keeping the Hazard Mitigation Plan and Comprehensive Plans consistent ensures that land development is done with awareness and understanding of hazard risk and that mitigation projects complement rather than contradict community development objectives.

6.1.2 GOAL SETTING

At the third planning meeting, the HMPC reviewed and discussed the goals and objectives from the 2020 plan. The HMPC largely approved of the existing goals. One revision was made to Objective 1.1 to incorporate the need to protect property and critical facilities from hazard impacts.

The revised and reaffirmed goals of this plan update are detailed below in Section 6.1.3.

6.1.3 RESULTING GOALS AND OBJECTIVES

The HMPC agreed upon four general goals for this planning effort and included specific objectives in support of each goal. The refined goals and objectives are as follows:

Goal 1 – Reduce the risk of loss of life and personal injury from natural hazards through local land development regulations, capital improvements, planning/investment, and proactive long-range planning regarding land use and post-disaster redevelopment.

Objective 1.1: Reduce the length of time that local infrastructure systems are deemed inoperable due to the impacts of natural hazards, and protect property and critical facilities from hazard impacts.

Objective 1.2: Preserve open space in floodplain areas.

Objective 1.3: Reduce flooding and erosion vulnerability through land development initiatives, maintenance, and improvement of storm drainage.

Goal 2 – Provide education and notification to citizens that empowers them to protect themselves and their families from natural hazards.

Objective 2.1: Ensure adequate warning and notification relating to hazards including efforts to establish well publicized, accessible shelter facilities that meet national standards for safety and supply.

Objective 2.2: Improve the public awareness and understanding of local vulnerability to hazards and improve disaster warning/post-disaster information efforts.

Goal 3 – Fulfill Federal and State requirements for receipt of future disaster recovery and hazard mitigation assistance.

Objective 3.1: Improve all participating jurisdictions' general hazard mitigation capability.

Objective 3.2: Work toward compliance with all State and Federal planning and regulatory requirements including standards for Local Emergency Operations Plans, Flood Damage Prevention Ordinances, Continuity of Operations Plans, and the Community Rating System.

Goal 4 – Improve interjurisdictional/interagency cooperation and coordination, especially regarding the reduction of natural hazard impacts.

Objective 4.1: Reduce the risk of damage from wildfires to existing and future development.

Objective 4.2: Ensure effective local/interagency communication and response during disaster events.

6.2 IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIVITIES

Requirement §201.6(c)(3)(ii): [The mitigation strategy section shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

To identify and select mitigation projects that support the mitigation goals and objectives, the risks and vulnerabilities associated with all hazards identified and evaluated in Section 4 Risk Assessment were evaluated for mitigation opportunities. The HMPC analyzed viable mitigation options that supported the identified goals and objectives, addressed key problems, risks, or vulnerabilities, and aligned with other local plans and efforts. The HMPC was provided with the following list of mitigation categories which are utilized as part of the CRS planning process but are also applicable to multi-hazard mitigation:

- Prevention
- Property Protection
- Natural Resource Protection
- Emergency Services
- Structural Projects
- Public Information and Outreach

The HMPC was also provided with examples of potential mitigation actions for each of the above categories. The HMPC was instructed to consider both future and existing buildings in evaluating possible mitigation actions. Facilitated discussions took place to examine and analyze the options. The HMPC also considered which actions from the previous plan that were not already completed should be continued in this action plan.

More details on mitigation alternatives considered by the HMPC are provided in Appendix C.

6.2.1 PRIORITIZATION PROCESS

In the process of identifying continuing and new mitigation actions, the HMPC was provided with a set of prioritization criteria to assist in deciding why one recommended action might be more important, more effective, or more likely to be implemented than another. HMPC members were asked to consider a set of prioritization criteria, which were grouped into three categories: Suitability, Risk Reduction, and Cost. The criteria for the prioritization process included the following:

- **Suitability**
  - Appropriateness of Action
  - Community Acceptance
  - Technical and Administrative Feasibility
  - Environmental Impact
  - Legal Conformance
  - Consistency with Existing Plans and Other Community Goals
- **Risk Reduction**

  - Scope of Benefits
  - Potential to Save Lives
  - Importance of Benefits
  - Level of Inconvenience or Unintended Consequence
  - Losses Avoided
  - Number of People to Benefit
- **Cost**
  - Estimate of Upfront Cost
  - Estimate of Ongoing Cost
  - Benefit to Cost Ratio
  - Financing Availability
  - Affordability
  - Elimination of Repetitive Damages

In accordance with the DMA requirements, an emphasis was placed on the importance of a benefit-cost analysis in determining action priority, as reflected in the prioritization criteria above. For each action, the HMPC considered the benefit-cost analysis in terms of:

- Ability of the action to address the problem
- Contribution of the action to save life or property
- Available technical and administrative resources for implementation
- Availability of funding and perceived cost-effectiveness

The consideration of these criteria helped to prioritize and refine mitigation actions but did not constitute a full benefit-cost analysis. The cost-effectiveness of any mitigation alternative will be considered in greater detail through performing benefit-cost project analyses when seeking FEMA mitigation grant funding for eligible actions associated with this plan.

Using these prioritization criteria, the HMPC assigned each action a ranking of High, Medium, or Low priority. The prioritization ranking for each mitigation action considered by the HMPC is provided in Section 7 Mitigation Action Plans.

7 MITIGATION ACTION PLANS

Requirement §201.6(c)(3)(iii): [The mitigation strategy section shall include an] action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

This section provides the mitigation action plan for each participating jurisdiction, grouped by county. To improve regional coordination and increase capability to implement projects, many actions are multi-jurisdictional but will be led by the respective county. In the cases where individual jurisdictions identified their own actions in addition to the countywide actions, these additional actions are listed by jurisdiction at the end of the county table.

Mitigation action plans are organized as follows:

- Table 7.1 – Mitigation Action Plan, Camden County
- Table 7.2 – Mitigation Action Plan, Chowan County
- Table 7.3 – Mitigation Action Plan, Gates County
- Table 7.4 – Mitigation Action Plan, Hertford County
- Table 7.5 – Mitigation Action Plan, Pasquotank County
- Table 7.6 – Mitigation Action Plan, Perquimans County

The following acronyms are used to identify potential funding sources for each action:

- FEMA – Federal Emergency Management Agency
- FMA – Flood Mitigation Assistance
- GF – General Fund
- HMGP – Hazard Mitigation Grant Program
- NCDEQ – North Carolina Department of Environmental Quality
- NCDOT – North Carolina Department of Transportation
- NCDPS – North Carolina Department of Public Safety

The following acronyms are used to identify the mitigation category for each action:

- P – Prevention
- PP – Property Protection
- NRP – Natural Resource Protection
- SP – Structural Projects
- ES – Emergency Services
- PIO – Public Information & Outreach

Table 7.1 – Mitigation Action Plan, Camden County

Action #	Description	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CAM1	Maintain "Storm Ready Community" Status	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards, Tornado & Thunderstorm, Severe Winter Weather	Med	2.1	ES	County Emergency Management	Staff Time	General Fund	Ongoing – next 5 years	Carry Forward	Camden County continues to maintain the County's Storm Ready Status and will continue to do so through implementation of this plan. Certification is in place with an expiration of April 15, 2026.
CAM2	Minimize economic and property losses due to flooding through continued compliance in the National Flood Insurance Program (NFIP).	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	P	County Planning & Zoning, County Emergency Management, County Board of Commissioners	Staff Time	General Fund	Ongoing – next 5 years	Carry Forward	Camden County continues to be an active participant of the NFIP program and will continue to do so through the planning period.
CAM3	Continue to participate in the Community Rating System (CRS) and carry out required activities to maintain the County's Class 7 rating.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	3.2	P	County Planning & Zoning, County Emergency Management, County Board of Commissioners	Staff Time	General Fund. NCDPS	Ongoing – next 5 years	Carry Forward	Camden County is one of only two communities in the Albemarle region that participates in the CRS Program. This plan update will be incorporated into the County's next five-year audit and potentially improve its rating.
CAM4	Develop and maintain comprehensive water management policies for the County considering the connections between land-use, urban growth, and surface water and ground water issues.	Drought	Med	3.2	NRP	County Planning & Zoning, County Board of Commissioners, County Emergency Management, NCDCM – Coastal Area Management Act	Staff Time	General Fund, NCDEQ, NCDPS	Ongoing – next 5 years	Carry Forward	Camden County continues to monitor its water resources and will maintain a water shortage management plan to ensure the availability of resources during drought conditions.
CAM5	Encourage new or renovated critical facilities to apply structural hazard mitigation and sustainability concepts when building or remodeling their facilities; to include back-up power sources.	All Hazards	High	1.2	PP	County Planning & Zoning, County Board of Commissioners	Staff Time	General Fund, NCDPS, Grant Funds	Ongoing – next 5 years	Carry Forward	The County will continue to promote the integration of these concepts into the design consideration of new or renovated critical facilities.
CAM6	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	1.1	PP	County Emergency Management, County Board of Commissioners	To Be Determined	General Fund, NCDPS, Grant Funds	2 to 3 years	Carry Forward	The County will continue to work on establishing backup power supplies at all critical facilities. This will be undertaken as funding becomes available.

Action #	Description	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CAM7	Maintain Debris Removal and Monitoring Services Contracts	Dam & Levee Failure, Drought, Earthquake, Flooding, Hurricane & Coastal Hazards, Tornado & Thunderstorm, Severe Winter Weather	Med	1.1	ES	County Emergency Management, County Planning & Zoning, County Board of Commissioners	Staff Time	NCDPS, FEMA	Other – As necessary	Carry Forward	Camden County maintains a pre-disaster debris management contract and reviews and renews this contract on an annual basis.
CAM8	Encourage the use of weather radios/severe weather warning apps especially in schools, rest homes, convalescent homes, retirement centers and other locations where people congregate to inform them of the approach of severe weather.	All Hazards	Med	2.1	PIO	County Emergency Management, American Red Cross	Staff Time	General Fund, American Red Cross	Ongoing – next 5 years	Carry Forward	The County will continue to work with the American Red Cross to promote this program through the planning process.
CAM9	Review the Pasquotank-Camden-Elizabeth City Multi-Hazard Operations Plan annually and update the plan as necessary. Ensure all departments establish guidelines for response to emergencies and to maintain departmental operations. Work with County departments to ensure each department possesses a clear understanding of department responsibilities as outlined in the Pasquotank-Camden- Elizabeth City Multi-Hazard Operations Plan.	All Hazards	Med	3.2	ES	County Emergency Management, County Board of Commissioners	Staff Time	General Fund, NCDPS	Other – Once Annually	Carry Forward	Camden County reviews its Emergency Operations Plan annually and specifically addresses issues identified through past storm experiences.
CAM10	Continue efforts to develop continuity of operations plans (COOP) for county departments. Continuity of operations planning has been completed by several departments and additional planning efforts are currently underway. These efforts will also be promoted for community businesses private facilities.	All Hazards	Med	3.2	ES	County Emergency Management, County Board of Commissioners, County Department Heads	Staff Time	General Fund, NCDPS	Other – Once Annually	Carry Forward	Camden County reviews its Continuity of Operations Plan annually and specifically addresses issues identified through past storm experiences.
CAM11	Record all tax parcel information and floodplain locations in a GIS system including repetitive loss areas, areas of greatest risk, and vulnerable populations.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	P	County GIS, County Emergency Management, County Tax Department	Staff Time	General Fund, NCDPS	Maintain annually	Carry Forward	Camden County maintains all GIS data through its tax department. These efforts will continue through this plan update.
CAM12	In conjunction with NCEM, produce an up-to-date flood map of Camden County that can be utilized to reduce development in the floodplain. This map should be independent of the County Flood Insurance Rate Maps and reflect the actual extent of past flood events.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	PP	County GIS, County Emergency Management, County Planning & Zoning	Staff Time	General Fund, NCDPS	1 to 2 Years	Carry Forward	The alternate flood impact map has not been started due to staffing. County will be moving forward with this in the immediate future.

Action #	Description	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CAM14	Minimize the impacts of lightning strikes. Continue to educate the public on severe thunderstorm safety and the safety measures to be taken from lightening injuries.	Hurricane & Coastal Hazards, Tornado & Thunderstorm	Med	2.2	PIO	County Emergency Management	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	Camden County will work closely with electric service providers to identify a cost effective solution to this problem.
CAM15	Reduce the impact of wind on trees near county structures and critical facilities. Monitor trees and branches at risk of breaking or falling in windstorms. Prune or thin trees or branches on county/city property when they would pose an immediate threat to property, utility lines or other significant structures or critical facilities in the county.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards, Tornado & Thunderstorm	High	1.1	P	County Public Works, County Manager, County Planning & Zoning	Staff Time	General Fund	Ongoing – next 5 years	Carry Forward	Camden County factors this aspect of emergency management and mitigation into its day-to-day operations. The County will continue to coordinate efforts with utility service providers.
CAM16	Continue the Stormwater Advisory Committee's work in identifying major drainage issues in the four stormwater districts and work to identify what level of maintenance is needed in these areas. Implement drainage improvement projects as needed.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards, Tornado & Thunderstorm	High	1.3	P, SP	Stormwater Advisory Committee, County Public Works, County Planning & Zoning	Staff Time	General Fund, NCDWR	Ongoing – next 5 years	Carry Forward	The County will continue to identify ongoing stormwater hot spots, and where practicable and feasible establish a solution to these issues.
CAM17	Update/maintain the County's current Action Plan for Wildfire Response. These efforts will include a review of inter-agency and multijurisdictional efforts to identify, contain and extinguish wildfires. This effort will also involve an education effort focused on informing home and property owners about Wildland/Urban Interface fire safety.	Wildfire	Med	4.1	P	County Emergency Management, County Manager, Volunteer Fire Depts., NC Forest Service	Staff Time	General Fund, NC Forest Service	Ongoing – next 5 years	Carry Forward	The County will continue to work with the NC Forest Service to address the issue of Wildfire safety throughout the County.
CAM18	Engage in comprehensive pre- and post-storm planning efforts utilizing the most accurate and thorough data available. These efforts will involve the review and incorporation of all existing policy and regulatory tools currently in place in an effort to identify cost effective and environmentally sound mitigation projects for implementation.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards, Tornado & Thunderstorm	Med	1.3	P	County Planning & Zoning, County Emergency Management, County Board of Commissioners	Staff Time	General Fund	Ongoing – next 5 years	Carry Forward	This effort is ongoing with plan and policy review/updates with projects determined by availability of funding.
CAM19	Continue to utilize annual, as well as post-disaster Federal (FEMA) and State, mitigation funds to acquire and elevate structures impact by excessive flooding.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	3.2	PP	County Emergency Management, County Planning & Zoning	To Be Determined	NCDPS, FEMA	Annually – As Needed	Carry Forward	The County continues to utilize mitigation funding to address the impacts of recent natural hazard events.

Action #	Description	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CAM20	Increase awareness regarding the impacts of natural disasters by educating and informing residents, businesses, contractors, realtors, developers and visitors via public education, social media and print materials. These efforts should focus on ways to mitigate disaster impacts to both person and property.	All Hazards	High	2.1	PIO	County Emergency Management, County Planning & Zoning	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	The County will continue to disseminate information and improve upon its outreach and education efforts through the implementation of this plan.
CAM21	Work to improve its emergency notification system in an effort to increase awareness regarding the locations of shelters and evacuation routes during natural hazard events.	All Hazards	High	2.1	PIO	County Emergency Management, County Planning & Zoning	$25,000	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	The County's Emergency Alert System is in place; however, the effectiveness of the system is reviewed annually, as well as following natural hazard events.
CAM22	Engage in a comprehensive planning process aimed at establishing a management plan for all county-owned mitigation properties.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.2	PP	County Emergency Management, County Planning & Zoning	Staff Time	General Fund	Ongoing – next 5 years	Carry Forward	Work continues in development of a management plan for the county-owned mitigation projects.
CAM23	Undertake efforts to reestablish hydrologic connections between the Perquimans River and the Great Dismal Swamp.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	NRP, SP	County Manager, County Emergency Management, County Board of Commissioners	To Be Determined	General Fund, NCDOT	2 to 3 years	Carry Forward	County is continuing to work on the re-establishment of the hydrologic connection as listed.
CAM24	Create or Update Community Wildfire Protection Plans in each fire district.	Wildfire	Med	4.1	P	County Emergency Management, Fire Departments, NC Forest Service	To Be Determined	Grant Funds	5 years	New	

Table 7.2 – Mitigation Action Plan, Chowan County

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CHO/ EDN1	Map facilities and areas impacted by natural disasters through their respective GIS systems. Mapping efforts will include the location of all critical facilities, housing, businesses, and infrastructure impacted by past natural hazard events. Priority will be given to the mapping of homes impacted by flooding events, specifically those located within the defined flood hazard area. Mapping will be utilized to determine potential mitigation funding.	Chowan County, Edenton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	2.2	PIO	Chowan County GIS, Edenton Planning	Staff Time	General Fund NCDPS	Ongoing – next 5 years	Carry Forward	The County GIS Department will continue to maintain this data and incorporate new information as natural disasters occur.
CHO/ EDN2	Work to improve drainage conditions throughout the County through the identification and implementation of capital improvements projects. A variety of funding mechanisms will be utilized to carry out these efforts and when possible, grant funding will be utilized. These efforts should initially focus on the following issues: • Filberts Creek culvert replacement • Clearing and snagging of drainage ditches and canals • Potential drainage improvements to Pembroke Circle • Potential drainage improvements to Dillard Mill • Potential drainage improvements to Woodlawn Park	Chowan County, Edenton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	SP	Chowan County Planning & Zoning, Chowan County Board of Commissioners	To Be Determined	General Fund, NCDPS, HMGP, NCDENR	3 to 5 years	Carry Forward	These improvements have not been completed but remain a priority.
CHO/ EDN3	Repair and upgrade all facilities and equipment associated with both Bennett and Dillard Millpond.	Chowan County, Edenton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	SP	Chowan County Administration, Edenton Administration	To Be Determined	General Fund, NCDPS, NCDEQ	3 to 5 years	Carry Forward	Chowan County received a $134,619 Accessible Park state grant for Phase 1 of Bennett's Millpond improvements.
CHO/ EDN4	Compile a map reflecting the "true" extent of past flooding events. This effort should document the flooding associated with each respective flooding event, and document flooding that coincides with defined NFIP Flood Hazard Areas. Additionally, impacted critical facilities, businesses, homes, and infrastructure should be catalogued.	Chowan County, Edenton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.2	P	Chowan County GIS, Edenton Planning	Staff Time	General Fund NCDPS	Ongoing – next 5 years	Carry Forward	This mapping has not been completed but remain a priority. Edenton completed some flooding and erosion hot spot mapping through the Resilient Coastal Communities Program.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CHO/ EDN5	Continue to utilize annual, as well as post-disaster Federal (FEMA) and State mitigation funds, to both acquire and elevate structures impacted by excessive flooding. These efforts should focus on but are not limited to the following portions of the County: • Downtown Edenton • Cape Colony Subdivision • The Haughton Road Area	Chowan County, Edenton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	SP	Chowan County Administration, Edenton Administration	To Be Determined	HMGP, FMA, General Fund	Ongoing – As needed	Carry Forward	The County and Edenton will continue to pursue the elevation and/or acquisition of flood prone structures.
CHO/ EDN6	Continue to proactively seek out grant funding through NCEM and FEMA for mitigation of repetitive loss properties (RLP's) and other high risk properties from future flooding events. The County will maintain a list of RLP's, and on an annual basis, will apply for funding for all structures that meet cost-benefit thresholds as defined by FEMA. These efforts will be carried out in coordination with the Town of Edenton.	Chowan County, Edenton	All Hazards	Med	1.3	PP	Chowan County Administration, Edenton Administration	To Be Determined	HMGP, FMA, General Fund	Ongoing – As needed	Carry Forward	The County and Edenton will continue to pursue acquisition or elevation of high-risk properties.
CHO/ EDN7	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 provide material outlining sound techniques for floodplain development and floodproofing of existing structures. The County will also maintain staff educated in these issues to work with prospective builders.	Chowan County, Edenton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	2.2	PIO	Chowan County Planning and Inspections, Edenton Administration	Staff Time	General Fund, NCDPS	Ongoing – As needed	Carry Forward	The County Building Inspections Department will continue to provide this information, as well as be available to address questions and inquiries as necessary.
CHO/ EDN8	Work to educate and inform local residents about current and potential threats associated with natural hazard events through the use of social media, news media outlets, County and Town distribution list, and television media. These efforts will include providing information regarding the dangers associated with residing within defined flood hazard areas.	Chowan County, Edenton	All Hazards	High	2.2	PIO	Chowan County Planning and Inspections, Edenton Administration	Staff Time	General Fund, NCDPS	Ongoing – As needed	Carry Forward	The County Building Inspections Department will continue to provide this information, as well as be available to address questions and inquiries as necessary.
CHO/ EDN9	Continue to maintain a formal notification system to alert local residents when water conservation measures have been put in place stemming from prolonged drought conditions. Notification will follow the water use restriction schedule defined by the County Board of Commissioners and Town Council.	Chowan County, Edenton	Drought	High	2.1	PIO	Chowan County Emergency Management, Edenton Administration	Staff Time	General Fund, NCDPS	Ongoing – As needed	Carry Forward	The County will continue to institute measures associated with the County's Water Shortage Management Plan.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CHO/ EDN10	Advocate the use of existing State and Federal regulatory programs for protecting and preserving coastal wetland Areas of Environmental Concern. Consider additional opportunities to preserve and protect natural resources.	Chowan County, Edenton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	3.1	NRP	Chowan County Planning, Edenton Administration, NCDEQ, EPA	Staff Time	General Fund, NCDEQ	Ongoing – As needed	Carry Forward	The County will continue to seek opportunities for natural resource protection.
CHO/ EDN11	Support planning for improvements to the Chowan County/Edenton regional transportation systems to provide for safe traffic flow and evacuation. These efforts should include the identification of location for the use of electrical highways signs intended to provide warning regarding inclement weather and/or hazardous road conditions.	Chowan County, Edenton	Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather	Low	1.1	P	Chowan County Planning & Zoning, Edenton Administration, NCDOT	Staff Time	General Fund, NCDOT	Ongoing – next 5 years	Carry Forward	No progress was made in the past five years but this remains a priority.
CHO/ EDN12	Work with the curriculum directors of both the public and private schools to add all mitigation hazards prevention and preparedness information.	Chowan County, Edenton	All Hazards	Med	2.2	PIO	Chowan County Emergency Management, Edenton Administration, Chowan County Board of Education	Staff Time	General Fund	Ongoing – Annually	Carry Forward	No progress was made in the past five years but this remains a priority.
CHO/ EDN13	Require all public utility companies as well as County- and Town-owned utilities to inspect and repair damage due to hurricanes and storms within a 5-year time frame.	Chowan County, Edenton	Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather	Med	1.1	P	Chowan County Administration, Edenton Administration, Utility Providers	Staff Time	General Fund, Utility Providers	2 to 3 years	Carry Forward	No progress achieved. Chowan County will work with the Town of Edenton, as well as other Electric Service Providers to enact this policy.
CHO/ EDN14	Work with local charities such as Baptist Men and/or Habitat for Humanity chapters, to apply non-structural mitigation measures to the homes of low-income senior citizens in the Flood Hazard Area.	Chowan County, Edenton	Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather	High	4.2	PP	Chowan County Administration, Edenton Administration, Local Non-Profits	To Be Determined	General Fund, Local Non-Profits	Ongoing – next 5 years	Carry Forward	These efforts are currently underway at the local level. County does not have records of local charities' efforts.
CHO/ EDN15	Maintain information on the County website relating to evacuation and sheltering. Emergency information on the website will include: evacuation routes, sheltering, delays and closures, pet sheltering options, and special needs information.	Chowan County, Edenton	All Hazards	High	2.1	PIO	Chowan County Emergency Management, Chowan County Planning & Zoning	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	No updates were made in the past five years but this remains a priority for outreach.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CHO/ EDN16	Maintain, and where necessary, establish backup generators at all identified critical facilities. Additionally, County Emergency Management will evaluate the equipment on a regular basis to assure it continues to meet operational demands at county facilities.	Chowan County, Edenton	Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather	High	1.1	PP	Chowan County Emergency Management, Edenton Administration	To Be Determined	General Fund, NCDPS	2 to 3 years	Carry Forward	The County will continue to identify need regarding the installation of backup generators and where necessary work with NCDPS to implement this strategy.
CHO/ EDN17	Increase efforts to educate the public and increase agency capabilities in regard to wildfire response. These efforts will include a review of inter-agency and multijurisdictional efforts to identify, contain and extinguish wildfires. This effort will also involve an education effort focused on informing home and property owners about Wildland/Urban Interface fire safety.	Chowan County, Edenton	Wildfire	Med	4.1	ES	Chowan County Emergency Management, Edenton Administration	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	No progress was made in the past five years but this remains a priority.
CHO/ EDN18	Annually review and update the County's Emergency Operations Plan (EOP) to ensure compliance with all NCEM and NCOEMS procedures and policies. Through these updates, the County will work closely with the Town of Edenton to ensure that all jurisdictions continue to be educated and prepared for activation of the EOP in the event of a disaster event.	Chowan County, Edenton	All Hazards	Med	3.2	ES	Chowan County Emergency Management, County Board of Commissioners, Edenton Administration	Staff Time	General Fund, Staff Time, NCDPS	Other – Once Annually	Carry Forward	Chowan County, in conjunction with the Town of Edenton reviews its Emergency Operations Plan annually. The County addresses issues identified through past storm experiences.
CHO/ EDN19	Improve awareness regarding the intensity of natural hazard events as they materialize through: • Establishing an emergency radio broadcast frequency that runs a recorded message pre- and post-hazard to communicate critical time-sensitive information. It could include routes/bridges that are open or closed, weather/hazard forecasts, location of emergency shelters. • More fully utilizing County/Town websites to provide pre-hazard and post-hazard recovery information (debris pick-up schedule, critical dates, forms, phone numbers, housing availability, etc.).	Chowan County, Edenton	All Hazards	High	2.2	PIO	Chowan County Emergency Management, Edenton Administration	$10,000	General Fund, NCDPS	2 to 3 Years	Carry Forward	No progress was made in the past five years but this remains a priority.
CHO/ EDN20	Create or Update Community Wildfire Protection Plans in each fire district.	Chowan County, Edenton	Wildfire	Med	4.1	P	County Emergency Management, Fire Departments, NC Forest Service	To Be Determined	Grant Funds	5 years	New	

Table 7.3 – Mitigation Action Plan, Gates County

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
GAT1	Establish a county-wide program focused on clearing and snagging watercourses and arterial ditches to open waterways by clearing debris throughout the county to minimize localized flooding.	Gates County, Gatesville	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	P	County Administration, County Board of Commissioners, Municipal Administration	To Be Determined	GF, NCDEQ, NCDPS	Ongoing – next 5 years	Carry Forward	Gates County continues efforts on identifying and addressing hazards associated with this goal and has worked with NCDOT and other state agencies to have some identified areas addressed. Have also started reporting and tracking commonly flooded areas during storm activities.
GAT2	Support the expansion of US Highway 13/158 to facilitate greater evacuation capacity.	Gates County, Gatesville	Dam & Levee Failure, Earthquake, Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather, Wildfire, Radiological Incident	Low	1.1	ES	County Administration, County Board of Commissioners, Municipal Administration	Function of NCDOT Regional Transportation Improvement Program	GF, NCDOT	Ongoing – As Funds Become Available	Carry Forward	Gates County took part in stakeholder meeting with NCDOT October 2023 awaiting invites to future meeting in reference to the Highway 13 corridor strategic highway expansion.
GAT3	Expand efforts to provide public awareness of local hazard mitigation planning and emergency response procedures through the use of social media, local news outlets, and public meetings.	Gates County, Gatesville	All Hazards	High	2.2	PIO	County Administration, County Board of Commissioners, Municipal Administration	Staff Time	GF, NCDPS	Ongoing – next 5 years	Carry Forward	Gates County has expanded warning and notification capabilities to include social media, digital information boards in the public, as well as expanding roadside information boards. County continues to look for other opportunities for improvements.
GAT4	Annually, or as deemed necessary, review and amend when necessary the flood damage prevention ordinance and ensure regulations are in place to mitigate potential losses from events.	Gates County, Gatesville	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	P	County Administration, County Board of Commissioners, Municipal Administration	Staff Time	GF, NCDPS	Ongoing – As necessary	Carry Forward	Gates County annually reviews ordinances and monitors for possible ordinance for System improvement
GAT5	Annually review hazard mitigation plan strategies and actions as they pertain to the County's Land Use Plan and Land Development Regulations, including incorporation of floodplain mapping.	Gates County, Gatesville	All Hazards	Med	1.3	P	County Administration, County Board of Commissioners, Municipal Administration	To Be Determined	GF, NCDEQ, NCDPS	Ongoing - Annually	Carry Forward	Gates County plans to review hazard mitigation plan annually and make updates as necessary

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
GAT6	Increase emergency management training opportunities for local government personnel.	Gates County, Gatesville	All Hazards	Med	4.2	ES	County Administration, County Board of Commissioners, Municipal Administration	Staff Time	GF, NCDPS	Ongoing - Annually	Carry Forward	Gates County has added both education opportunities and positions to emergency management it is going to continue to work on increasing awareness and training of all county staff and residents.
GAT7	Increase community awareness of wildlife-related issues and wildland fire safety by utilizing the Firewise program and its resources (www.firewise.org).	Gates County, Gatesville	Wildfire	High	4.1	P	County Administration, County Board of Commissioners, Municipal Administration	Staff Time	GF, NC Forest Service, NCDPS	Ongoing - Annually	Carry Forward	Gates County has added wildfire public education to its public education materials as well as reviewing the county CWPP and Wildlife Interface areas as part of its goal in the 2025 and 2026 while working with NC Forest Service.
GAT8	Further educate the public regarding methods to address structural mitigation and residing within the floodplain through public meetings and ongoing outreach efforts.	Gates County, Gatesville	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	2.2	PP	County Administration, County Board of Commissioners, Municipal Administration	Staff Time	GF, NCDPS, FEMA	Ongoing - Annually	Carry Forward	County has conducted activities addressed in this section. It plans on annually reviewing and addressing issues and looking for possible mitigation strategies to improve upon.
GAT9	Increase EMS and law enforcement personnel resources through the County's annual capital improvement budgeting process.	Gates County, Gatesville	All Hazards	Med	1.1	ES	County Administration, County Board of Commissioners, Municipal Administration	To Be Determined	GF, NCDPS	2 to 3 years	Carry Forward	County has increased some positions and has a current proposal for the next year's budget as well as setting out some long- and short-term goals for both adding position, recruitment, and retention. County has experienced some recruitment and retention obstacles.
GAT10	Work closely with utility service providers to keep power/utility right-of-way clear by routinely pruning trees and clearing tree limbs.	Gates County, Gatesville	Dam & Levee Failure, Earthquake, Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather	High	1.1	P	County Administration, County Board of Commissioners, Municipal Administration	Staff Time	GF, Utility Service Providers, NCDPS	Ongoing - Annually	Carry Forward	The county will continue to carry out with efforts to minimize the impact of natural disasters on central services most importantly the electrical and water systems.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
GAT11	Investigate the potential advantages and disadvantages, if any, of joining the NFIP's Community Rating System (CRS). Consider making application to the CRS program during the five-year implementation of this plan.	Gates County, Gatesville	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	3.2	P	County Administration, County Board of Commissioners, Municipal Administration	To Be Determined	GF, NCDPS, FEMA	2 to 3 years	Carry Forward	County has started information gathering on this process and is still in discussion about joining.
GAT12	Work to improve its emergency notification system in an effort to increase awareness regarding the locations of shelters and evacuation routes during natural hazard events.	Gates County, Gatesville	All Hazards	High	2.1	PIO	County Emergency Management, County Planning & Zoning	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	The county has added to its mass notification systems. County currently uses code red for both staff and public emergency notifications. Has expanded its social media abilities. Has implemented projects to improve notification to vulnerable and underserved areas of the population. County continues to review and plans on making improvements to notification systems policies and best practices.
GAT13	Continue to work towards the Implementation of all projects defined within the Hurricane Matthew Resilient Redevelopment Plan	Gates County, Gatesville	Dam & Levee Failure, Drought, Earthquake, Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather	Med	1.3	P	County Administration, County Board of Commissioners, Municipal Administration	To Be Determined	General Fund, NCDPS, NCDEQ, NCDOT	Ongoing – As funding is available	Carry Forward	County is revisiting the Hurricane Matthew Resilient Redevelopment Plan to identify best next steps for activities and look for funding.
GAT14	Acquire or elevate flood prone buildings including repetitive loss properties and other high-risk properties to reduce impacts of future flooding.	Gates County, Gatesville	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	PP	County Administration, County Emergency Management, Municipal Administration	To Be Determined	Grant Funds	Ongoing – Next 5 years	New	
GAT15	Improve drainage conditions through the identification and implementation of capital improvements projects.	Gates County, Gatesville	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	SP	County Administration, County Emergency Management, Municipal Administration	To Be Determined	Grant Funds	Ongoing – Next 5 years	New	
GAT16	Create or Update Community Wildfire Protection Plans in each fire district.	Gates County, Gatesville	Wildfire	Med	4.1	P	County Emergency Management, Fire Departments, NC Forest Service	To Be Determined	Grant Funds	5 years	New	

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
GAT17	Improve resiliency of critical infrastructure to include county government office buildings.	Gates County, Gatesville	All Hazards	High	1.1	PP	County Administration, County Emergency Management, Municipal Administration	To Be Determined	Grant Funds	3-5 years	New	
GAT18	Add shelter locations to include post shelter operations, accommodations for animal sheltering, and improving points of distribution sites.	Gates County, Gatesville	Dam & Levee Failure, Earthquake, Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather	Med	2.1	ES	County Administration, County Emergency Management, Municipal Administration	To Be Determined	Grant Funds	3-5 years	New	
GAT19	Look for opportunities to add a community resiliency center.	Gates County, Gatesville	All Hazards	Low	3.1	P	County Administration, County Emergency Management, Municipal Administration	To Be Determined	Grant Funds	5 years	New	
GAT20	Implement emergency communication projects to do with resiliency and redundancy of emergency communications equipment to include radio, cellular, and internet communications equipment.	Gates County, Gatesville	All Hazards	High	4.1	PP, ES	County Administration, County Emergency Management, Municipal Administration	To Be Determined	Grant Funds	5 years	New	
GAT21	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.	Gates County, Gatesville	All Hazards	High	1.1	PP	County Emergency Management, County Administration	To Be Determined	General Fund, NCDPS, Grant Funds	5 years	New	
GAT22	Address safe drinking water and having a more reliable safety water system for public health and fire suppression needs.	Gates County, Gatesville	Wildfire	Med	1.1, 4.1	SP, ES	County Emergency Management	To Be Determined	General Fund, Grant Funds	5 years	New	

Table 7.4 – Mitigation Action Plan, Hertford County

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
HER1	Improve upon efforts to inform citizens of the location and availability of shelters and evacuation routes in the event of a natural disaster. These efforts will utilize local print and television media outlets, social networking, as well as Town and County websites. The County will also evaluate all shelter facilities to ensure that they all meet American Red Cross standards.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Dam & Levee Failure, Severe Winter Weather	High	2.1	ES	County Emergency Management, Municipal Administration, County Public Works, Municipal Public Works	Staff Time	GF, Grant Funds, American Red Cross	Ongoing – next 5 years	Carry Forward	The County will continue to work towards improving upon the availability and education regarding established shelter facilities throughout the County.
HER2	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.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Dam & Levee Failure, Severe Winter Weather	Med	4.2	P	County Emergency Management, Municipal Administration, Electrical Utility Providers	Staff Time	GF, Electric Service Providers	Ongoing – Annually	Carry Forward	The County will establish a protocol to meet with Utility Service Provides annually to prepare for the impact of natural disasters, in particular tropical storms and hurricanes.
HER3	Maintain, and where necessary, establish backup generators at all identified critical facilities. Additionally, County Emergency Services will evaluate the equipment on a regular basis to assure it continues to meet operational demands at county facilities.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	High	1.1	PP	County Emergency Management, Municipal Administrations, County Public Works, Municipal Public Works	To Be Determined	GF, Grant Funds, Utility Providers	Ongoing – As Funding Becomes Available	Carry Forward	The County will continue to establish backup generators in locations that do not currently have one as funding becomes available.
HER4	Retrofit all County and Municipal facilities for lightning protection.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Tornadoes & Thunderstorms	Med	1.1	PP	County Emergency Management, Municipal Administrations, County Public Works, Municipal Public Works	To Be Determined	GF, Grant Funds, Utility Providers	Ongoing – As Funding Becomes Available	Carry Forward	The County will work with electric service providers to establish funding and a solution for addressing this strategy.
HER5	Support through local ordinances conservation easements on all flood-prone property and impose such easements on all properties acquired with public assistance funds.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.2	NRP	County Emergency Management, Municipal Administrations, County Public Works, Municipal Public Works	Staff Time	Acquired through donation	Ongoing – as opportunities arise	Carry Forward	The County will continue to accept conservation easements as opportunities arise through the development process.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
HER6	Provide annual review of development restrictions in floodplain areas and maintain initiatives to ensure limited residential and commercial development in the floodplain and optimal protection of critical facilities.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Dam & Levee Failure, Severe Winter Weather	Med	1.3	P	County Emergency Management, County Administration, Municipal Administrations	Staff Time	GF, Grant Funds	Ongoing - Annually	Carry Forward	The County will review development regulations annually in an attempt to identify methods to improve the resiliency of development in flood prone areas.
HER7	The HMPC will review "firewise" zoning and subdivision standards and recommend their appropriateness for incorporation into existing or new zoning or subdivision ordinances. (Source http://www.firewise.org)	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Wildfire	Med	4.1	P	County Emergency Management, Municipal Administrations	Staff Time	GF, Grant Funds, US Forest Service	2 to 3 years	Carry Forward	The County will make it apriority to undertake this effort during the planning period.
HER8	Review county and municipal zoning, subdivision, and flood damage prevention ordinances for improved control of flooding hazards and improvement of drainage.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	P	County Inspections, County Administration, Municipal Administrations	Staff Time	GF, NCDPS	Ongoing – as need arises	Carry Forward	The County will undertake this effort as the need arises.
HER9	Adopt and annually update a capital improvements plan with an emphasis on mitigation for critical facilities.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	High	1.1	PP, SP	County Administration, Municipal Administrations	Staff Time	GF	Ongoing - Annually	Carry Forward	This will be addressed through the County's annual budgeting process.
HER10	At the local government staff level, work with the North Carolina Dept. of Transportation (NCDOT) and the Regional Planning Organization to identify drainage problem areas; develop resolutions for drainage issues created by NCDOT facilities, including inspections of channels, retention basins; and, as needed, pursue debris removal.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	NRP, SP	County Emergency Management, County Administration, Municipal Administrations, NCDOT	Staff Time	GF	Ongoing – as need arises	Carry Forward	The County will work with NCDOT, as well as all participating municipal jurisdictions to carry out this strategy.
HER11	Apply for all available funding from the Hazard Mitigation Grant Program (HMGP) and other funds to assist with the mitigation of severe repetitive loss properties and other high risk properties by acquiring, elevating, or relocating structures out of the floodplain.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	3.2	PP	County Emergency Management, County Administration, Municipal Administrations	To Be Determined	GF, Grant Funding	Ongoing – As opportunities arise	Carry Forward	The County will continue to carry out this strategy as is necessary following natural hazard events.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
HER12	Inspect debris blockage problems and secure funds for the clearance of debris from rivers, streams and tributaries.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	NRP	County Soil and Water Conservation, County Administration, Municipal Administrations	To Be Determined	GF	2 to 3 years	Carry Forward	The County will continue these efforts. The County carries out this process through its annual capital improvements campaign.
HER13	Mail once annually a notice to all property owners whose land is located within a special flood hazard area. This notice should clearly state that the recipients' property is susceptible to flooding. The County will also maintain a flood map information service, whereby County residents can call or come by to receive information regarding their property in relation to the defined floodplain.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	2.2	PIO	County Inspections, Municipal Inspections	$2,500	GF	Ongoing – Annually	Carry Forward	The County will initiate these annual mailings through implementation of this plan.
HER14	Make information regarding hazards and development regulations within the floodplain available through the following: (1) The County Planning Director will ensure that the local library maintains information relating to flooding and flood protection. (Maintain dates of distribution and librarian certification of availability); (2) The County will provide a link on their website to FEMA resources addressing flooding and flood protection. This information will be made available to citizens, realtors, developers, and contractors.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	2.2	PIO	County Inspections	Staff Time	GF, NCDPS	Ongoing – next 5 years	Carry Forward	This program is in place and will continue to be provided.
HER15	Coordinate with the Hertford County School System to establish a Hazards Awareness Educational Program for use by educators within the Hertford County School System.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	Med	2.2	PIO	County Emergency Management, Municipal Administration, County Board of Education	Staff Time	General Fund	Ongoing – Annually	Carry Forward	Hertford County will initiate this program through the implementation of this plan.
HER16	Maintain a registry of special needs individuals which has been coordinated with the Hertford 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.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	High	4.2	ES	County Emergency Management	Staff Time	GF	Ongoing – Annually	Carry Forward	This effort is underway, and the County will continue to expand upon these efforts through implementation of this plan.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
HER17	Maintain a list of all hazardous material sites or transport corridors in Hertford County. This effort will be carried out through the efforts of the County LEPC.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	Med	4.2	ES	County Emergency Management	Staff Time	GF	Ongoing – next 5 years	Carry Forward	The County maintains an active LEPC and will continue to do so through implementation of this plan.
HER18	Actively work with Federal, State, local and private partners to identify mitigation measures and secure funding via grants to alleviate flooding. These efforts should focus on the following areas: • US 13 at Ahoskie Creek • Harrellsville Island • Ahoskie Creek and DT Road • Murfreesboro Drainage and Culverts • Ebo Road Drainage and Culverts • Como Drainage and Culverts	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	SP	County Planning & Zoning, County Board of Commissioners	To Be Determined	General Fund, NCDPS, HMGP, NCDENR	3 to 5 years	Carry Forward	Efforts are ongoing by Towns to keep drainage and culverts clear of debris to alleviate and/or reduce flooding. Efforts are ongoing to reduce the flooding impact at Ahoskie Creek, Harrellsville Island, and Ebo Road drainage.
HER19	Annually review and update the County's Emergency Operations Plan (EOP) to ensure compliance with all NCEM and NCOEMS procedures and policies. Through these updates, the County will work closely with participating municipal jurisdictions to ensure that all jurisdictions continue to be educated and prepared for activation of the EOP in the event of a disaster event.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	Med	3.2	ES	County Emergency Management, County Board of Commissioners, Town Administrations	Staff Time	General Fund, Staff Time, NCDPS	Other – Once Annually	Carry Forward	Hertford County reviews County EOP annually to include outside supporting agencies.
HER20	Hertford County, and all participating jurisdictions, will work to implement all recommendations defined within the Hurricane Matthew Resiliency Redevelopment Plan	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	Med	3.1	P	County Emergency Management, County Board of Commissioners, Town Administrations	Staff Time	General Fund, Staff Time, NCDPS, NCDEQ, NCDOT	Other – Once Annually	Carry Forward	Progress is ongoing as efforts are being made to reduce the issues of flood impacts on areas in Hertford County, with the replacement of culverts to reduce road flooding and debris removal from Ahoskie Creek and Potecasi Creek. Other flood prone areas within the plan will be included as funding becomes available.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
HER21	Increase awareness regarding the impacts of natural disasters by educating and informing residents, businesses and visitors via public education, social media and print materials. These efforts should focus on ways to mitigate disaster impacts to both person and property.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	High	2.1	PIO	County Emergency Management, County Planning & Zoning, Municipal Administrations	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	Efforts are underway to keep the public informed of the impacts of natural disasters through social media and printed educational materials available for the public.
HER22	Create or Update Community Wildfire Protection Plans in each fire district.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Wildfire	Med	4.1	P	County Emergency Management, Fire Departments, NC Forest Service	To Be Determined	Grant Funds	5 years	New	

Table 7.5 – Mitigation Action Plan, Pasquotank County

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
PAS1	Engage in comprehensive pre- and post-storm planning efforts utilizing the most accurate and thorough data available. These efforts will involve the review and incorporation of all existing policy and regulatory tools currently in place in an effort to identify cost effective and environmentally sound mitigation projects for implementation.	Pasquotank County, Elizabeth City	All Hazards	Med	1.3	P	County Planning Office, City Planning Division, County Board of Commissioners/City Council	Staff Time	General Fund	Ongoing – Annually	Carry Forward	This effort will be undertaken as events occur within the County.
PAS2	Maintain "Storm Ready Community" Status	Pasquotank County, Elizabeth City	Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Dam & Levee Failure, Severe Winter Weather	Med	2.1	ES	County Emergency Management	Staff Time	General Fund	Ongoing – next 5 years	Carry Forward	Pasquotank County continues to maintain the County's Storm Ready Status and will continue to do so through implementation of this plan. Currently in place with an expiration date of April 15, 2026.
PAS3	Join the Community Rating System (CRS).	Pasquotank County, Elizabeth City	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	3.2	P	County Board of Commissioners, City Council, County/City Staff	Staff Time	General Fund	2 to 3 years	Carry Forward	The County, as well as Elizabeth City, will consider joining the Community Rating System (CRS) through implementation of this plan. Challenge = contingent on identifying available staffing.
PAS4	Develop and maintain comprehensive water management policies for Pasquotank County/Elizabeth City considering the connections between land use, urban growth, and surface water, and groundwater issues.	Pasquotank County, Elizabeth City	Drought	High	1.1	NRP	County Planning Office, County Emergency Management, County Board of Commissioners/City Council, NCDCM – Coastal Area Management Act, Public Utilities	Staff Time	General Fund, Grant Funds	Ongoing – next 5 years	Carry Forward	The County will continue to carry out these efforts through implementation of this plan.
PAS5	Continue to utilize annual, as well as post-disaster, Federal (FEMA) and State mitigation funds to both acquire and elevate structures impacted by excessive flooding.	Pasquotank County, Elizabeth City	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	3.1	PP	County Public Works, County Board of Commissioners, City Administration	To Be Determined	General Fund, NCDENR, NCDPS	Ongoing – As opportunities arise	Carry Forward	Projects are ongoing and determined by available grant funding.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
PAS6	Encourage new or renovated critical facilities to apply structural hazard mitigation and sustainability concepts when building or remodeling their facilities, to include back-up power sources.	Pasquotank County, Elizabeth City	All Hazards	High	1.2	PP	County Planning and Inspections Department, City Planning and Inspections Department	Staff Time	General Fund, Grants	Ongoing – next 5 years	Carry Forward	The County and City will continue to promote the integration of these concepts into the design consideration of new or renovated critical facilities.
PAS7	Increase awareness regarding the impacts of natural disasters by educating and informing residents, businesses, contractors, realtors, developers, and visitors via public education, social media and print materials. These efforts should focus on ways to mitigate disaster impacts to both persons and property.	Pasquotank County, Elizabeth City	All Hazards	High	2.2	PIO	County Emergency Management, City Administration, County Administration	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	The County undertakes these efforts but will aim to improve upon its outreach and education efforts through implementation of this plan.
PAS8	Encourage the use of weather radios/severe weather warning apps – especially in schools, rest homes, convalescent homes, retirement centers and other locations where people congregate – to inform them of approaching severe weather.	Pasquotank County, Elizabeth City	Flood, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Dam & Levee Failure, Severe Winter Weather	Med	2.1	PIO	County Emergency Management	Staff Time	General Fund, Grant Funds, American Red Cross	Ongoing – next 5 years	Carry Forward	This program is already in place and is considered important enough to carry forward into the implementation of this plan.
PAS9	Work to improve its emergency notification system in an effort to increase awareness regarding the locations of shelters and evacuation routes during natural hazard events.	Pasquotank County, Elizabeth City	All Hazards	High	2.1	PIO	County Emergency Management, City Administration	$25,000	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	The County's Emergency Alert System is in place; however, the effectiveness of the system is reviewed annually, as well as following natural hazard events.
PAS10	Review the Pasquotank-Camden-Elizabeth City Multi- Hazard Emergency Operations Plan annually and update the plan as necessary. Ensure all County and City departments continue to develop guidelines for response to emergencies and to maintain departmental operations. Work with County and City departments to ensure each department possesses a clear understanding of department responsibilities as outlined in the Pasquotank-Camden-Elizabeth City Multi-Hazard Emergency Operations Plan.	Pasquotank County, Elizabeth City	All Hazards	Med	3.2	ES	County Emergency Management, County Board of Commissioners, Elizabeth City	Staff Time	General Fund, Staff Time, NCDPS	Other – Once Annually	Carry Forward	Pasquotank County, in conjunction with Elizabeth City will review its Emergency Operations Plan annually, specifically the County addresses issues identified through past storm experiences.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
PAS11	Continue efforts to develop continuity of operational plans (COOP) for county/city departments.	Pasquotank County, Elizabeth City	All Hazards	Med	3.2	ES	County Board of Commissioner/City Council, County/City Planning Boards, Department Heads, County Emergency Management	Staff Time	General Fund, NCDPS	Other – Once Annually	Carry Forward	The Continuity of Operations Plan is reviewed annually in concert with the Emergency Operations Plan. This effort is based on the results of a staged table top exercise, and/or any events that have occurred over the past year.
PAS12	Encourage the installation of generator switches in new construction critical facilities. As projects go through Technical Review Committee, applicants can be encouraged to pre-wire facilities for a generator. New construction critical facilities that would benefit from pre-wiring include, but are not limited to, public schools, local government facilities, facilities that may be utilized as storm shelters, adult care facilities, etc.	Pasquotank County, Elizabeth City	All Hazards	High	1.1	PP	City/County Planning and Inspections, City/County Planning Board	Staff Time	General Fund, NCDPS	Other – As funding is available and need determined	Carry Forward	The County and City will continue to work on establishing backup power supplies at all critical facilities. This will be undertaken as funding becomes available.
PAS13	Incorporate shoreline vegetation protection buffers into the City of Elizabeth City's Unified Development Ordinance as a stipulation to development in and near areas of environmental concern.	Pasquotank County, Elizabeth City	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	NRP	City Planning Department, City Council	Staff Time	General Fund	2 to 3 years	Carry Forward	This regulation has not been established to date, but will be considered through implementation of this plan.
PAS15	Information is distributed during public events and via social media. All structures rehabilitated greater than 50% damage or reconstructed greater than 50% have to meet present wind load requirements in NC Building Code.	Pasquotank County, Elizabeth City	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	2.2	PIO	County Emergency Management, City Administration, County/City Planning and Inspections	Staff Time	General Fund, NCDPS	1 year	Carry Forward	The County and City will continue to disseminate this information and carry that effort out through implementation of this plan.
PAS16	Reduce the vulnerability of infrastructure and the built environment by identifying infrastructure (i.e., pumping stations, roads) in the city/county that is repetitively damaged by flooding and consider ways to reduce those vulnerabilities.	Pasquotank County, Elizabeth City	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.1	SP	County Public Works, County Board of Commissioners, City Administration	To Be Determined	General Fund, NCDPS, NCDEQ	Ongoing, as needed	Carry Forward	This strategy will continue to be carried out by the County and City as opportunities arise.
PAS17	Actively work with Federal, State, local and private partners to identify mitigation measures and secure funding via grants to alleviate flooding.	Pasquotank County, Elizabeth City	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	SP	County Public Works, County Board of Commissioners, City Administration	To Be Determined	General Fund, NCDENR, NCDPS	5 years	Carry Forward	Continue to seek grants to assist with mitigation efforts.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
PAS19	Work with the Drainage Committee to address stormwater/drainage issues in Pasquotank County, outside of the city limits of Elizabeth City	Pasquotank County	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	NRP, SP	County Planning Department, County Board of Commissioners	To Be Determined	General Fund, NCDPS, NCDEQ	Ongoing, as needed	New	Continue to work with the established drainage committee to identify areas that need feasibility study and improvement funding.
PAS20	Create or Update Community Wildfire Protection Plans in each fire district.	Pasquotank County, Elizabeth City	Wildfire	Med	4.1	P	County Emergency Management, Fire Departments, NC Forest Service	To Be Determined	Grant Funds	5 years	New	
PAS21	Restore waterfront facilities at Wharf Park / Waterfront Park.	Elizabeth City	Flooding, Hurricane & Coastal Hazards	High	1.1	SP	Elizabeth City Development Services	$2 million+	Grant Funds	2-3 years	New	
PAS22	Improve and raise street surfaces and drainageways to reduce stormwater flooding.	Elizabeth City	Flooding, Hurricane & Coastal Hazards	High	1.3	SP	Elizabeth City Development Services	$750,000+	Grant Funds	5 years	New	Received a grant for improvements at the intersection of Flora Street and Riverside Ave; Applied for grant funding for Dawson Canal and Outfall Restoration Project;
PAS23	Compile a Vulnerability Index for city facilities and critical assets.	Elizabeth City	All Hazards	High	1.1	P	Elizabeth City Development Services	To Be Determined	General Fund	1-2 years	New	
PAS24	Update the City's CAMA Land Use Plan and integrate resilience planning strategies.	Elizabeth City	All Hazards	High	1.3	P	Elizabeth City Development Services	$180,000+	Grant Funds	2-3 years	New	Applied for Resilient Coastal Communities Program grant funding.

Table 7.6 – Mitigation Action Plan, Perquimans County

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
Perquimans County and Jurisdictions												
PER2	Record all tax parcel information and floodplain locations in a GIS system including repetitive loss areas, areas of greatest risk, and vulnerable populations. Maintain and update GIS layers that identify critical facilities/infrastructure and other facilities to include childcare centers, mobile home parks/subdivisions, and senior care facilities.	Perquimans County, Hertford, Winfall	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	2.2	PIO	County GIS, Municipal Planning	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	In progress. The County GIS Department will continue to maintain this data and incorporate new information as natural disasters occur.
PER3	Consider participating in the Community Rating System (CRS).	Perquimans County	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	3.2	P	County Planning & Zoning, County Board of Commissioners, County Building Inspections	Staff Time	General Fund, NCDPS, NFIP	2 to 3 years	Carry Forward	Not implemented due to lack of staff availability. Perquimans County, as well as Hertford and Winfall will consider joining the CRS program through implementation of this plan.
PER4	Continue to acquire destroyed or substantially damaged properties and relocate households. Acquire or elevate structures that are at high risk of flooding. Seek State and Federal funding (voluntary program).	Perquimans County, Hertford, Winfall	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.2	SP	County Emergency Management, Municipal Administrations	To Be Determined	HMGP, FMA, CDBG, General Fund	Ongoing – next 5 years	Carry Forward	Perquimans County will continue to carry out the mitigation buyout/elevation programs.
PER5	Maintain and annually update the county Emergency Operations Plan. This plan should contain detailed information on responsible parties and contact information. This information should be updated as positions and contact information change.	Perquimans County, Hertford, Winfall	All Hazards	Med	3.2	ES	County Emergency Management, Municipal Administrations	Staff Time	General Fund, NCDPS	Ongoing - Annually	Carry Forward	This effort is carried out annually by Perquimans County Emergency Services. The review and amendments are based on the results of the County's annual tabletop exercise.
PER6	Work to improve/expand its emergency notification system in an effort to increase awareness regarding the locations of shelters and evacuation routes during natural hazard events.	Perquimans County, Hertford, Winfall	Hurricane & Coastal Hazards, Tornado & Thunderstorm, Severe Winter Weather	High	2.1	ES	County Emergency Management, Municipal Administrations	$20,000	General Fund, NCDPS	2 to 3 years	Carry Forward	The County will continue to work towards improving upon existing emergency notification system procedures, using the existing CodeRed Notification System and the Know Your Zone advertisements.
PER7	Promote and encourage the training of Community Emergency Response Teams (CERT) throughout the county.	Perquimans County, Hertford, Winfall	Hurricane & Coastal Hazards, Tornado & Thunderstorm, Severe Winter Weather	Med	2.2	ES	County Emergency Management, Municipal Administrations	$10,000	General Fund, NCDPS	Ongoing - Annually	Carry Forward	The County will continue efforts to expand upon its existing CERT program participation.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
PER8	Work to develop continuity of operations plans (COOP) for county/town departments, assisted living facilities, long-term care facilities, day care centers, etc.	Perquimans County, Hertford, Winfall	All Hazards	High	4.2	ES	County Emergency Management, Municipal Administrations	Staff Time	General Fund, NCDPS	2 to 3 years	Carry Forward	The County will review and update the County's Continuity of Operations Plan (COOP), following its annually scheduled tabletop exercise. In addition, the Gates and Perquimans Communications Centers have merged, as well as Chowan and Perquimans-Gates having mutual agreements to provide Communication Center backup sites for one another. Also, the Finance Office and Human Resources Office are both backed up off site in the event of a natural disaster.
PER10	Continue to monitor and maintain prewired generator switches in new construction critical facilities and existing shelters. As projects go through the County's development review process, applicants can be encouraged to pre-wire facilities for a generator.	Perquimans County, Hertford, Winfall	All Hazards	High	2.1	PP	County Emergency Management, Municipal Administrations, County Building Inspections	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	County Emergency Management maintains switches at all critical facilities, the County Building Inspections Department will require switches be installed during the construction of any new facility deemed critical or that will potentially be utilized as a shelter.
PER11	Sponsor a hazard mitigation symposium for county residents, including information on preparedness for all significant hazards. The symposium should address the options of elevation, relocation, and flood-proofing.	Perquimans County, Hertford, Winfall	Hurricane & Coastal Hazards, Tornado & Thunderstorm, Severe Winter Weather	Med	2.2	PIO	County Emergency Management, Municipal Administrations	Staff Time	General Fund, NCDPS	Ongoing - Annually	Carry Forward	The County will continue to host a symposium once annually prior to the start of hurricane season.
PER12	Continue to maintain a library of materials focused on educating property owners, contractors, realtors and developers about ways to mitigate the effects of high winds and flooding through the use of best management practices during the construction/ renovation of residential and non-residential structures. The County will also utilize print and social media for awareness and education. The County will also maintain staff educated in these issues to work with prospective builders.	Perquimans County, Hertford, Winfall	Hurricane & Coastal Hazards, Tornado & Thunderstorm, Severe Winter Weather	Med	2.2	PIO	County Planning & Zoning, Municipal Administrations	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	This activity is currently underway and will be maintained through the planning process.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
PER13	Increase awareness regarding the impacts of natural disasters by educating and informing residents, businesses and visitors via public education, social media and print materials. These efforts should focus on ways to mitigate disaster impacts to both person and property.	Perquimans County, Hertford, Winfall	All Hazards	High	2.1	PIO	County Emergency Management, County Planning & Zoning	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	The County will continue to carry out these efforts through continued outreach and public education efforts.
PER14	Develop and distribute information to the public regarding the requirements for anchoring LP gas tanks.	Perquimans County, Hertford, Winfall	All Hazards	High	2.2	PIO	County Planning & Zoning, Municipal Administrations	$1,000	General Fund, NCDPS	1 year	Carry Forward	Not yet implemented due to funding issues.
PER15	Actively working with Federal, State, local and private partners to identify mitigation measures and secure funding via grants to alleviate flooding. These efforts should focus on the following areas: • Property along the Perquimans River • Bear Swamp Watershed • Bagley Swamp Watershed • Burnt Mill Watershed	Perquimans County	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	P	County Planning & Zoning, County Board of Commissioners	To Be Determined	General Fund, NCDPS, HMGP, NCDENR	3 to 5 years	Carry Forward	Implementation delayed due to indeterminate cost. The county will continue to investigate the possibility of partnering with Federal, State, Local, and private partners to identify mitigation measures and secure funding.
PER17	Establish a county-wide Mosquito Abatement Program.	Perquimans County	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	ES	County Public Works	To Be Determined	General Fund	2 to 3 years	Carry Forward	Implementation delayed due to indeterminate cost.
PER18	Undertake a county-wide campaign to snag and clear all arterial creeks and canals of beaver dams and other problematic blockages.	Perquimans County	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	P	County Public Works, County Board of Commissioners	To Be Determined	General Fund, NCDPS, NCDEQ	2 to 3 years	Carry Forward	Implementation delayed due to indeterminate cost.
PAS20	Create or Update Community Wildfire Protection Plans in each fire district.	Perquimans County, Hertford, Winfall	Wildfire	Med	4.1	P	County Emergency Management, Fire Departments, NC Forest Service	To Be Determined	Grant Funds	5 years	New	
Town of Hertford												
HRT1	Update the CAMA Land Use Plan in conjunction with the County's Core Land Use Plan.	Town of Hertford	All Hazards	Med	1.3	P	Town Manager	Staff Time	General Fund	2 to 3 years	Carry Forward	The joint CAMA Land Use Plan has not been updated since 2016.
HRT2	Consider revising Hertford's Zoning Ordinance and Subdivision Regulations to improve stormwater management practices in developments to better address Mitigation Goals and Objectives.	Town of Hertford	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	P	Town Manager	Staff Time	General Fund	2 to 3 years	Carry Forward	The Town has not revised its zoning or subdivision regulations yet but still intends to consider changes to stormwater regulations.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
HRT3	Work in conjunction with NCDOT and other agencies to ensure that stormwater facilities are maintained to allow for reasonable flows.	Town of Hertford	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	P	Town Manager	Staff Time	General Fund	2 to 3 years	Carry Forward	The Town contracted Withers Ravenel for stormwater planning assistance. WithersRavenel has been working internally to identify gaps from the completion of the Stormwater Master Plan to the now completed AIA surveys. During a meeting with Hertford on 3/6/2025 six more areas of Town were identified as needing supplementary inventory information based on what was reported in the Stormwater Master Plan. WithersRavenel is working through a large backlog and has a delay of about 2 months for field crews to be scheduled. The Town of Herford has a project for the Hyde Park Culvert to help with the storm water flow and new construction to help with the flooding of Jennies gut. This project is currently in design phase. Final construction drawings should be complete by April 2025.
Town of Winfall												
WIN1	Review the Town's Land Use Plan, Land Development Regulations, and Water and Sewer Ordinances and ensure that hazard mitigation objectives are addressed.	Town of Winfall	All Hazards	Med	1.3	P	Mayor	Staff Time	General Fund	2 to 3 years	Carry Forward	The joint CAMA Land Use Plan has not been updated since 2016. Town will consider plan and ordinance updates.
WIN2	Minimize construction of impervious surfaces adjacent to floodplains or near storm water drainage routes that empty into the river.	Town of Winfall	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	P	Mayor	Staff Time	General Fund	2 to 3 years	Carry Forward	The Town will seek opportunities to minimize impervious surface
WIN3	Continue to encourage efforts toward county-wide water systems with Perquimans County.	Town of Winfall	Drought	Med	1.3	P	Mayor	Staff Time	General Fund	2 to 3 years	Carry Forward	The Town will continue to work with the County on water system resources.
WIN4	Continue to evaluate those businesses with potential hazardous liquids for adequate protection of the public.	Town of Winfall	All Hazards	Low	4.2	ES	Town Council	Staff Time	General Fund	Ongoing – next 5 years	Carry Forward	This effort is also addressed through the County's standing Local Emergency Planning Committee (LEPC).

8 PLAN MAINTENANCE

Requirement §201.6(c)(4): [The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

Implementation and maintenance of the plan is critical to the overall success of hazard mitigation planning. This section discusses how the Mitigation Action Plans will be implemented by participating jurisdictions and outlines the method and schedule for monitoring, updating, and evaluating the plan. This section also discusses incorporating the plan into existing planning mechanisms and how the public will continue to be involved in the planning process. It consists of the following three subsections:

8.1 Implementation
8.2 Monitoring, Evaluation, and Enhancement
8.3 Continued Public Involvement

8.1 IMPLEMENTATION

8.1.1 MITIGATION ACTION PLAN IMPLEMENTATION

Each jurisdiction participating in this plan update is responsible for implementing specific mitigation actions as prescribed in their Mitigation Action Plan (found in Section 7). In each Mitigation Action Plan, every proposed action is assigned to a specific local department or agency to ensure responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their own unique mitigation action list as needed without altering the broader focus of the regional plan.

In addition to the assignment of a local lead department or agency, an implementation timeline or a specific implementation date or window has been assigned to each mitigation action to help assess whether reasonable progress is being made toward implementation. The participating jurisdictions 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.

8.1.2 PLAN INTEGRATION

An important implementation mechanism that is highly effective and low-cost is incorporation of the Hazard Mitigation Plan recommendations and their underlying principles into other plans and mechanisms. Where possible, plan participants will use existing plans and/or programs to implement the Mitigation Action Plan. It will be the responsibility of the HMPC representatives from each participating jurisdiction to determine and pursue opportunities for integrating the requirements of this plan with other local planning documents and ensure that the goals and strategies of new and updated local planning documents for their jurisdictions or agencies are consistent with the goals and actions of the Hazard Mitigation Plan and will not contribute to increased hazard vulnerability in the Plan Area. Methods for integration may include:

— Monitoring other planning/program agendas;

— Attending other planning/program meetings;
— Participating in other planning processes; and
— Monitoring community budget meetings for other community program opportunities.

Table 8.1 details each jurisdiction's integration of the 2020 Albemarle Regional Hazard Mitigation Plan into other local planning efforts as well as any identified opportunities for integration of this plan update.

Table 8.1 – Integration Efforts

Jurisdiction	Integration of 2020 plan	Intended integration of this plan update
Camden County	The County utilized this plan to guide capital expenditures that involved projects outlined in this plan.	Integration will be pursued as opportunities arise and will be pursued with floodplain management activities considered as part of CRS Program participation.
Chowan County	The County has incorporated hazard mitigation and preparedness on the emergency management website.	The updated plan will be used to guide capital expenditures that involve projects outlined in this plan.
Edenton	The Town pursued resiliency planning beyond what was covered by the hazard mitigation plan. Edenton participated in NC DCM's Resilient Coastal Communities Program and utilized components of this plan to develop a resiliency plan.	The Town will continue to integrate findings and projects from this plan to guide future resilience efforts. It will also use the plan to support CRS Program participation.
Gates County	Information outlined within the current Hazard Mitigation Plan was utilized during development of the County's business continuity plan.	Integration will be pursued as opportunities arise.
Gatesville	No integration occurred.	Integration will be pursued as opportunities arise.
Hertford County	The County pursued resiliency planning beyond what was covered by the hazard mitigation plan. Hertford County participated in NC DCM's Resilient Coastal Communities Program and utilized components of this plan to develop a resiliency plan.	The County will continue to integrate findings and projects from this plan to guide future resilience efforts
Ahoskie	The Town pursued resiliency planning beyond what was covered by the hazard mitigation plan. Ahoskie participated in NC DCM's Resilient Coastal Communities Program and utilized components of this plan to develop a resiliency plan.	The Town will continue to integrate findings and projects from this plan to guide future resilience efforts
Cofield	No integration occurred.	Integration will be pursued as opportunities arise.
Como	No integration occurred.	Integration will be pursued as opportunities arise.
Harrellsville	No integration occurred.	Integration will be pursued as opportunities arise.

Jurisdiction	Integration of 2020 plan	Intended integration of this plan update
Murfreesboro	No integration occurred.	Integration will be pursued as opportunities arise.
Winton	No integration occurred.	Integration will be pursued as opportunities arise.
Pasquotank County	The County worked with Newland Township to pursue resiliency planning beyond what was covered by the hazard mitigation plan. They participated in NC DCM's Resilient Coastal Communities Program and utilized components of this plan to develop a resiliency plan	The County will continue to integrate findings and projects from this plan to guide future resilience efforts
Elizabeth City	The City pursued resiliency planning beyond what was covered by the hazard mitigation plan. Elizabeth City participated in NC DCM's Resilient Coastal Communities Program and utilized components of this plan to develop a resiliency plan.	The City will continue to integrate findings and projects from this plan to guide future resilience efforts
Perquimans County	Perquimans County utilized the Hazard Mitigation Plan in the development of the County's updated zoning ordinance.	The County will continue to utilize the Hazard Mitigation Plan to make land use policy decisions.
Hertford	The Town pursued resiliency planning beyond what was covered by the hazard mitigation plan. Hertford participated in NC DCM's Resilient Coastal Communities Program and utilized components of this plan to develop a resiliency plan.	The Town will continue to integrate findings and projects from this plan to guide future resilience efforts
Winfall	The information outlined in this plan was used in the development of the Town's strategic plan.	Integration will be pursued as opportunities arise.

Opportunities to integrate the requirements of this Plan into other local planning mechanisms shall continue to be identified through future meetings of the HMPC and through the five-year 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 Hazard Mitigation Plan is deemed by the HMPC to be the most effective and appropriate method to implement local hazard mitigation actions at this time.

8.2 MONITORING, EVALUATION, AND ENHANCEMENT

8.2.1 ROLE OF HMPC IN IMPLEMENTATION, MONITORING AND MAINTENANCE

With adoption of this plan, each jurisdiction will be responsible for the implementation and maintenance of their mitigation actions. The County Emergency Managers or County Managers will take the lead in

all plan monitoring and update procedures. As such, the County Emergency Managers/County Managers agree to continue their relationship with the HMPC and:

- Act as a forum for hazard mitigation issues;
- Disseminate hazard mitigation ideas and activities to all participants;
- Pursue the implementation of high-priority, low/no-cost recommended actions;
- Ensure hazard mitigation remains a consideration for community decision makers;
- Maintain a vigilant monitoring of multi-objective cost-share opportunities to help the communities implement the plan's recommended actions for which no current funding exists;
- Monitor and assist in implementation and update of this plan;
- Report on plan progress and recommended revisions to their County Boards of Commissioners;
- Support local jurisdictions in reporting on plan progress and recommended revisions to their local governing bodies; and
- Inform and solicit input from the public.

The HMPC's primary duty moving forward is to see the plan successfully carried out and report to the individual County Boards of Commissioners, Town and City Councils, NCEM, FEMA, and the public on the status of plan implementation and mitigation opportunities. Other duties include reviewing and promoting mitigation proposals, considering stakeholder concerns about flood mitigation, passing concerns on to appropriate entities, and providing relevant information for posting on each County and local community websites (and others as appropriate).

Simultaneous to these efforts, it will be important to maintain a constant monitoring of funding opportunities that can be leveraged to implement some of the costlier recommended actions. This task will include creating and maintaining a bank of ideas on how to meet local match or participation requirements. When funding does become available, the Region, individual counties, and participating jurisdictions will be positioned to capitalize on the opportunity. Funding opportunities to be monitored include special pre- and post-disaster funds, state and federal earmarked funds, benefit assessments, and other grant programs, including those that can serve or support multi-objective applications.

8.2.2 MAINTENANCE SCHEDULE

Plan maintenance implies an ongoing effort to monitor and evaluate plan implementation and to update the plan as progress, roadblocks, or changing circumstances are recognized. The County Emergency Managers/County Managers will reconvene the HMPC quarterly for regular reviews and plan maintenance. These meetings may be held in-person or via conference call or webinar. The HMPC will also convene to review the plan after significant hazard events. If determined appropriate or as requested, an annual report on the plan will be developed and presented to local governing bodies of participating jurisdictions to report on implementation progress and recommended changes.

The five-year written update to this plan will be submitted to the NCEM and FEMA Region IV, unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule. With this plan update anticipated to be adopted and fully approved by 2025, the next plan update for the Albemarle Region will be completed by 2030.

8.2.3 MAINTENANCE EVALUATION PROCESS

Evaluation of progress can be achieved by monitoring changes in vulnerabilities identified in the plan. Changes in vulnerability can be identified by noting:

- Decreased vulnerability as a result of implementing recommended actions;

- Increased vulnerability as a result of failed or ineffective mitigation actions; and/or
- Increased vulnerability as a result of new development (and/or annexation).

Updates to this plan will:

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

In order to best evaluate any changes in vulnerability as a result of plan implementation, the HMPC will follow the following process:

- The HMPC representatives from each jurisdiction will be responsible for tracking and reporting on their mitigation actions. Jurisdictional representatives should provide input on whether the action as implemented met the defined objectives and/or is likely to be successful in reducing vulnerabilities.
- If the action does not meet identified objectives, the jurisdictional representatives will determine what additional measures may be implemented and will make any required modifications to the plan.
- All monitoring and implementation information will be reported to the full HMPC, led by the County Emergency Managers/County Managers, during quarterly meetings. An annual plan maintenance report may be drafted as deemed necessary.

Changes will be made to the plan as needed to accommodate for actions that have failed or are not considered feasible after a review of their consistency with established criteria, time frame, community priorities, and/or funding resources. Actions that were not ranked high but were identified as potential mitigation activities will be reviewed during the monitoring and update of this plan to determine feasibility of future implementation. Updating of the mitigation action plans will be by written changes and submissions, as is appropriate and necessary, and as approved by the appropriate jurisdiction's local governing body.

Following a disaster declaration, the plan will be revised as necessary to reflect lessons learned, or to address specific issues and circumstances arising from the event. It will be the responsibility of the County Emergency Managers/County Managers to reconvene the HMPC and ensure the appropriate stakeholders are invited to participate in the plan revision and update process following declared disaster events.

CRITERIA FOR QUARTERLY REVIEWS IN PREPARATION FOR 5-YEAR UPDATE

The criteria recommended in 44 CFR 201 and 206 will be utilized in reviewing and updating the plan. More specifically, quarterly reviews will monitor changes to the following information:

- Community growth or change in the past quarter.
- The number of substantially damaged or substantially improved structures by flood zone.
- The renovations to public infrastructure including water, sewer, drainage, roads, bridges, gas lines, and buildings.
- Natural hazard occurrences that required activation of the Emergency Operations Center (EOC) and whether the event resulted in a presidential disaster declaration.

- Natural hazard occurrences that were not of a magnitude to warrant activation of the EOC or a federal disaster declaration but were severe enough to cause damage in the community or closure of businesses, schools, or public services.
- The dates of hazard events descriptions.
- Documented damages due to the event.
- Closures of places of employment or schools and the number of days closed.
- Road or bridge closures due to the hazard and the length of time closed.
- Assessment of the number of private and public buildings damaged and whether the damage was minor, substantial, major, or if buildings were destroyed. The assessment will include residences, mobile homes, commercial structures, industrial structures, and public buildings, such as schools and public safety buildings.
- Review of any changes in federal, state, and local policies to determine the impact of these policies on the community and how and if the policy changes can or should be incorporated into the Hazard Mitigation Plan. Review of the status of implementation of projects (mitigation strategies) including projects completed will be noted. Projects behind schedule will include a reason for delay of implementation.

8.3 CONTINUED PUBLIC INVOLVEMENT

Continued public involvement is imperative to the overall success of the plan's implementation. The quarterly review process will provide an opportunity to solicit participation from new and existing stakeholders and to publicize success stories from the plan implementation and seek additional public comment. Efforts to involve the public in the maintenance, evaluation, and revision process may include:

- Advertising HMPC meetings in the local newspaper, public bulletin boards and/or City and County office buildings;
- Designating willing citizens and private sector representatives as official members of the HMPC;
- Utilizing local media to update the public of any maintenance and/or review activities;
- Utilizing City and County websites to advertise any maintenance and/or review activities;
- Maintaining copies of the plan in public libraries or other appropriate venues;
- Posting annual progress reports on the Plan to County, City, and Town websites;
- Heavy publicity of the plan and potential ways for the public to be involved after significant hazard events, tailored to the event that has just happened;
- Keeping websites, social media outlets, etc. updated;
- Drafting articles for the local community newspapers/newsletters;
- Utilizing social media accounts (e.g. Twitter, Facebook).

PUBLIC INVOLVEMENT FOR FIVE-YEAR UPDATE

When the HMPC reconvenes for the five-year update, they will coordinate with all stakeholders participating in the planning process—including those that joined the committee since the planning process began—to update and revise the plan. In reconvening, the HMPC will be responsible for coordinating the activities necessary to involve the greater public, including disseminating information through a variety of media channels detailing the plan update process. As part of this effort, public meetings will be held and public comments will be solicited on the plan update draft. The HMPC will continue to reach out to stakeholders and organizations that can represent or connect with vulnerable populations and underserved communities.

9 PLAN ADOPTION

Requirement §201.6(c)(5): [The plan shall include] documentation that the plan has been formally approved by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).

The purpose of formally adopting this plan is to secure buy-in, raise awareness of the plan, and formalize the plan's implementation. The adoption of this plan completes Planning Step 9 (Adopt the Plan) of the 10-step planning process, in accordance with the requirements of DMA 2000. FEMA Approval Letters and community adoption resolutions are provided below.

U.S. Department of Homeland Security
Region 4
3005 Chamblee Tucker Road
Atlanta, GA 30341

FEMA

May 15, 2025

Mr. Steve McGugan
State Hazard Mitigation Officer
Assistant Director / Mitigation Section Chief
Division of Emergency Management, NC Department of Public Safety
200 Park Offices Drive
Durham, NC 27713

Reference: Albemarle Regional Hazard Mitigation Plan

Dear Mr. McGugan:

We are pleased to inform you the Albemarle Regional Hazard Mitigation Plan update complies with the Federal hazard mitigation planning requirements resulting from the Disaster Mitigation Act of 2000, as contained in 44 CFR §201.6. FEMA approval does not include the review or approval of content that exceeds these applicable FEMA mitigation planning requirements. Effective May 15, 2025, the plan is approved for a period of five (5) years to May 14, 2030.

Enclosed is the status of all participating jurisdictions. Approved jurisdictions are eligible applicants through the State for the following mitigation grant programs administered by the Federal Emergency Management Agency (FEMA):

- Hazard Mitigation Grant Program (HMGP)
- Flood Mitigation Assistance (FMA)

Please note that all funding requests will be evaluated individually according to the program's specific eligibility requirements.

The State and all plan participants should be commended for their close coordination and communications with our office in the review and subsequent approval of the plan. If you or any plan participant need assistance, please do not hesitate to contact Kymberly Kudla, of my staff, at (202) 655-6712.

Sincerely,

Kristen M. Martinenza, P.E.
Risk Analysis Branch Chief

Enclosure

Enclosure: Plan Participant Status List

Attached is the list of participating jurisdictions in the referenced hazard mitigation plan.

	Community Name	Jurisdiction Status	Date Approved by FEMA
1)	Ahoskie town	APA	
2)	Camden County	APA	
3)	Chowan County	APA	
4)	Cofield village	APA	
5)	Como town	APA	
6)	Edenton town	APA	
7)	Elizabeth City city	Approved	5/15/25
8)	Gates County	APA	
9)	Gatesville town	APA	
10)	Harrellsville town	APA	
11)	Hertford County	APA	
12)	Hertford town	APA	
13)	Murfreesboro town	APA	
14)	Pasquotank County	APA	
15)	Perquimans County	APA	
16)	Winfall town	APA	
17)	Winton town	APA	

U.S. Department of Homeland Security
Region 4
3005 Chamblee Tucker Road
Atlanta, GA 30341

FEMA

May 1, 2026

Mr. Steve McGugan
State Hazard Mitigation Officer
Assistant Director / Mitigation Section Chief
Division of Emergency Management, NC Department of Public Safety
200 Park Offices Drive
Durham, NC 27713

Reference: Albemarle Regional Hazard Mitigation Plan

Dear Mr. McGugan:

This is a follow-up to our previous correspondence of May 15, 2025, in which we approved the Albemarle Regional Hazard Mitigation Plan and all participating jurisdictions that originally submitted adoption resolutions. We have recently received and approved additional resolution(s) for inclusion. FEMA approval does not include the review or approval of content that exceeds the applicable FEMA mitigation planning requirements.

Enclosed is the status of all participating jurisdictions. Approved jurisdictions are eligible applicants through the State for the following mitigation grant programs administered by the Federal Emergency Management Agency (FEMA):

- Hazard Mitigation Grant Program (HMGP)
- Flood Mitigation Assistance (FMA)
- Building Resilient Infrastructure and Communities (BRIC)

Please note that all funding requests will be evaluated individually according to the program's specific eligibility requirements.

If you or any plan participant need assistance, please do not hesitate to contact Kymberly Kudla, of my staff, at (202) 655-6712.

Sincerely,

KRISTEN M MARTINENZA

Digitally signed by KRISTEN M MARTINENZA
Date: 2026.05.01 11:31:50 -04'00'

Kristen M. Martinenza, P.E.
Risk Analysis Branch Chief

Enclosure

Enclosure: Plan Participant Status List

Attached is the list of participating jurisdictions in the referenced hazard mitigation plan.

	Jurisdiction Name	Jurisdiction Status	Date Approved by FEMA
1)	Ahoskie town	Approved	7/17/25
2)	Camden County	Approved	12/8/25
3)	Chowan County	Approved	8/5/25
4)	Cofield village	Approved	7/17/25
5)	Como town	Approved	7/17/25
6)	Edenton town	Approved	8/22/25
7)	Elizabeth City city	Approved	5/15/25
8)	Gates County	Approved	1/20/26
9)	Gatesville town	Approved	5/1/26
10)	Harrellsville town	Approved	7/17/25
11)	Hertford County	Approved	8/6/25
12)	Hertford town	Approved	6/2/25
13)	Murfreesboro town	Approved	7/17/25
14)	Pasquotank County	Approved	12/8/25
15)	Perquimans County	Approved	6/2/25
16)	Winfall town	Approved	6/2/25
17)	Winton town	Approved	7/30/25

RESOLUTION 2025-06-02
ADOPTING ALBEMARLE REGIONAL
HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within Camden County are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, Camden County desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, Camden County has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Board of Commissioners of Camden County to fulfill this obligation in order that Camden County will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County.

NOW, THEREFORE, be it resolved that the Board of Commissioners of Camden County, North Carolina hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

1

2. Vests Pasquotank-Camden Emergency Management with the responsibility, authority, and the means to:

(a) Inform all concerned parties of this action.
(b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints Pasquotank-Camden Emergency Management to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Camden County Board of Commissioners for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 2nd day of June, 2025.

ATTEST:

Tiffney White, Chair
Camden County Board of Commissioners

Karen M. Davis, NCMCC
Clerk to the Board of Commissioners

Certified by: _____ (SEAL)

Date: 6.2.2025

2

RESOLUTION ADOPTING THE
ALBEMARLE REGIONAL HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within Chowan County are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, Chowan County desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, Chowan County has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Board of Commissioners of Chowan County to fulfill this obligation in order that the County will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County;

1

NOW, THEREFORE, be it resolved that the Board of Commissioners of Chowan County hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

2. Vests Cord Palmer with the responsibility, authority, and the means to:

   (a) Inform all concerned parties of this action.
   (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints Cord Palmer to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Chowan County Board of Commissioners for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 4th day of August, 2025.

Bob Kirby

Bob Kirby, Chair
Chowan County Board of Commissioners

Attest:

Susanne Stallings

Susanne Stallings, Clerk
Chowan County Board of Commissioners

Certified by: Susanne Stallings, Clerk (SEAL)

Date: 8-4-25

CHOWAN COUNTY 1668 N.C.

2

RESOLUTION
ADOPTING ALBEMARLE REGIONAL
HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within Town of Edenton are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, the Town of Edenton desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, the Town of Edenton has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Town of Edenton Town Council to fulfill this obligation in order that the Town will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County;

NOW, THEREFORE, be it resolved that the Town of Edenton Town Council hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

1

2. Vests the Town of Edenton with the responsibility, authority, and the means to:

   (a) Inform all concerned parties of this action.
   (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints Town of Edenton Emergency Management to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Town of Edenton Town Council for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 28th day of July, 2025.

W. Hackney High, Jr., Mayor
Town of Edenton

Attest:

Corey Gooden, Clerk
Town of Edenton

Certified by: 7/31/2025 (SEAL)

Town of Edenton * Incorporated 1715 Chowan County NC

Date: 7-31-25

2

RESOLUTION
ADOPTING ALBEMARLE REGIONAL
HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within **Gates County** are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, **Gates County** desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, the **Gates County** has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the **Board of Commissioners of Gates County** to fulfill this obligation in order that the **Gates County** will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County;

NOW, THEREFORE, be it resolved that the **Board of Commissioners of Gates County** hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

1

2. Vests **Gates County** with the responsibility, authority, and the means to:

   (a) Inform all concerned parties of this action.
   (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints **Gates County** Emergency Management to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the **Gates County Board of Commissioners** for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 14th day of January, 2026.

Emily Truman, Chair
Gates County Board of Commissioners

Attest:

Reneé Draper, Clerk to the Board
Gates County Board of Commissioners

Certified by: Reneé Draper

Date: 01.14.2026

GATES COUNTY
INCORPORATED 1779
Home Of Merchants Mill Pond State Park
NORTH CAROLINA

2

RESOLUTION
ADOPTING ALBERMARLE REGIONAL
HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within the **Town of Gatesville** are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, the **Town of Gatesville** desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, the **Town of Gatesville** has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the **Town Council of Gatesville** to fulfill this obligation in order that the **Town of Gatesville** will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the Town;

NOW, THEREFORE, be it resolved that the **Town Council of Gatesville** hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

2. Vests the **Town of Gatesville** with the responsibility, authority, and the means to:

   (a) Inform all concerned parties of this action.
   (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map, identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints **Gates County** Emergency Management to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the **Town Council of Gatesville** for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 4th day of March, 2026.

G. Doug Lilley, Mayor
Town of Gatesville

Attest:

Janet Lilley, Town Clerk
Town of Gatesville

Certified by : Janet Lilley

Date: 3/4/26

RESOLUTION
ADOPTING ALBEMARLE REGIONAL
HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within Hertford County are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, Hertford County desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, the County of Hertford has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Board of Commissioners of Hertford County to fulfill this obligation in order that the County will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County;

NOW, THEREFORE, be it resolved that the Board of Commissioners of Hertford County hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan and;

1

2. Vests Patrick Dilday with the responsibility, authority, and the means to:

   (a) Inform all concerned parties of this action.
   (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints Patrick Dilday, Emergency Management Director to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Hertford County Board of Commissioners for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 4th day of August, 2025.

Andre M. Lassiter, Chairman
Hertford County Board of Commissioners

Attest:

Renee Tyler
Clerk To The Board of Commissioners

Certified by: _____

Date: 8/4/2025

2

RESOLUTION
ADOPTING ALBEMARLE REGIONAL
HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within Town of Ahoskie are subject to the effects of natural hazards that pose threats to life and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorms, tornadoes, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, the Town of Ahoskie desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five-year cycle; and

WHEREAS, the Town of Ahoskie has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Town of Ahoskie Town Council to fulfill this obligation in order that the Town of Ahoskie will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the Town.

NOW, THEREFORE, be it resolved that the Town of Ahoskie Town Council hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

1

2. Vests Town of Ahoskie with responsibility, authority, and the means to:

   (a) Inform all concerned parties of this action.
   (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints Town of Ahoskie Emergency Management to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Town of Ahoskie Town Council for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this on the 13th day of May, 2025.

Weyling White, Mayor
Town of Ahoskie

Attest:
Joleatha Chestnutt, Town Clerk
Town of Ahoskie

Certified by: Joleatha Chestnutt
TOWN CLERK
Date: May 13, 2025

TOWN OF AHOSKIE NORTH CAROLINA

2

RESOLUTION
ADOPTING ALBEMARLE REGIONAL
HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within the Town of Como are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, the Town of Como desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, the
Town of Como has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Town Council of the Town of Como to fulfill this obligation in order that the Town of Como will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County;

NOW, THEREFORE, be it resolved that the Town Council for the Town of Como hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

2. Vests Como Town Council with the responsibility, authority, and the means to:

(a) Inform all concerned parties of this action.
(b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 29th day of April, 2025.

Lorie Higbee

Lorie Higbee, Mayor pro tem

Town of Como, North Carolina

Attest:

Melissa H Edwards

Melissa Edwards, Clerk
Town of Como, North Carolina

Certified by: Pamela C. Carr, Notary (SEAL)

PAMELA C. CARR NOTARY PUBLIC HERTFORD COUNTY, N.C.

Date: April 29, 2025

1

RESOLUTION
ADOPTING ALBEMARLE REGIONAL
HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within Town of Harrellsville are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, the Town of Harrellsville desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, the Town of Harrellsville has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Town Council members of Town of Harrellsville to fulfill this obligation in order that the Town will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting Hertford County;

NOW, THEREFORE, be it resolved that the Town of Harrellsville Town Council Members hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

1

2. Vests Town of Harrellsville with the responsibility, authority, and the means to:

   (a) Inform all concerned parties of this action.
   (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints Hertford County Emergency Management to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Town of Harrellsville Town Council for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 5th day of May, 2025.

Lisa Hunnicutt, Mayor Pro Tem
Town of Harrellsville

Attest:

Dina H. Askew, Clerk
Town of Harrellsville

Certified by: _____ (SEAL)

Date: 5-5-2025

2

RESOLUTION
ADOPTING ALBEMARLE REGIONAL
HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within Town of Murfreesboro are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, Town of Murfreesboro desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, the Town of Murfreesboro has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Town Council to fulfill this obligation in order that the Town of Murfreesboro will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County;

NOW, THEREFORE, be it resolved that the Town Council of Murfreesboro hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

1

2. Vests Town of Murfreesboro with the responsibility, authority, and the means to:

   (a) Inform all concerned parties of this action.
   (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints Town Administrator to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Town Council of the Town of Murfreesboro for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 20th day of May, 2025.

Hal Thomas

Hal Thomas, Mayor
Town of Murfreesboro

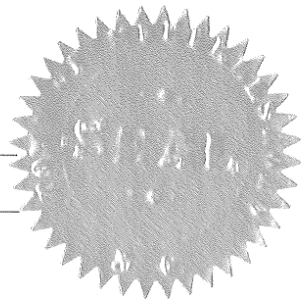
Attest:

Carolyn Brown

Carolyn Brown, Clerk
Town of Murfreesboro

Certified by: Carolyn Brown

Date: 5/20/25



2

RESOLUTION
ADOPTING ALBEMARLE REGIONAL
HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within the Town of Winton are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, the Town of Winton desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, the Town of Winton has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Town Council of the Town of Winton to fulfill this obligation in order that the Town of Winton will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County;

NOW, THEREFORE, be it resolved that the Town Council for the Town of Winton hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

1

2. Vests Winton Town Council with the responsibility, authority, and the means to:

   (a) Inform all concerned parties of this action.
   (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 23rd day of July, 2025.

Evans Heath, Mayor
Town of Winton, North Carolina

Attest:

Florinda Vann, Deputy Clerk
Town of Winton, North Carolina

Certified by: Pamela C. Carr (SEAL)

Date: 7/23/2025

PAMELA C. CARR NOTARY PUBLIC HERTFORD COUNTY, N.C.

2

RESOLUTION
ADOPTING ALBEMARLE REGIONAL
HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within Town of Cofield are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, the Town of Cofield desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, the Town of Cofield has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Council Members of the Town of Cofield Town of Cofield to fulfill this obligation in order that the Town of Cofield will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County;

NOW, THEREFORE, be it resolved that the Council Members of Town of Cofield hereby:

1

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

2. Vests Town of Cofield Agency with the responsibility, authority, and the means to:

   (a) Inform all concerned parties of this action.
   (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints Town of Cofield Emergency Management to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Town of Cofield Council Members for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 12th day of May, 2025.

J. S. Wynn, Mayor
Name, Chair
Town of Cofield

Attest:

Name, Clerk
Town of Cofield

Certified by: _____ (SEAL)

Date: May 12, 2025

KRISTI JERNIGAN WOOD
NOTARY PUBLIC
Hertford County
North Carolina
My Commission Expires January 4, 2028

2

COMMISSIONERS
Lloyd E. Griffin, III, Chairman
Clifford Shaw, Vice-Chairman
Charles Jordan
Barry Overman
Sean Lavin
Jonathan Meads
Sam Davis, III

PASQUOTANK
COUNTY·NC

COUNTY MANAGER
Sparty Hammett

ASSISTANT COUNTY MANAGER
John Shannon

COUNTY ATTORNEY
R. Michael Cox

CLERK TO THE BOARD
Lynn B. Scott

RESOLUTION
ADOPTING ALBEMARLE REGIONAL
HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within Pasquotank County are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, the County desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, the county has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

1

WHEREAS, it is the intent of the Pasquotank County Board of Commissioners to fulfill this obligation in order that the County will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County;

NOW, THEREFORE, be it resolved that the Pasquotank County Board of Commissioners hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

2. Vests Pasquotank County Emergency Management with the responsibility, authority, and the means to:

   (a) Inform all concerned parties of this action.
   (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints Pasquotank County Emergency Management to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Pasquotank County Board of Commissioners for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 16th day of June, 2025.

Lloyd Griffin, Chair
Pasquotank County Board of Commissioners

Attest:

Lynn B. Scott
Pasquotank County Board of Commissioners

Certified by: Lynn B. Scott (SEAL)

Date: 6/16/25



2

RESOLUTION #2025-04-03
A RESOLUTION ADOPTING THE ALBEMARLE REGIONAL HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within the **City of Elizabeth City** are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, the **City of Elizabeth City** desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, the **City of Elizabeth City** has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the **City Council of the City of Elizabeth City** to fulfill this obligation in order that the **City of Elizabeth City** will be eligible

1

for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County;

NOW, THEREFORE, be it resolved that the **City Council of the City of Elizabeth City** hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

2. Vests **the City of Elizabeth City** with the responsibility, authority, and the means to:

(a) Inform all concerned parties of this action.
(b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints **Reginald Goodson** to assure that the Hazard Mitigation Plan is reviewed annually and revised every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the **City Council of the City of Elizabeth City** for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 28th day of April, 2025.

Edward Kirk Rivers

E. Kirk Rivers
Mayor

Attest:
April Onley

April Onley, NCCMC
City Clerk

Certified by: April Onley

Date: April 29, 2025

(SEAL)

2

REBECCA T. CORPREW
CLERK TO BOARD
W. FRANK HEATH, III
COUNTY MANAGER

PERQUIMANS COUNTY
BOARD OF COMMISSIONERS

P.O. BOX 45
HERTFORD, NORTH CAROLINA 27944
TELEPHONE: 1-252-426-7550

WALLACE E. NELSON
CHAIRMAN
CHARLES WOODARD
VICE CHAIRMAN
TIMOTHY J. CORPREW
JOSEPH W. HOFFLER
KATHRYN M. TREIBER
JAMES W. WARD
W. HACKNEY HIGH, JR.
COUNTY ATTORNEY

RESOLUTION ADOPTING THE ALBEMARLE REGIONAL HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within Perquimans County are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, the County and participating municipal jurisdictions desire to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five-year cycle; and

WHEREAS, Perquimans County has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Board of Commissioners of Perquimans County to fulfill this obligation so that Perquimans County will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County;

NOW, THEREFORE, be it resolved that the Board of Commissioners of Perquimans County hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

2. Vests Perquimans County with the responsibility, authority, and the means to:

Perquimans County's Vision:
To be a community of opportunity in which to live, learn, work, prosper and play.

(a) Inform all concerned parties of this action.
(b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints Perquimans County Emergency Management to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Perquimans County Board of Commissioners for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this 5th day of May, 2025.

Wallace E. Nelson, Chairman
Perquimans County Board of Commissioners

Attest:

Rebecca Corprew, Clerk
Perquimans Board of Commissioners

Certified by: Mary P. Hunnicutt (SEAL)

Date: 5/5/2025

BOARD OF COUNTY COMMISSIONERS PERQUIMANS COUNTY NORTH CAROLINA FORMED 1668

Perquimans County's Vision:
To be a community of opportunity in which to live, learn, work, prosper and play.

RESOLUTION ADOPTING THE
ALBEMARLE REGIONAL HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within The Town of Hertford are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, the Town of Hertford and participating municipal jurisdictions desire to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five-year cycle; and

WHEREAS, The Town of Hertford has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Hertford Town Council to fulfill this obligation so that the Town of Hertford will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the Town of Hertford;

NOW, THEREFORE, be it resolved that the Town Council of The Town of Hertford hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

2. Vests The Town of Hertford with the responsibility, authority, and the means to:

   (a) Inform all concerned parties of this action.
   (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints The Town of Hertford Manager to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Town of Hertford Town Council for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this 12th day of May 2025.

R. Ashley Hodges
Mayor, Town of Hertford

Attest:

Gina Durante
Clerk, Town of Hertford

TOWN OF HERTFORD ORIGINAL CHARTER 1758 NORTH CAROLINA

RESOLUTION ADOPTING THE
ALBEMARLE REGIONAL HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within The Town of Winfall are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the region are particularly vulnerable to drought, excessive heat, hurricane and coastal hazards, thunderstorm, tornado, winter weather, flooding, wildfire, hazardous substances, cyber threat, terrorism, and infrastructure failure; and

WHEREAS, the Town of Winfall and participating municipal jurisdictions desire to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five-year cycle; and

WHEREAS, The Town of Winfall has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Winfall Town Council to fulfill this obligation so that the Town of Winfall will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the Town of Winfall;

NOW, THEREFORE, be it resolved that the Town Council of The Town of Winfall hereby:

1. Adopts the Albemarle Regional Hazard Mitigation Plan.

2. Vests The Town of Winfall with the responsibility, authority, and the means to:

   (a) Inform all concerned parties of this action.
   (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints the Winfall Mayor to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Town of Winfall Town Council for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this 12th day of May, 2025.

Mayor, Town of Winfall

Attest:

Valerie Jackson
Clerk, Town of Winfall

Certified by: Valerie Jackson

Date: May 12th 2025

ANNEX A CAMDEN COUNTY

A.1 ASSET INVENTORY

Camden County and the HMPC provided a local inventory of critical facilities and community lifelines, which are a priority for mitigation planning and emergency management. Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. Table A.1 provides a count of critical facilities by FEMA lifeline category in Camden County. Figure A.1 shows the locations of all critical facilities in Camden County.

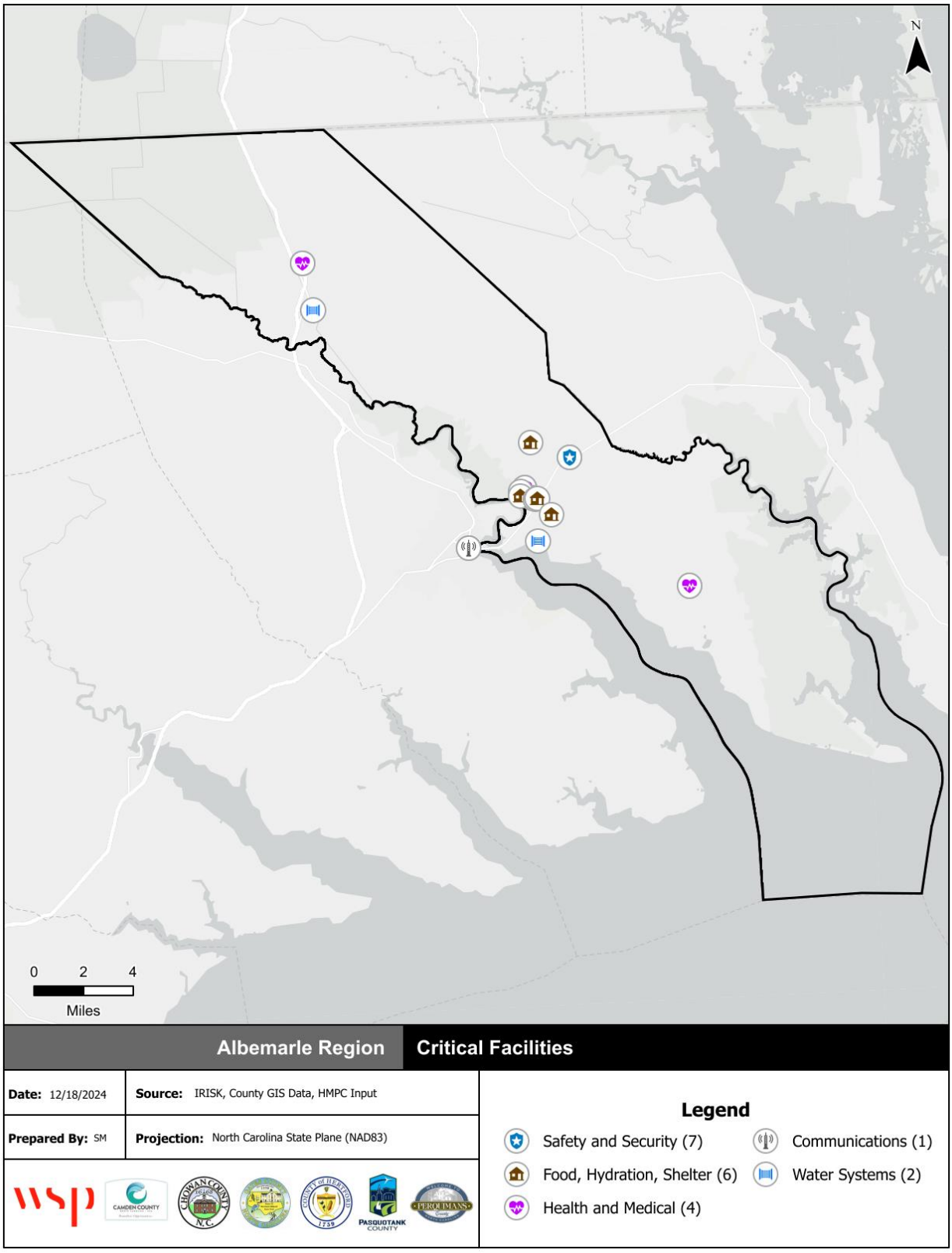
Table A.2 provides a detailed inventory of the critical facilities in Camden County, indicating each facility's FEMA lifeline category, flood zone, 1% annual chance flood depth, and vulnerability to storm surge, sea level rise, and wildfire. More information on hazard vulnerability is provided in the hazard profiles.

Table A.1 – Critical Facilities by Type, Unincorporated Camden County

Facility Type	Count of Facility Type	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	6	$35,949,390
Hazardous Materials	0	$0
Health and Medical	4	$2,520,032
Safety and Security	6	$10,438,458
Transportation	0	$0
Water Systems	2	$25,239
Total	**18**	**$48,933,119**

Source: Camden County, HMPC

Figure A.1 – Critical Facilities, Unincorporated Camden County



Source: NCEM IRISK Database, HMPC input, GIS Analysis

Table A.2 – Camden County Critical Facilities Inventory

FEMA Lifeline	Facility Type	Address	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Safety & Security	Sheriff's Office	117 N. NC Hwy 343, Camden	$3,959,213	0.1	X Unshaded	7	2	Indirect Exposure	0
Safety & Security	Fire	1061 S. NC Hwy 343, Shiloh	$400,673	0.1	X Unshaded	8	4	Indirect Exposure	0
Safety & Security	Fire	114 Sawyers Creek Rd., Camden	$1,313,974	0.1	X Shaded	7	2	Indirect Exposure	0
Safety & Security	Fire	127 Keeter Barn Rd., South Mills	$597,384	0.1	X Unshaded	NA	3	Indirect Exposure	0
Health & Medical	Emergency Medical Services	1061 S. NC Hwy 343, Shiloh	$400,673	0.1	X Unshaded	8	4	Indirect Exposure	0
Health & Medical	Emergency Medical Services	114 Sawyers Creek Rd., Camden	$1,313,974	0.1	X Shaded	7	2	Indirect Exposure	0
Health & Medical	Emergency Medical Services	127 Keeter Barn Rd., South Mills	$597,384	0.1	X Unshaded	NA	3	Indirect Exposure	0
Health & Medical	Emergency Medical Services	330 US Hwy 158 East, Camden	$208,001	0.1	X Unshaded	9	3	Indirect Exposure	0
Safety & Security	Courts	117 N. NC Hwy 343, Camden	$3,959,213	0.1	X Unshaded	7	2	Indirect Exposure	0
Safety & Security	Administration	330 US Hwy 158 East, Camden	$208,001	0.1	X Unshaded	9	3	Indirect Exposure	0
Food, Hydration, Shelter	School	175 N. NC Hwy 343, Camden	$23,370,645	0.1	X Unshaded	6	2	Indirect Exposure	0
Food, Hydration, Shelter	School	123 Noblitt Dr., Camden	-	0.1	X Unshaded	6	2	Indirect Exposure	0
Food, Hydration, Shelter	School	248 Scotland Rd., Camden	$10,334,050	0.1	X Unshaded	6	2	Indirect Exposure	0
Food, Hydration, Shelter	School	103 US 158 West, Camden	$699,669	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	School	103A US 158 West, Camden	$262,742	0.1	X Unshaded	NA	4	Indirect Exposure	0
Water Systems	Water	103 Water Plant Dr., Camden	$17,583	0.1	X Unshaded	7	2	Indirect Exposure	0
Water Systems	Water	220 Canal Drive, South Mills	$7,656	0.1	X Unshaded	9	3	Direct Exposure	2
Food, Hydration, Shelter	Point of Distribution	197 S. NC Hwy 343, Camden	$1,282,284	0.1	X Unshaded	7	2	Indirect Exposure	0

A.2 RISK ASSESSMENT

This section contains a hazard profile and vulnerability assessment for those hazards that were rated with a higher priority in Camden County than for the Albemarle Region as a whole. Risk and vulnerability findings are also presented here for those hazards that are spatially defined and have variations in risk that could be evaluated quantitatively on a jurisdictional level. The hazards included in this section are flooding and wildfire.

A.2.1 FLOODING

Table A.3 details the acreage of Camden County's total area by flood zone on the Effective DFIRM. Per this assessment, over 46 percent of the County is within mapped 1%-annual-chance floodplain.

Table A.3 – Flood Zone Acreage, Camden County

Flood Zone	Acreage	Percent of Total (%)
Camden County		
Zone A	30,804.8	15.5
Zone AE	62,207.4	31.3
Zone VE	20.4	0.0
Zone X (500-year)	5,407.2	2.7
Zone X (unshaded)	80,998.2	40.7
Total	**198,864.9**	--

Source: FEMA Effective DFIRM; U.S. Census Bureau

Figure A.2 reflects the effective mapped flood hazard zones for Camden County and Figure A.3 displays the depth of flooding estimated to occur during the 1%-annual-chance flood.

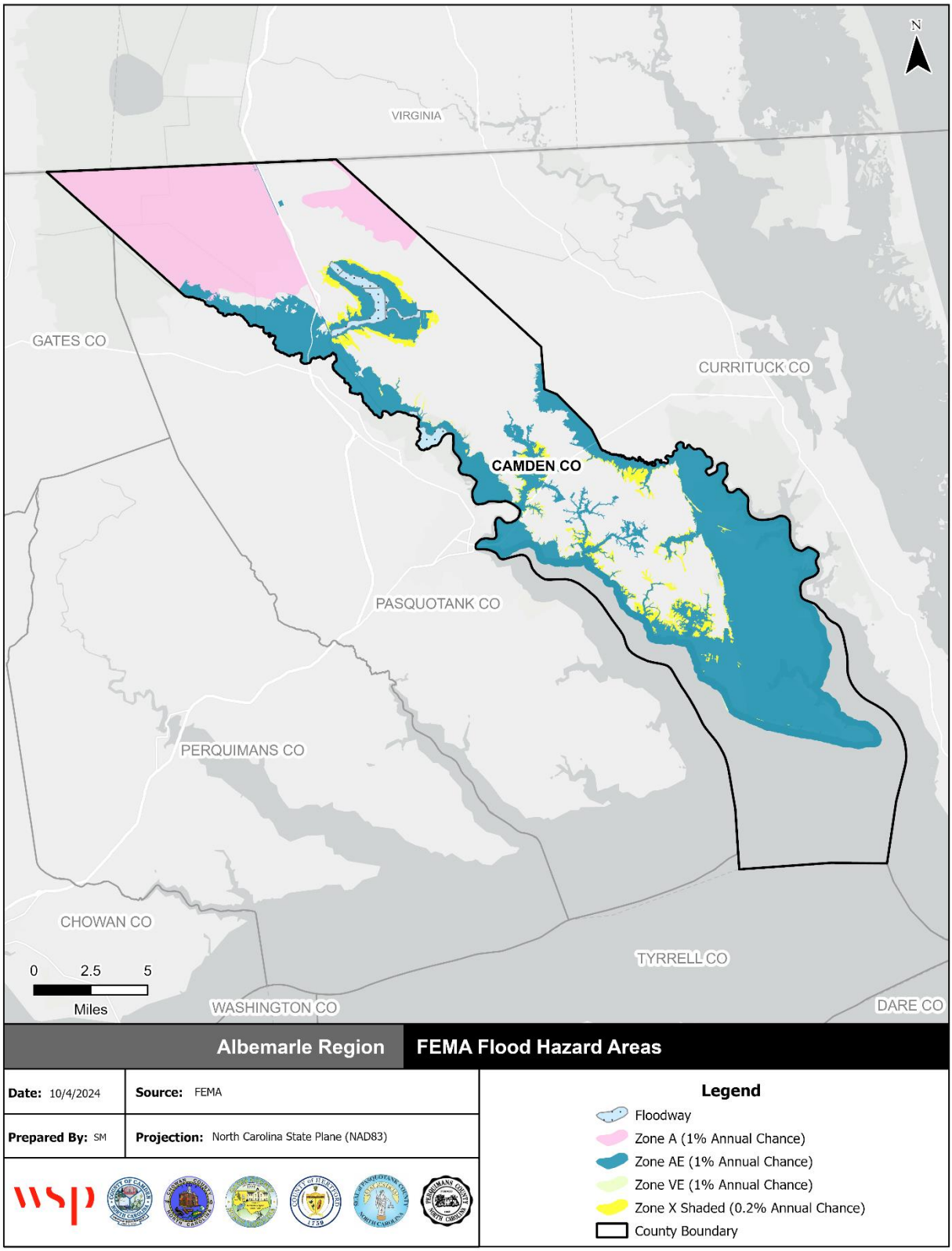
Table A.4 provides building counts and values for critical facilities by flood zone in Camden County.

Table A.4 – Critical Facilities Exposed to Flooding, Camden County

Flood Zone	Critical Facility Count	Structure Value
Camden County		
Zone X (500-year)	2	$2,627,948
Zone X (Unshaded)	16	$46,305,171
Total	**18**	**$48,950,119**

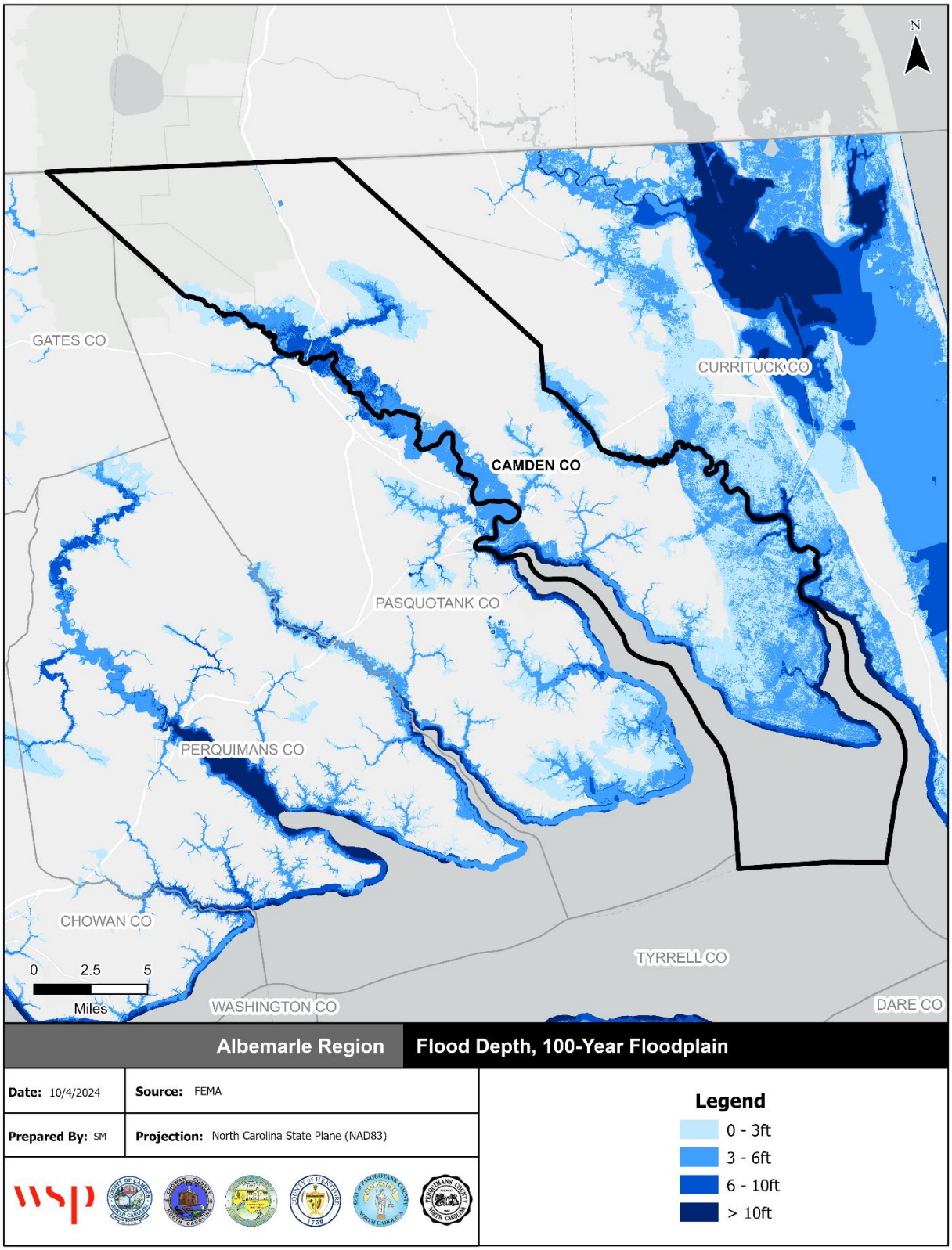
Source: FEMA Effective FIRM

Figure A.2 – FEMA Flood Hazard Areas, Camden County



Source: FEMA Effective DFIRM

Figure A.3 – Flood Depth, 1%-Annual-Chance Floodplain, Camden County



Source: FEMA Effective DFIRM

A.2.1.1 *FLOOD INSURANCE DATA*

The following tables reflect NFIP entry dates as well as policy and claims data for Camden County categorized by structure type, flood zone, Pre-FIRM and Post-FIRM.

Table A.5 – NFIP Program Entry Dates

Community	Emergency Entry	Regular Program Entry
Camden County	May 14, 1974	December 4, 1985

Source: FEMA Community Information System

Table A.6 – NFIP Policy and Claims Data by Structure Type

Structure Type	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Single Family	483	$296,890	$128,983,000	262	$2,859,547.43
2-4 Family	1	$1,029	$350,000	1	$3,539.06
All Other Residential	1	$524	$208,000	4	$102,144.87
Non-Residential	12	$8,842	$2,438,000	14	$320,145.58
Total	**497**	**$307,285**	**$131,979,000**	**281**	**$3,285,376.94**

Source: FEMA Community Information System, accessed January 2025

Table A.7 – NFIP Policy and Claims Data by Flood Zone

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
A01-30 & AE Zones	348	$214,825	$85,179,000	239	$2,795,304.83
A Zones	12	$7,234	$3,028,000	25	$223,583.41
B, C & X Zone					
Standard	137	$85,226	$43,772,000	7	$96,591.80
Preferred	0	$0	$0	8	$154,623.58
Total	**497**	**$307,285**	**$131,979,000**	**279**	**$3,270,103.62**

Source: FEMA Community Information System, accessed January 2025

Table A.8 – NFIP Policy and Claims Data Pre-FIRM

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
A01-30 & AE Zones	91	$67,189	$19,052,000	116	$1,319,234.51
A Zones	0	$0	$0	16	$181,989.14
B, C & X Zone	40	$25,231	$11,866,000	9	$165,697.74
Standard	40	$25,231	$11,866,000	5	$93,104.90
Preferred	0	$0	$0	4	$72,592.84
Total	**131**	**$92,420**	**$30,918,000**	**141**	**$1,666,921.39**

Source: FEMA Community Information System, accessed January 2025

Table A.9 – NFIP Policy and Claims Data Post-FIRM

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
A01-30 & AE Zones	257	$147,636	$66,127,000	123	$1,476,070.32
A Zones	12	$7,234	$3,028,000	9	$41,594.27
B, C & X Zone	97	$59,995	$31,906,000	6	$85,517.64
Standard	97	$59,995	$31,906,000	2	$3,486.90
Preferred	0	$0	$0	4	$82,030.74
Total	**366**	**$214,865**	**$101,061,000**	**138**	**$1,603,182.23**

Source: FEMA Community Information System, accessed January 2025

A.2.2 WILDFIRE

Table A.10 summarizes the acreage in Camden County that falls within the Functional Wildland Urban Interface (WUI), categorized into zones that describe the wildfire risk mitigation activities appropriate for each zone. Areas in the Functional WUI are those areas where development and building structures may intermix with burnable land cover. Approximately, 2.5 percent of Camden County is categorized as having direct exposure to wildfire risk within the Functional WUI.

Table A.10 – Functional Wildland Urban Interface Acreage, Camden County

	Functional Wildland Urban Interface (WUI) Category	Acres	Percent
	Direct Exposure	3,497	2.50%
	Indirect Exposure	7,094	5.00%
	Critical Fireshed	108,827	76.80%
	Sources of Ember Load to Buildings	9,393	6.60%
	Little to No Exposure	0	0.00%
	Water	12,799	9.00%
	Total	**141,610**	**100.00%**

Source: Southern Wildfire Risk Assessment

Figure A.4 depicts the Functional WUI with the location of critical facilities for unincorporated Camden County. Figure A.5 depicts the Fire Intensity Scale, which indicates the potential severity of fire based on fuel loads, topography, and other factors. Figure A.6 depicts Burn Probability based on landscape conditions, percentile weather, historical ignition patterns, and historical prevention and suppression efforts.

Potential fire intensity is highest in the parks and game lands in Camden County, with significant concentrations of land with higher potential intensity in the northwest near the Virginia border and in the southeast along the North River and the Albemarle Sound. Burn probability is low throughout the County, except for some area of moderate probability in the Dismal Swamp State Park along the Virginia border. Despite some overlap of moderate burn probability and fire intensity, these areas are largely outside direct and indirect exposure within the Functional WUI. A fire in these areas would not likely pose a significant risk to human settlement and the built environment.

Table A.11 provides the count and estimated value of all structures that intersect with areas of unincorporated Camden County that are categorized with direct exposure to wildfire risk on the Functional WUI scale.

Table A.12 provides building counts and values for critical facilities by FEMA lifeline that are located in areas categorized with direct exposure to wildfire risk on the Functional WUI scale.

Table A.11 – Structures at Risk to Direct Exposure Functional WUI, Unincorporated Camden County

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	245	$7,132,706.00	$7,132,706.00	$14,265,412.00
Commercial	29	$5,822,410.00	$5,822,410.00	$11,644,820.00
Education	1	$16,920.00	$16,920.00	$33,840.00
Government	13	$2,840,906.00	$2,840,906.00	$5,681,812.00
Industrial	6	$2,397,963.00	$3,596,944.50	$5,994,907.50
Religious	14	$1,963,622.00	$1,963,622.00	$3,927,244.00
Residential	1,641	$171,119,726.00	$85,559,863.00	$256,679,589.00
Total	**1,949**	**$191,294,253.00**	**$106,933,371.50**	**$298,227,624.50**

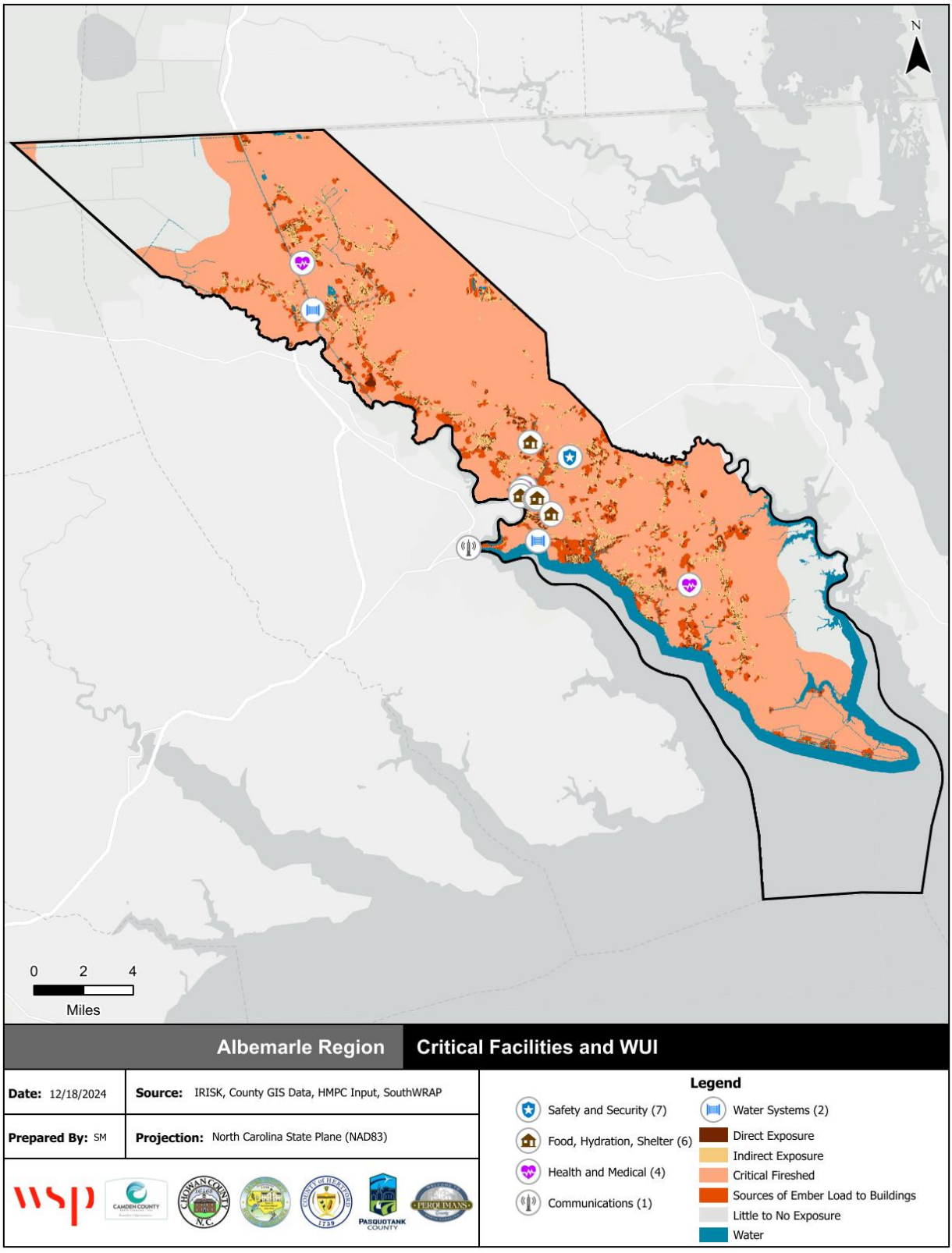
Source: Southern Wildfire Risk Assessment

Table A.12 – Critical Facilities Exposed to Wildfire, Unincorporated Camden County

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	1	$7,656
Total	**1**	**$7,656**

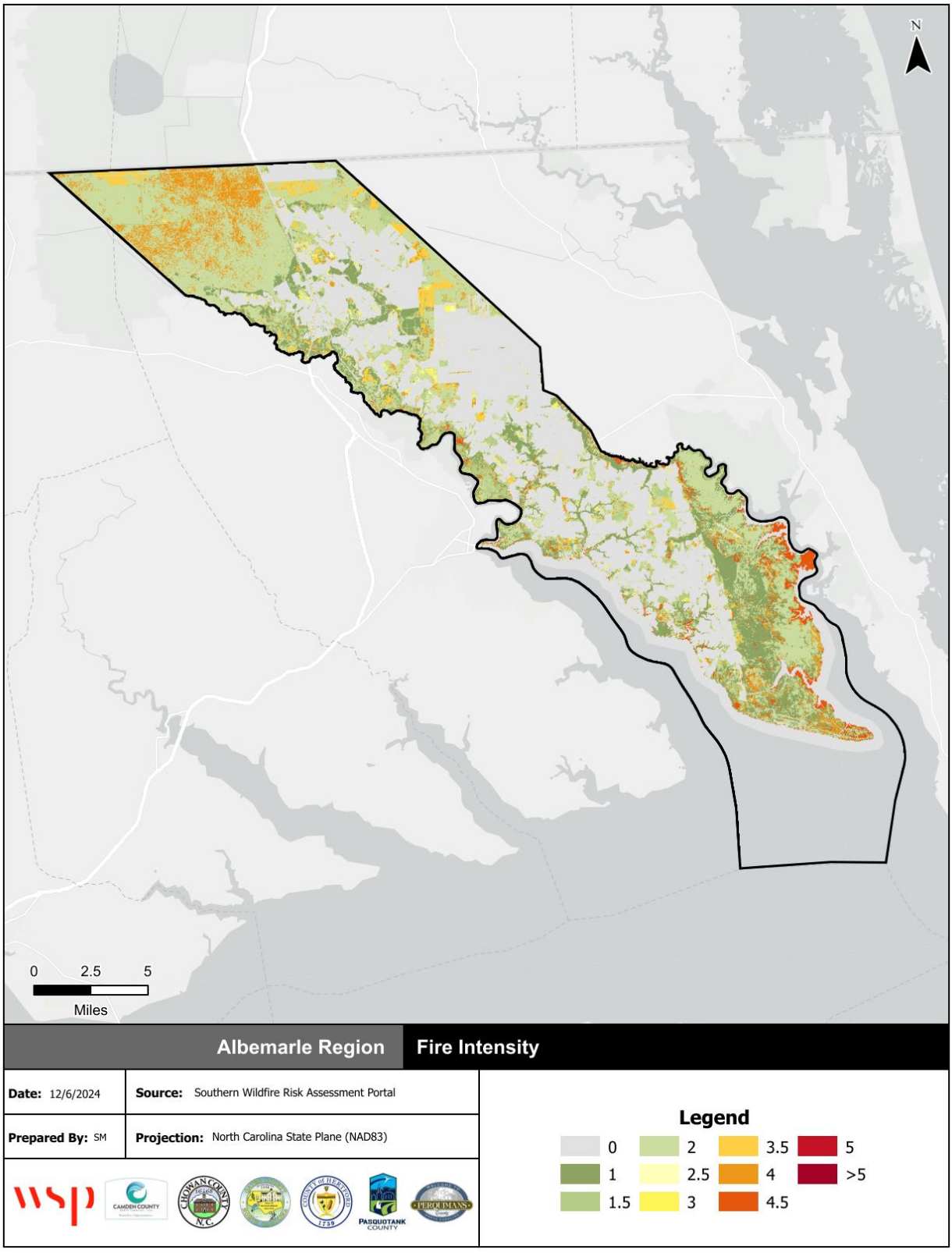
Source: Southern Wildfire Risk Assessment

Figure A.4 – Critical Facilities and Functional WUI, Unincorporated Camden County



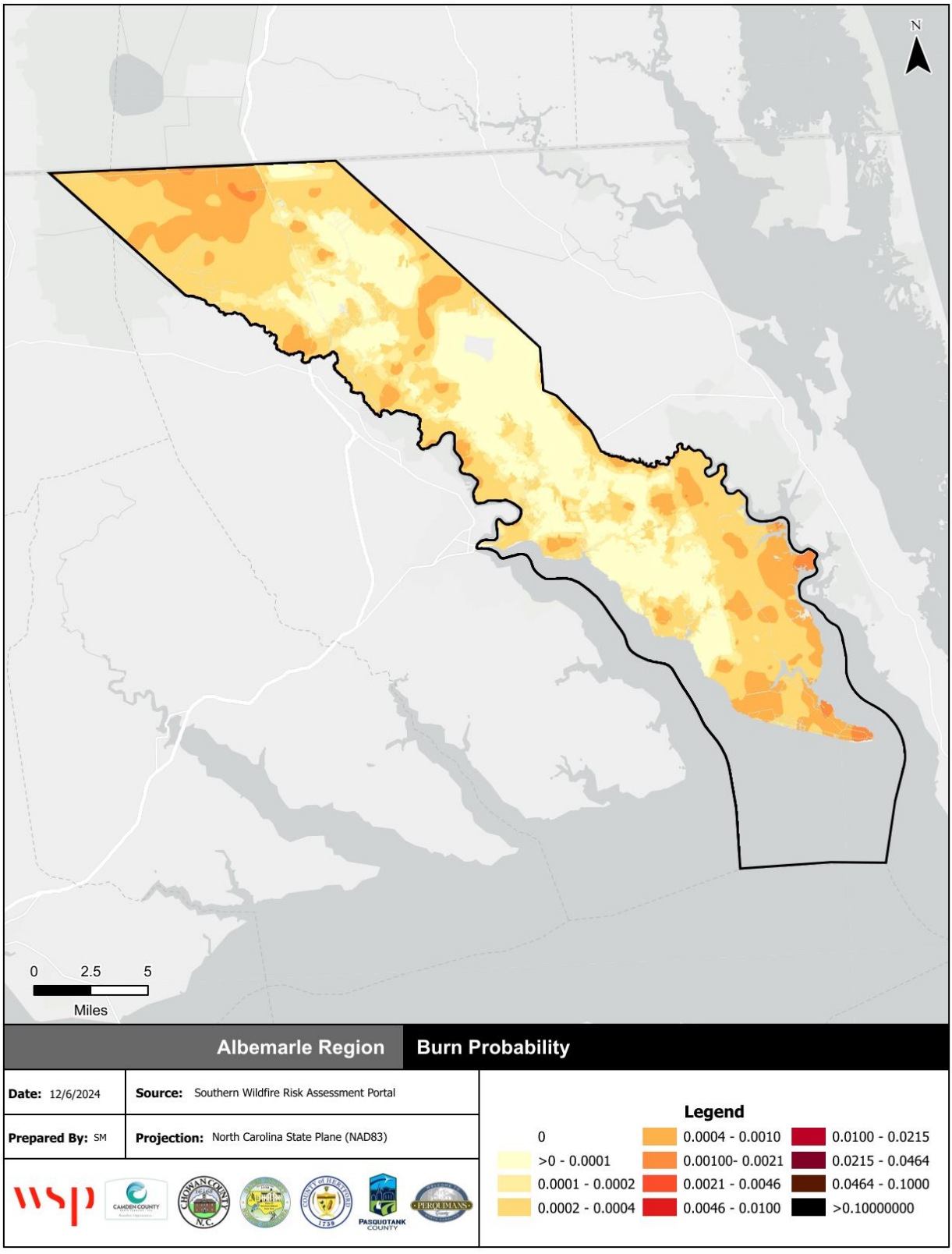
Source: Southern Wildfire Risk Assessment

Figure A.5 – Fire Intensity Scale, Unincorporated Camden County



Source: Southern Wildfire Risk Assessment

Figure A.6 – Burn Probability, Unincorporated Camden County



Source: Southern Wildfire Risk Assessment

A.3 MITIGATION STRATEGY

Action #	Description	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CAM1	Maintain "Storm Ready Community" Status	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards, Tornado & Thunderstorm, Severe Winter Weather	Med	2.1	ES	County Emergency Management	Staff Time	General Fund	Ongoing – next 5 years	Carry Forward	Camden County continues to maintain the County's Storm Ready Status and will continue to do so through implementation of this plan. Certification is in place with an expiration of April 15, 2026.
CAM2	Minimize economic and property losses due to flooding through continued compliance in the National Flood Insurance Program (NFIP).	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	P	County Planning & Zoning, County Emergency Management, County Board of Commissioners	Staff Time	General Fund	Ongoing – next 5 years	Carry Forward	Camden County continues to be an active participant of the NFIP program and will continue to do so through the planning period.
CAM3	Continue to participate in the Community Rating System (CRS) and carry out required activities to maintain the County's Class 7 rating.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	3.2	P	County Planning & Zoning, County Emergency Management, County Board of Commissioners	Staff Time	General Fund. NCDPS	Ongoing – next 5 years	Carry Forward	Camden County is one of only two communities in the Albemarle region that participates in the CRS Program. This plan update will be incorporated into the County's next five-year audit and potentially improve its rating.
CAM4	Develop and maintain comprehensive water management policies for the County considering the connections between land-use, urban growth, and surface water and ground water issues.	Drought	Med	3.2	NRP	County Planning & Zoning, County Board of Commissioners, County Emergency Management, NCDCM – Coastal Area Management Act	Staff Time	General Fund, NCDEQ, NCDPS	Ongoing – next 5 years	Carry Forward	Camden County continues to monitor its water resources and will maintain a water shortage management plan to ensure the availability of resources during drought conditions.
CAM5	Encourage new or renovated critical facilities to apply structural hazard mitigation and sustainability concepts when building or remodeling their facilities; to include back-up power sources.	All Hazards	High	1.2	PP	County Planning & Zoning, County Board of Commissioners	Staff Time	General Fund, NCDPS, Grant Funds	Ongoing – next 5 years	Carry Forward	The County will continue to promote the integration of these concepts into the design consideration of new or renovated critical facilities.
CAM6	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	1.1	PP	County Emergency Management, County Board of Commissioners	To Be Determined	General Fund, NCDPS, Grant Funds	2 to 3 years	Carry Forward	The County will continue to work on establishing backup power supplies at all critical facilities. This will be undertaken as funding becomes available.

Action #	Description	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CAM7	Maintain Debris Removal and Monitoring Services Contracts	Dam & Levee Failure, Drought, Earthquake, Flooding, Hurricane & Coastal Hazards, Tornado & Thunderstorm, Severe Winter Weather	Med	1.1	ES	County Emergency Management, County Planning & Zoning, County Board of Commissioners	Staff Time	NCDPS, FEMA	Other – As necessary	Carry Forward	Camden County maintains a pre-disaster debris management contract and reviews and renews this contract on an annual basis.
CAM8	Encourage the use of weather radios/severe weather warning apps especially in schools, rest homes, convalescent homes, retirement centers and other locations where people congregate to inform them of the approach of severe weather.	All Hazards	Med	2.1	PIO	County Emergency Management, American Red Cross	Staff Time	General Fund, American Red Cross	Ongoing – next 5 years	Carry Forward	The County will continue to work with the American Red Cross to promote this program through the planning process.
CAM9	Review the Pasquotank-Camden-Elizabeth City Multi-Hazard Operations Plan annually and update the plan as necessary. Ensure all departments establish guidelines for response to emergencies and to maintain departmental operations. Work with County departments to ensure each department possesses a clear understanding of department responsibilities as outlined in the Pasquotank-Camden- Elizabeth City Multi-Hazard Operations Plan.	All Hazards	Med	3.2	ES	County Emergency Management, County Board of Commissioners	Staff Time	General Fund, NCDPS	Other – Once Annually	Carry Forward	Camden County reviews its Emergency Operations Plan annually and specifically addresses issues identified through past storm experiences.
CAM10	Continue efforts to develop continuity of operations plans (COOP) for county departments. Continuity of operations planning has been completed by several departments and additional planning efforts are currently underway. These efforts will also be promoted for community businesses private facilities.	All Hazards	Med	3.2	ES	County Emergency Management, County Board of Commissioners, County Department Heads	Staff Time	General Fund, NCDPS	Other – Once Annually	Carry Forward	Camden County reviews its Continuity of Operations Plan annually and specifically addresses issues identified through past storm experiences.
CAM11	Record all tax parcel information and floodplain locations in a GIS system including repetitive loss areas, areas of greatest risk, and vulnerable populations.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	P	County GIS, County Emergency Management, County Tax Department	Staff Time	General Fund, NCDPS	Maintain annually	Carry Forward	Camden County maintains all GIS data through its tax department. These efforts will continue through this plan update.
CAM12	In conjunction with NCEM, produce an up-to-date flood map of Camden County that can be utilized to reduce development in the floodplain. This map should be independent of the County Flood Insurance Rate Maps and reflect the actual extent of past flood events.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	PP	County GIS, County Emergency Management, County Planning & Zoning	Staff Time	General Fund, NCDPS	1 to 2 Years	Carry Forward	The alternate flood impact map has not been started due to staffing. County will be moving forward with this in the immediate future.

Action #	Description	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CAM14	Minimize the impacts of lightning strikes. Continue to educate the public on severe thunderstorm safety and the safety measures to be taken from lightening injuries.	Hurricane & Coastal Hazards, Tornado & Thunderstorm	Med	2.2	PIO	County Emergency Management	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	Camden County will work closely with electric service providers to identify a cost effective solution to this problem.
CAM15	Reduce the impact of wind on trees near county structures and critical facilities. Monitor trees and branches at risk of breaking or falling in windstorms. Prune or thin trees or branches on county/city property when they would pose an immediate threat to property, utility lines or other significant structures or critical facilities in the county.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards, Tornado & Thunderstorm	High	1.1	P	County Public Works, County Manager, County Planning & Zoning	Staff Time	General Fund	Ongoing – next 5 years	Carry Forward	Camden County factors this aspect of emergency management and mitigation into its day-to-day operations. The County will continue to coordinate efforts with utility service providers.
CAM16	Continue the Stormwater Advisory Committee's work in identifying major drainage issues in the four stormwater districts and work to identify what level of maintenance is needed in these areas. Implement drainage improvement projects as needed.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards, Tornado & Thunderstorm	High	1.3	P, SP	Stormwater Advisory Committee, County Public Works, County Planning & Zoning	Staff Time	General Fund, NCDWR	Ongoing – next 5 years	Carry Forward	The County will continue to identify ongoing stormwater hot spots, and where practicable and feasible establish a solution to these issues.
CAM17	Update/maintain the County's current Action Plan for Wildfire Response. These efforts will include a review of inter-agency and multijurisdictional efforts to identify, contain and extinguish wildfires. This effort will also involve an education effort focused on informing home and property owners about Wildland/Urban Interface fire safety.	Wildfire	Med	4.1	P	County Emergency Management, County Manager, Volunteer Fire Depts., NC Forest Service	Staff Time	General Fund, NC Forest Service	Ongoing – next 5 years	Carry Forward	The County will continue to work with the NC Forest Service to address the issue of Wildfire safety throughout the County.
CAM18	Engage in comprehensive pre- and post-storm planning efforts utilizing the most accurate and thorough data available. These efforts will involve the review and incorporation of all existing policy and regulatory tools currently in place in an effort to identify cost effective and environmentally sound mitigation projects for implementation.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards, Tornado & Thunderstorm	Med	1.3	P	County Planning & Zoning, County Emergency Management, County Board of Commissioners	Staff Time	General Fund	Ongoing – next 5 years	Carry Forward	This effort is ongoing with plan and policy review/updates with projects determined by availability of funding.
CAM19	Continue to utilize annual, as well as post-disaster Federal (FEMA) and State, mitigation funds to acquire and elevate structures impact by excessive flooding.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	3.2	PP	County Emergency Management, County Planning & Zoning	To Be Determined	NCDPS, FEMA	Annually – As Needed	Carry Forward	The County continues to utilize mitigation funding to address the impacts of recent natural hazard events.

Action #	Description	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CAM20	Increase awareness regarding the impacts of natural disasters by educating and informing residents, businesses, contractors, realtors, developers and visitors via public education, social media and print materials. These efforts should focus on ways to mitigate disaster impacts to both person and property.	All Hazards	High	2.1	PIO	County Emergency Management, County Planning & Zoning	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	The County will continue to disseminate information and improve upon its outreach and education efforts through the implementation of this plan.
CAM21	Work to improve its emergency notification system in an effort to increase awareness regarding the locations of shelters and evacuation routes during natural hazard events.	All Hazards	High	2.1	PIO	County Emergency Management, County Planning & Zoning	$25,000	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	The County's Emergency Alert System is in place; however, the effectiveness of the system is reviewed annually, as well as following natural hazard events.
CAM22	Engage in a comprehensive planning process aimed at establishing a management plan for all county-owned mitigation properties.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.2	PP	County Emergency Management, County Planning & Zoning	Staff Time	General Fund	Ongoing – next 5 years	Carry Forward	Work continues in development of a management plan for the county-owned mitigation projects.
CAM23	Undertake efforts to reestablish hydrologic connections between the Perquimans River and the Great Dismal Swamp.	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	NRP, SP	County Manager, County Emergency Management, County Board of Commissioners	To Be Determined	General Fund, NCDOT	2 to 3 years	Carry Forward	County is continuing to work on the re-establishment of the hydrologic connection as listed.
CAM24	Create or Update Community Wildfire Protection Plans in each fire district.	Wildfire	Med	4.1	P	County Emergency Management, Fire Departments, NC Forest Service	To Be Determined	Grant Funds	5 years	New	

ANNEX B CHOWAN COUNTY

B.1 ASSET INVENTORY

Chowan County and the HMPC provided a local inventory of critical facilities and community lifelines, which are a priority for mitigation planning and emergency management. Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. Table B.1 and Table B.2 provides a count of critical facilities by FEMA lifeline category by jurisdiction in Chowan County. Figure B.1 and Figure B.2 shows the locations of all critical facilities in Chowan County and participating jurisdictions.

Table B.3 provides a detailed inventory of the critical facilities in Chowan County, indicating each facility's FEMA lifeline category, flood zone, 1% annual chance flood depth, and vulnerability to storm surge, sea level rise, and wildfire. More information on hazard vulnerability is provided in the hazard profiles.

Table B.1 – Critical Facilities by Type, Unincorporated Chowan County

Facility Type	Count of Facility Type	Structure Value
Communications	1	$0
Energy	0	$0
Food, Hydration, Shelter	67	$92,326,048
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	1	$663,031
Transportation	0	$0
Water Systems	6	$1,524,412
Total	**75**	**$94,513,491**

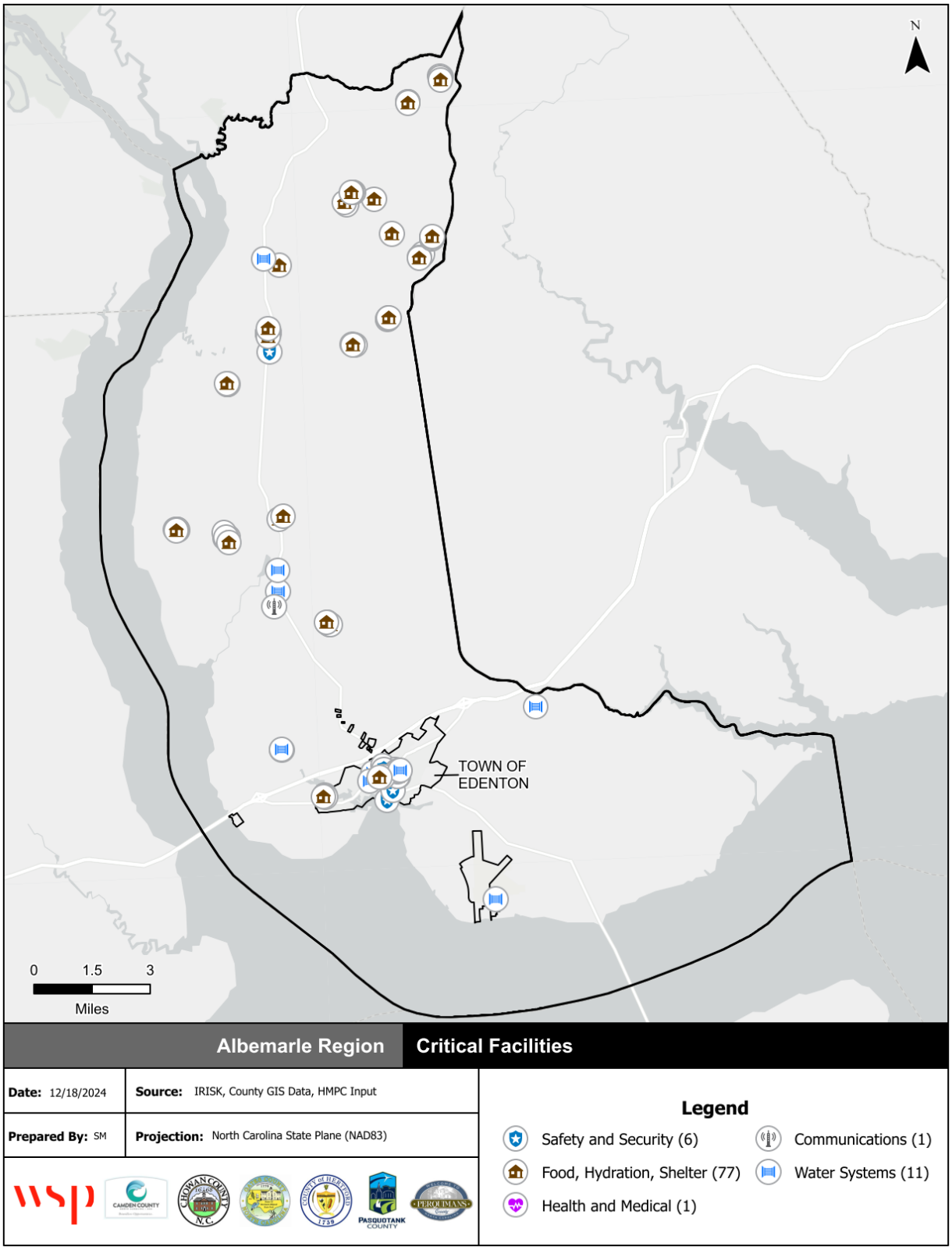
Source: Chowan County, HMPC

Table B.2 – Critical Facilities by Type, Town of Edenton

Facility Type	Count of Facility Type	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	10	$25,760,023
Hazardous Materials	0	$0
Health and Medical	1	$17,299,705
Safety and Security	6	$25,385,807
Transportation	1	$1,144,135
Water Systems	5	$39,709
Total	**23**	**$69,629,379**

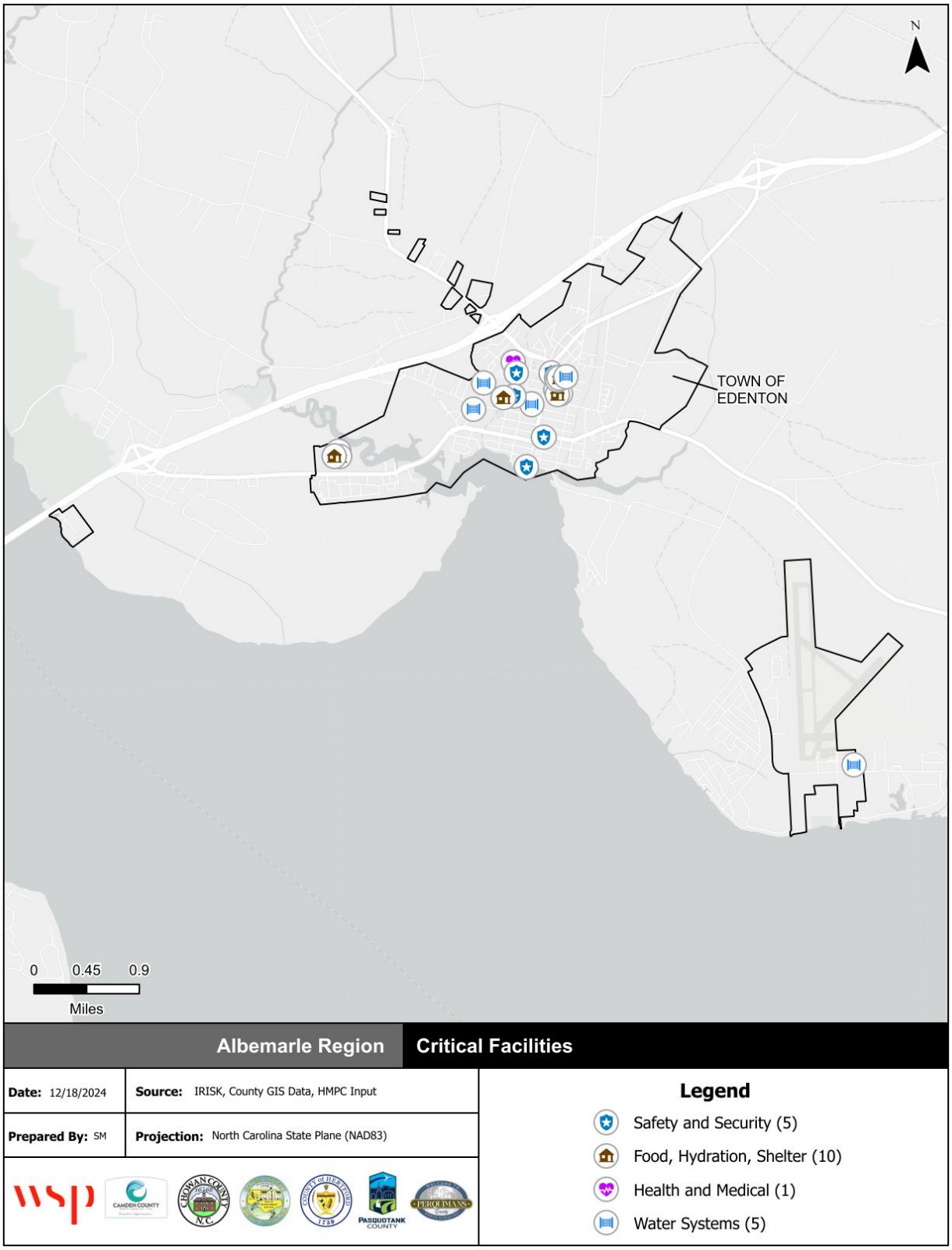
Source: Chowan County, HMPC

Figure B.1 – Critical Facilities, Chowan County



Source: NCEM IRISK Database, HMPC input, GIS Analysis

Figure B.2 – Critical Facilities, Town of Edenton



Source: NCEM IRISK Database, HMPC input, GIS Analysis

Table B.3 – Chowan County Critical Facilities Inventory

FEMA Lifeline	Facility Type	Address	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Unincorporated Chowan County									
Water Systems	Treatment Plant	-	$44,828	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Water Systems	Treatment Plant	-	$44,828	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Water Systems	Water	-	$980,280	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$44,800	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$44,800	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$54,294	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$79,983	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-	$79,983	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$78,000	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$500	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-	$79,983	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-	$79,983	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-	$57,047	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$92,189	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-	$33,092	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$26,000	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$941	0.1	X Unshaded	NA	NA	Direct Exposure	3
Food, Hydration, Shelter	Hog Farm	-	$239,247	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$239,247	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$239,247	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$239,247	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$57,750	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$26,591	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$25,537	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$89,905	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$94,063	0.1	X Unshaded	NA	NA	Indirect Exposure	0

FEMA Lifeline	Facility Type	Address	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Hog Farm	-	$23,545	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$49,082	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$116,320	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$6,000	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$71,000	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$67,000	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$67,000	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$5,000	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$239,247	0.1	X Unshaded	NA	5	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-	$34,944	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$34,944	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$325,624	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$34,944	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Safety and Security	Fire Station	-	$663,031	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$5,144,046	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	School	-	$5,144,046	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$5,144,046	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$5,144,046	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$5,144,046	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$5,144,046	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$5,144,046	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$5,144,046	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$5,144,046	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$5,144,046	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$18,144,791	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$18,144,791	0.1	X Unshaded	NA	NA	Indirect Exposure	0

FEMA Lifeline	Facility Type	Address	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Chicken House	-	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	-	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	-	-	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	-	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Municipal	2869 Virginia Rd.	$2,445,046	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Shelter	138 Icaria Rd	$204,337	0.1	X Unshaded	NA	NA	Direct Exposure	3
Water Systems	Water	3235 Virginia Rd	$70,630	0.1	X Unshaded	NA	NA	Critical Fireshed	0
Water Systems	Water	1608 Virginia Rd	$454,476	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Communications	Communications	1421 Virginia Rd	$21,600	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Water Systems	Water	208 Thick Neck Rd Edenton	$300,000	0.1	X Unshaded	NA	NA	NA	4
Town of Edenton									
Water Systems	Water	-	$39,709	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Water Systems	Water	-	-	0.1	X Unshaded	NA	NA	Direct Exposure	2
Safety & Security	Police Station	-	$378,974	0.1	X Shaded	5	2	Indirect Exposure	0
Safety & Security	Police Station	-	$1,556,890	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Health & Medical	Hospital	-	$17,299,705	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$461,560	0.1	X Unshaded	10	4	Indirect Exposure	0

FEMA Lifeline	Facility Type	Address	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Hog Farm	-	$461,560	0.1	X Unshaded	7	2	Direct Exposure	1
Food, Hydration, Shelter	Hog Farm	-	$461,560	0.1	X Unshaded	7	3	Indirect Exposure	0
Safety and Security	Fire Station	-	$283,252	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Safety and Security	Emergency Operations	-	$17,299,705	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	School	-	$4,529,990	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$4,529,990	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$146,217	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$4,529,990	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$4,529,990	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$4,529,990	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Safety & Security	Emergency Services	305 West Freemason Street	$5,240,958	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Transportation	Transportation	113 Airport Drive	$1,144,135	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Safety & Security	Safety	739 Soundside Rd	$626,028	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Water Systems	Water	817B Soundside Rd	$169,161	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Water Systems	Water	304 Park Avenue	$237,471	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Water Systems	Water	202 Twiddy Avenue	$300,000	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Municipal	100 West Freemason Circle	$1,725,393	0.1	X Unshaded	NA	NA	Indirect Exposure	0

B.2 RISK ASSESSMENT

This section contains a hazard profile and vulnerability assessment for those hazards that were rated with a higher priority by jurisdiction in Chowan County than for the Albemarle Region as a whole. Risk and vulnerability findings are also presented here for those hazards that are spatially defined and have variations in risk that could be evaluated quantitatively on a jurisdictional level. The hazards included in this section are flooding and wildfire.

B.2.1 FLOODING

Table B.4 details the acreage of Chowan County's total area by jurisdiction and flood zone on the Effective DFIRM. Per this assessment, over 18 percent of unincorporated Chowan County is within the mapped 1%-annual-chance floodplain and over 13 percent of the Town of Edenton are in the 1%-annual-chance floodplain. Overall, over 18 percent of Chowan County is in the SFHA.

Table B.4 – Flood Zone Acreage by Jurisdiction, Chowan County

Flood Zone	Acreage	Percent of Total (%)
Unincorporated Chowan County		
Zone AE	22,636.7	15.5
Zone AO	1.2	0.0
Zone VE	4,714.6	3.2
Zone X (500-year)	999.8	0.7
Zone X (unshaded)	91,500.1	62.5
Total	**146,458.6**	--
Town of Edenton		
Zone AE	447.1	13.6
Zone VE	1.8	0.1
Zone X (500-year)	41.5	1.3
Zone X (unshaded)	2,794.3	85.1
Total	**3,284.8**	--

Source: FEMA Effective DFIRM

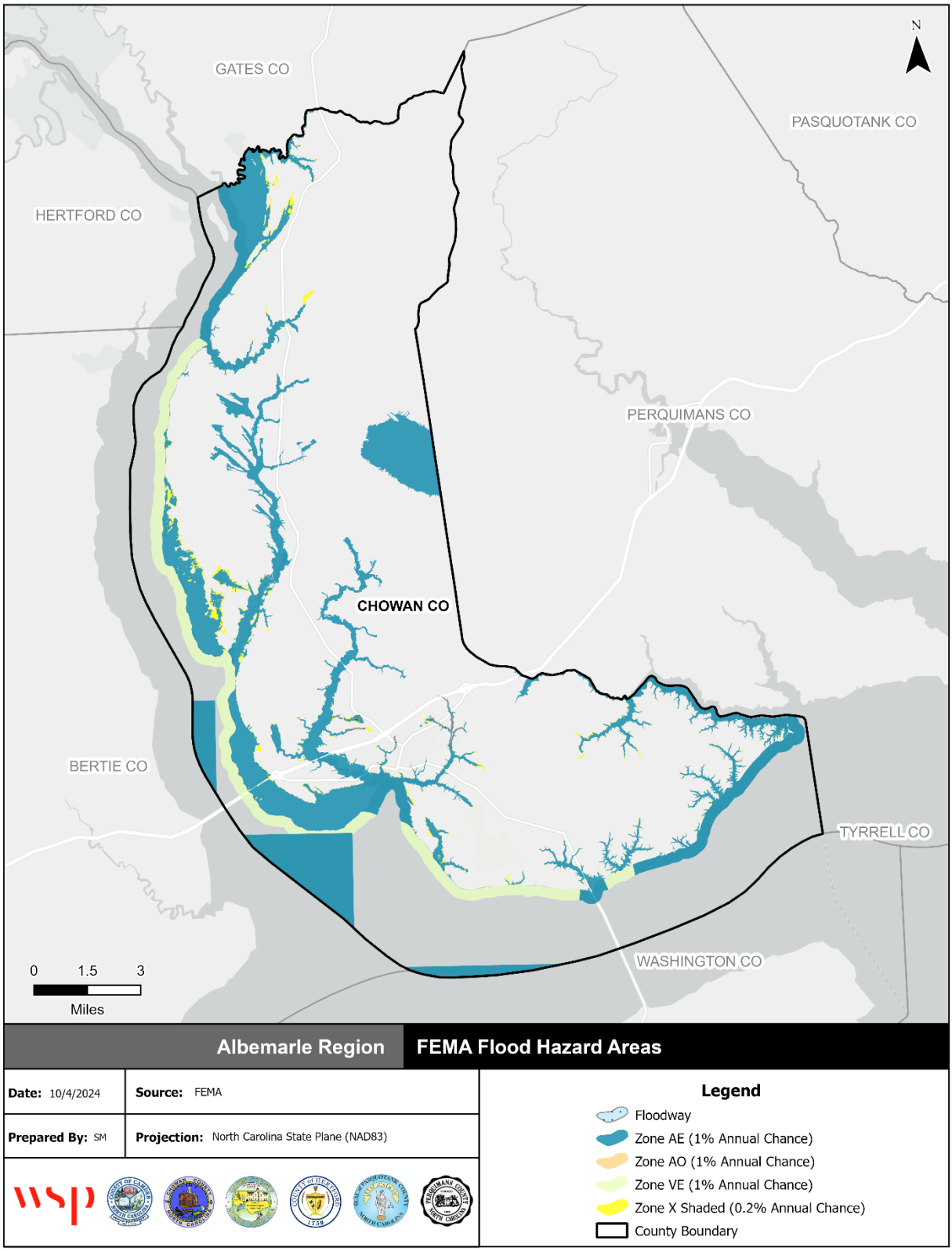
Figure B.3 and Figure B.4 reflect the effective mapped flood hazard zones for Chowan County and the Town of Edenton, and Figure B.5 and Figure B.6 display the depth of flooding estimated to occur in these areas during the 1%-annual-chance flood. Table B.5 provides building counts and values for critical facilities by flood zone in Chowan County and the Town of Edenton.

Table B.5 – Critical Facilities Exposed to Flooding, Chowan County

Flood Zone	Critical Facility Count	Structure Value
Camden County		
Zone X (unshaded)	75	$94,513,491
Total	**75**	**$94,513,491**
Town of Edenton		
Zone X (shaded)	1	$ 378,974
Zone X (unshaded)	22	$69,250,405
Total	**23**	**$69,629,379**

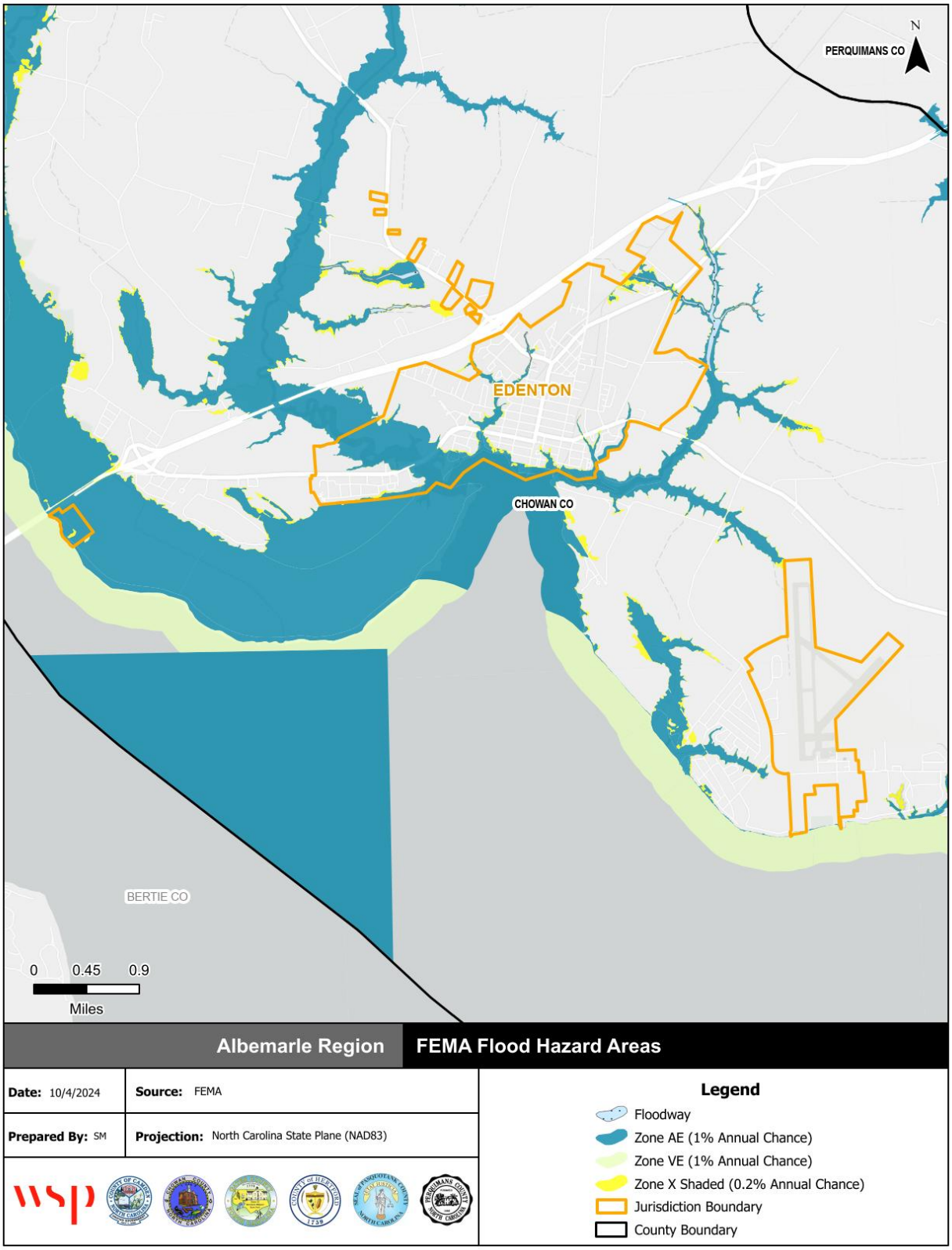
Source: FEMA Effective FIRM

Figure B.3 – FEMA Flood Hazard Areas, Unincorporated Chowan County



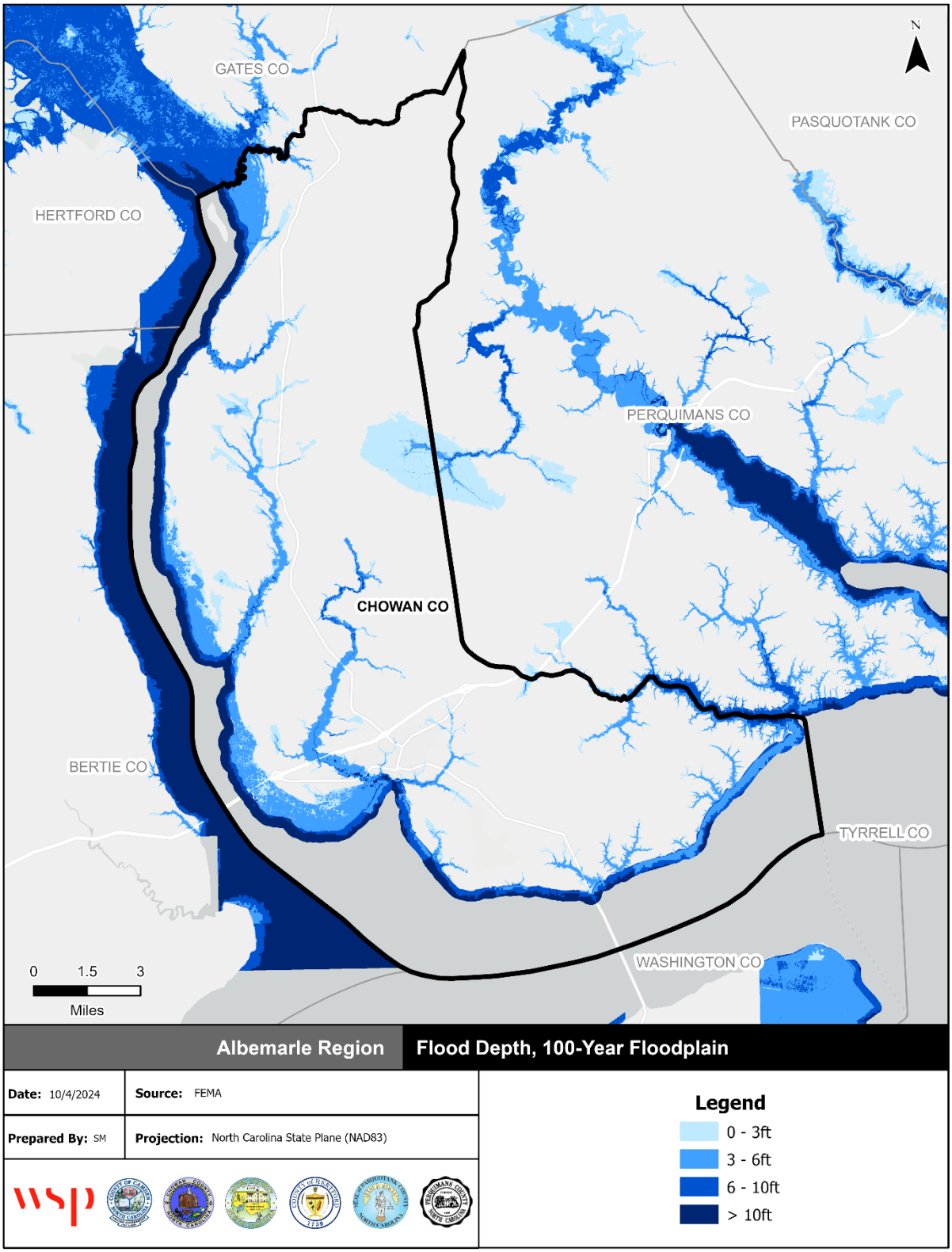
Source: FEMA Effective DFIRM

Figure B.4 – FEMA Flood Hazard Areas, Town of Edenton



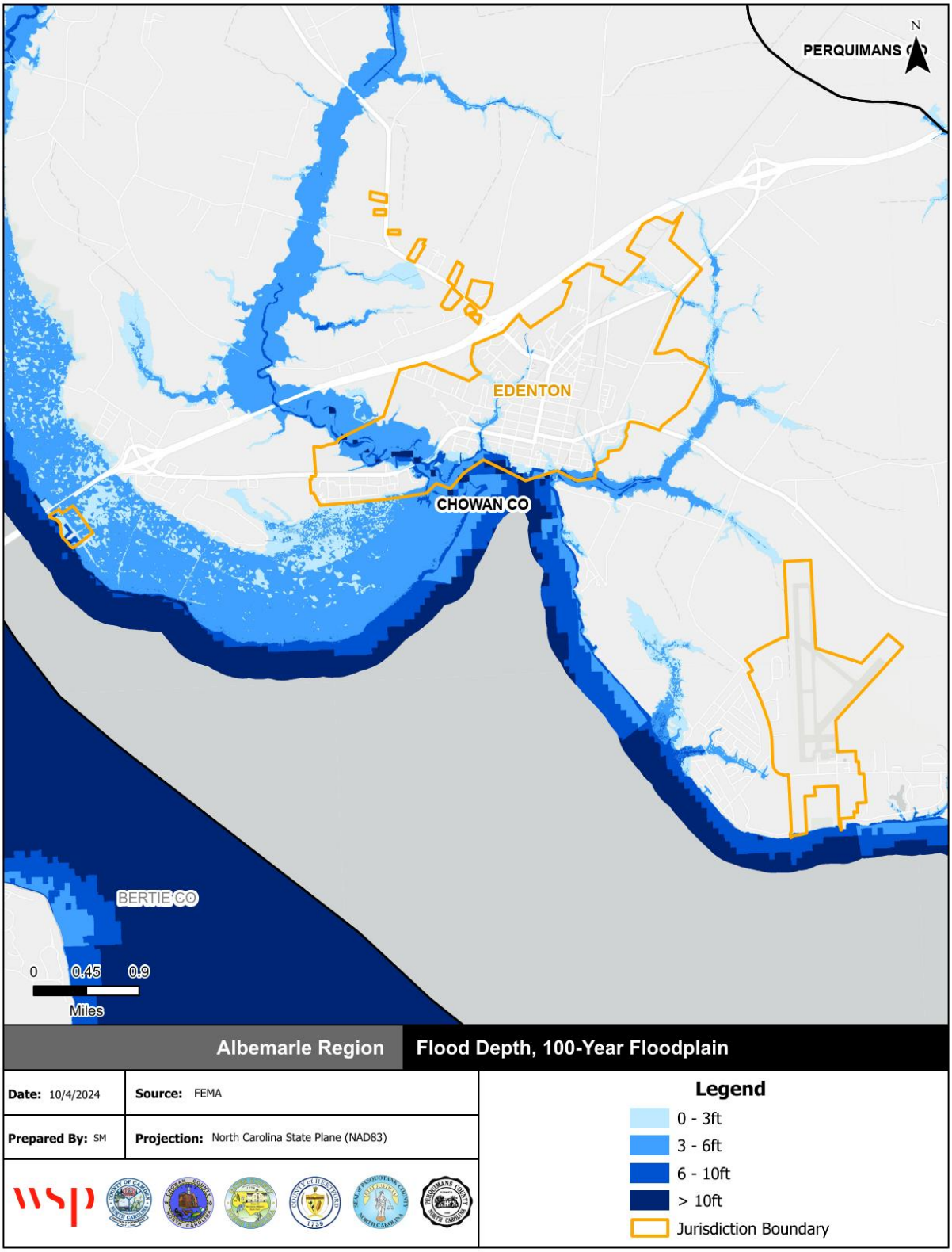
Source: FEMA Effective DFIRM

Figure B.5 – Flood Depth, 1%-Annual-Chance Floodplain, Unincorporated Chowan County



Source: FEMA Effective DFIRM

Figure B.6 – Flood Depth, 1%-Annual-Chance Floodplain, Town of Edenton



Source: FEMA Effective DFIRM

B.2.1.1 *FLOOD INSURANCE DATA*

The following tables reflect NFIP entry dates as well as policy and claims data for Chowan County and the Town of Edenton, categorized by structure type, flood zone, Pre-FIRM and Post-FIRM.

Table B.6 – NFIP Program Entry Dates

Community	Emergency Entry	Regular Program Entry
Chowan County (Unincorporated Area)	August 25, 1977	July 3, 1985
Town of Edenton	November 14, 1973	September 15, 1977

Source: FEMA Community Information System

Table B.7 – NFIP Policy and Claims Data by Structure Type

Structure Type	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Chowan County Unincorporated Area					
Single Family	113	$86,962	$32,539,000	112	$1,455,316.87
2-4 Family	0	$0	$0	0	$0.00
All Other Residential	24	$5,792	$6,000,000	0	$0.00
Non-Residential	3	$3,033	$1,031,000	2	$48,172.79
Total	**140**	**$95,787**	**$39,570,000**	**114**	**$1,503,489.66**
Town of Edenton					
Single Family	74	$56,799	$21,913,000	146	$3,700,302.74
2-4 Family	0	$0	$0	0	$0.00
All Other Residential	61	$19,868	$17,833,000	1	$0.00
Non-Residential	9	$16,959	$4,431,000	18	$770,807.46
Total	**144**	**$93,626**	**$44,177,000**	**165**	**$4,471,110.20**

Source: FEMA Community Information System, accessed January 2025

Table B.8 – NFIP Policy and Claims Data by Flood Zone

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Chowan County Unincorporated Area					
A01-30 & AE Zones	77	$52,046	$19,012,000	87	$1,362,838.23
B, C & X Zone					
Standard	63	$43,741	$20,558,000	5	$28,016.82
Preferred	0	$0	$0	20	$110,448.24
Total	**140**	**$95,787**	**$39,570,000**	**112**	**$1,501,303.29**
Town of Edenton					
A01-30 & AE Zones	88	$51,305	$23,986,000	137	$3,612,954.04
A Zones	0	$0	$0	2	$77,183.55
B, C & X Zone					
Standard	56	$42,321	$20,191,000	13	$444,365.86
Preferred	0	$0	$0	13	$336,606.75
Total	**144**	**$93,626**	**$44,177,000**	**165**	**$4,471,110.20**

Source: FEMA Community Information System, accessed January 2025

Table B.9 – NFIP Policy and Claims Data Pre-FIRM

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Chowan County Unincorporated Area					
A01-30 & AE Zones	21	$21,475	$4,566,000	42	$888,162.17
B, C & X Zone	30	$20,929	$9,387,000	17	$104,462.23
Standard	30	$20,929	$9,387,000	4	$23,075.46
Preferred	0	$0	$0	13	$81,386.77
Total	**51**	**$42,404**	**$13,953,000**	**59**	**$992,624.40**
Town of Edenton					
A01-30 & AE Zones	52	$34,007	$14,626,000	97	$3,129,899.86
A Zones	0	$0	$0	2	$77,183.55
B, C & X Zone	26	$20,227	$7,846,000	13	$287,121.56
Standard	26	$20,227	$7,846,000	4	$30,695.57
Preferred	0	$0	$0	9	$256,425.99
Total	**78**	**$54,234**	**$22,472,000**	**112**	**$3,494,204.97**

Source: FEMA Community Information System, accessed January 2025

Table B.10 – NFIP Policy and Claims Data Post-FIRM

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Chowan County Unincorporated Area					
A01-30 & AE Zones	56	$30,571	$14,446,000	45	$474,676.06
B, C & X Zone	33	$22,812	$11,171,000	8	$34,002.83
Standard	33	$22,812	$11,171,000	1	$4,941.36
Preferred	0	$0	$0	7	$29,061.47
Total	**89**	**$53,383**	**$25,617,000**	**53**	**$508,678.89**
Town of Edenton					
A01-30 & AE Zones	36	$17,298	$9,360,000	40	$483,054.18
B, C & X Zone	30	$22,094	$12,345,000	13	$493,851.05
Standard	30	$22,094	$12,345,000	9	$413,670.29
Preferred	0	$0	$0	4	$80,180.76
Total	**66**	**$39,392**	**$21,705,000**	**53**	**$976,905.23**

Source: FEMA Community Information System, accessed January 2025

B.2.2 WILDFIRE

Table B.11 summarizes the acreage in Chowan County that falls within the Functional Wildland Urban Interface (WUI), categorized into zones that describe the wildfire risk mitigation activities appropriate for each zone. Areas in the Functional WUI are those areas where development and building structures may intermix with burnable land cover. Approximately, 4.9 percent of Chowan County is categorized as having direct exposure to wildfire risk within the Functional WUI.

Table B.11 – Functional Wildland Urban Interface Acreage, Chowan County

	Functional Wildland Urban Interface (WUI) Category	Acres	Percent
	Direct Exposure	5,993	4.90%
	Indirect Exposure	9,223	7.50%
	Critical Fireshed	78,660	63.80%
	Sources of Ember Load to Buildings	16,234	13.20%
	Little to No Exposure	0	0.00%
	Water	13,132	10.70%
	Total	**123,242**	**100.00%**

Source: Southern Wildfire Risk Assessment

Figure B.7 and Figure B.8 depicts the Functional WUI with the location of critical facilities for unincorporated Chowan County and all participating jurisdictions. Figure B.9 and Figure B.10 depicts the Fire Intensity Scale, which indicates the potential severity of fire based on fuel loads, topography, and other factors. Figure B.11 and Figure B.12 depicts Burn Probability based on landscape conditions, percentile weather, historical ignition patterns, and historical prevention and suppression efforts.

Areas of moderate to high potential fire intensity are scattered throughout the county, with higher concentrations northeast of Edenton along the Perquimans County border and southwest along the Chowan River. Burn probability is also slightly higher in these areas but is otherwise generally low throughout the county. While the area around the Perquimans County border has high burn probability and fire intensity, these areas are largely outside direct and indirect exposure within the Functional WUI, therefore impacts to buildings and people would be minimal. Risk is higher along the Chowan River west of Edenton, where moderate burn probability and fire intensity coincide with Functional WUI.

Table B.12 and Table B.13 provides the count and estimated value of all structures that intersect with areas of unincorporated Camden County and participating jurisdictions that are rated with direct exposure on the Functional WUI scale.

Table B.14 and Table B.15 provides building counts and values for critical facilities by FEMA lifeline that are located in areas categorized with direct exposure to wildfire risk on the Functional WUI scale.

Table B.12 – Structures at Risk to Direct Exposure Functional WUI, Unincorporated Chowan County

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	260	$13,867,150.00	$13,867,150.00	$27,734,300.00
Commercial	76	$18,071,733.00	$18,071,733.00	$36,143,466.00
Education	5	$1,719,043.00	$1,719,043.00	$3,438,086.00
Government	6	$66,012,359.00	$66,012,359.00	$132,024,718.00
Industrial	44	$8,283,016.00	$12,424,524.00	$20,707,540.00
Religious	24	$7,001,581.00	$7,001,581.00	$14,003,162.00
Residential	2,826	$274,577,930.70	$137,288,965.30	$411,866,896.00
Total	**3,241**	**$389,532,812.70**	**$256,385,355.30**	**$645,918,168.00**

Source: Southern Wildfire Risk Assessment

Table B.13 – Structures at Risk to Direct Exposure Functional WUI, Town of Edenton

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	2	$162,825.00	$162,825.00	$325,650.00
Commercial	32	$11,239,059.00	$11,239,059.00	$22,478,118.00
Education	1	$427,259.00	$427,259.00	$854,518.00
Government	3	$511,777.00	$511,777.00	$1,023,554.00
Industrial	5	$691,805.00	$1,037,707.50	$1,729,512.50
Religious	3	$2,270,856.00	$2,270,856.00	$4,541,712.00
Residential	520	$77,033,139.00	$38,516,569.50	$115,549,708.50
Total	**566**	**$92,336,720.00**	**$54,166,053.00**	**$146,502,773.00**

Source: Southern Wildfire Risk Assessment

Table B.14 – Critical Facilities Exposed to Wildfire, Unincorporated Chowan County

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	11	$5,827,579
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	0	$0
Total	**11**	**$5,827,579**

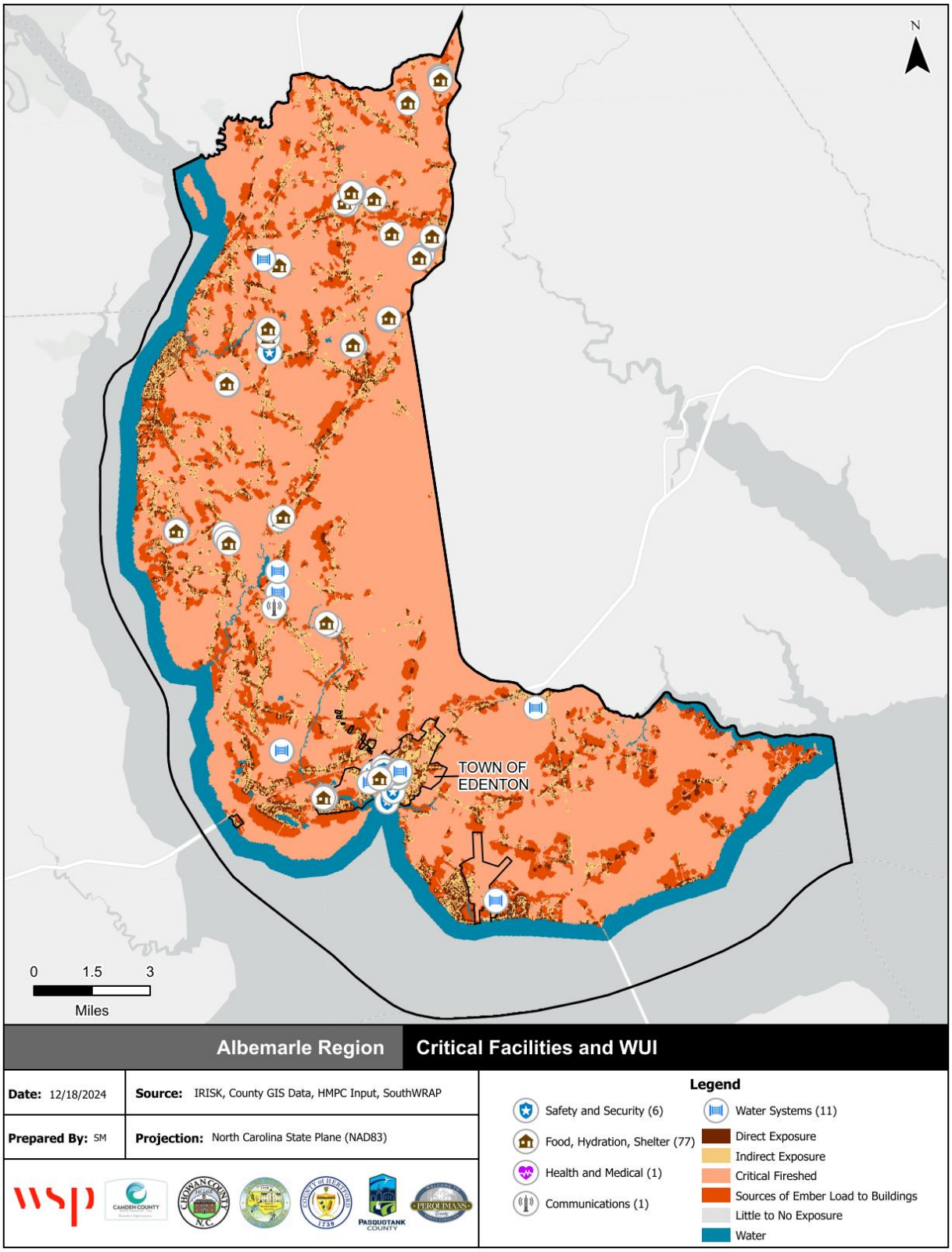
Source: Southern Wildfire Risk Assessment

Table B.15 – Critical Facilities Exposed to Wildfire, Town of Edenton

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	1	$461,560
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	1	17,299,705
Transportation	0	$0
Water Systems	1	$0
Total	**3**	**$17,761,265**

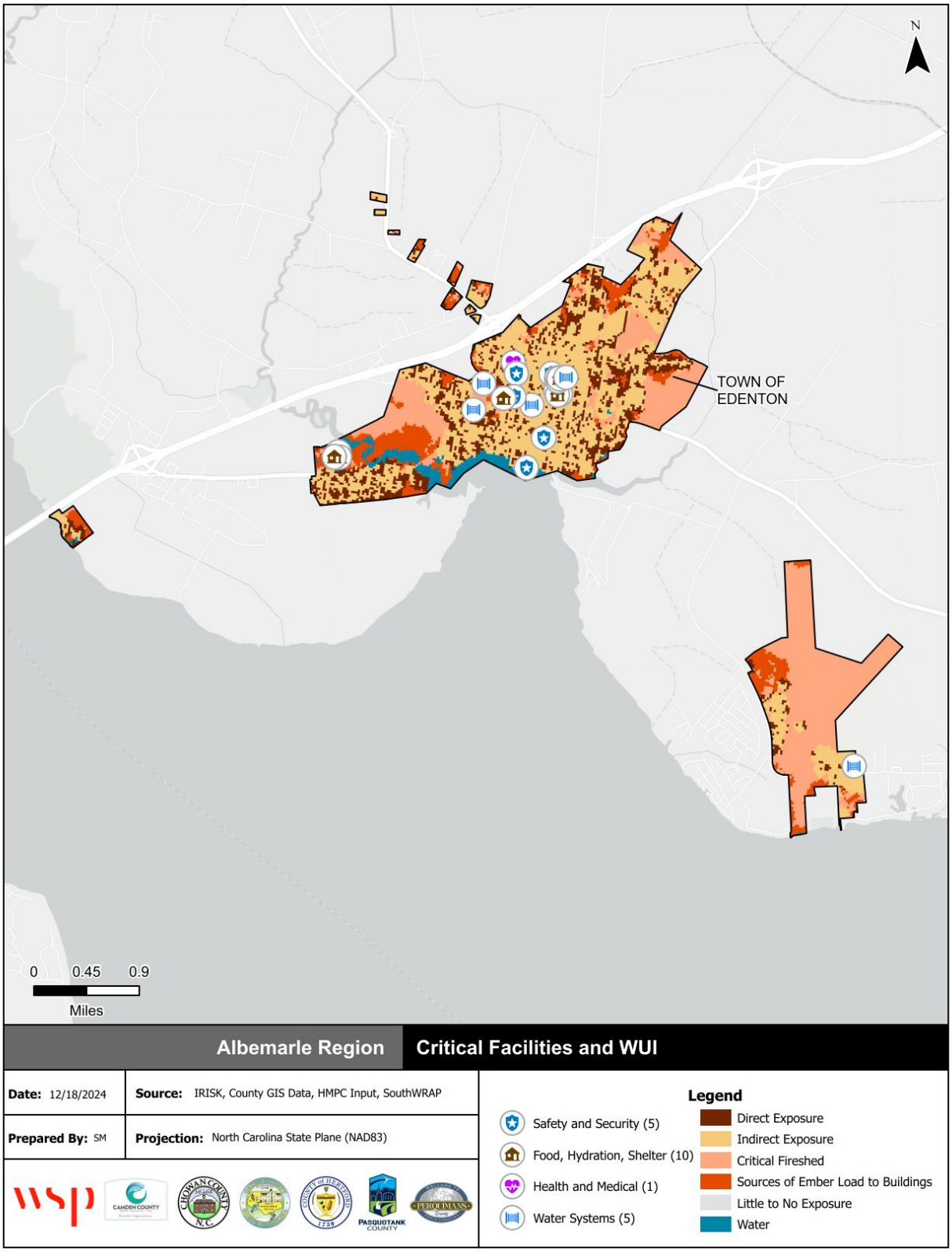
Source: Southern Wildfire Risk Assessment

Figure B.7 – Critical Facilities and Functional WUI, Unincorporated Chowan County



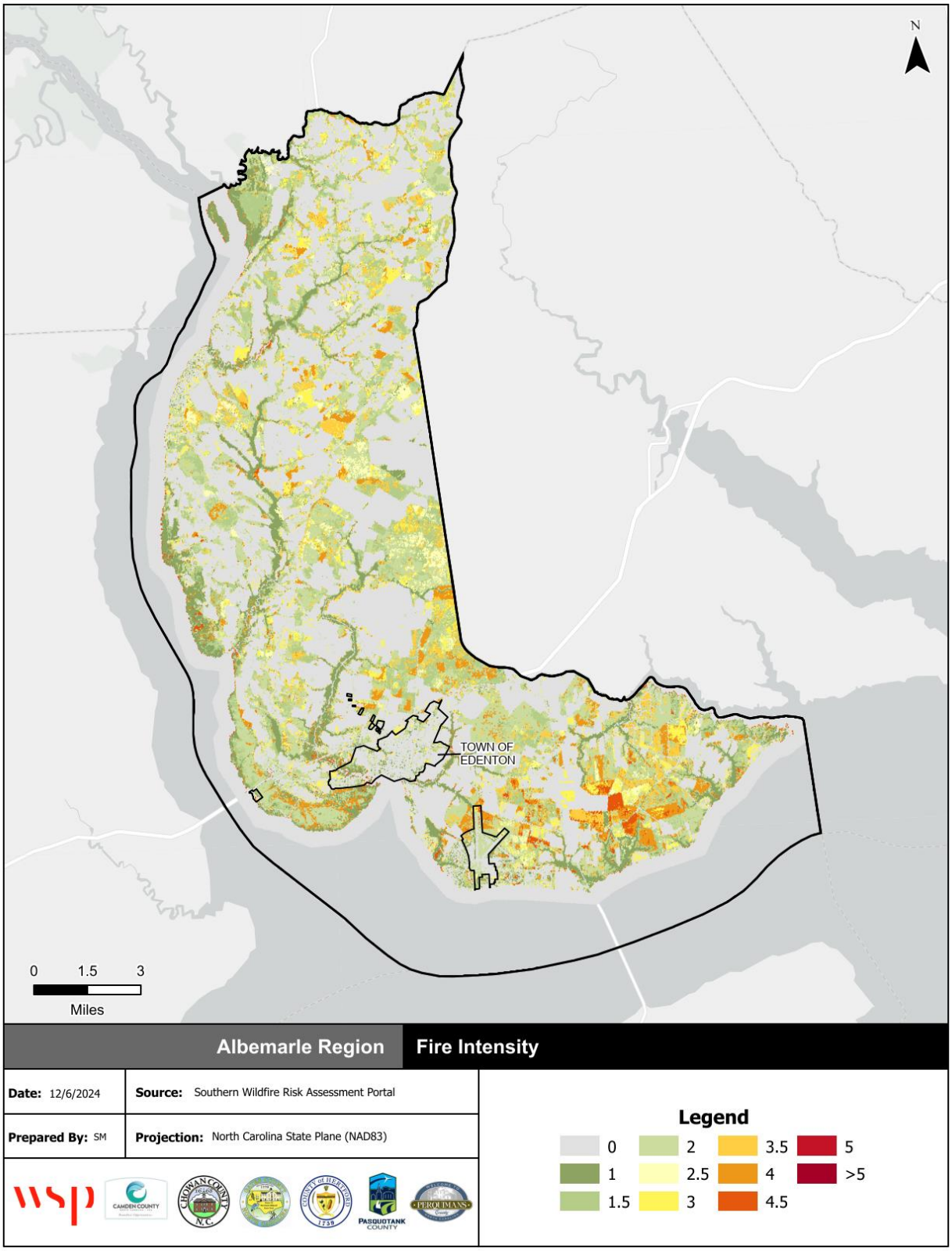
Source: Southern Wildfire Risk Assessment

Figure B.8 – Critical Facilities and Functional WUI, Town of Edenton



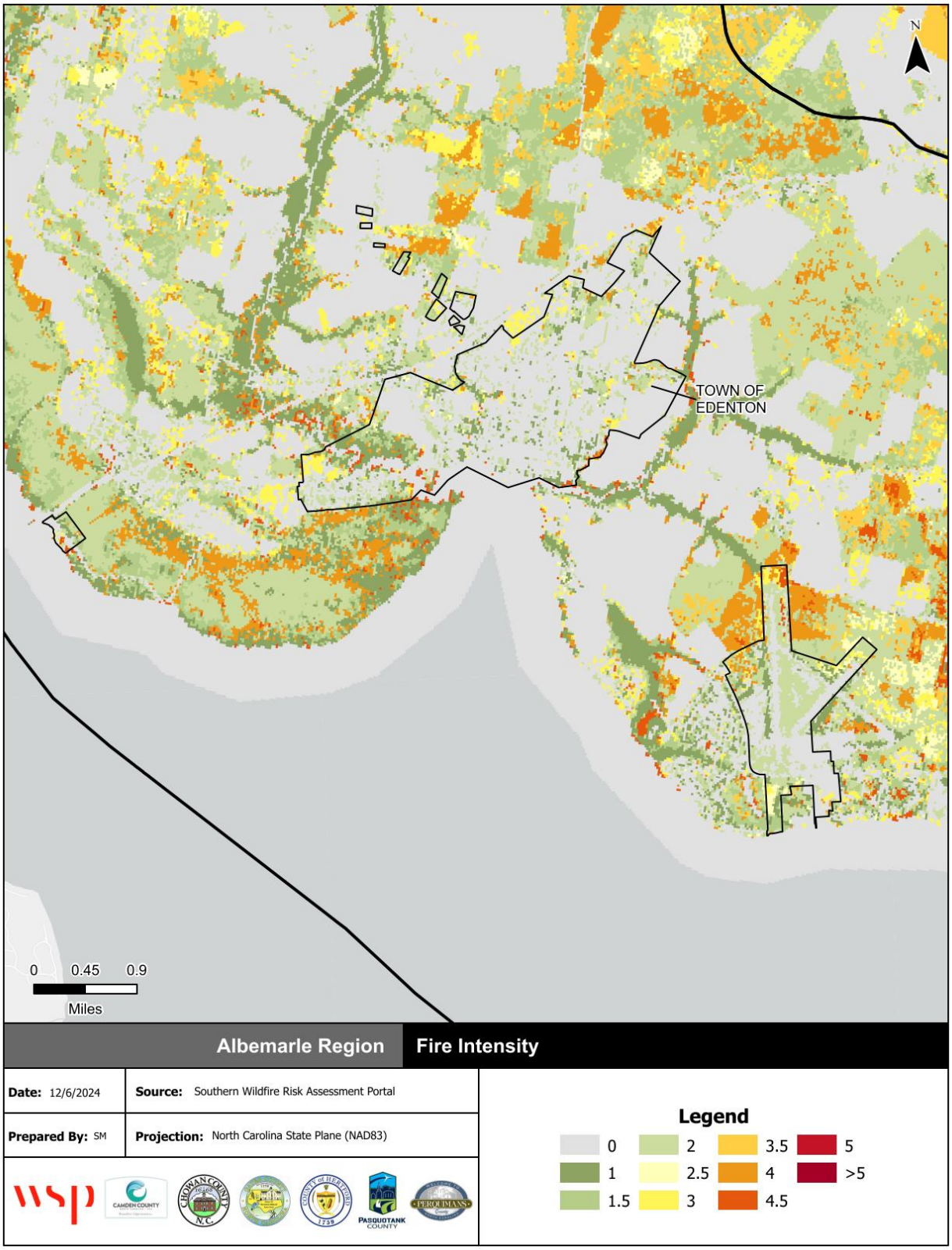
Source: Southern Wildfire Risk Assessment

Figure B.9 – Fire Intensity Scale, Unincorporated Chowan County



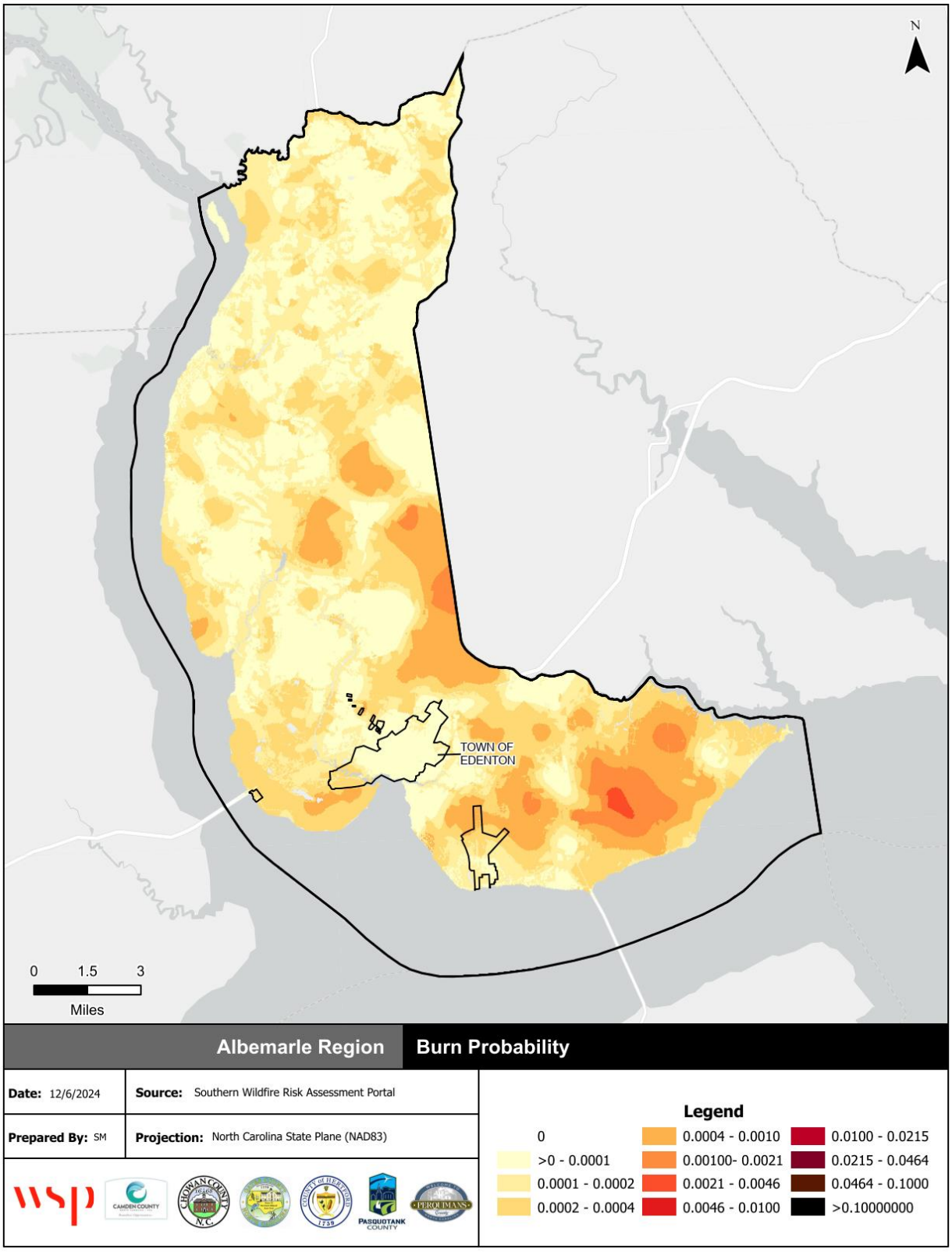
Source: Southern Wildfire Risk Assessment

Figure B.10 – Fire Intensity Scale, Town of Edenton



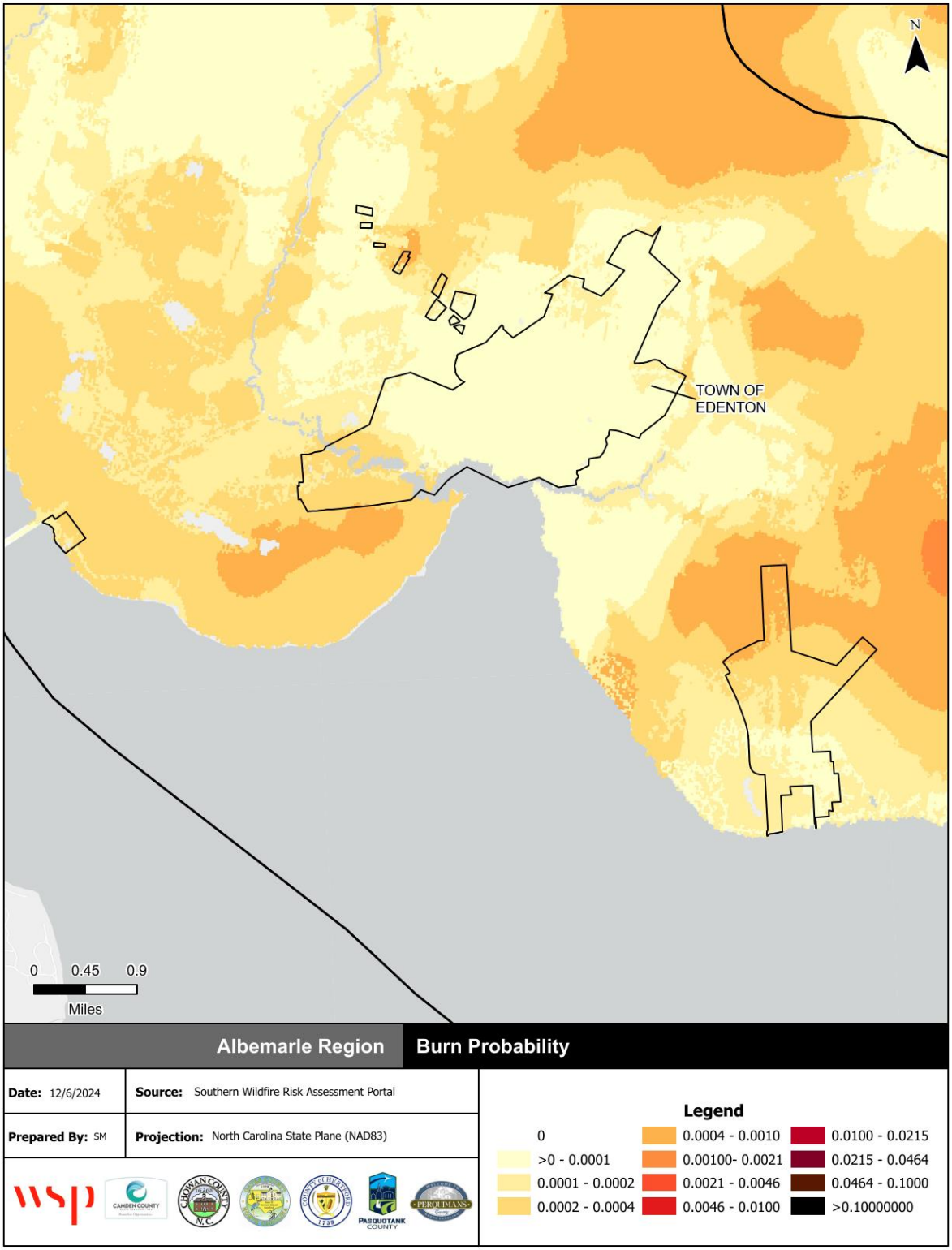
Source: Southern Wildfire Risk Assessment

Figure B.11 – Burn Probability, Unincorporated Chowan County



Source: Southern Wildfire Risk Assessment

Figure B.12 – Burn Probability, Town of Edenton



Source: Southern Wildfire Risk Assessment

B.3 MITIGATION STRATEGY

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CHO/ EDN1	Map facilities and areas impacted by natural disasters through their respective GIS systems. Mapping efforts will include the location of all critical facilities, housing, businesses, and infrastructure impacted by past natural hazard events. Priority will be given to the mapping of homes impacted by flooding events, specifically those located within the defined flood hazard area. Mapping will be utilized to determine potential mitigation funding.	Chowan County, Edenton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	2.2	PIO	Chowan County GIS, Edenton Planning	Staff Time	General Fund NCDPS	Ongoing – next 5 years	Carry Forward	The County GIS Department will continue to maintain this data and incorporate new information as natural disasters occur.
CHO/ EDN2	Work to improve drainage conditions throughout the County through the identification and implementation of capital improvements projects. A variety of funding mechanisms will be utilized to carry out these efforts and when possible, grant funding will be utilized. These efforts should initially focus on the following issues: • Filberts Creek culvert replacement • Clearing and snagging of drainage ditches and canals • Potential drainage improvements to Pembroke Circle • Potential drainage improvements to Dillard Mill • Potential drainage improvements to Woodlawn Park	Chowan County, Edenton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	SP	Chowan County Planning & Zoning, Chowan County Board of Commissioners	To Be Determined	General Fund, NCDPS, HMGP, NCDENR	3 to 5 years	Carry Forward	These improvements have not been completed but remain a priority.
CHO/ EDN3	Repair and upgrade all facilities and equipment associated with both Bennett and Dillard Millpond.	Chowan County, Edenton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	SP	Chowan County Administration, Edenton Administration	To Be Determined	General Fund, NCDPS, NCDEQ	3 to 5 years	Carry Forward	Chowan County received a $134,619 Accessible Park state grant for Phase 1 of Bennett's Millpond improvements.
CHO/ EDN4	Compile a map reflecting the "true" extent of past flooding events. This effort should document the flooding associated with each respective flooding event, and document flooding that coincides with defined NFIP Flood Hazard Areas. Additionally, impacted critical facilities, businesses, homes, and infrastructure should be catalogued.	Chowan County, Edenton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.2	P	Chowan County GIS, Edenton Planning	Staff Time	General Fund NCDPS	Ongoing – next 5 years	Carry Forward	This mapping has not been completed but remain a priority. Edenton completed some flooding and erosion hot spot mapping through the Resilient Coastal Communities Program.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CHO/ EDN5	Continue to utilize annual, as well as post-disaster Federal (FEMA) and State mitigation funds, to both acquire and elevate structures impacted by excessive flooding. These efforts should focus on but are not limited to the following portions of the County: • Downtown Edenton • Cape Colony Subdivision • The Haughton Road Area	Chowan County, Edenton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	SP	Chowan County Administration, Edenton Administration	To Be Determined	HMGP, FMA, General Fund	Ongoing – As needed	Carry Forward	The County and Edenton will continue to pursue the elevation and/or acquisition of flood prone structures.
CHO/ EDN6	Continue to proactively seek out grant funding through NCEM and FEMA for mitigation of repetitive loss properties (RLP's) and other high risk properties from future flooding events. The County will maintain a list of RLP's, and on an annual basis, will apply for funding for all structures that meet cost-benefit thresholds as defined by FEMA. These efforts will be carried out in coordination with the Town of Edenton.	Chowan County, Edenton	All Hazards	Med	1.3	PP	Chowan County Administration, Edenton Administration	To Be Determined	HMGP, FMA, General Fund	Ongoing – As needed	Carry Forward	The County and Edenton will continue to pursue acquisition or elevation of high-risk properties.
CHO/ EDN7	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 provide material outlining sound techniques for floodplain development and floodproofing of existing structures. The County will also maintain staff educated in these issues to work with prospective builders.	Chowan County, Edenton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	2.2	PIO	Chowan County Planning and Inspections, Edenton Administration	Staff Time	General Fund, NCDPS	Ongoing – As needed	Carry Forward	The County Building Inspections Department will continue to provide this information, as well as be available to address questions and inquiries as necessary.
CHO/ EDN8	Work to educate and inform local residents about current and potential threats associated with natural hazard events through the use of social media, news media outlets, County and Town distribution list, and television media. These efforts will include providing information regarding the dangers associated with residing within defined flood hazard areas.	Chowan County, Edenton	All Hazards	High	2.2	PIO	Chowan County Planning and Inspections, Edenton Administration	Staff Time	General Fund, NCDPS	Ongoing – As needed	Carry Forward	The County Building Inspections Department will continue to provide this information, as well as be available to address questions and inquiries as necessary.
CHO/ EDN9	Continue to maintain a formal notification system to alert local residents when water conservation measures have been put in place stemming from prolonged drought conditions. Notification will follow the water use restriction schedule defined by the County Board of Commissioners and Town Council.	Chowan County, Edenton	Drought	High	2.1	PIO	Chowan County Emergency Management, Edenton Administration	Staff Time	General Fund, NCDPS	Ongoing – As needed	Carry Forward	The County will continue to institute measures associated with the County's Water Shortage Management Plan.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CHO/ EDN10	Advocate the use of existing State and Federal regulatory programs for protecting and preserving coastal wetland Areas of Environmental Concern. Consider additional opportunities to preserve and protect natural resources.	Chowan County, Edenton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	3.1	NRP	Chowan County Planning, Edenton Administration, NCDEQ, EPA	Staff Time	General Fund, NCDEQ	Ongoing – As needed	Carry Forward	The County will continue to seek opportunities for natural resource protection.
CHO/ EDN11	Support planning for improvements to the Chowan County/Edenton regional transportation systems to provide for safe traffic flow and evacuation. These efforts should include the identification of location for the use of electrical highways signs intended to provide warning regarding inclement weather and/or hazardous road conditions.	Chowan County, Edenton	Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather	Low	1.1	P	Chowan County Planning & Zoning, Edenton Administration, NCDOT	Staff Time	General Fund, NCDOT	Ongoing – next 5 years	Carry Forward	No progress was made in the past five years but this remains a priority.
CHO/ EDN12	Work with the curriculum directors of both the public and private schools to add all mitigation hazards prevention and preparedness information.	Chowan County, Edenton	All Hazards	Med	2.2	PIO	Chowan County Emergency Management, Edenton Administration, Chowan County Board of Education	Staff Time	General Fund	Ongoing – Annually	Carry Forward	No progress was made in the past five years but this remains a priority.
CHO/ EDN13	Require all public utility companies as well as County- and Town-owned utilities to inspect and repair damage due to hurricanes and storms within a 5-year time frame.	Chowan County, Edenton	Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather	Med	1.1	P	Chowan County Administration, Edenton Administration, Utility Providers	Staff Time	General Fund, Utility Providers	2 to 3 years	Carry Forward	No progress achieved. Chowan County will work with the Town of Edenton, as well as other Electric Service Providers to enact this policy.
CHO/ EDN14	Work with local charities such as Baptist Men and/or Habitat for Humanity chapters, to apply non-structural mitigation measures to the homes of low-income senior citizens in the Flood Hazard Area.	Chowan County, Edenton	Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather	High	4.2	PP	Chowan County Administration, Edenton Administration, Local Non-Profits	To Be Determined	General Fund, Local Non-Profits	Ongoing – next 5 years	Carry Forward	These efforts are currently underway at the local level. County does not have records of local charities' efforts.
CHO/ EDN15	Maintain information on the County website relating to evacuation and sheltering. Emergency information on the website will include: evacuation routes, sheltering, delays and closures, pet sheltering options, and special needs information.	Chowan County, Edenton	All Hazards	High	2.1	PIO	Chowan County Emergency Management, Chowan County Planning & Zoning	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	No updates were made in the past five years but this remains a priority for outreach.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
CHO/ EDN16	Maintain, and where necessary, establish backup generators at all identified critical facilities. Additionally, County Emergency Management will evaluate the equipment on a regular basis to assure it continues to meet operational demands at county facilities.	Chowan County, Edenton	Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather	High	1.1	PP	Chowan County Emergency Management, Edenton Administration	To Be Determined	General Fund, NCDPS	2 to 3 years	Carry Forward	The County will continue to identify need regarding the installation of backup generators and where necessary work with NCDPS to implement this strategy.
CHO/ EDN17	Increase efforts to educate the public and increase agency capabilities in regard to wildfire response. These efforts will include a review of inter-agency and multijurisdictional efforts to identify, contain and extinguish wildfires. This effort will also involve an education effort focused on informing home and property owners about Wildland/Urban Interface fire safety.	Chowan County, Edenton	Wildfire	Med	4.1	ES	Chowan County Emergency Management, Edenton Administration	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	No progress was made in the past five years but this remains a priority.
CHO/ EDN18	Annually review and update the County's Emergency Operations Plan (EOP) to ensure compliance with all NCEM and NCOEMS procedures and policies. Through these updates, the County will work closely with the Town of Edenton to ensure that all jurisdictions continue to be educated and prepared for activation of the EOP in the event of a disaster event.	Chowan County, Edenton	All Hazards	Med	3.2	ES	Chowan County Emergency Management, County Board of Commissioners, Edenton Administration	Staff Time	General Fund, Staff Time, NCDPS	Other – Once Annually	Carry Forward	Chowan County, in conjunction with the Town of Edenton reviews its Emergency Operations Plan annually. The County addresses issues identified through past storm experiences.
CHO/ EDN19	Improve awareness regarding the intensity of natural hazard events as they materialize through: • Establishing an emergency radio broadcast frequency that runs a recorded message pre- and post-hazard to communicate critical time-sensitive information. It could include routes/bridges that are open or closed, weather/hazard forecasts, location of emergency shelters. • More fully utilizing County/Town websites to provide pre-hazard and post-hazard recovery information (debris pick-up schedule, critical dates, forms, phone numbers, housing availability, etc.).	Chowan County, Edenton	All Hazards	High	2.2	PIO	Chowan County Emergency Management, Edenton Administration	$10,000	General Fund, NCDPS	2 to 3 Years	Carry Forward	No progress was made in the past five years but this remains a priority.
CHO/ EDN20	Create or Update Community Wildfire Protection Plans in each fire district.	Chowan County, Edenton	Wildfire	Med	4.1	P	County Emergency Management, Fire Departments, NC Forest Service	To Be Determined	Grant Funds	5 years	New	

ANNEX C GATES COUNTY

C.1 ASSET INVENTORY

Gates County and the HMPC provided a local inventory of critical facilities and community lifelines, which are a priority for mitigation planning and emergency management. Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. Table C.1 and Table C.2 provides a count of critical facilities by FEMA lifeline category by jurisdiction in Gates County. Figure C.1 and Figure C.2 shows the locations of all critical facilities in Gates County and participating jurisdictions.

Table C.3 provides a detailed inventory of the critical facilities in Gates County, indicating each facility's FEMA lifeline category, flood zone, 1% annual chance flood depth, and vulnerability to storm surge, sea level rise, and wildfire. More information on hazard vulnerability is provided in the hazard profiles.

Table C.1 – Critical Facilities by Type, Unincorporated Gates County

Facility Type	Count of Facility Type	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	114	$47,613,153
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	1	$0
Total	**115**	**$47,613,153**

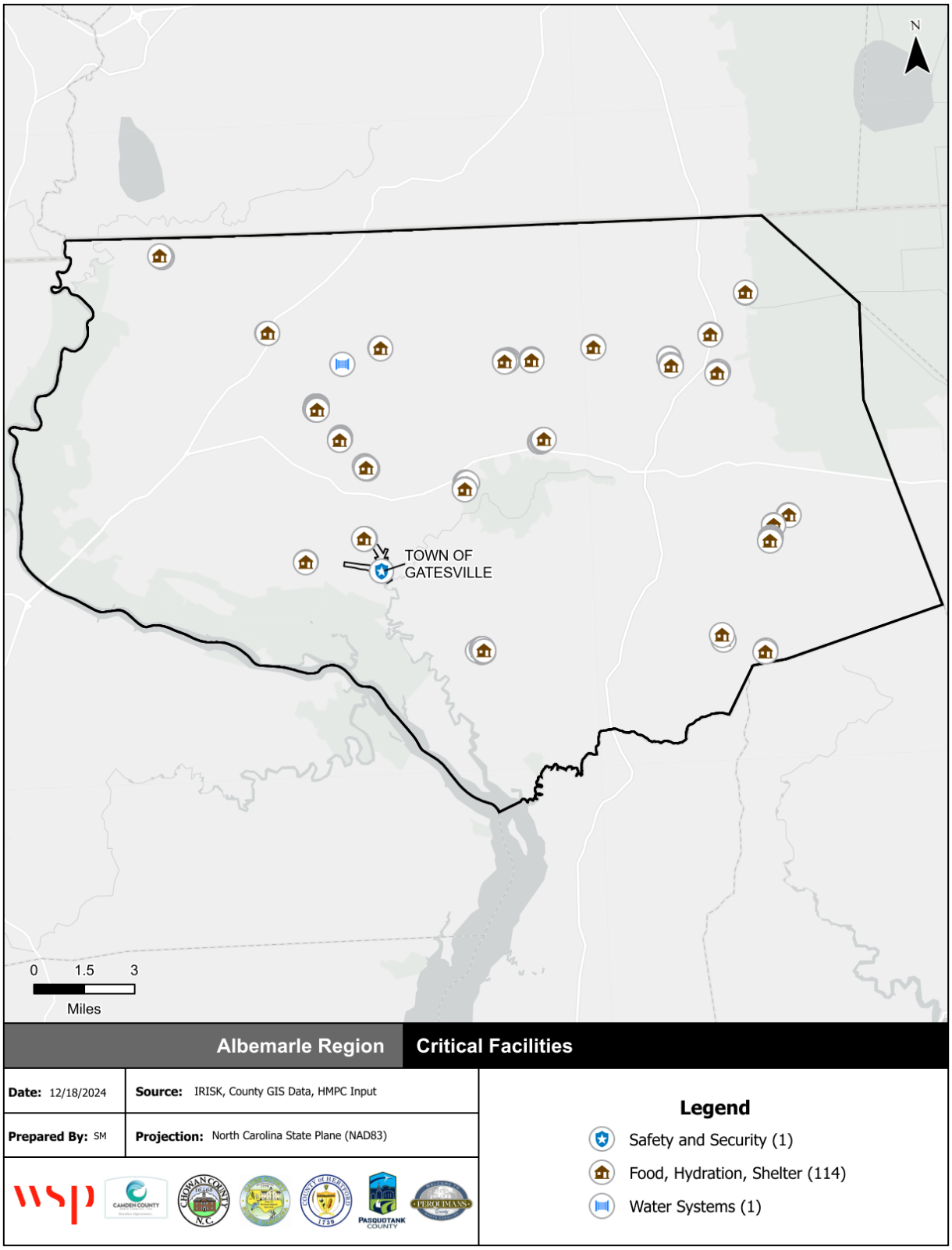
Source: Gates County, HMPC

Table C.2 – Critical Facilities by Type, Gatesville

Facility Type	Count of Facility Type	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	1	$916,709
Transportation	0	$0
Water Systems	0	$0
Total	**1**	**$916,709**

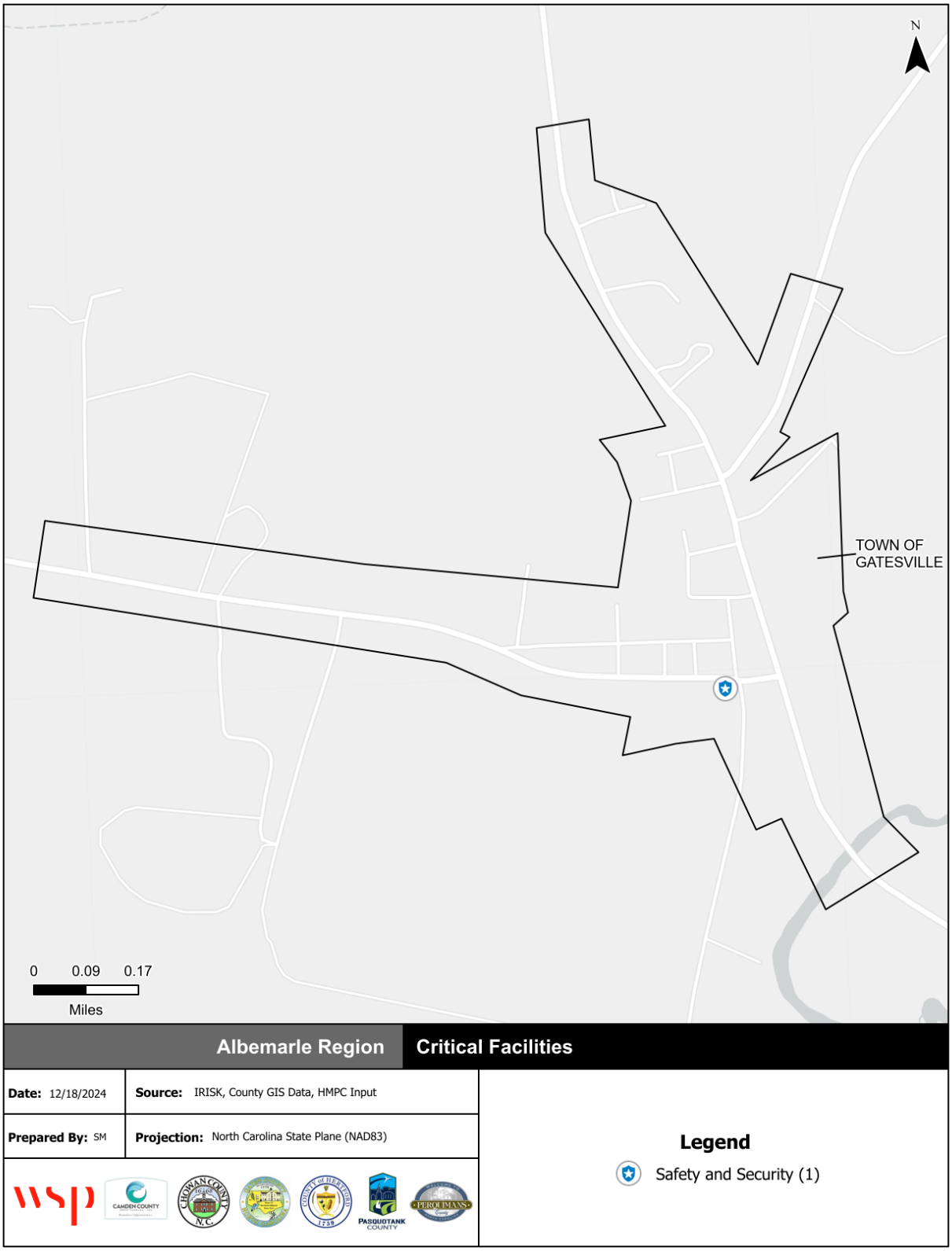
Source: Gates County, HMPC

Figure C.1 - Critical Facilities, Unincorporated Gates County



Source: NCEM IRISK Database, HMPC input, GIS Analysis

Figure C.2 - Critical Facilities, Town of Gatesville



Source: NCEM IRISK Database, HMPC input, GIS Analysis

Table C.3 – Gates County Critical Facilities Inventory

FEMA Lifeline	Facility Type	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Unincorporated Gates County								
Water Systems	Water	-	0.1	X Unshaded	NA	NA	Direct Exposure	3
Food, Hydration, Shelter	Hog Farm	$9,091	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$91,666	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$168,432	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$54,211	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$72,805	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$289,877	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,321,057	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,321,057	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$32,426	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$5,064	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$289,877	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$72,805	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$49,979	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,000	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$337,382	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$9,091	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$91,666	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$91,666	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$91,666	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$59,128	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$59,128	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$59,128	0.1	X Unshaded	NA	NA	Direct Exposure	2.5
Food, Hydration, Shelter	Hog Farm	$59,128	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$59,128	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$54,211	0.1	X Unshaded	NA	NA	Indirect Exposure	0

FEMA Lifeline	Facility Type	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Hog Farm	$72,805	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$289,877	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$289,877	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$289,877	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$289,877	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$289,877	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$289,877	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$289,877	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$289,877	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,321,057	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,321,057	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,321,057	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,321,057	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,321,057	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,321,057	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,321,057	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,321,057	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,321,057	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,321,057	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,321,057	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$1,321,057	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$49,979	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$49,979	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,000	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$1,000	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$337,382	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$337,382	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$337,382	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$337,382	0.1	X Unshaded	NA	NA	Indirect Exposure	0

FEMA Lifeline	Facility Type	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Hog Farm	$337,382	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$337,382	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$337,382	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$54,211	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$289,877	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$289,877	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$289,877	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$289,877	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$353,600	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$483,242	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$156,166	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$91,180	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$100,826	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Chicken House	$113,436	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$104,258	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$41,777	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$1,481,760	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$115,363	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$238,625	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$485,007	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$351,938	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$353,600	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$353,600	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$353,600	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$353,600	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$353,600	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$483,242	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$483,242	0.1	X Unshaded	NA	NA	Indirect Exposure	0

FEMA Lifeline	Facility Type	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Chicken House	$483,242	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$483,242	0.1	X Unshaded	NA	NA	Direct Exposure	1.5
Food, Hydration, Shelter	Chicken House	$156,166	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$91,180	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$100,826	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Chicken House	$100,826	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Chicken House	$113,436	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$113,436	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$113,436	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$104,258	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$41,777	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$1,481,760	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$1,481,760	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$1,481,760	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$1,481,760	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$1,481,760	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$1,481,760	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$1,481,760	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$115,363	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$238,625	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$485,007	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$485,007	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$485,007	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$351,938	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$351,938	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$351,938	0.1	X Unshaded	NA	NA	Indirect Exposure	0

FEMA Lifeline	Facility Type	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Chicken House	$54,211	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$54,211	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$54,211	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$54,211	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$54,211	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Gatesville								
Safety and Security	Emergency Operations	$916,709	0.1	X Unshaded	NA	NA	Indirect Exposure	0

C.2 RISK ASSESSMENT

This section contains a hazard profile and vulnerability assessment for those hazards that were rated with a higher priority by jurisdiction in Gates County than for the Albemarle Region as a whole. Risk and vulnerability findings are also presented here for those hazards that are spatially defined and have variations in risk that could be evaluated quantitatively on a jurisdictional level. The hazards included in this section are flooding and wildfire.

C.2.1 FLOODING

Table C.4 details the acreage of Gates County's total area by jurisdiction and flood zone on the Effective DFIRM. Per this assessment, over 32 percent of the unincorporated County is within the SFHA and over 13 percent of Gatesville is within the SFHA.

Table C.4 – Flood Zone Acreage by Jurisdiction, Gates County

Flood Zone	Acreage	Percent of Total (%)
Unincorporated Gates County		
Zone A	22,870.2	10.3
Zone AE	48,619.4	22.0
Zone X (500-year)	1,313.4	0.6
Zone X (unshaded)	148,602.5	67.1
Total	**221,405.5**	--
Town of Gatesville		
Zone A	41.7	13.6
Zone X (unshaded)	264.7	86.4
Total	**306.4**	--

Source: FEMA Effective DFIRM

Figure C.3 and Figure C.4 reflect the effective mapped flood hazard zones for Gates County and Gatesville, and Figure C.5 and Figure C.6 display the depth of flooding estimated to occur in these areas during the 1%-annual-chance flood.

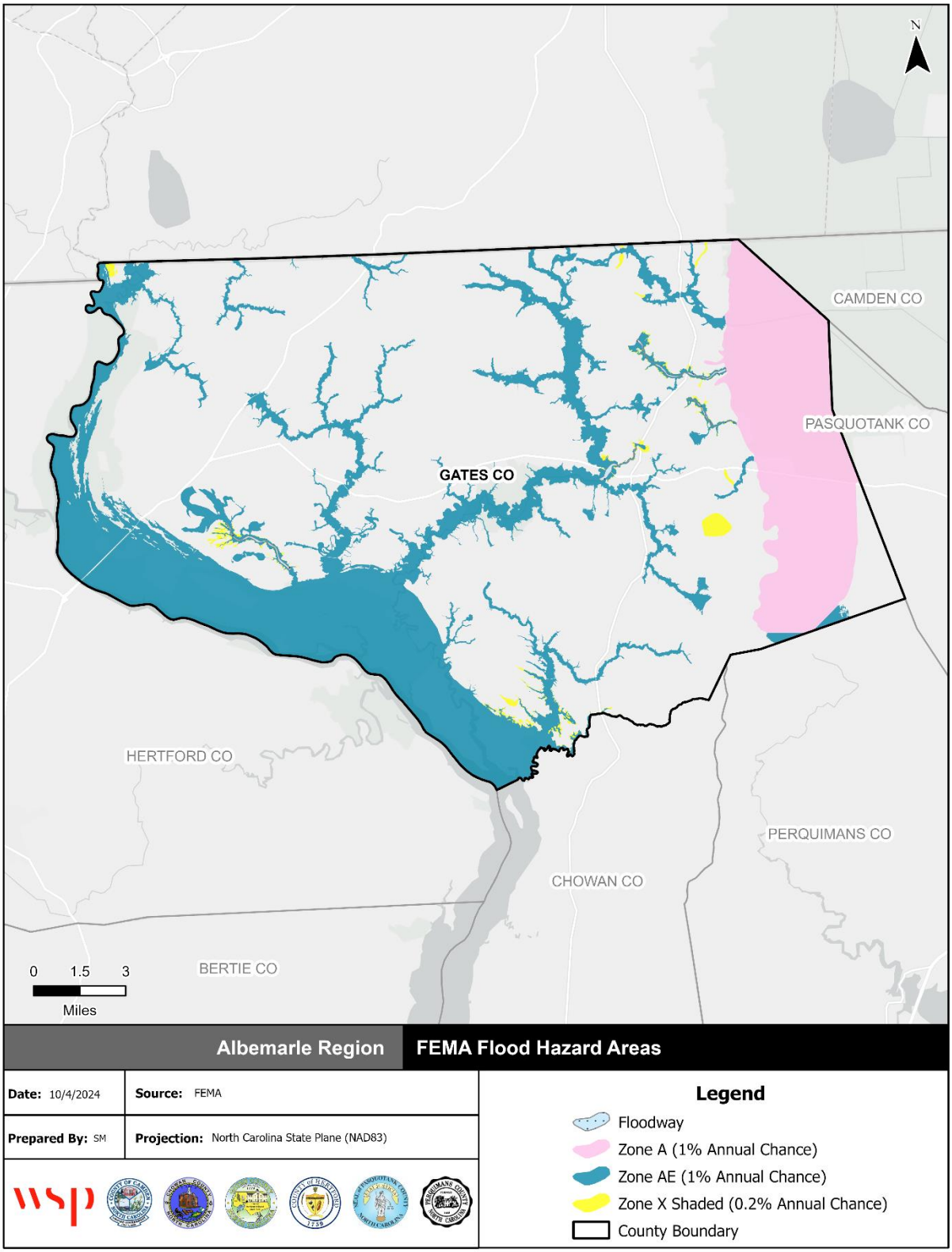
Table C.5 provides building counts and values for critical facilities by flood zone in Gates County and Gatesville.

Table C.5 – Critical Facilities Exposed to Flooding, Gates County

Flood Zone	Critical Facility Count	Structure Value
Gates County		
Zone X (unshaded)	115	$47,613,153
Total	**115**	**$47,613,153**
Town of Gatesville		
Zone X (unshaded)	1	$916,709
Total	**1**	**$916,709**

Source: FEMA Effective FIRM

Figure C.3 – FEMA Flood Hazard Areas, Unincorporated Gates County



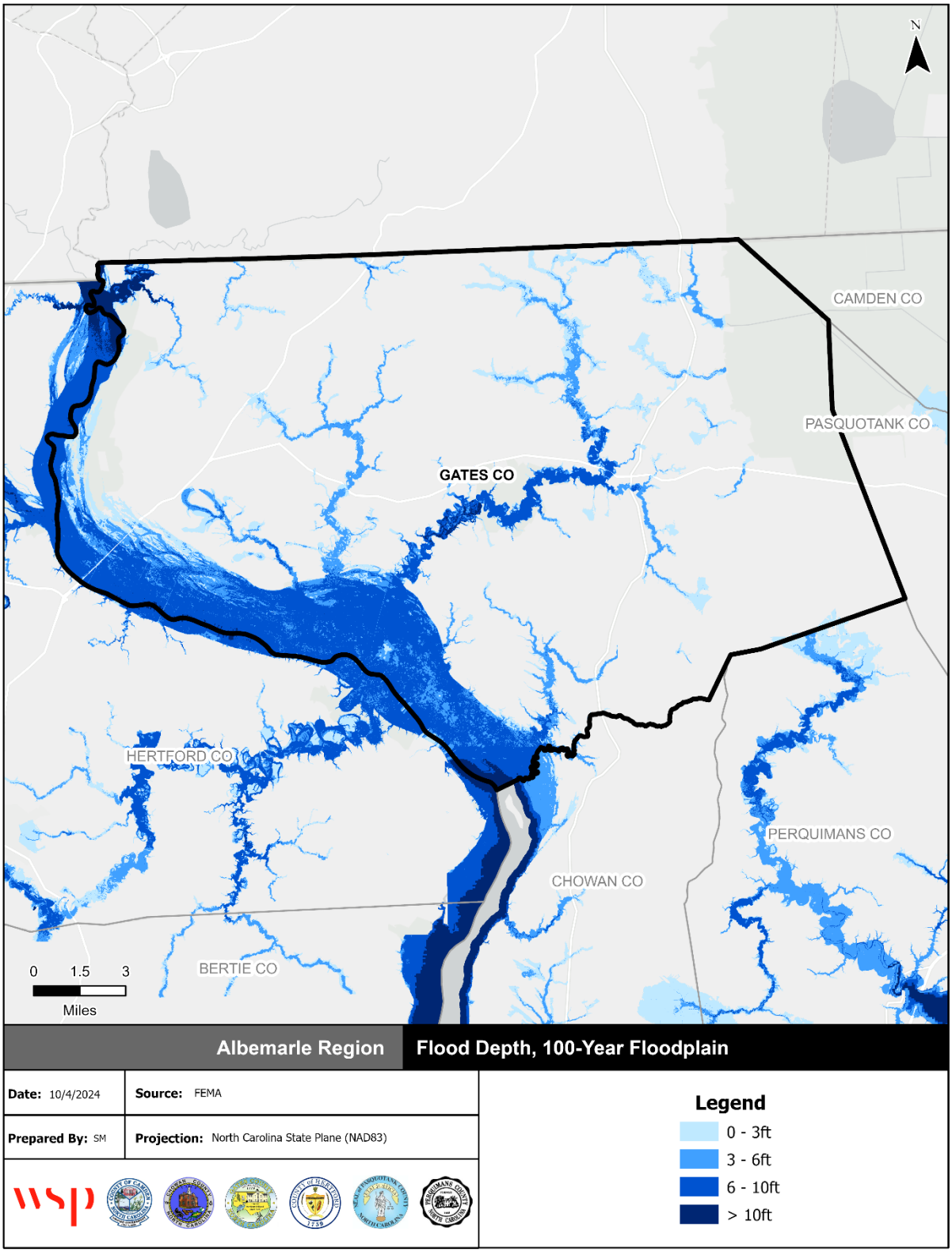
Source: FEMA Effective DFIRM

Figure C.4 – FEMA Flood Hazard Areas, Town of Gatesville



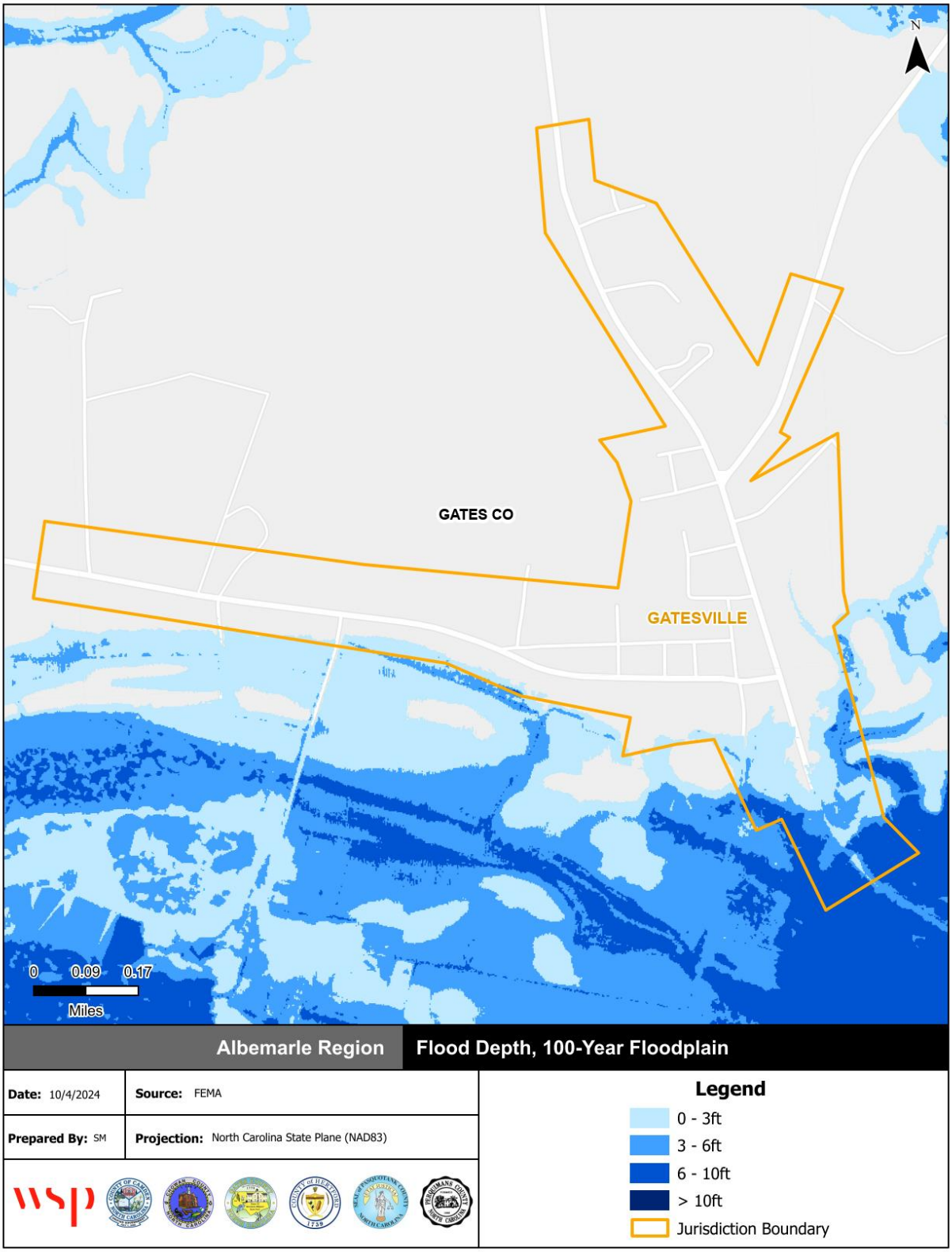
Source: FEMA Effective DFIRM

Figure C.5 – Flood Depth, 1%-Annual-Chance Floodplain, Unincorporated Gates County



Source: FEMA Effective DFIRM

Figure C.6 – Flood Depth, 1%-Annual-Chance Floodplain, Town of Gatesville



Source: FEMA Effective DFIRM

C.2.1.1 *FLOOD INSURANCE DATA*

The following tables reflect NFIP entry dates as well as policy and claims data for Gates County and the Town of Gatesville, categorized by structure type, flood zone, Pre-FIRM and Post-FIRM.

Table C.6 – NFIP Program Entry Dates

Community	Emergency Entry	Regular Entry Date
Gates County (Unincorporated Area)	March 4, 1976	July 16, 1991
Town of Gatesville	July 8, 1975	May 13, 1977

Source: FEMA Community Information System

Table C.7 – NFIP Policy and Claims Data by Structure Type

Structure Type	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Gates County Unincorporated Area					
Single Family	48	$26,149	$11,363,000	18	$223,065.84
2-4 Family	0	$0	$0	0	$0.00
All Other Residential	0	$0	$0	0	$0.00
Non-Residential	4	$2,407	$1,150,000	5	$68,129.31
Total	**52**	**$28,556**	**$12,513,000**	**23**	**$291,195.15**
Town of Gatesville					
Single Family	1	$418	$87,000	0	$0.00
2-4 Family	0	$0	$0	0	$0.00
All Other Residential	0	$0	$0	0	$0.00
Non-Residential	2	$2,116	$379,000	3	$124,956.26
Total	**3**	**$2,534**	**$466,000**	**3**	**$124,956.26**

Source: FEMA Community Information System, accessed January 2025

Table C.8 – NFIP Policy and Claims Data by Flood Zone

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Gates County Unincorporated Area					
A01-30 & AE Zones	24	$13,413	$4,766,000	13	$74,445.32
A Zones	0	$0	$0	4	$111,802.54
B, C & X Zone					
Standard	28	$15,143	$7,747,000	3	$83,633.57
Preferred	0	$0	$0	3	$21,313.72
Total	**52**	**$28,556**	**$12,513,000**	**23**	**$291,195.15**
Town of Gatesville					
A01-30 & AE Zones	1	$418	$87,000	0	$0.00
B, C & X Zone					
Standard	2	$2,116	$379,000	2	$119,851.82
Preferred	0	$0	$0	1	$5,104.44
Total	3	$2,534	$466,000	3	$124,956.26

Source: FEMA Community Information System, accessed January 2025

Table C.9 – NFIP Policy and Claims Data Pre-FIRM

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Gates County Unincorporated Area					
A01-30 & AE Zones	8	$4,363	$1,541,000	5	$39,855.79
A Zones	0	$0	$0	4	$111,802.54
B, C & X Zone	13	$6,323	$3,038,000	5	$98,273.22
Standard	13	$6,323	$3,038,000	3	$83,633.57
Preferred	0	$0	$0	2	$14,639.65
Total	**21**	**$10,686**	**$4,579,000**	**14**	**$249,931.55**
Town of Gatesville					
A01-30 & AE Zones	0	$0	$0	0	$0.00
B, C & X Zone	0	$0	$0	0	$0.00
Standard	0	$0	$0	0	$0.00
Preferred	0	$0	$0	0	$0.00
Total	0	$0	$0	**0**	**$0.00**

Source: FEMA Community Information System, accessed January 2025

Table C.10 – NFIP Policy and Claims Data Post-FIRM

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Gates County Unincorporated Area					
A01-30 & AE Zones	16	$9,050	$3,225,000	8	$34,589.53
B, C & X Zone	15	$8,820	$4,709,000	1	$6,674.07
Standard	15	$8,820	$4,709,000	0	$0.00
Preferred	0	$0	$0	1	$6,674.07
Total	**31**	**$17,870**	**$7,934,000**	**9**	**$41,263.60**
Town of Gatesville					
A01-30 & AE Zones	1	$418	$87,000	0	$0.00
B, C & X Zone	2	$2,116	$379,000	3	$124,956.26
Standard	2	$2,116	$379,000	2	$119,851.82
Preferred	0	$0	$0	1	$5,104.44
Total	**3**	**$2,534**	**$466,000**	**3**	**$124,956.26**

Source: FEMA Community Information System, accessed January 2025

C.2.2 WILDFIRE

Table C.11 summarizes the acreage in Gates County that falls within the Functional Wildland Urban Interface (WUI), categorized into zones that describe the wildfire risk mitigation activities appropriate for each zone. Areas in the Functional WUI are those areas where development and building structures may intermix with burnable land cover. Approximately, 4.5 percent of Gates County is categorized as having direct exposure to wildfire risk within the Functional WUI.

Table C.11 – Functional Wildland Urban Interface Acreage, Gates County

	Functional Wildland Urban Interface (WUI) Category	Acres	Percent
	Direct Exposure	9,557	4.50%
	Indirect Exposure	7,650	3.60%
	Critical Fireshed	162,454	76.70%
	Sources of Ember Load to Buildings	28,831	13.60%
	Little to No Exposure	0	0.00%
	Water	3,277	1.50%
	Total	**211,769**	**100.00%**

Source: Southern Wildfire Risk Assessment

Figure C.7 and Figure C.8 depicts the Functional WUI with the location of critical facilities for unincorporated Gates County and all participating jurisdictions. Figure C.9 and Figure C.10 depicts the Fire Intensity Scale, which indicates the potential severity of fire based on fuel loads, topography, and other factors. Figure C.11 and Figure C.12 depicts Burn Probability based on landscape conditions, percentile weather, historical ignition patterns, and historical prevention and suppression efforts.

Areas of moderate to high potential fire intensity are spread throughout Gates County; however, with the exception of an area in western central Gates County, burn probability is low throughout most of the county. Functional WUI is limited, but there is some overlap throughout unincorporated areas between direct and indirect exposure within the Functional WUI, burn probability, and moderate to high potential fire intensity.

Table C.12 and Table C.13 provides the count and estimated value of all structures that intersect with areas of unincorporated Gates County and participating jurisdictions that are rated with direct exposure on the Functional WUI scale.

Table C.14 and Table C.15 provides building counts and values for critical facilities by FEMA lifeline that are located in areas categorized with direct exposure to wildfire risk on the Functional WUI scale. Note that no critical facilities with direct exposure to wildfire were identified within the Town of Gatesville.

Table C.12 – Structures at Risk to Direct Exposure Functional WUI, Unincorporated Gates County

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	733	$35,087,469.00	$35,087,469.00	$70,174,938.00
Commercial	77	$9,288,723.00	$9,288,723.00	$18,577,446.00
Education	21	$16,085,816.00	$16,085,816.00	$32,171,632.00
Government	8	$17,001,578.00	$17,001,578.00	$34,003,156.00
Industrial	19	$3,027,818.00	$4,541,727.00	$7,569,545.00
Religious	44	$7,268,200.00	$7,268,200.00	$14,536,400.00
Residential	2,549	$177,404,849.00	$88,702,424.50	$266,107,273.50
Total	**3,451**	**$265,164,453.00**	**$177,975,937.50**	**$443,140,390.50**

Source: Southern Wildfire Risk Assessment

Table C.13 – Structures at Risk to Direct Exposure Functional WUI, Town of Gatesville

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	1	$23,416.00	$23,416.00	$46,832.00
Commercial	6	$514,883.00	$514,883.00	$1,029,766.00
Education	1	$168,306.00	$168,306.00	$336,612.00
Government	1	$78,581.00	$78,581.00	$157,162.00
Industrial	2	$455,436.00	$683,154.00	$1,138,590.00
Religious	1	$274,161.00	$274,161.00	$548,322.00
Residential	67	$7,103,812.00	$3,551,906.00	$10,655,718.00
Total	**79**	**$8,618,595.00**	**$5,294,407.00**	**$13,913,002.00**

Source: Southern Wildfire Risk Assessment

Table C.14 – Critical Facilities Exposed to Wildfire, Unincorporated Gates County

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	26	$5,251,562
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	1	$0
Total	**27**	**$5,251,562**

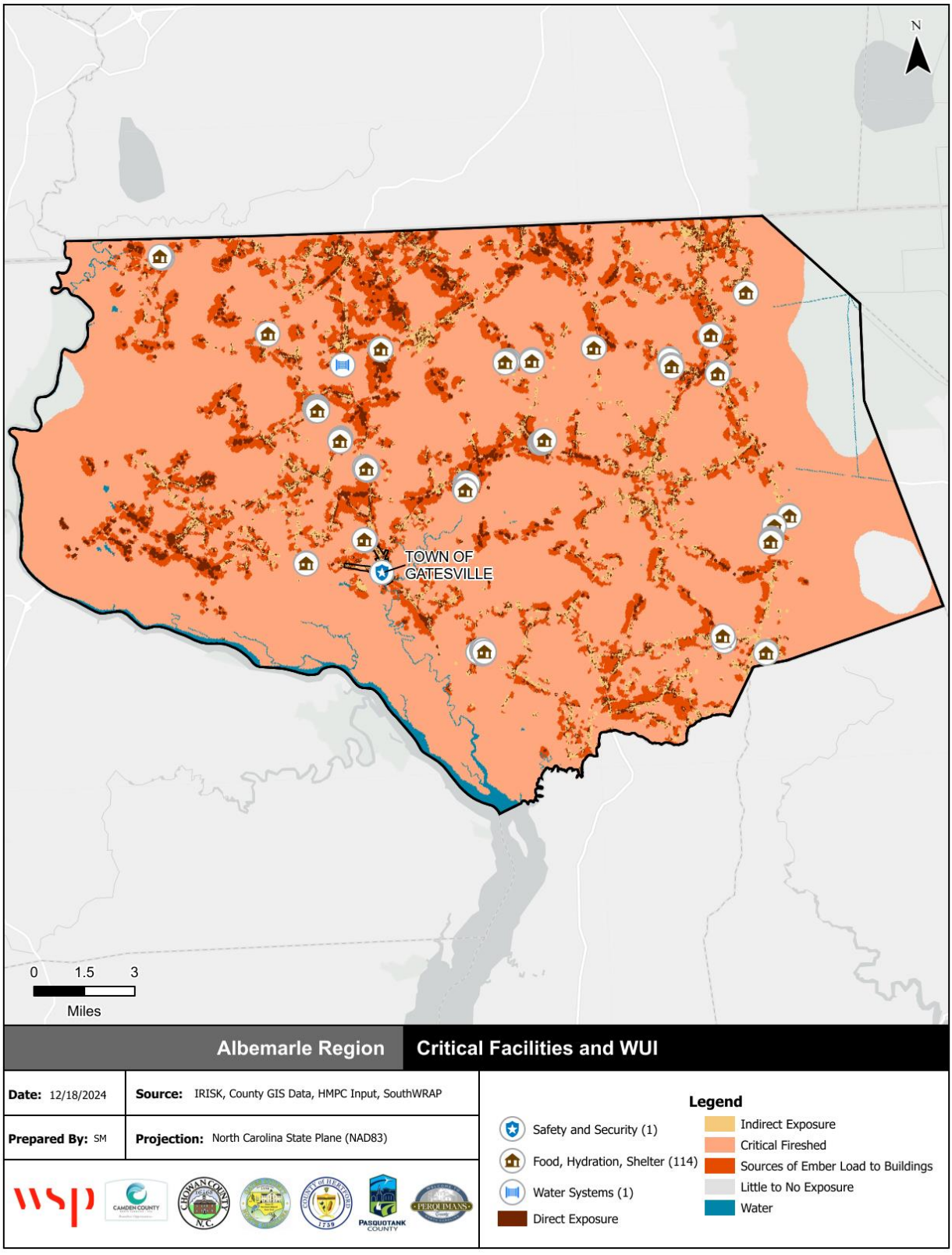
Source: Southern Wildfire Risk Assessment

Table C.15 – Critical Facilities Exposed to Wildfire, Town of Gatesville

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	0	$0
Total	**0**	**$0**

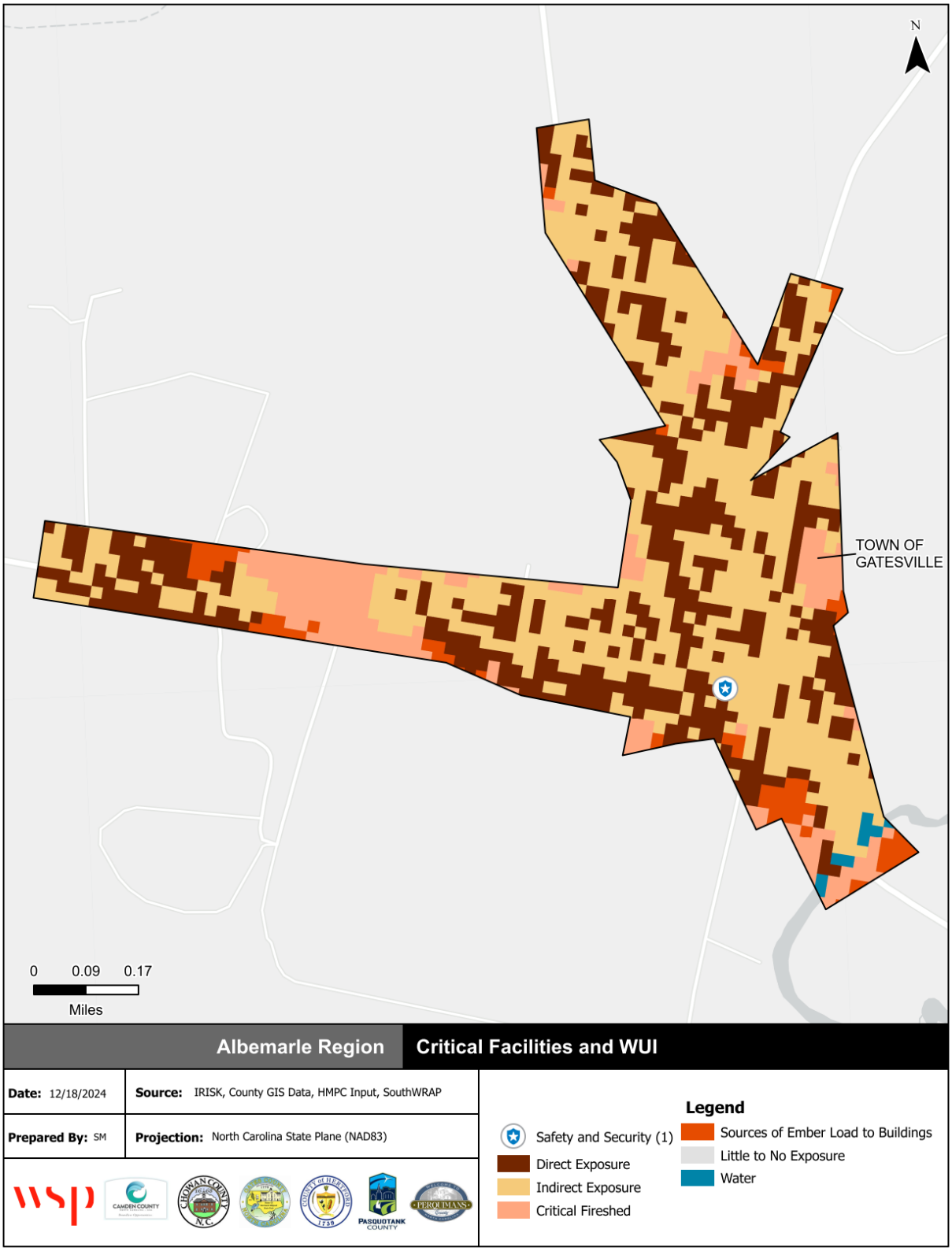
Source: Southern Wildfire Risk Assessment

Figure C.7 – Critical Facilities and Functional WUI, Unincorporated Gates County



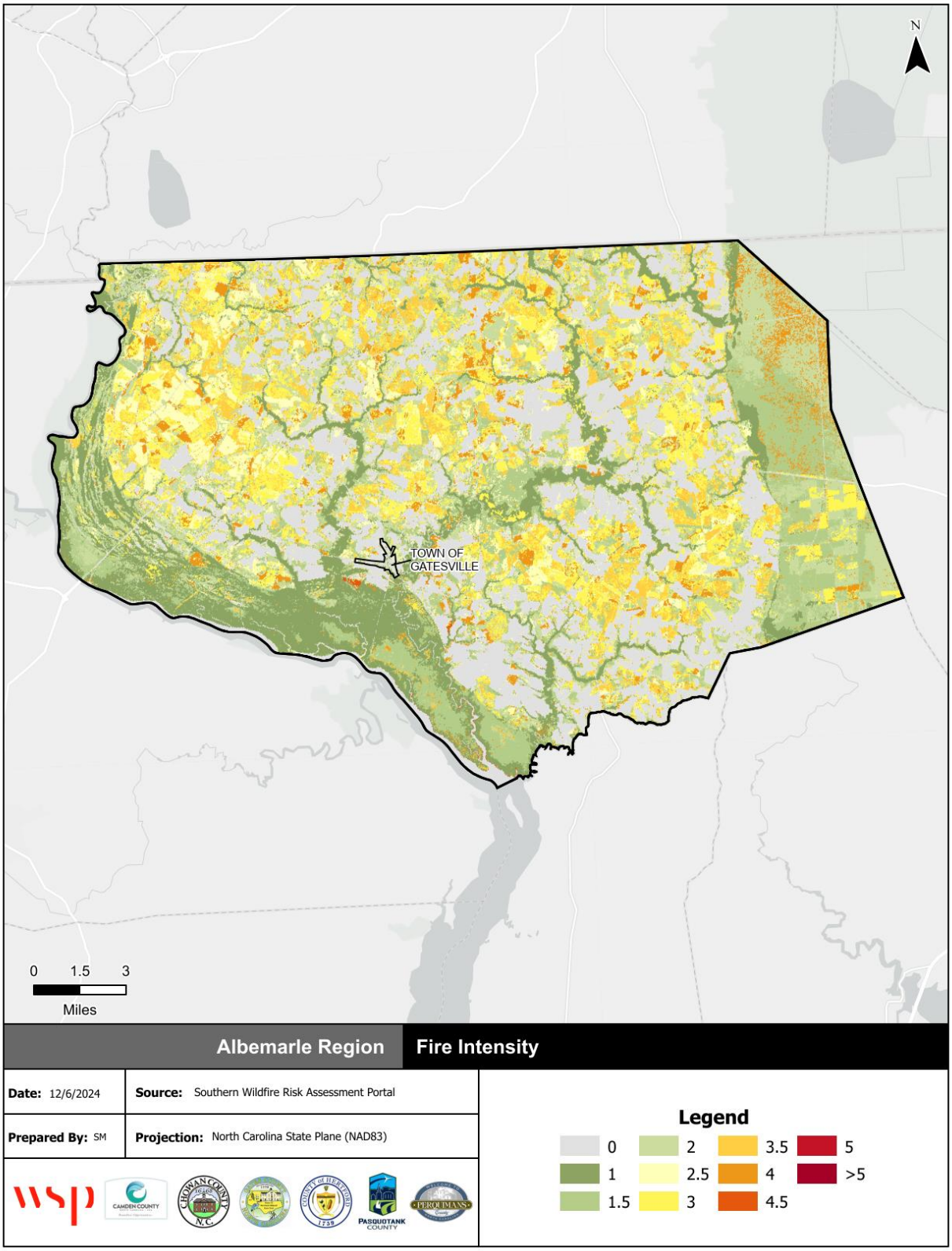
Source: Southern Wildfire Risk Assessment

Figure C.8 – Critical Facilities and Functional WUI, Town of Gatesville



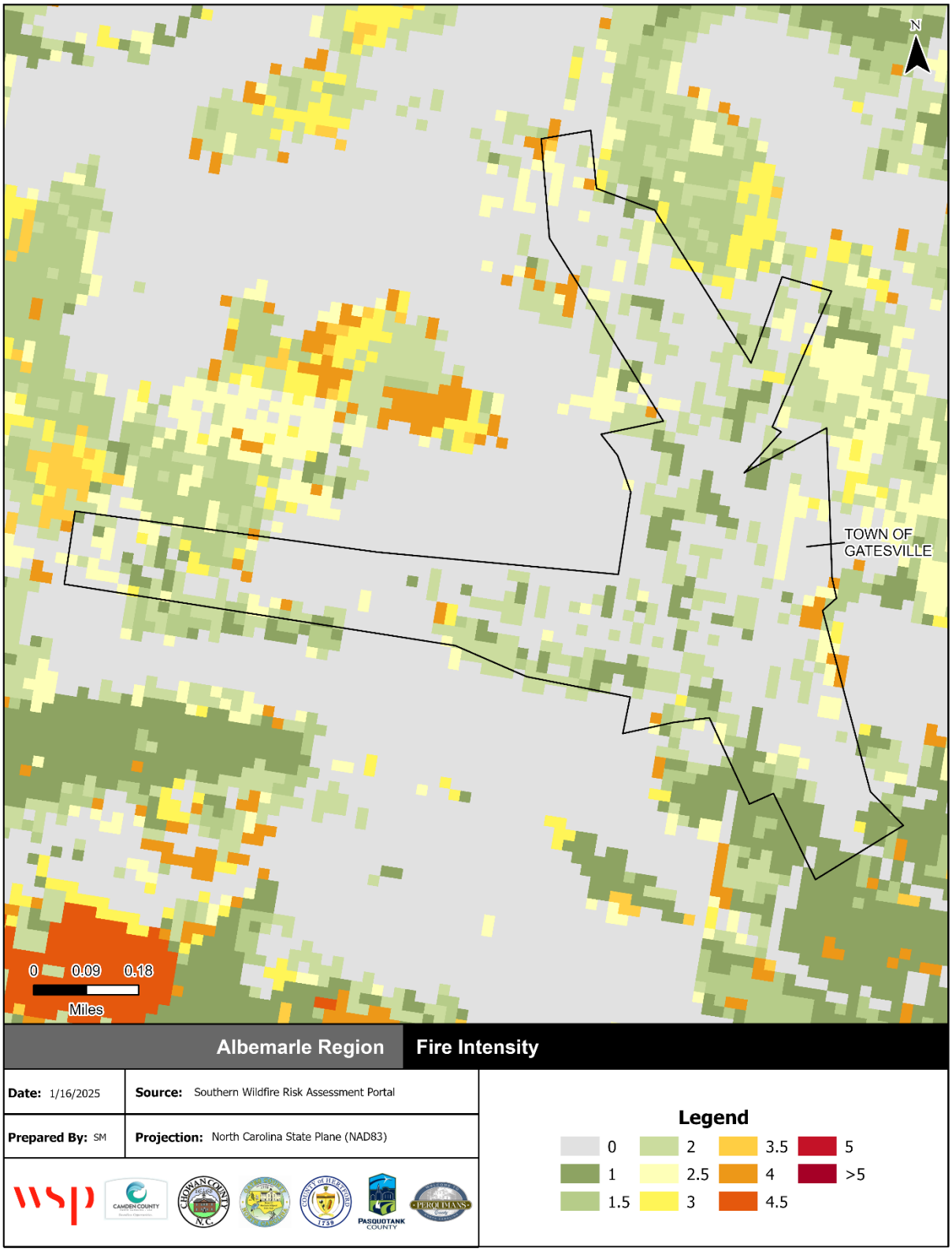
Source: Southern Wildfire Risk Assessment

Figure C.9 – Fire Intensity Scale, Unincorporated Gates County



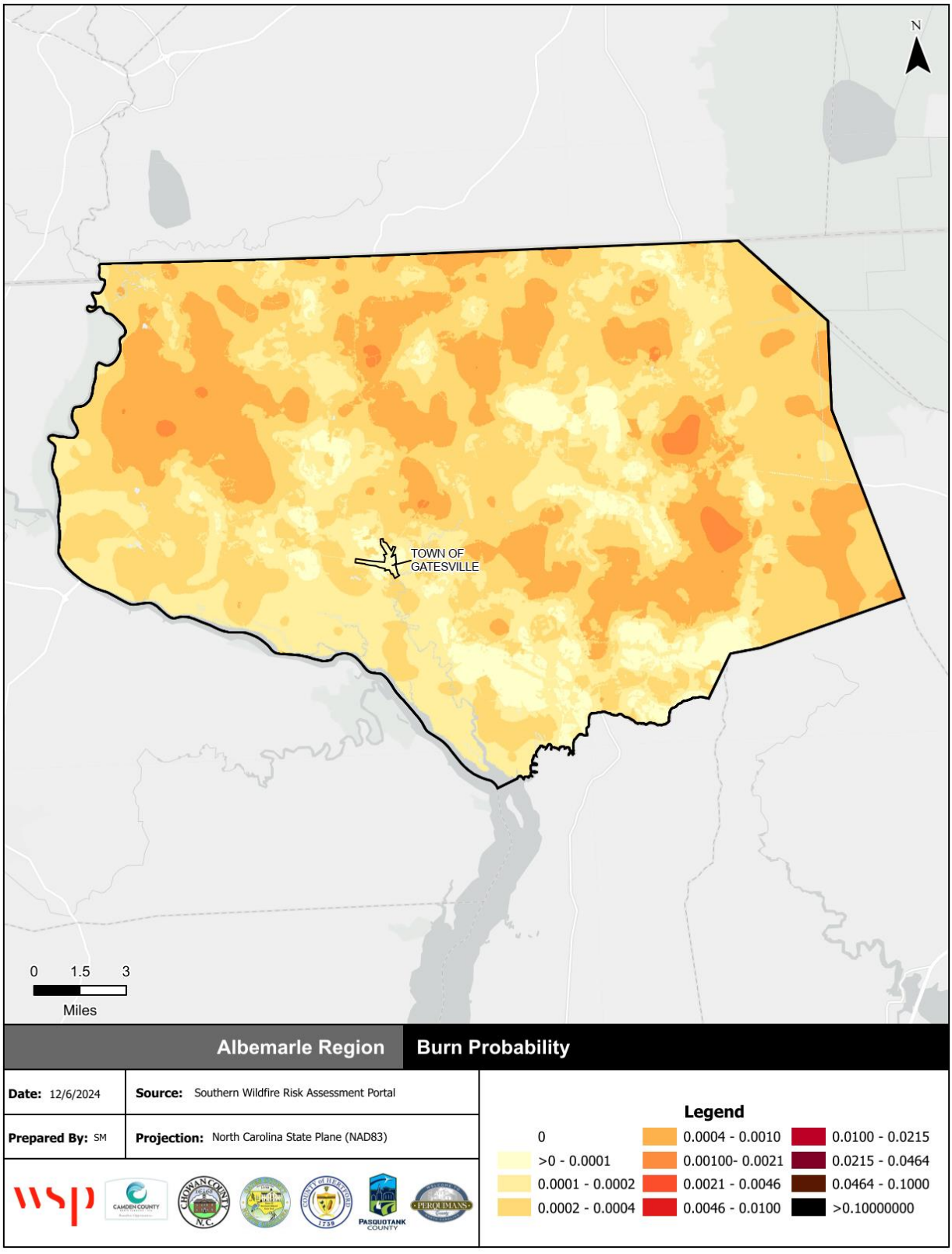
Source: Southern Wildfire Risk Assessment

Figure C.10 – Fire Intensity, Town of Gatesville



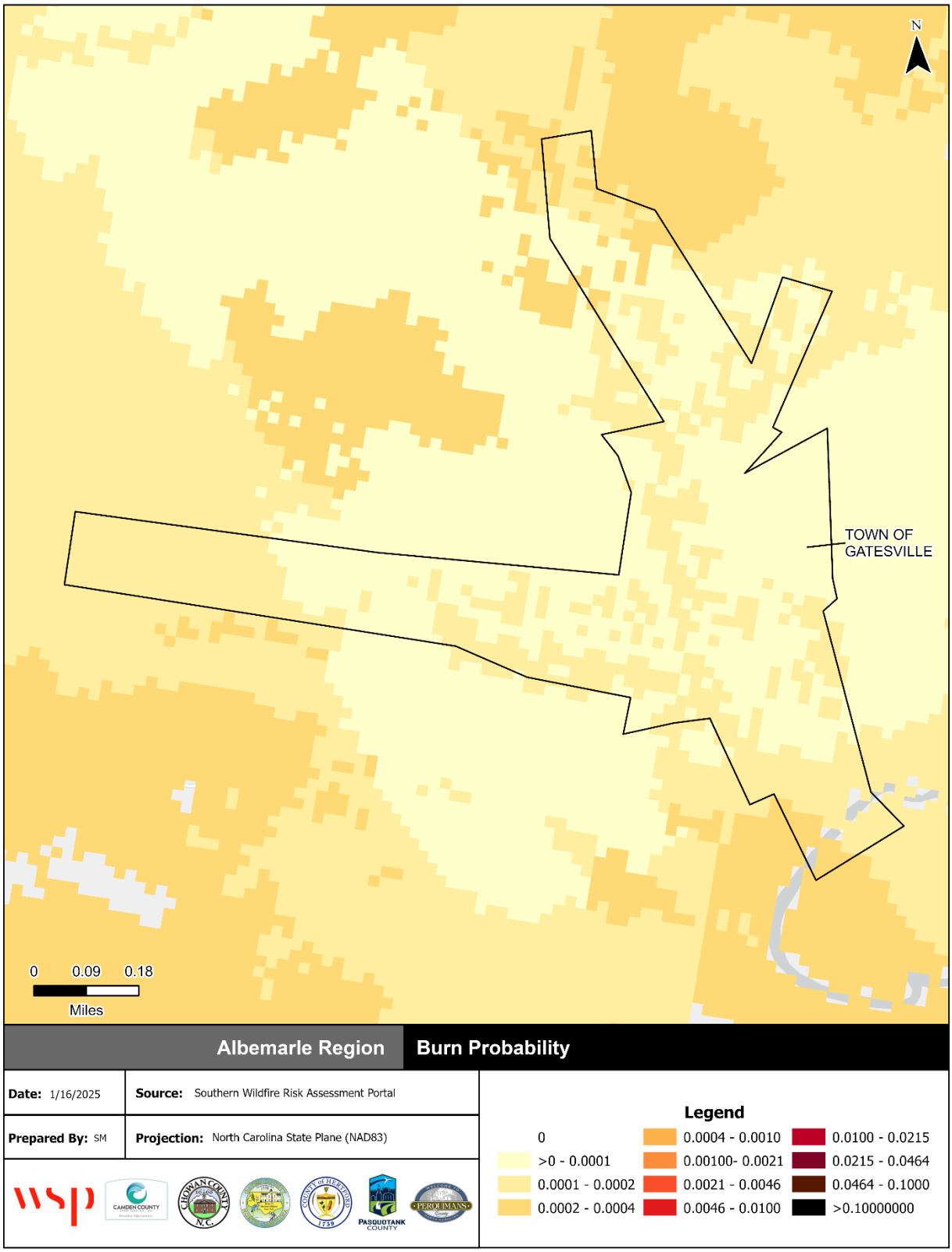
Source: Southern Wildfire Risk Assessment

Figure C.11 – Burn Probability, Unincorporated Gates County



Source: Southern Wildfire Risk Assessment

Figure C.12 – Burn Probability, Town of Gatesville



Source: Southern Wildfire Risk Assessment

C.3 MITIGATION STRATEGY

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
GAT1	Establish a county-wide program focused on clearing and snagging watercourses and arterial ditches to open waterways by clearing debris throughout the county to minimize localized flooding.	Gates County, Gatesville	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	P	County Administration, County Board of Commissioners, Municipal Administration	To Be Determined	GF, NCDEQ, NCDPS	Ongoing – next 5 years	Carry Forward	Gates County continues efforts on identifying and addressing hazards associated with this goal and has worked with NCDOT and other state agencies to have some identified areas addressed. Have also started reporting and tracking commonly flooded areas during storm activities.
GAT2	Support the expansion of US Highway 13/158 to facilitate greater evacuation capacity.	Gates County, Gatesville	Dam & Levee Failure, Earthquake, Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather, Wildfire, Radiological Incident	Low	1.1	ES	County Administration, County Board of Commissioners, Municipal Administration	Function of NCDOT Regional Transportation Improvement Program	GF, NCDOT	Ongoing – As Funds Become Available	Carry Forward	Gates County took part in stakeholder meeting with NCDOT October 2023 awaiting invites to future meeting in reference to the Highway 13 corridor strategic highway expansion.
GAT3	Expand efforts to provide public awareness of local hazard mitigation planning and emergency response procedures through the use of social media, local news outlets, and public meetings.	Gates County, Gatesville	All Hazards	High	2.2	PIO	County Administration, County Board of Commissioners, Municipal Administration	Staff Time	GF, NCDPS	Ongoing – next 5 years	Carry Forward	Gates County has expanded warning and notification capabilities to include social media, digital information boards in the public, as well as expanding roadside information boards. County continues to look for other opportunities for improvements.
GAT4	Annually, or as deemed necessary, review and amend when necessary the flood damage prevention ordinance and ensure regulations are in place to mitigate potential losses from events.	Gates County, Gatesville	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	P	County Administration, County Board of Commissioners, Municipal Administration	Staff Time	GF, NCDPS	Ongoing – As necessary	Carry Forward	Gates County annually reviews ordinances and monitors for possible ordinance for System improvement
GAT5	Annually review hazard mitigation plan strategies and actions as they pertain to the County's Land Use Plan and Land Development Regulations, including incorporation of floodplain mapping.	Gates County, Gatesville	All Hazards	Med	1.3	P	County Administration, County Board of Commissioners, Municipal Administration	To Be Determined	GF, NCDEQ, NCDPS	Ongoing - Annually	Carry Forward	Gates County plans to review hazard mitigation plan annually and make updates as necessary

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
GAT6	Increase emergency management training opportunities for local government personnel.	Gates County, Gatesville	All Hazards	Med	4.2	ES	County Administration, County Board of Commissioners, Municipal Administration	Staff Time	GF, NCDPS	Ongoing - Annually	Carry Forward	Gates County has added both education opportunities and positions to emergency management it is going to continue to work on increasing awareness and training of all county staff and residents.
GAT7	Increase community awareness of wildlife-related issues and wildland fire safety by utilizing the Firewise program and its resources (www.firewise.org).	Gates County, Gatesville	Wildfire	High	4.1	P	County Administration, County Board of Commissioners, Municipal Administration	Staff Time	GF, NC Forest Service, NCDPS	Ongoing - Annually	Carry Forward	Gates County has added wildfire public education to its public education materials as well as reviewing the county CWPP and Wildlife Interface areas as part of its goal in the 2025 and 2026 while working with NC Forest Service.
GAT8	Further educate the public regarding methods to address structural mitigation and residing within the floodplain through public meetings and ongoing outreach efforts.	Gates County, Gatesville	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	2.2	PP	County Administration, County Board of Commissioners, Municipal Administration	Staff Time	GF, NCDPS, FEMA	Ongoing - Annually	Carry Forward	County has conducted activities addressed in this section. It plans on annually reviewing and addressing issues and looking for possible mitigation strategies to improve upon.
GAT9	Increase EMS and law enforcement personnel resources through the County's annual capital improvement budgeting process.	Gates County, Gatesville	All Hazards	Med	1.1	ES	County Administration, County Board of Commissioners, Municipal Administration	To Be Determined	GF, NCDPS	2 to 3 years	Carry Forward	County has increased some positions and has a current proposal for the next year's budget as well as setting out some long- and short-term goals for both adding position, recruitment, and retention. County has experienced some recruitment and retention obstacles.
GAT10	Work closely with utility service providers to keep power/utility right-of-way clear by routinely pruning trees and clearing tree limbs.	Gates County, Gatesville	Dam & Levee Failure, Earthquake, Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather	High	1.1	P	County Administration, County Board of Commissioners, Municipal Administration	Staff Time	GF, Utility Service Providers, NCDPS	Ongoing - Annually	Carry Forward	The county will continue to carry out with efforts to minimize the impact of natural disasters on central services most importantly the electrical and water systems.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
GAT11	Investigate the potential advantages and disadvantages, if any, of joining the NFIP's Community Rating System (CRS). Consider making application to the CRS program during the five-year implementation of this plan.	Gates County, Gatesville	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	3.2	P	County Administration, County Board of Commissioners, Municipal Administration	To Be Determined	GF, NCDPS, FEMA	2 to 3 years	Carry Forward	County has started information gathering on this process and is still in discussion about joining.
GAT12	Work to improve its emergency notification system in an effort to increase awareness regarding the locations of shelters and evacuation routes during natural hazard events.	Gates County, Gatesville	All Hazards	High	2.1	PIO	County Emergency Management, County Planning & Zoning	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	The county has added to its mass notification systems. County currently uses code red for both staff and public emergency notifications. Has expanded its social media abilities. Has implemented projects to improve notification to vulnerable and underserved areas of the population. County continues to review and plans on making improvements to notification systems policies and best practices.
GAT13	Continue to work towards the Implementation of all projects defined within the Hurricane Matthew Resilient Redevelopment Plan	Gates County, Gatesville	Dam & Levee Failure, Drought, Earthquake, Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather	Med	1.3	P	County Administration, County Board of Commissioners, Municipal Administration	To Be Determined	General Fund, NCDPS, NCDEQ, NCDOT	Ongoing – As funding is available	Carry Forward	County is revisiting the Hurricane Matthew Resilient Redevelopment Plan to identify best next steps for activities and look for funding.
GAT14	Acquire or elevate flood prone buildings including repetitive loss properties and other high-risk properties to reduce impacts of future flooding.	Gates County, Gatesville	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	PP	County Administration, County Emergency Management, Municipal Administration	To Be Determined	Grant Funds	Ongoing – Next 5 years	New	
GAT15	Improve drainage conditions through the identification and implementation of capital improvements projects.	Gates County, Gatesville	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	SP	County Administration, County Emergency Management, Municipal Administration	To Be Determined	Grant Funds	Ongoing – Next 5 years	New	
GAT16	Create or Update Community Wildfire Protection Plans in each fire district.	Gates County, Gatesville	Wildfire	Med	4.1	P	County Emergency Management, Fire Departments, NC Forest Service	To Be Determined	Grant Funds	5 years	New	

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
GAT17	Improve resiliency of critical infrastructure to include county government office buildings.	Gates County, Gatesville	All Hazards	High	1.1	PP	County Administration, County Emergency Management, Municipal Administration	To Be Determined	Grant Funds	3-5 years	New	
GAT18	Add shelter locations to include post shelter operations, accommodations for animal sheltering, and improving points of distribution sites.	Gates County, Gatesville	Dam & Levee Failure, Earthquake, Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Severe Winter Weather	Med	2.1	ES	County Administration, County Emergency Management, Municipal Administration	To Be Determined	Grant Funds	3-5 years	New	
GAT19	Look for opportunities to add a community resiliency center.	Gates County, Gatesville	All Hazards	Low	3.1	P	County Administration, County Emergency Management, Municipal Administration	To Be Determined	Grant Funds	5 years	New	
GAT20	Implement emergency communication projects to do with resiliency and redundancy of emergency communications equipment to include radio, cellular, and internet communications equipment.	Gates County, Gatesville	All Hazards	High	4.1	PP, ES	County Administration, County Emergency Management, Municipal Administration	To Be Determined	Grant Funds	5 years	New	
GAT21	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.	Gates County, Gatesville	All Hazards	High	1.1	PP	County Emergency Management, County Administration	To Be Determined	General Fund, NCDPS, Grant Funds	5 years	New	
GAT22	Address safe drinking water and having a more reliable safety water system for public health and fire suppression needs.	Gates County, Gatesville	Wildfire	Med	1.1, 4.1	SP, ES	County Emergency Management	To Be Determined	General Fund, Grant Funds	5 years	New	

ANNEX D HERTFORD COUNTY

D.1 ASSET INVENTORY

Hertford County and the HMPC provided a local inventory of critical facilities and community lifelines, which are a priority for mitigation planning and emergency management. Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. Table D.1 through Table D.7 provides a count of critical facilities by FEMA lifeline category by jurisdiction in Hertford County. Figure D.1 through Figure D.7 shows the locations of all critical facilities in Hertford County and participating jurisdictions. Note that no critical facilities were identified within the Town of Como.

Table D.8 provides a detailed inventory of the critical facilities in Hertford County, indicating each facility's FEMA lifeline category, flood zone, 1% annual chance flood depth, and vulnerability to storm surge, sea level rise, and wildfire. More information on hazard vulnerability is provided in the hazard profiles.

Table D.1 – Critical Facilities by Type, Unincorporated Hertford County

Facility Type	Count of Facility Type	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	176	$191,504,480
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	1	$301,946
Transportation	0	$0
Water Systems	13	$1,538,683
Total	**190**	**$193,345,109**

Source: Hertford County, HMPC

Table D.2 – Critical Facilities by Type, Town of Ahoskie

Facility Type	Count of Facility Type	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	1	$21,519,551
Safety and Security	0	$0
Transportation	0	$0
Water Systems	5	$11,678,631
Total	**6**	**$33,198,182**

Source: Hertford County, HMPC

Table D.3 – Critical Facilities by Type, Village of Cofield

Facility Type	Count of Facility Type	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	2	$85,002
Total	**2**	**$85,002**

Source: Hertford County, HMPC

Table D.4 – Critical Facilities by Type, Town of Como

Facility Type	Count of Facility Type	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	0	$0
Total	**0**	**$0**

Source: Hertford County, HMPC

Table D.5 – Critical Facilities by Type, Town of Harrellsville

Facility Type	Count of Facility Type	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	2	$89,795
Transportation	0	$0
Water Systems	2	$266,978
Total	**4**	**$356,773**

Source: Hertford County, HMPC

Table D.6 – Critical Facilities by Type, Town of Murfreesboro

Facility Type	Count of Facility Type	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	3	$40,360
Total	**3**	**$40,360**

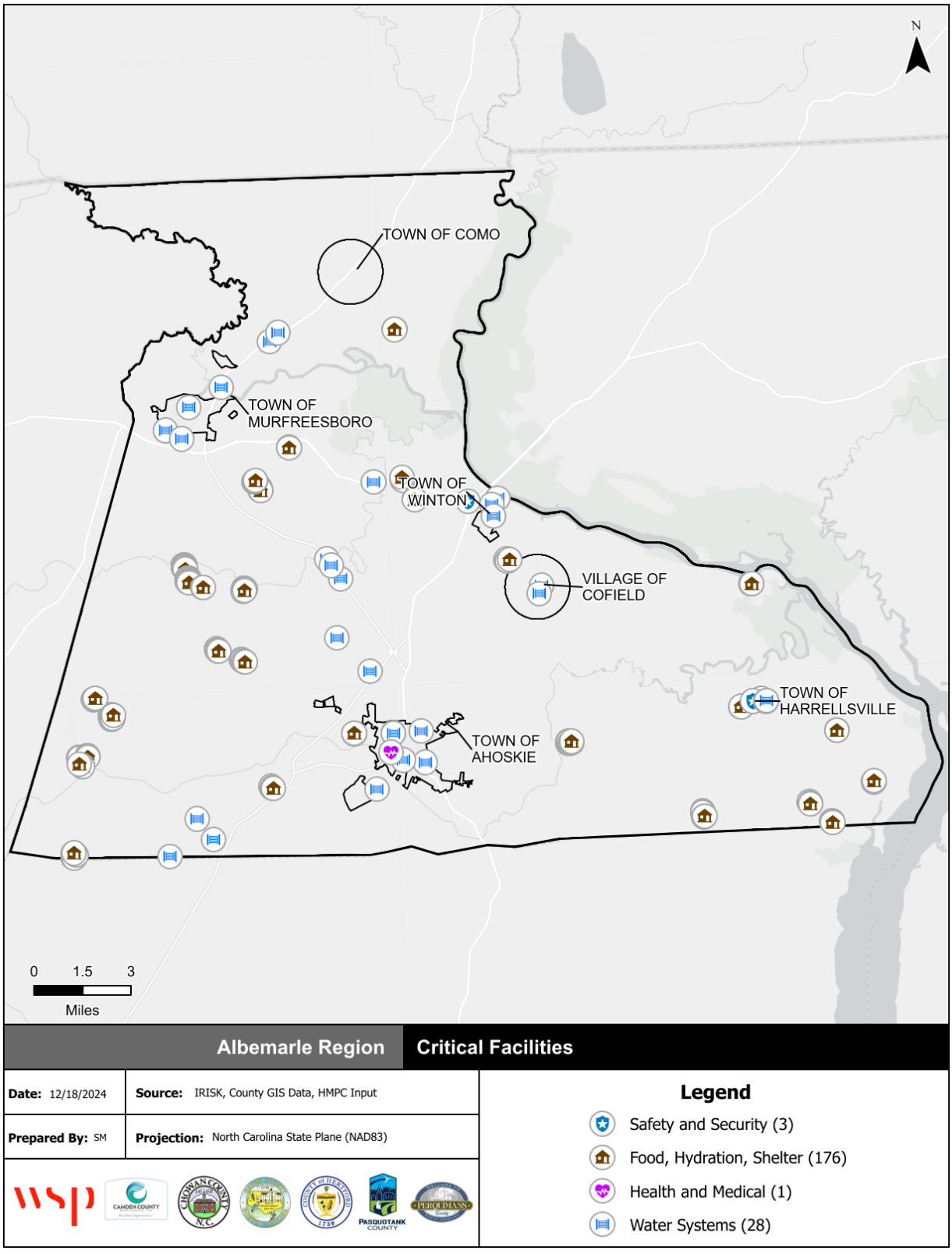
Source: Hertford County, HMPC

Table D.7 – Critical Facilities by Type, Town of Winton

Facility Type	Count of Facility Type	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	3	$377,763
Total	**3**	**$377,763**

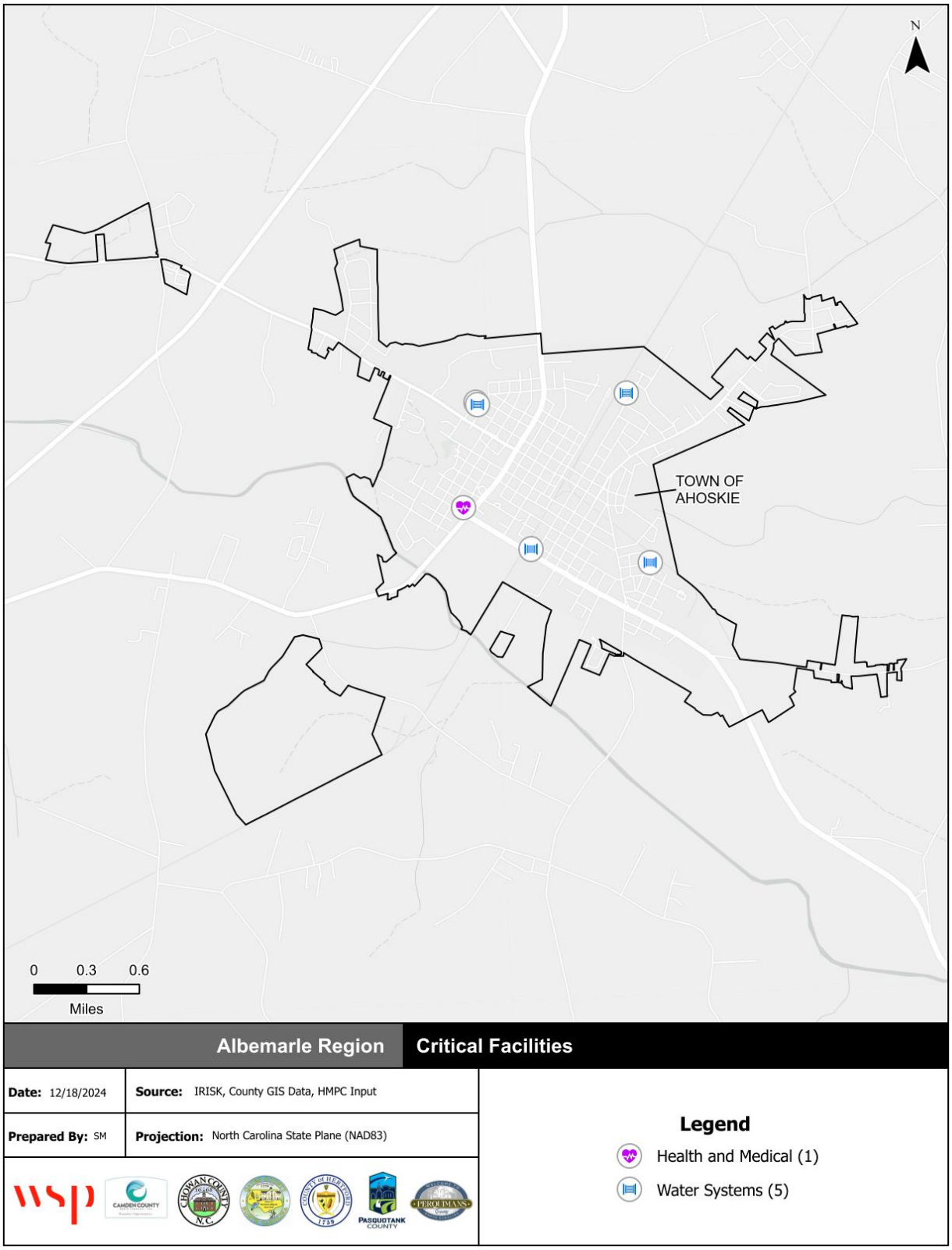
Source: Hertford County, HMPC

Figure D.1 – Critical Facilities, Unincorporated Hertford County



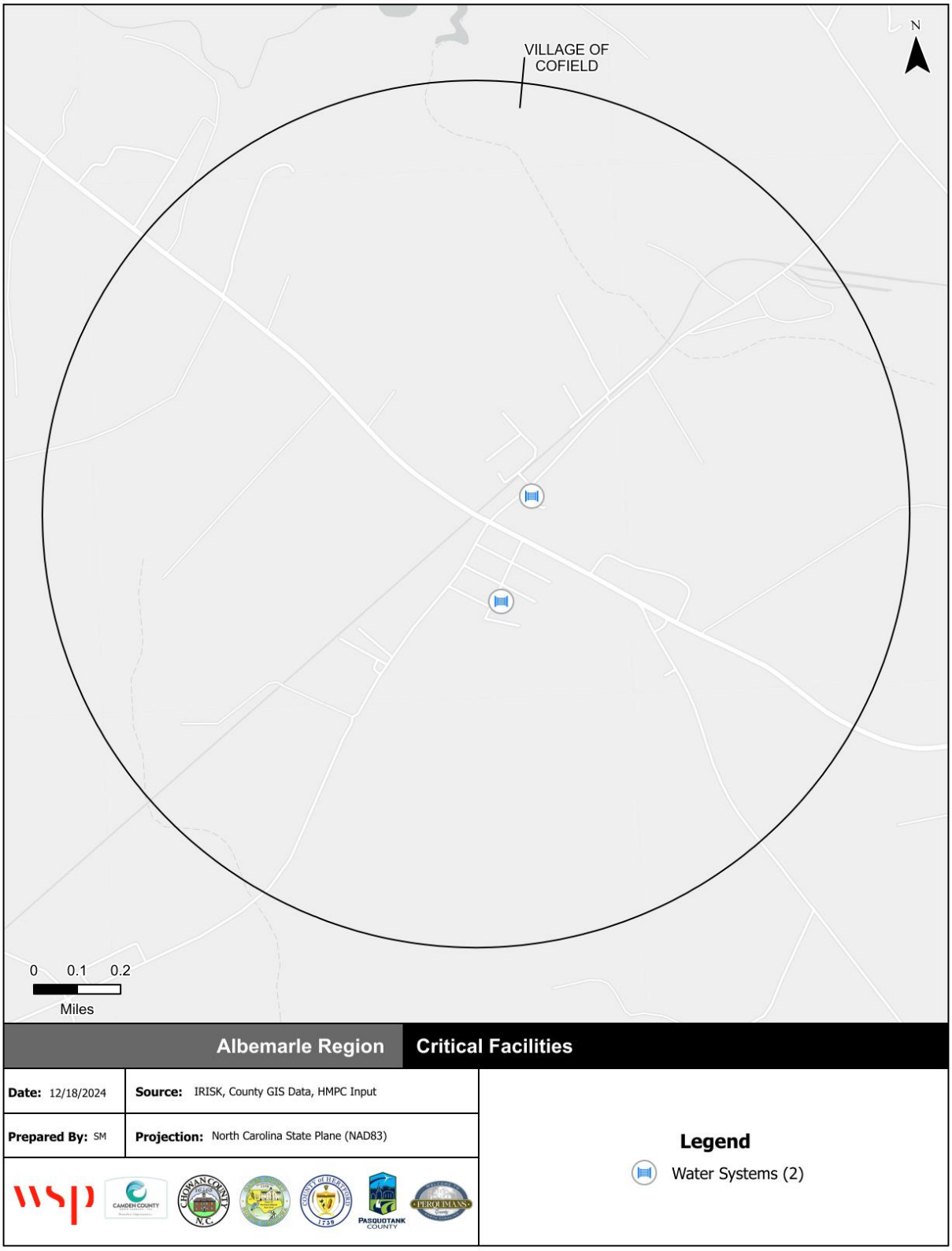
Source: NCEM IRISK Database, HMPC input, GIS Analysis

Figure D.2 – Critical Facilities, Town of Ahoskie



Source: NCEM IRISK Database, HMPC input, GIS Analysis

Figure D.3 – Critical Facilities, Village of Cofield



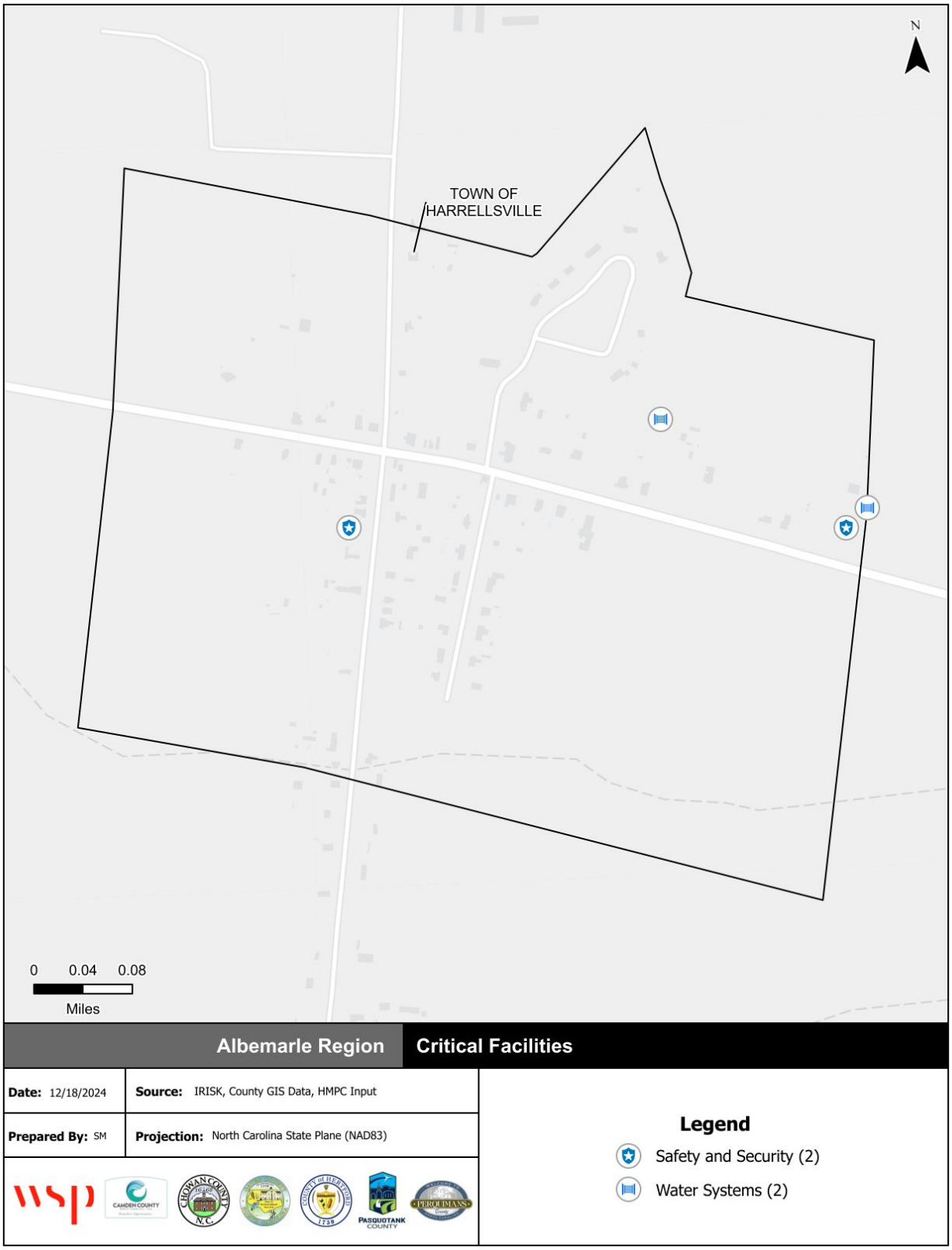
Source: NCEM IRISK Database, HMPC input, GIS Analysis

Figure D.4 – Critical Facilities, Town of Como



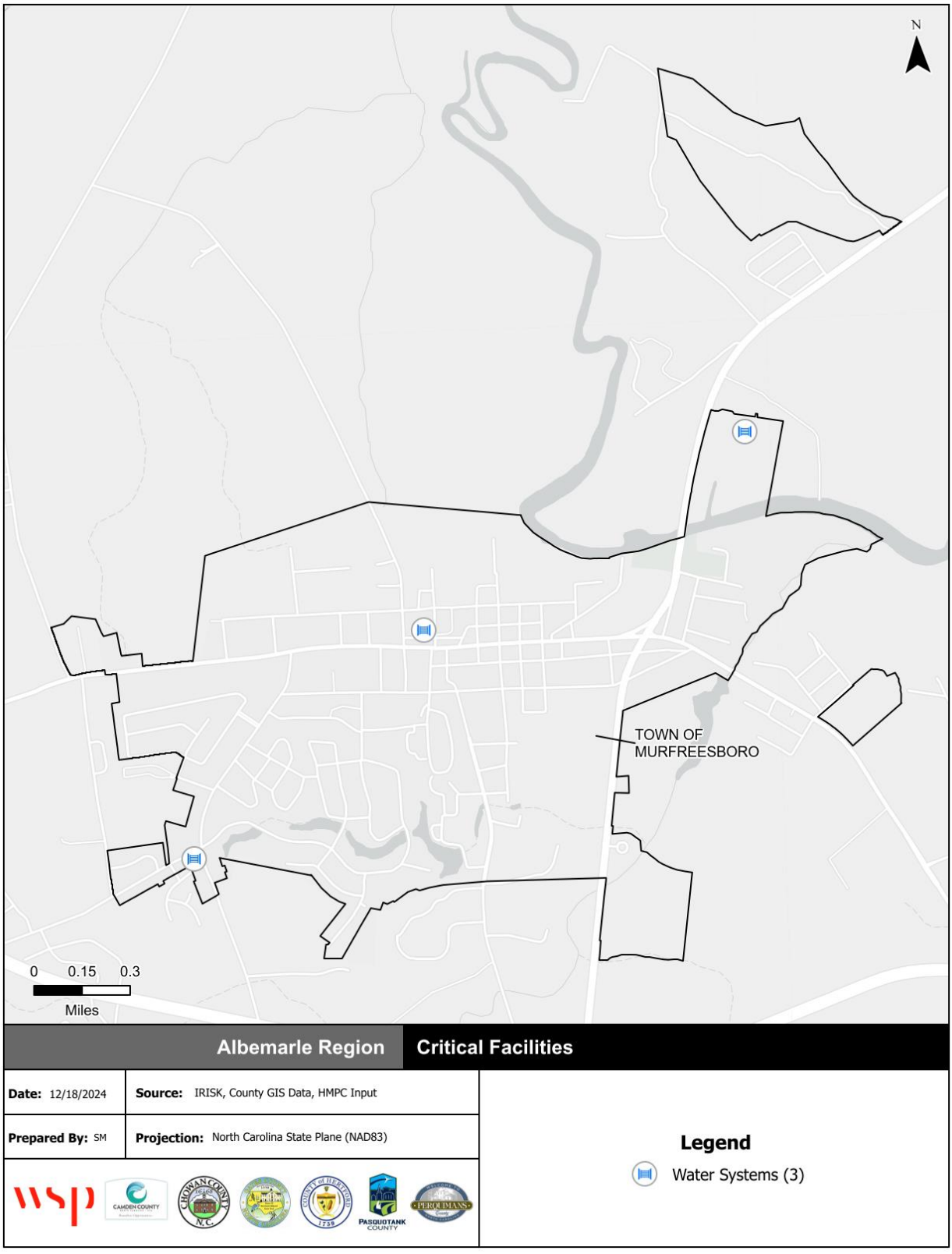
Source: NCEM IRISK Database, HMPC input, GIS Analysis

Figure D.5 – Critical Facilities, Town of Harrellsville



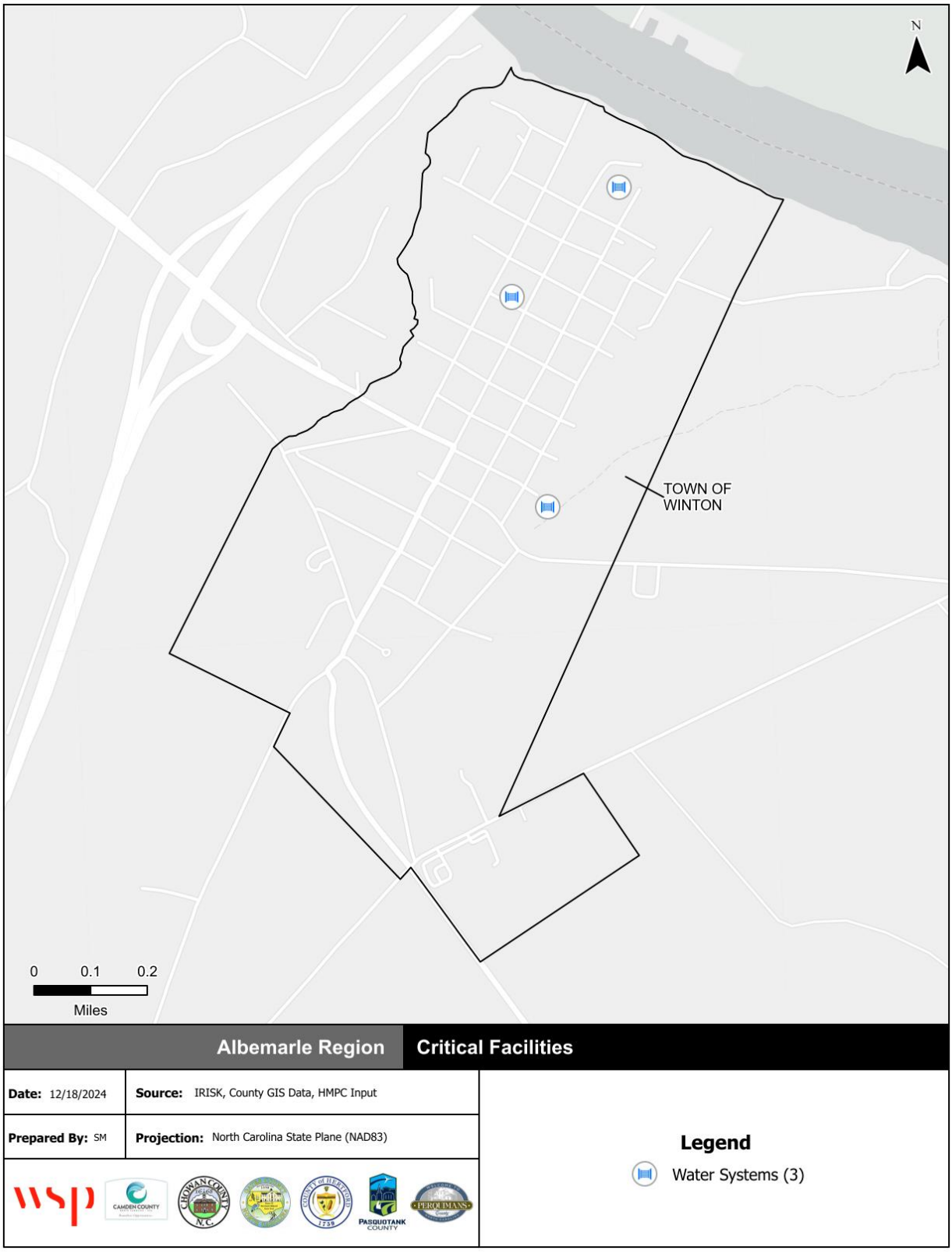
Source: NCEM IRISK Database, HMPC input, GIS Analysis

Figure D.6 – Critical Facilities, Town of Murfreesboro



Source: NCEM IRISK Database, HMPC input, GIS Analysis

Figure D.7 – Critical Facilities, Town of Winton



Source: NCEM IRISK Database, HMPC input, GIS Analysis

Table D.8 – Hertford County Critical Facilities Inventory

FEMA Lifeline	Facility Type	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Unincorporated Hertford County								
Water Systems	Water	-	0.1	X Unshaded	NA	NA	Critical Fireshed	3
Water Systems	Water	$44,550	0.1	X Unshaded	NA	NA	NA	1.5
Water Systems	Water	$50,831	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Water Systems	Water	$200	0.1	X Unshaded	NA	NA	Direct Exposure	3
Water Systems	Water	-	7	AE	NA	NA	Critical Fireshed	0
Water Systems	Water	-	0.1	X Unshaded	NA	NA	Critical Fireshed	0
Water Systems	Water	-	0.1	X Unshaded	NA	NA	Critical Fireshed	3
Water Systems	Water	$5,600	0.1	X Unshaded	NA	NA	Direct Exposure	3
Water Systems	Water	-	0.1	X Unshaded	NA	NA	Direct Exposure	3
Water Systems	Water	-	0.1	X Unshaded	NA	NA	Direct Exposure	2
Water Systems	Water	$6,706	0.1	X Unshaded	NA	NA	NA	2.5
Water Systems	Water	$1,430,796	0.1	X Unshaded	NA	NA	Direct Exposure	2
Water Systems	Water	-	3.7	AE	NA	4	Critical Fireshed	4
Food, Hydration, Shelter	Hog Farm	-	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,508,536	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$17,917	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$317,540	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$234,434	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$12,621	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,508,536	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,508,536	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$317,540	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$254,361	0.1	X Unshaded	NA	NA	Indirect Exposure	0

FEMA Lifeline	Facility Type	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	-	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	-	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	-	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	-	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	-	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,508,536	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,508,536	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,508,536	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,508,536	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,508,536	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,508,536	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,508,536	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,508,536	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$1,508,536	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$17,917	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$17,917	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$17,917	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$317,540	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$317,540	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$317,540	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$110,945	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$234,434	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$12,621	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$12,621	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Hog Farm	$12,621	0.1	X Unshaded	NA	NA	Direct Exposure	1.5

FEMA Lifeline	Facility Type	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Direct Exposure	3
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0

FEMA Lifeline	Facility Type	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$1,231,618	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$2,832,441	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$254,361	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$254,361	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Indirect Exposure	0

FEMA Lifeline	Facility Type	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Direct Exposure	2.5
Food, Hydration, Shelter	Hog Farm	$2,844,879	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Safety and Security	Emergency Operations	$301,946	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$371,174	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$76,149	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$466,055	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$17,500	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$1,790,792	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$26,759	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$591,820	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$135,450	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$184,755	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$126,642	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$303,013	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$171,180	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$20,531	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$706,137	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$706,137	0.1	X Unshaded	NA	NA	Direct Exposure	0

FEMA Lifeline	Facility Type	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Chicken House	$120,342	2.6	AE	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$468,859	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$115,910	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$263,546	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Chicken House	$196,436	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$196,436	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$371,174	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$371,174	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$371,174	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$76,149	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$76,149	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$466,055	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$466,055	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$466,055	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$17,500	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$1,790,792	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$1,790,792	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$1,790,792	0.1	X Unshaded	NA	NA	Critical Fireshed	0
Food, Hydration, Shelter	Chicken House	$26,759	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$591,820	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$591,820	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$591,820	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$135,450	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$184,755	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$184,755	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$126,642	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$126,642	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$303,013	0.1	X Unshaded	NA	NA	Indirect Exposure	0

FEMA Lifeline	Facility Type	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Chicken House	$303,013	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$303,013	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$171,180	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$20,531	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$20,531	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$20,531	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$20,531	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$20,531	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$706,137	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$706,137	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Chicken House	$706,137	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Chicken House	$706,137	0.1	AE	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Chicken House	$120,342	1.9	AE	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$120,342	2.1	AE	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$17,525	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$468,859	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$468,859	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$468,859	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$115,910	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$263,546	0.1	X Unshaded	NA	NA	Direct Exposure	0
Food, Hydration, Shelter	Chicken House	$303,013	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	$214,881	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$214,881	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	$214,881	0.1	X Unshaded	NA	NA	Direct Exposure	1.5
Town of Ahoskie								
Water Systems	Water	$3,537	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Water Systems	Water	$209,409	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Water Systems	Water	$367,108	0.1	X Unshaded	NA	NA	Indirect Exposure	0

FEMA Lifeline	Facility Type	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Water Systems	Water	$11,098,577	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Water Systems	Water	-	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Health and Medical	Hospital	$21,519,551	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Town of Harrellsville								
Water Systems	Water	$16,978	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Safety and Security	Fire Station	$52,871	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Safety and Security	Fire Station	$36,924	0.1	X Unshaded	NA	NA	Direct Exposure	2
Water Systems	Water Tanks & Treatment Building	$250,000	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Town of Murfreesboro								
Water Systems	Water	$19,534	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Water Systems	Water	$2,826	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Water Systems	Water	$18,000	0.1	X Shaded	NA	NA	NA	0
Town of Winton								
Water Systems	Water	$17,122	0.1	X Unshaded	NA	NA	Direct Exposure	2
Water Systems	Water	$251,922	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Water Systems	Water	$108,719	0.1	X Unshaded	NA	NA	NA	2
Village of Cofield								
Water Systems	Water	$55,324	0.1	X Unshaded	NA	NA	Direct Exposure	2
Water Systems	Water	$29,678	0.1	X Unshaded	NA	NA	Indirect Exposure	0

D.2 RISK ASSESSMENT

This section contains a hazard profile and vulnerability assessment for those hazards that were rated with a higher priority by jurisdiction in Hertford County than for the Albemarle Region as a whole. Risk and vulnerability findings are also presented here for those hazards that are spatially defined and have variations in risk that could be evaluated quantitatively on a jurisdictional level. The hazards included in this section are flooding and wildfire.

D.2.1 FLOODING

Table D.9 details the acreage of Hertford County's total area by jurisdiction and flood zone on the Effective DFIRM. Per this assessment, around 20 percent of the total area in the unincorporated areas of the county are in the SFHA. None of Harrellsville and less than 1 percent of Cofield are within the SFHA. Overall, almost 20 percent of Hertford County falls within the SFHA.

Table D.9 – Flood Zone Acreage by Jurisdiction, Hertford County

Flood Zone	Acreage	Percent of Total (%)
Unincorporated Hertford County		
Zone AE	45,417.8	20.5
Zone X (500-year)	1,214.7	0.5
Zone X (unshaded)	175,166.8	79.0
Total	**221,799.3**	--
Town of Ahoskie		
Zone AE	286.6	10.3
Zone X (500-year)	38.4	1.4
Zone X (unshaded)	2,468.5	88.4
Total	**2,793.5**	--
Town of Como		
Zone AE	3.7	0.2
Zone X (unshaded)	2,019.9	99.8
Total	**2,023.5**	--
Town of Murfeesboro		
Zone AE	96.5	6.6
Zone X (500-year)	54.7	3.8
Zone X (unshaded)	1,303.5	89.6
Total	**1,454.7**	--
Village of Cofield		
Zone AE	17.2	0.9
Zone X (500-year)	68.2	3.4
Zone X (unshaded)	1,928.4	95.8
Total	**2,013.9**	--
Town of Harrellsville		
Zone X (unshaded)	186.0	100.0
Total	**186.0**	--

Flood Zone	Acreage	Percent of Total (%)
Town of Winton		
Zone AE	10.7	2.1
Zone X (unshaded)	507.3	97.9
Total	**518.0**	--

Source: FEMA Effective DFIRM

Figure D.8 through Figure D.13 reflect the effective mapped flood hazard zones for all jurisdictions with land in the Special Flood Hazard Area in Hertford County, and Figure D.14 through Figure D.19 display the depth of flooding estimated to occur in these areas during the 1%-annual-chance flood.

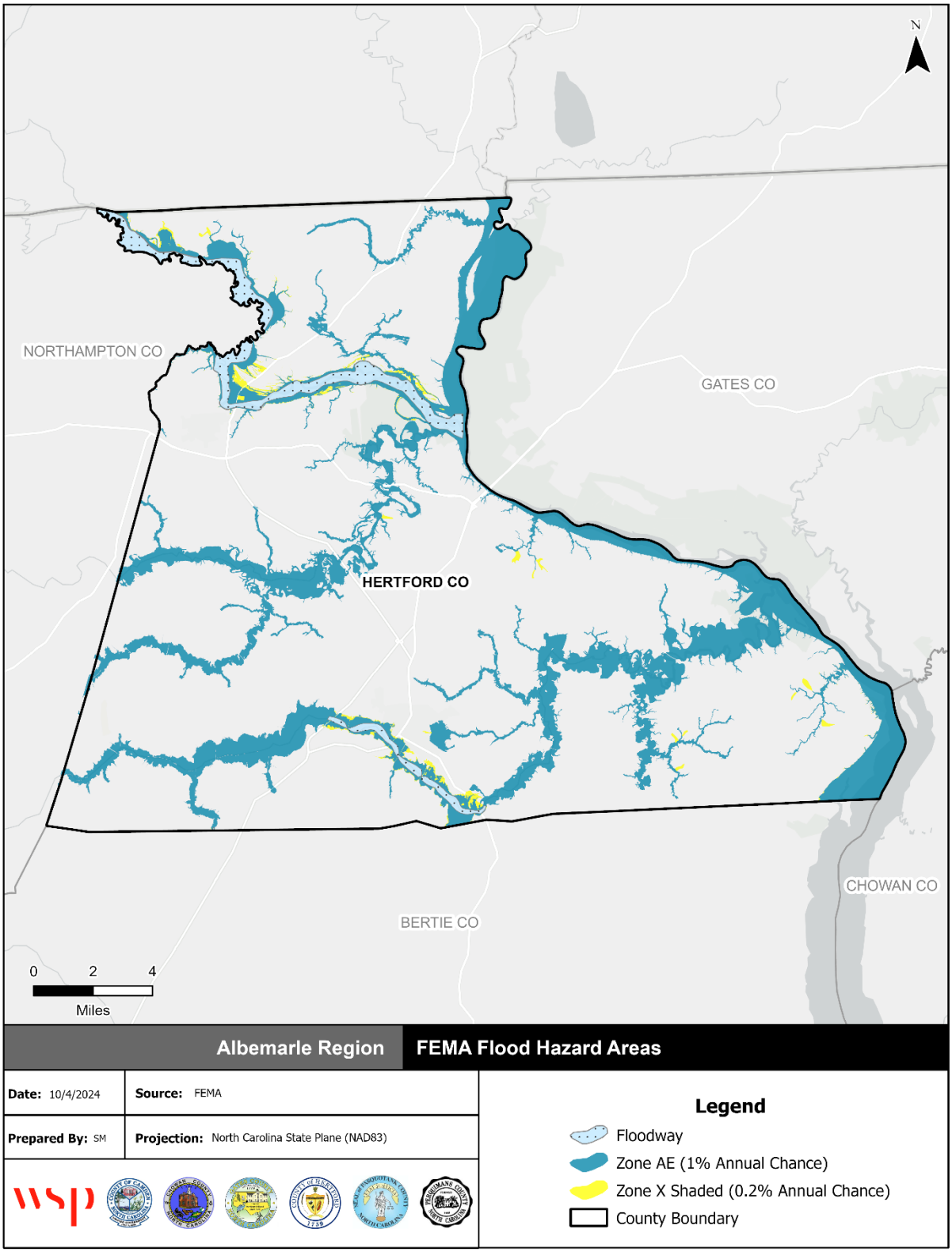
Table D.10 provides building counts and values for critical facilities by flood zone in Hertford County and incorporated jurisdictions.

Table D.10 – Critical Facilities Exposed to Flooding, Hertford County

Flood Zone	Critical Facility Count	Structure Value
Hertford County		
Zone AE	6	$ 1,067,163
Zone X (unshaded)	184	$192,277,946
Total	**190**	**$ 193,345,109**
Town of Ahoskie		
Zone X (unshaded)	6	$ 33,198,182
Total	**6**	**$ 33,198,182**
Town of Harrellsville		
Zone X (unshaded)	4	$356,773
Total	**4**	**$356,773**
Town of Murfreesboro		
Zone X (shaded)	1	$18,000
Zone (unshaded)	2	$22,360
Total	**3**	**$40,360**
Town of Winton		
Zone (unshaded)	3	$377,763
Total	**3**	**$377,763**
Village of Cofield		
Zone (unshaded)	2	$85,002
Total	**2**	**$85,002**

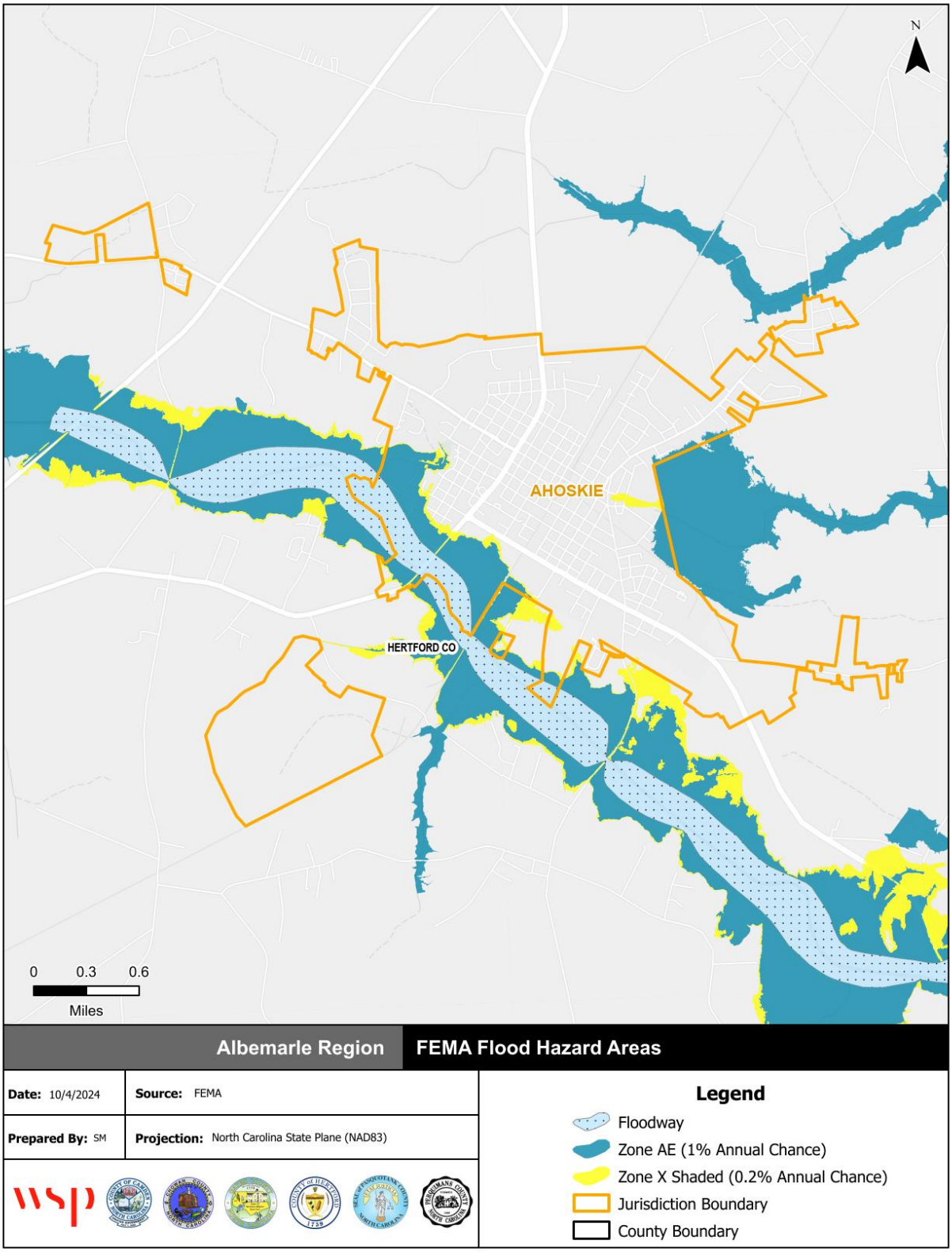
Source: FEMA Effective FIRM

Figure D.8 – FEMA Flood Hazard Areas, Unincorporated Hertford County



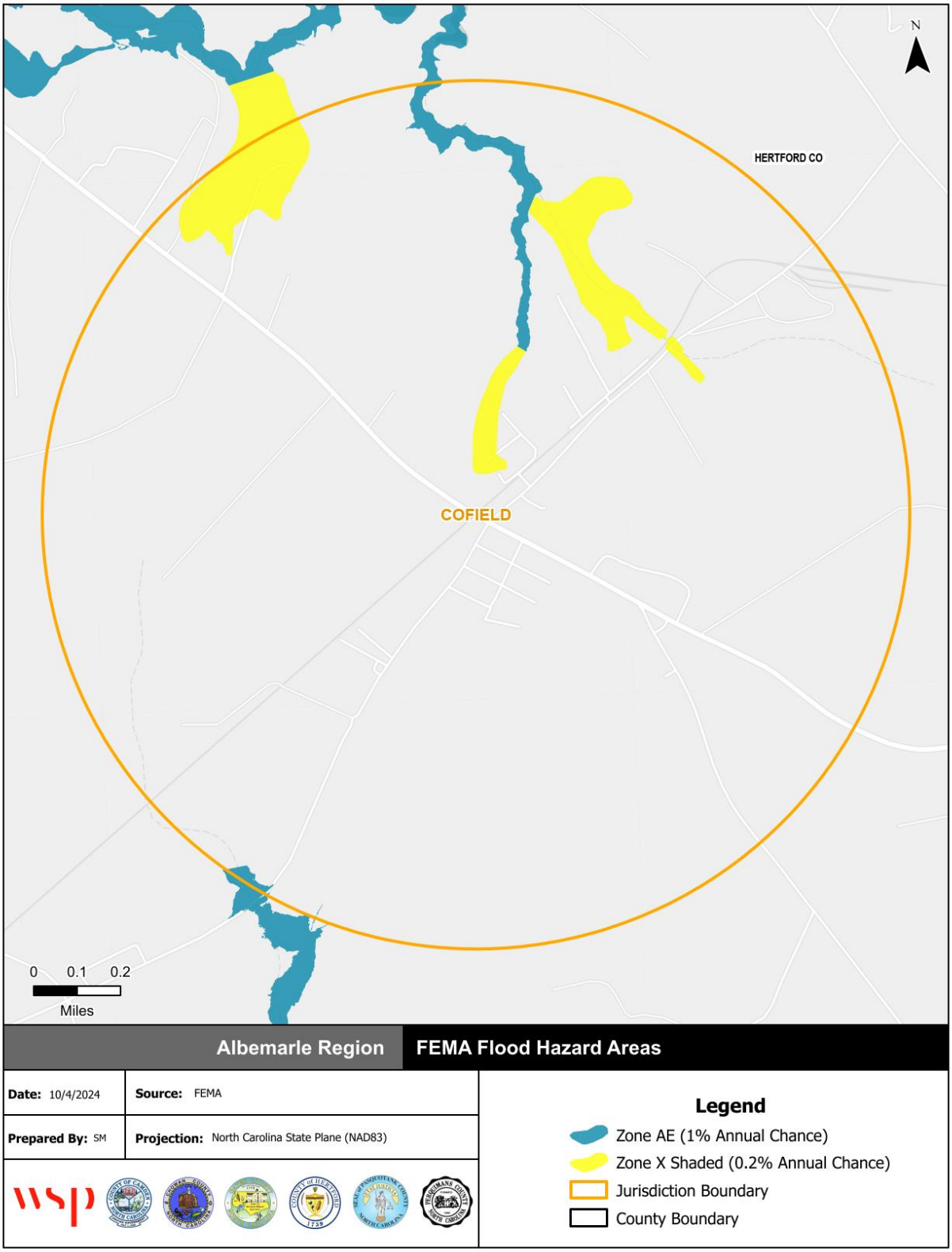
Source: FEMA Effective DFIRM

Figure D.9 – FEMA Flood Hazard Areas, Town of Ahoskie



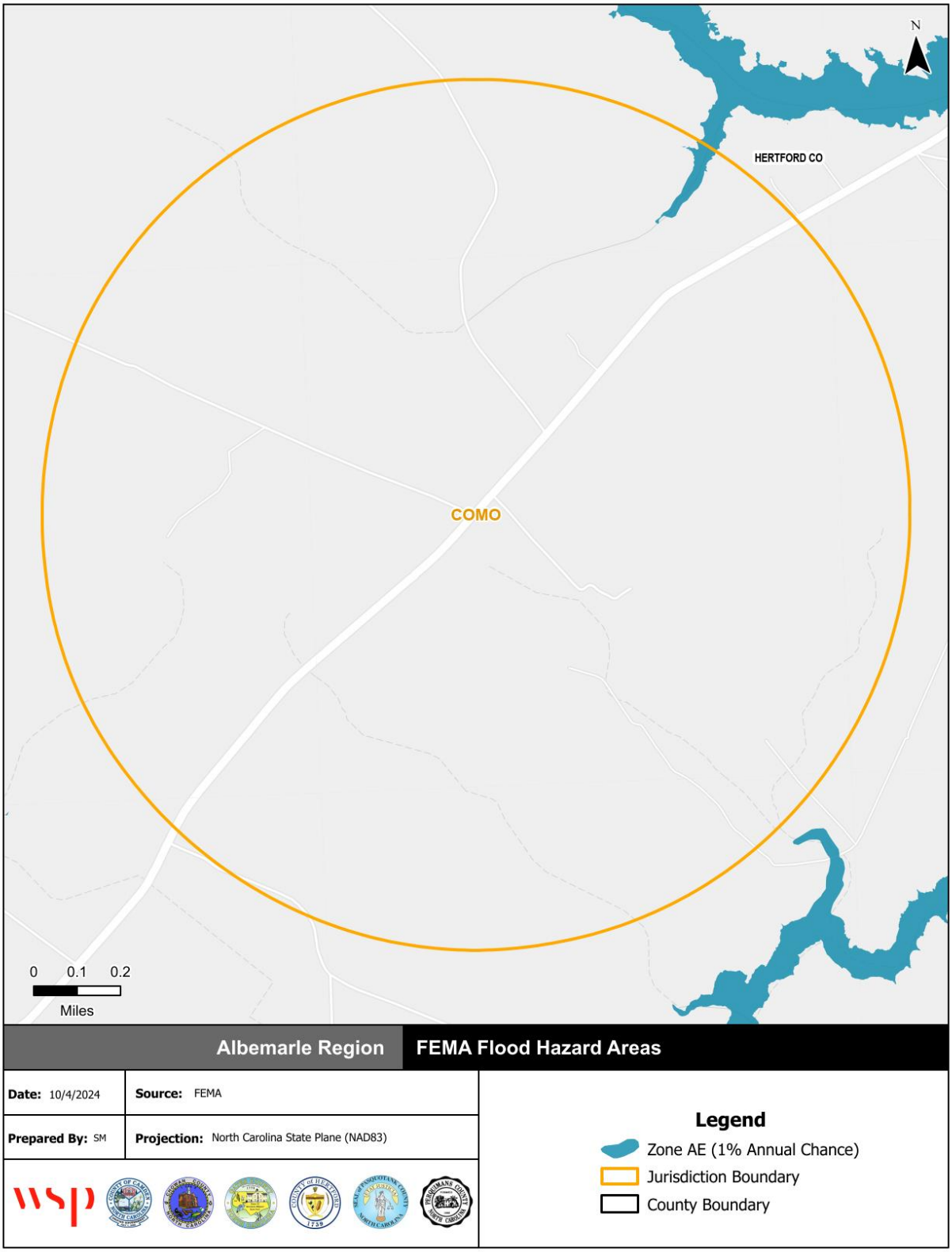
Source: FEMA Effective DFIRM

Figure D.10 – FEMA Flood Hazard Areas, Village of Cofield



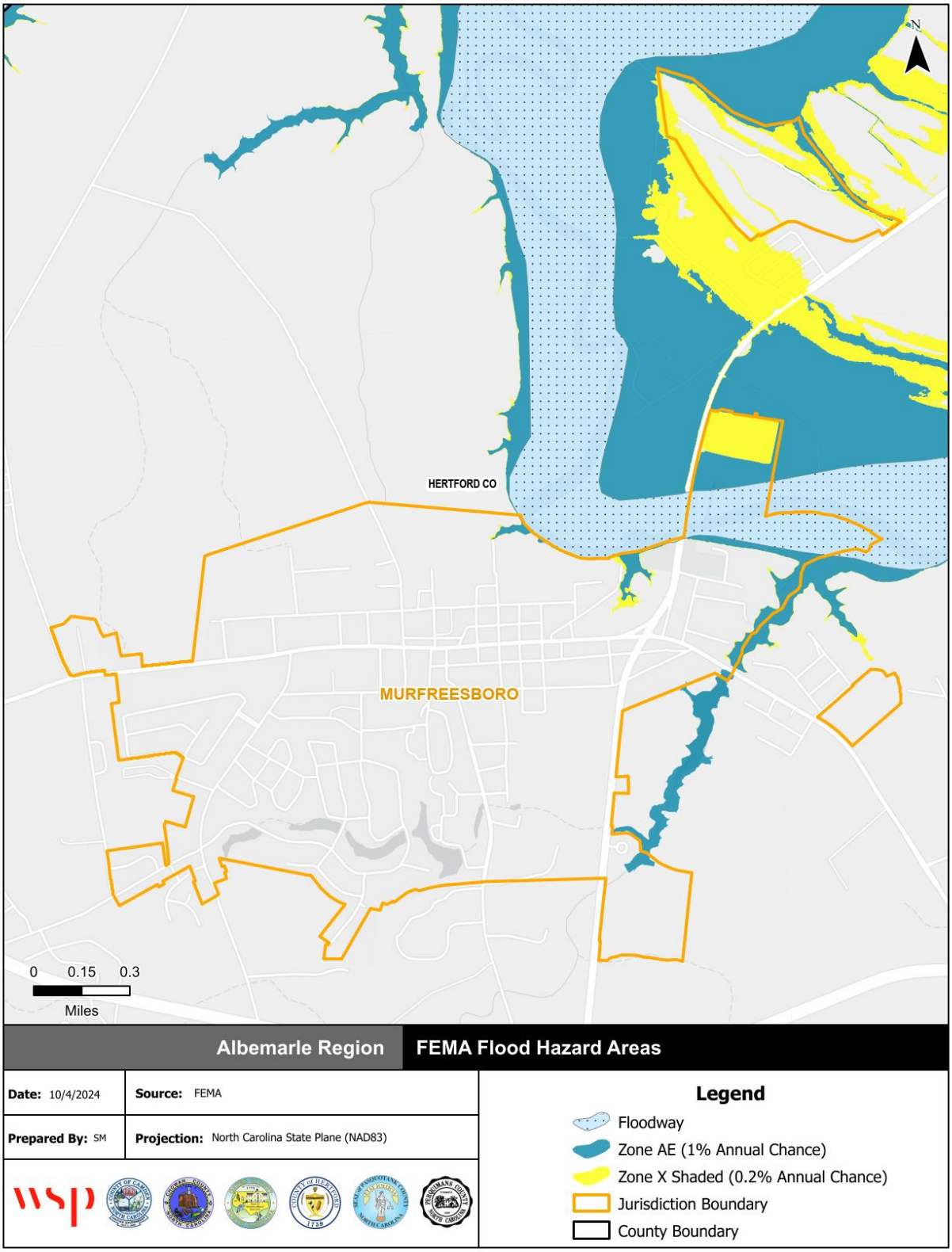
Source: FEMA Effective DFIRM

Figure D.11 – FEMA Flood Hazard Areas, Town of Como



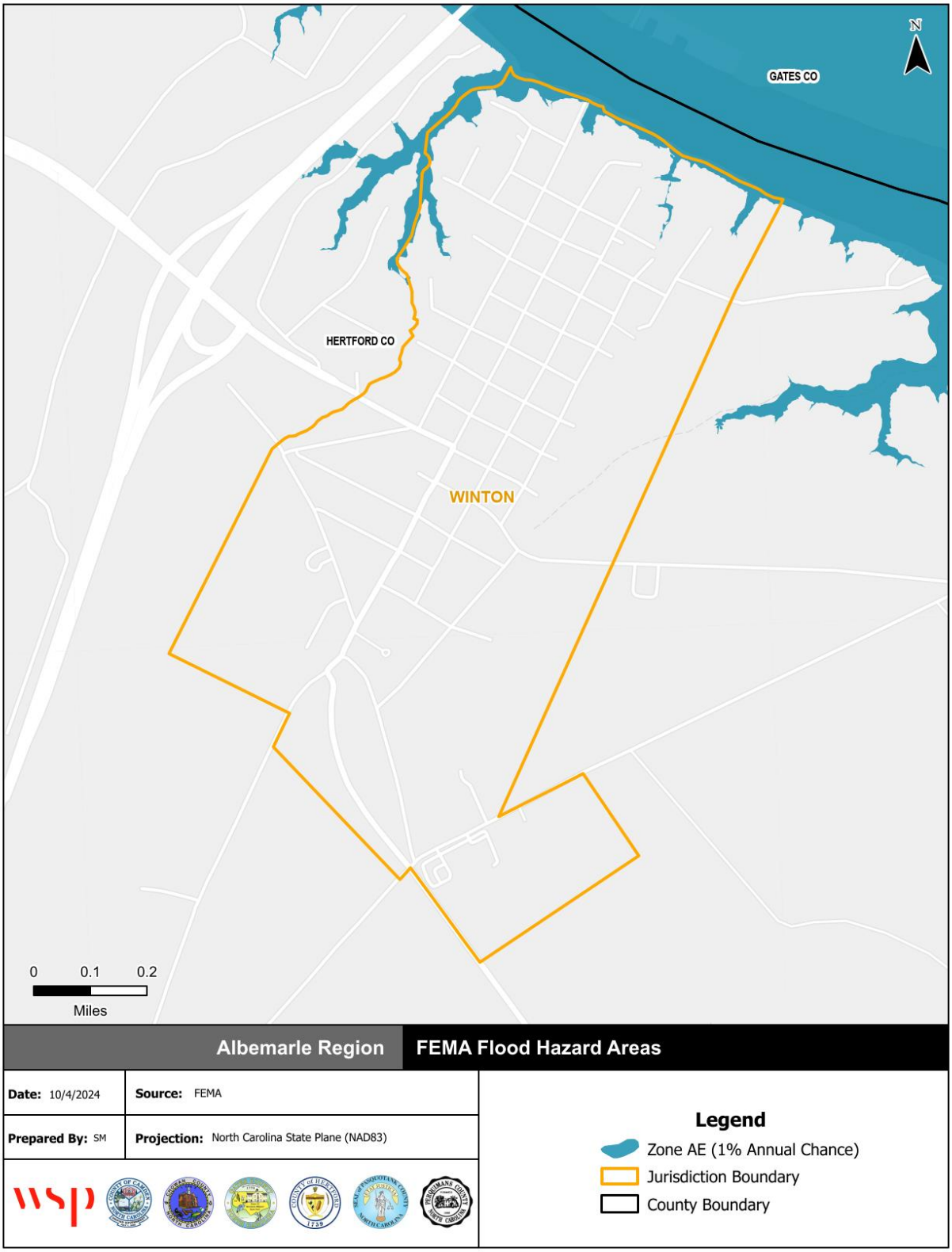
Source: FEMA Effective DFIRM

Figure D.12 – FEMA Flood Hazard Areas, Town of Murfreesboro



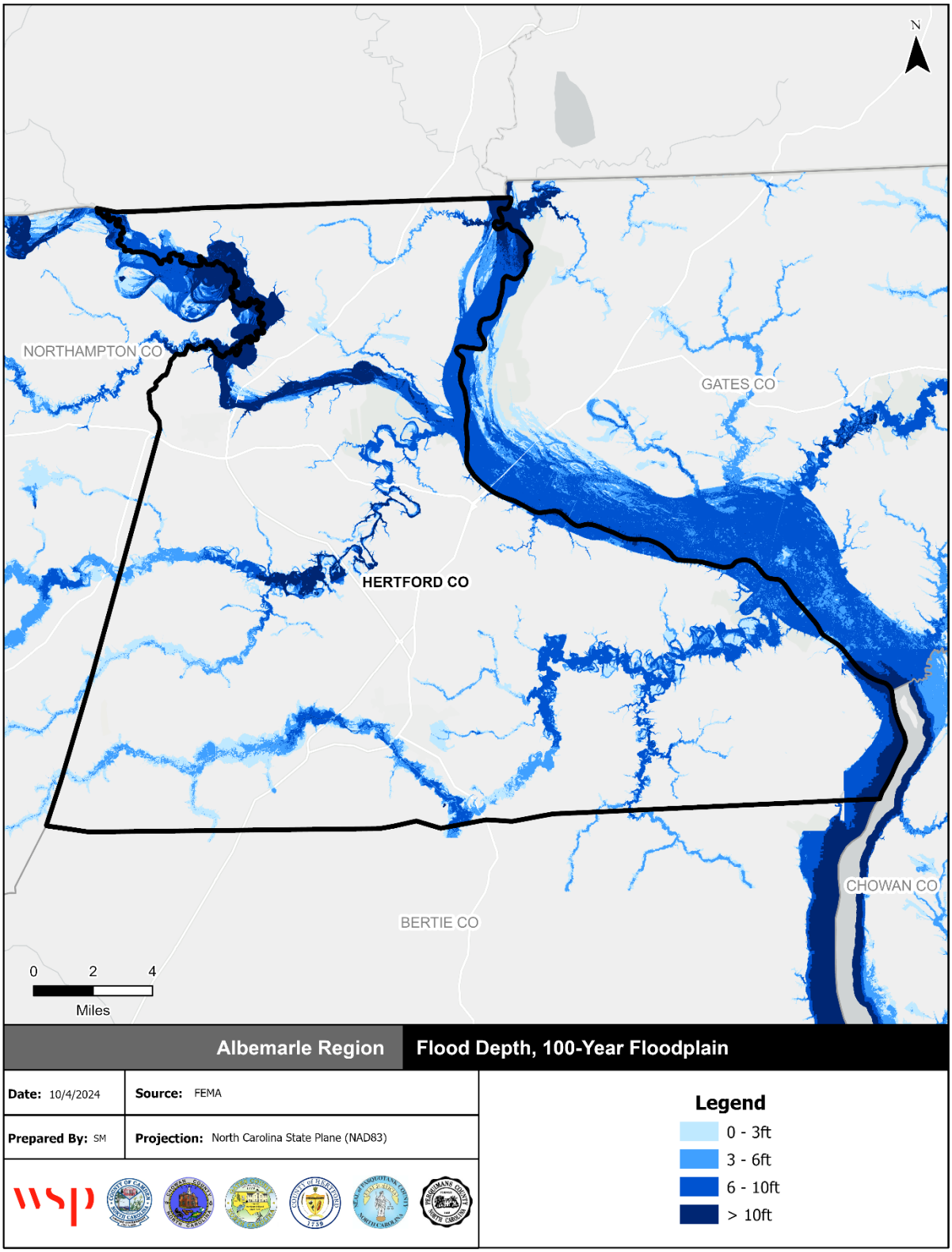
Source: FEMA Effective DFIRM

Figure D.13 – FEMA Flood Hazard Areas, Town of Winton



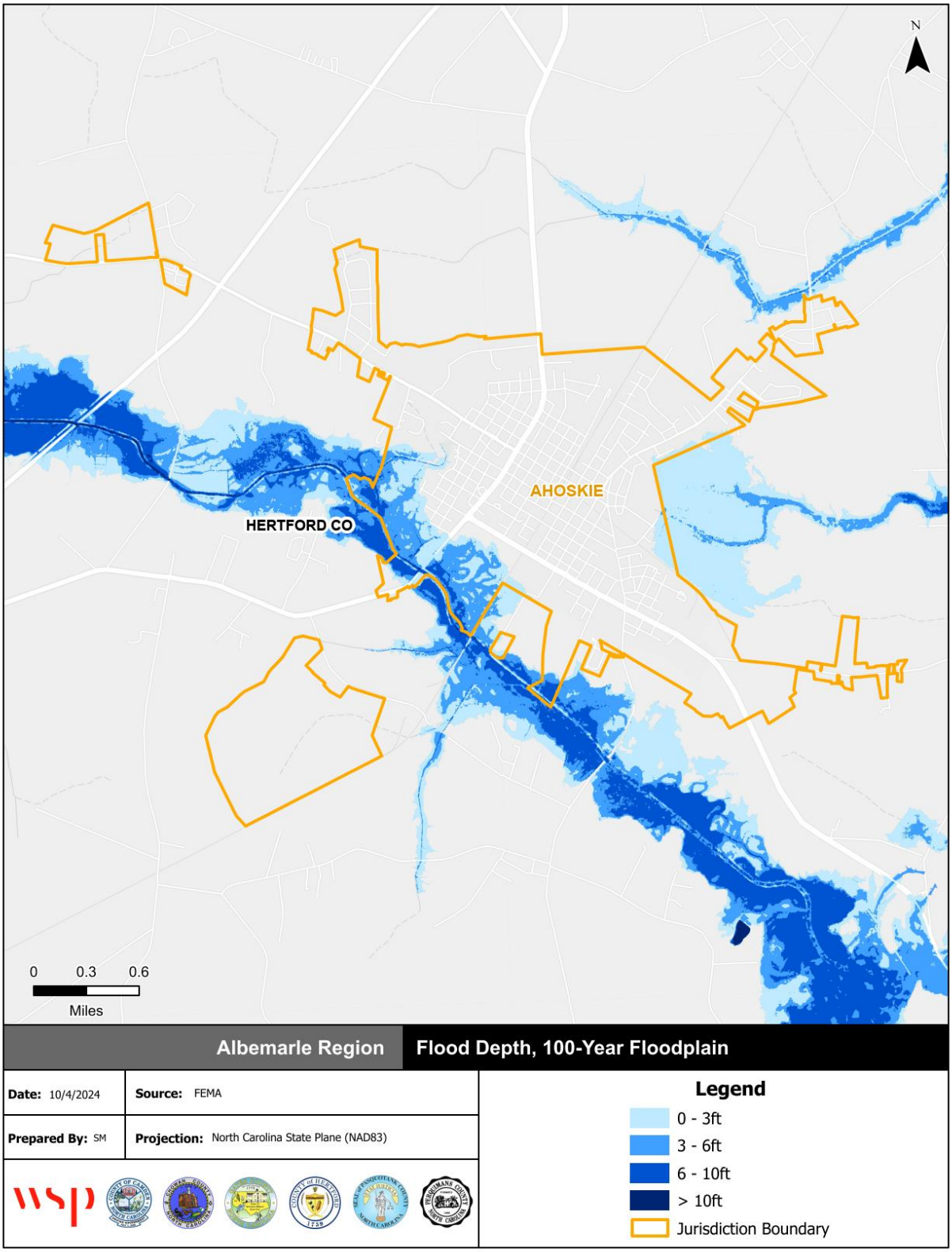
Source: FEMA Effective DFIRM

Figure D.14 – Flood Depth, 1%-Annual-Chance Floodplain, Unincorporated Hertford County



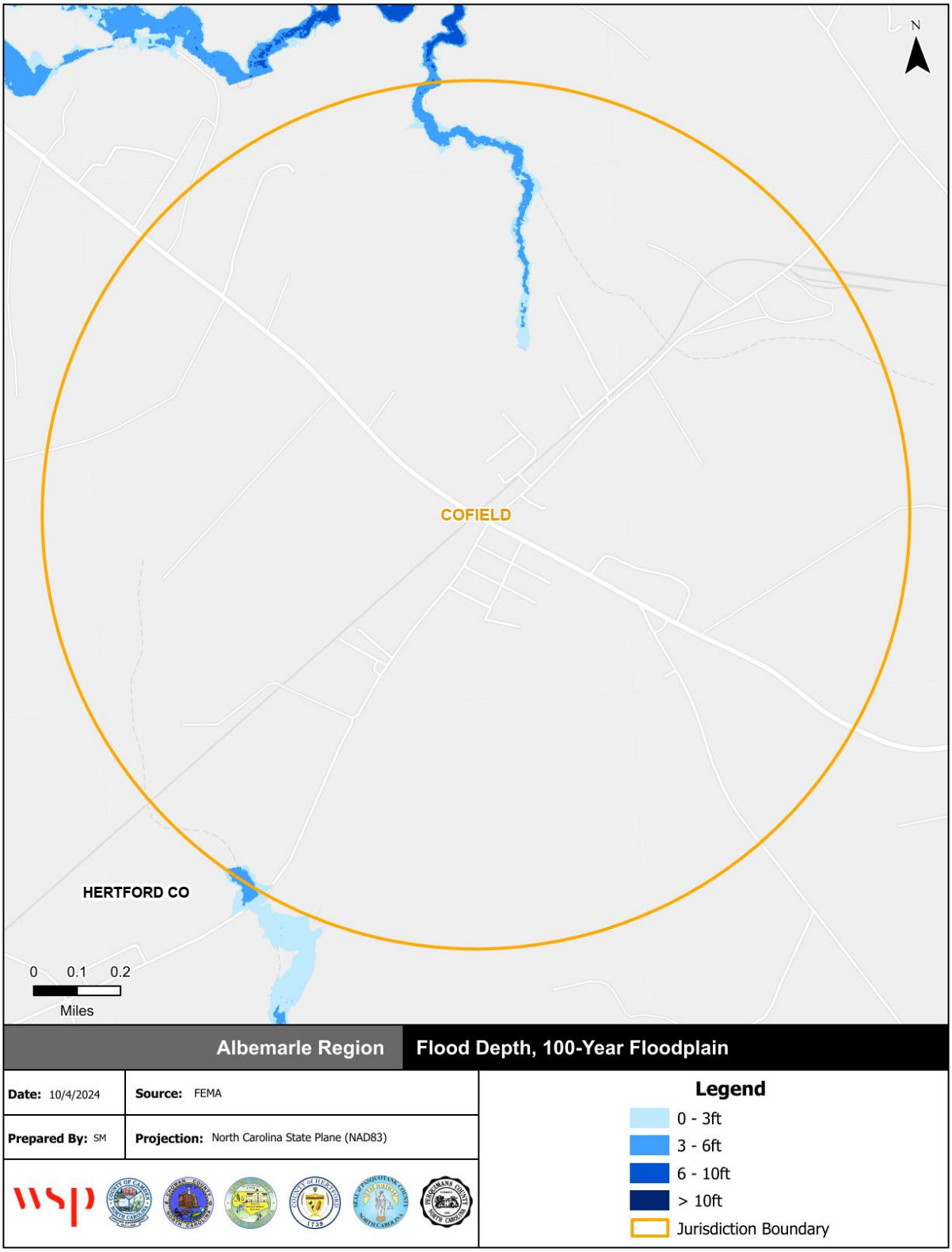
Source: FEMA Effective DFIRM

Figure D.15 – Flood Depth, 1%-Annual-Chance Floodplain, Town of Ahoskie



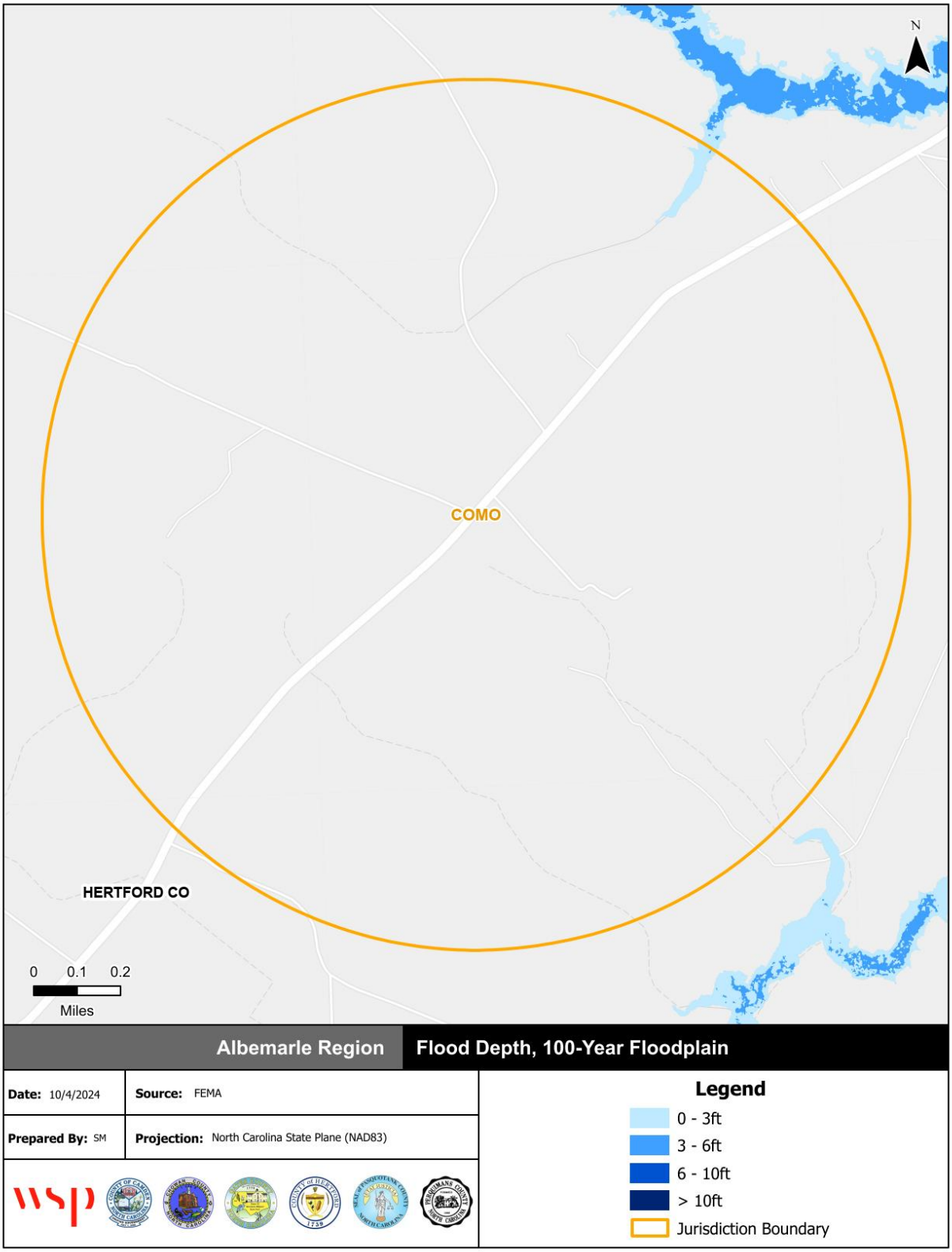
Source: FEMA Effective DFIRM

Figure D.16 – Flood Depth, 1%-Annual-Chance Floodplain, Village of Cofield



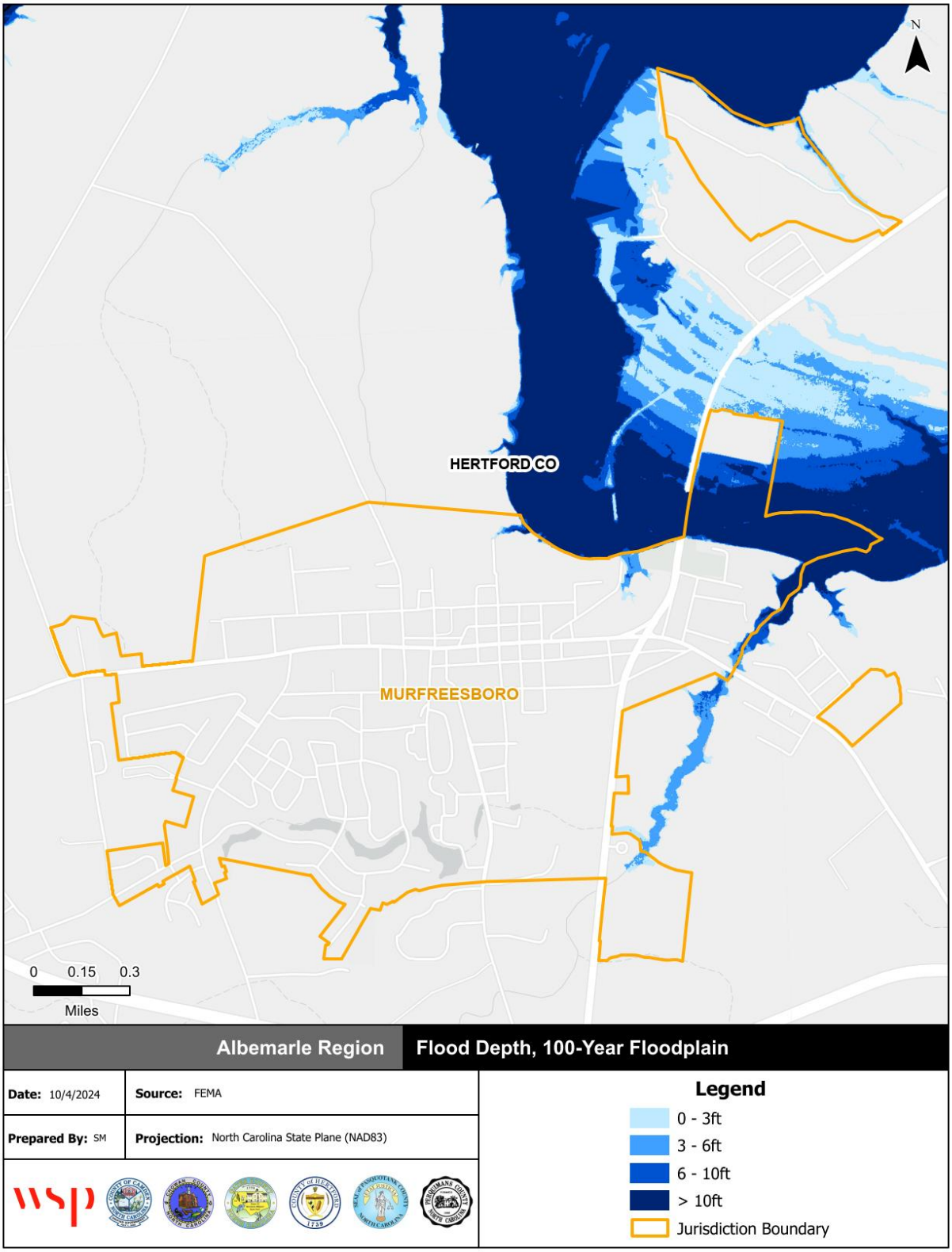
Source: FEMA Effective DFIRM

Figure D.17 – Flood Depth, 1%-Annual-Chance Floodplain, Town of Como



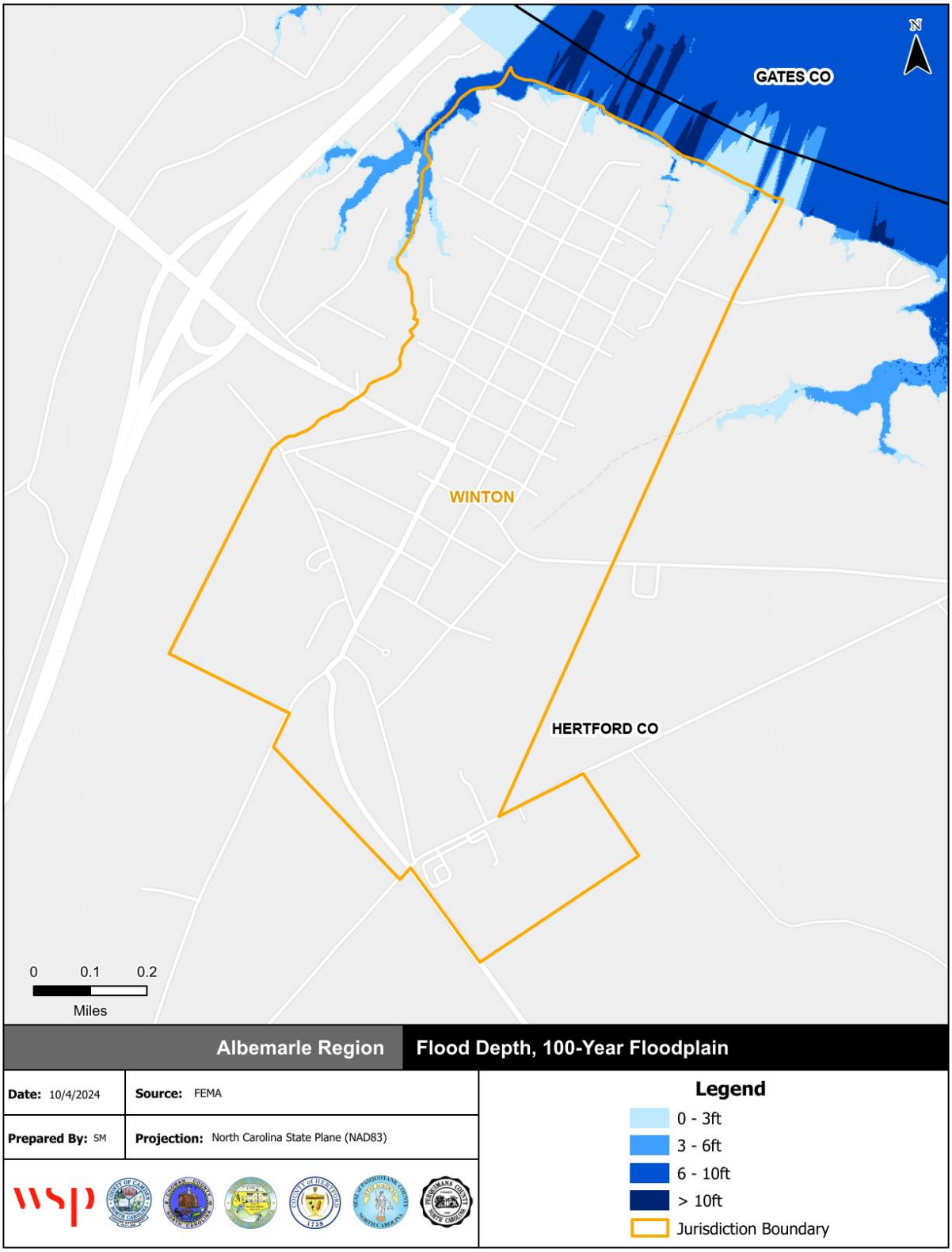
Source: FEMA Effective DFIRM

Figure D.18 – Flood Depth, 1%-Annual-Chance Floodplain, Town of Murfreesboro



Source: FEMA Effective DFIRM

Figure D.19 – Flood Depth, 1%-Annual-Chance Floodplain, Town of Winton



Source: FEMA Effective DFIRM

D.2.1.1 *FLOOD INSURANCE DATA*

The following tables reflect NFIP entry dates as well as policy and claims data for Hertford County and incorporated jurisdictions, categorized by structure type, flood zone, Pre-FIRM and Post-FIRM. Note: The Town of Como is a participant in the NFIP but there are no active policies or past claims in the Town.

Table D.11 – NFIP Program Entry Dates

Community	Emergency Entry	Regular Entry Date
Hertford County (Unincorporated Area)	October 6, 1995	November 1, 1999
Town of Ahoskie	May 13, 1974	May 1, 1987
Village of Cofield	August 7, 2001	August 3, 2009
Town of Como	--	December 12, 2007
Town of Harrellsville	--	Not Participating
Town of Murfreesboro	March 12, 1980	June 1, 1987
Town of Winton	August 3, 1979	July 1, 1987

Source: FEMA Community Information System

Table D.12 – NFIP Policy and Claims Data by Structure Type

Structure Type	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Hertford County Unincorporated Area					
Single Family	41	$30,214	$10,050,000	68	$1,188,990.27
2-4 Family	0	$0	$0	0	$0.00
All Other Residential	0	$0	$0	0	$0.00
Non-Residential	2	$2,202	$1,108,000	7	$231,174.62
Total	**43**	**$32,416**	**$11,158,000**	**75**	**$1,420,164.89**
Town of Ahoskie					
Single Family	7	$3,766	$1,485,000	65	$777,365.80
2-4 Family	0	$0	$0	0	$0.00
All Other Residential	0	$0	$0	0	$0.00
Non-Residential	5	$7,897	$2,307,000	4	$775,430.89
Total	**12**	**$11,663**	**$3,792,000**	**69**	**$1,552,796.69**
Village of Cofield					
Single Family	1	$630	$228,000	0	$0.00
2-4 Family	0	$0	$0	0	$0.00
All Other Residential	0	$0	$0	0	$0.00
Non-Residential	0	$0	$0	0	$0.00
Total	**1**	**$630**	**$228,000**	**0**	**$0.00**
Town of Murfreesboro					
Single Family	1	$619	$210,000	3	$0.00
2-4 Family	0	$0	$0	0	$0.00
All Other Residential	1	$734	$508,000	0	$0.00
Non-Residential	0	$0	$0	0	$0.00
Total	**2**	**$1,353**	**$718,000**	**3**	**$0.00**

Structure Type	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Town of Winton					
Single Family	0	$0	$0	3	$31,122.87
2-4 Family	0	$0	$0	0	$0.00
All Other Residential	0	$0	$0	0	$0.00
Non-Residential	0	$0	$0	0	$0.00
Total	**0**	**$0**	**$0**	**3**	**$31,122.87**

Source: FEMA Community Information System, accessed January 2025

Table D.13 – NFIP Policy and Claims Data by Flood Zone

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Hertford County Unincorporated Area					
A01-30 & AE Zones	9	$7,964	$2,541,000	6	$228,185.12
A Zones	6	$5,605	$1,171,000	25	$503,536.57
B, C & X Zone					
Standard	28	$18,847	$7,446,000	9	$107,315.05
Preferred	0	$0	$0	34	$614,252.54
Total	**43**	**$32,416**	**$11,158,000**	**74**	**$1,453,289.28**
Town of Ahoskie					
A01-30 & AE Zones	4	$4,211	$867,000	0	$0.00
A Zones	0	$0	$0	4	$56,821.32
B, C & X Zone					
Standard	8	$7,452	$2,925,000	19	$894,886.17
Preferred	0	$0	$0	44	$582,301.70
Total	**12**	**$11,663**	**$3,792,000**	**67**	**$1,534,009.19**
Village of Cofield					
B, C & X Zone					
Standard	1	$630	$228,000	0	$0.00
Preferred	0	$0	$0	0	$0.00
Total	**1**	**$630**	**$228,000**	**0**	**$0.00**
Town of Murfreesboro					
B, C & X Zone					
Standard	2	$1,353	$718,000	0	$0.00
Preferred	0	$0	$0	3	$0.00
Total	**2**	**$1,353**	**$718,000**	**3**	**$0.00**
Town of Winton					
A Zones	0	$0	$0	2	$12,000.00
B, C & X Zone					
Standard	0	$0	$0	0	$0.00
Preferred	0	$0	$0	1	$19,122.87
Total	**0**	**$0**	**$0**	**3**	**$31,122.87**

Source: FEMA Community Information System, accessed January 2025

Table D.14 – NFIP Policy and Claims Data Pre-FIRM

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Hertford County Unincorporated Area					
A01-30 & AE Zones	3	$2,970	$479,000	3	$53,083.61
A Zones	2	$1,428	$351,000	20	$458,789.06
B, C & X Zone	18	$11,890	$4,388,000	33	$490,027.31
Standard	18	$11,890	$4,388,000	8	$102,753.57
Preferred	0	$0	$0	26	$420,398.13
Total	**23**	**$16,288**	**$5,218,000**	**56**	**$1,001,899.98**
Town of Ahoskie					
A01-30 & AE Zones	2	$1,073	$177,000	0	$0.00
A Zones	0	$0	$0	4	$56,821.32
B, C & X Zone	6	$6,386	$2,309,000	58	$1,439,630.33
Standard	6	$6,386	$2,309,000	18	$892,569.67
Preferred	0	$0	$0	40	$547,060.66
Total	**8**	**$7,459**	**$2,486,000**	**62**	**$1,496,451.65**
Village of Cofield					
B, C & X Zone	1	$630	$228,000	0	$0.00
Standard	1	$630	$228,000	0	$0.00
Preferred	0	$0	$0	0	$0.00
Total	**1**	**$630**	**$228,000**	**0**	**$0.00**
Town of Murfreesboro					
B, C & X Zone	0	$0	$0	3	$0.00
Standard	0	$0	$0	0	$0.00
Preferred	0	$0	$0	3	$0.00
Total	**0**	**$0**	**$0**	**3**	**$0.00**
Town of Winton					
A Zones	0	$0	$0	2	$12,000.00
Total	**0**	**$0**	**$0**	**2**	**$12,000.00**

Source: FEMA Community Information System, accessed January 2025

Table D.15 – NFIP Policy and Claims Data Post-FIRM

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Hertford County Unincorporated Area					
A01-30 & AE Zones	6	$4,994	$2,062,000	3	$175,101.51
A Zones	4	$4,177	$820,000	5	$44,747.51
B, C & X Zone	10	$6,957	$3,058,000	9	$198,415.89
Standard	10	$6,957	$3,058,000	1	$4,561.48
Preferred	0	$0	$0	8	$193,854.41
Total	**20**	**$16,128**	**$5,940,000**	**17**	**$418,264.91**

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Town of Ahoskie					
A01-30 & AE Zones	2	$3,138	$690,000	0	$0.00
B, C & X Zone	2	$1,066	$616,000	5	$37,557.54
Standard	2	$1,066	$616,000	1	$2,316.50
Preferred	0	$0	$0	4	$35,241.04
Total	**4**	**$4,204**	**$1,306,000**	**5**	**$37,557.54**
Town of Murfreesboro					
B, C & X Zone	2	$1,353	$718,000	0	$0.00
Standard	2	$1,353	$718,000	0	$0.00
Preferred	0	$0	$0	0	$0.00
Total	**2**	**$1,353**	**$718,000**	**0**	**$0.00**
Town of Winton					
B, C & X Zone	0	$0	$0	1	$19,122.87
Standard	0	$0	$0	0	$0.00
Preferred	0	$0	$0	1	$19,122.87
Total	**0**	**$0**	**$0**	**1**	**$19,122.87**

Source: FEMA Community Information System, accessed January 2025

D.2.2 WILDFIRE

Table D.16 summarizes the acreage in Hertford County that falls within the Functional Wildland Urban Interface (WUI), categorized into zones that describe the wildfire risk mitigation activities appropriate for each zone. Areas in the Functional WUI are those areas where development and building structures may intermix with burnable land cover. Approximately, 4.8 percent of Hertford County is categorized as having direct exposure to wildfire risk within the Functional WUI.

Table D.16 – Functional Wildland Urban Interface Acreage, Hertford County

	Functional Wildland Urban Interface (WUI) Category	Acres	Percent
	Direct Exposure	10,917	4.80%
	Indirect Exposure	10,194	4.50%
	Critical Fireshed	171,344	75.00%
	Sources of Ember Load to Buildings	30,486	13.30%
	Little to No Exposure	0	0.00%
	Water	5,494	2.40%
	Total	**228,435**	**100.00%**

Source: Southern Wildfire Risk Assessment

Figure D.20 through Figure D. depicts the Functional WUI with the location of critical facilities for unincorporated Hertford County and all participating jurisdictions. Figure D.27 through Figure D.29 depicts the Fire Intensity Scale, which indicates the potential severity of fire based on fuel loads, topography, and other factors. Figure D.30 through Figure D.32 depicts Burn Probability based on landscape conditions, percentile weather, historical ignition patterns, and historical prevention and suppression efforts.

Areas of moderate to high potential fire intensity are spread throughout Hertford County. There is a cluster of moderate burn probability along the southern border of the county and to the east side of both

the Village of Cofield and the Town of Como, which coincides with an area of heightened potential fire intensity. Elsewhere in the county, burn probability is low. Functional WUI is also scattered throughout the county, and there is some overlap throughout unincorporated areas between direct and indirect exposure within the Functional WUI, burn probability, and high potential fire intensity.

Table D.17 through Table D.23 provides the count and estimated value of all structures that intersect with areas of unincorporated Hertford County and participating jurisdictions that are rated with direct exposure on the Functional WUI scale.

Table D.24 through Table D.30 provides building counts and values for critical facilities by FEMA lifeline that are located in areas categorized with direct exposure to wildfire risk on the Functional WUI scale. Note that no critical facilities with direct exposure to wildfire were identified within the Towns of Ahoskie, Como, and Murfreesboro.

Table D.17 – Structures at Risk to Direct Exposure Functional WUI, Unincorporated Hertford County

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	469	$23,434,038.00	$23,434,038.00	$46,868,076.00
Commercial	36	$4,259,177.00	$4,259,177.00	$8,518,354.00
Education	9	$3,044,794.00	$3,044,794.00	$6,089,588.00
Government	28	$131,135,771.00	$131,135,771.00	$262,271,542.00
Industrial	10	$357,423.00	$536,134.50	$893,557.50
Religious	37	$7,459,074.00	$7,459,074.00	$14,918,148.00
Residential	4,159	$177,527,174.00	$88,763,587.00	$266,290,761.00
Total	**4,748**	**$347,217,451.00**	**$258,632,575.50**	**$605,850,026.50**

Source: Southern Wildfire Risk Assessment

Table D.18 – Structures at Risk to Direct Exposure Functional WUI, Town of Ahoskie

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	2	$124,754.00	$124,754.00	$249,508.00
Commercial	16	$3,606,660.00	$3,606,660.00	$7,213,320.00
Education	2	$914,620.00	$914,620.00	$1,829,240.00
Government	6	$6,081,553.00	$6,081,553.00	$12,163,106.00
Industrial	0	$0	$0	$0
Religious	3	$1,673,944.00	$1,673,944.00	$3,347,888.00
Residential	598	$38,421,045.00	$19,210,522.50	$57,631,567.50
Total	**627**	**$50,822,576.00**	**$31,612,053.50**	**$82,434,629.50**

Source: Southern Wildfire Risk Assessment

Table D.19 – Structures at Risk to Direct Exposure Functional WUI, Village of Cofield

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	3	$75,789.00	$75,789.00	$151,578.00
Commercial	2	$16,258.00	$16,258.00	$32,516.00
Education	0	$0	$0	$0
Government	2	$8,933,693.00	$8,933,693.00	$17,867,386.00
Industrial	1	$125.00	$187.50	$312.50
Religious	1	$265,658.00	$265,658.00	$531,316.00
Residential	110	$3,196,163.00	$1,598,081.50	$4,794,244.50
Total	**119**	**$12,487,686.00**	**$10,889,667.00**	**$23,377,353.00**

Source: Southern Wildfire Risk Assessment

Table D.20 – Structures at Risk to Direct Exposure Functional WUI, Town of Como

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	4	$80,124.00	$80,124.00	$160,248.00
Commercial	2	$28,438.00	$28,438.00	$56,876.00
Education	0	$0	$0	$0
Government	0	$0	$0	$0
Industrial	0	$0	$0	$0
Religious	0	$0	$0	$0
Residential	25	$1,282,587.00	$641,293.50	$1,923,880.50
Total	**31**	**$1,391,149.00**	**$749,855.50**	**$2,141,004.50**

Source: Southern Wildfire Risk Assessment

Table D.21 – Structures at Risk to Direct Exposure Functional WUI, Town of Harrellsville

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	0	$0	$0	$0
Commercial	0	$0	$0	$0
Education	0	$0	$0	$0
Government	3	$329,807.00	$329,807.00	$659,614.00
Industrial	0	$0	$0	$0
Religious	0	$0	$0	$0
Residential	46	$2,172,476.00	$1,086,238.00	$3,258,714.00
Total	**49**	**$2,502,283.00**	**$1,416,045.00**	**$3,918,328.00**

Source: Southern Wildfire Risk Assessment

Table D.22 – Structures at Risk to Direct Exposure Functional WUI, Town of Murfreesboro

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	2	$33,092.00	$33,092.00	$66,184.00
Commercial	6	$4,249,436.00	$4,249,436.00	$8,498,872.00
Education	5	$1,473,247.00	$1,473,247.00	$2,946,494.00
Government	2	$212,420.00	$212,420.00	$424,840.00
Industrial	0	$0	$0	$0
Religious	1	$79,441.00	$79,441.00	$158,882.00
Residential	349	$26,454,558.00	$13,227,279.00	$39,681,837.00
Total	**365**	**$32,502,194.00**	**$19,274,915.00**	**$51,777,109.00**

Source: Southern Wildfire Risk Assessment

Table D.23 – Structures at Risk to Direct Exposure Functional WUI, Town of Winton

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	0	$0	$0	$0
Commercial	5	$119,695.00	$119,695.00	$239,390.00
Education	0	$0	$0	$0
Government	2	$91,661.00	$91,661.00	$183,322.00
Industrial	2	$166,152.00	$249,228.00	$415,380.00
Religious	7	$577,176.00	$577,176.00	$1,154,352.00
Residential	124	$5,560,951.00	$2,780,475.50	$8,341,426.50
Total	**140**	**$6,515,635.00**	**$3,818,235.50**	**$10,333,870.50**

Source: Southern Wildfire Risk Assessment

Table D.24 – Critical Facilities Exposed to Wildfire, Unincorporated Hertford County

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	44	$34,681,562
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	5	$1,436,596
Total	**49**	**$36,118,158**

Source: Southern Wildfire Risk Assessment

Table D.25 – Critical Facilities Exposed to Wildfire, Town of Ahoskie

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	0	$0
Total	**0**	**$0**

Source: Southern Wildfire Risk Assessment

Table D.26 – Critical Facilities Exposed to Wildfire, Village of Cofield

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	1	$55,324
Total	**1**	**$55,324**

Source: Southern Wildfire Risk Assessment

Table D.27 – Critical Facilities Exposed to Wildfire, Town of Como

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	0	$0
Total	**0**	**$0**

Source: Southern Wildfire Risk Assessment

Table D.28 – Critical Facilities Exposed to Wildfire, Town of Harrellsville

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	1	$36,924
Transportation	0	$0
Water Systems	0	$0
Total	**0**	**$0**

Source: Southern Wildfire Risk Assessment

Table D.29 – Critical Facilities Exposed to Wildfire, Town of Murfreesboro

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	0	$0
Total	**0**	**$0**

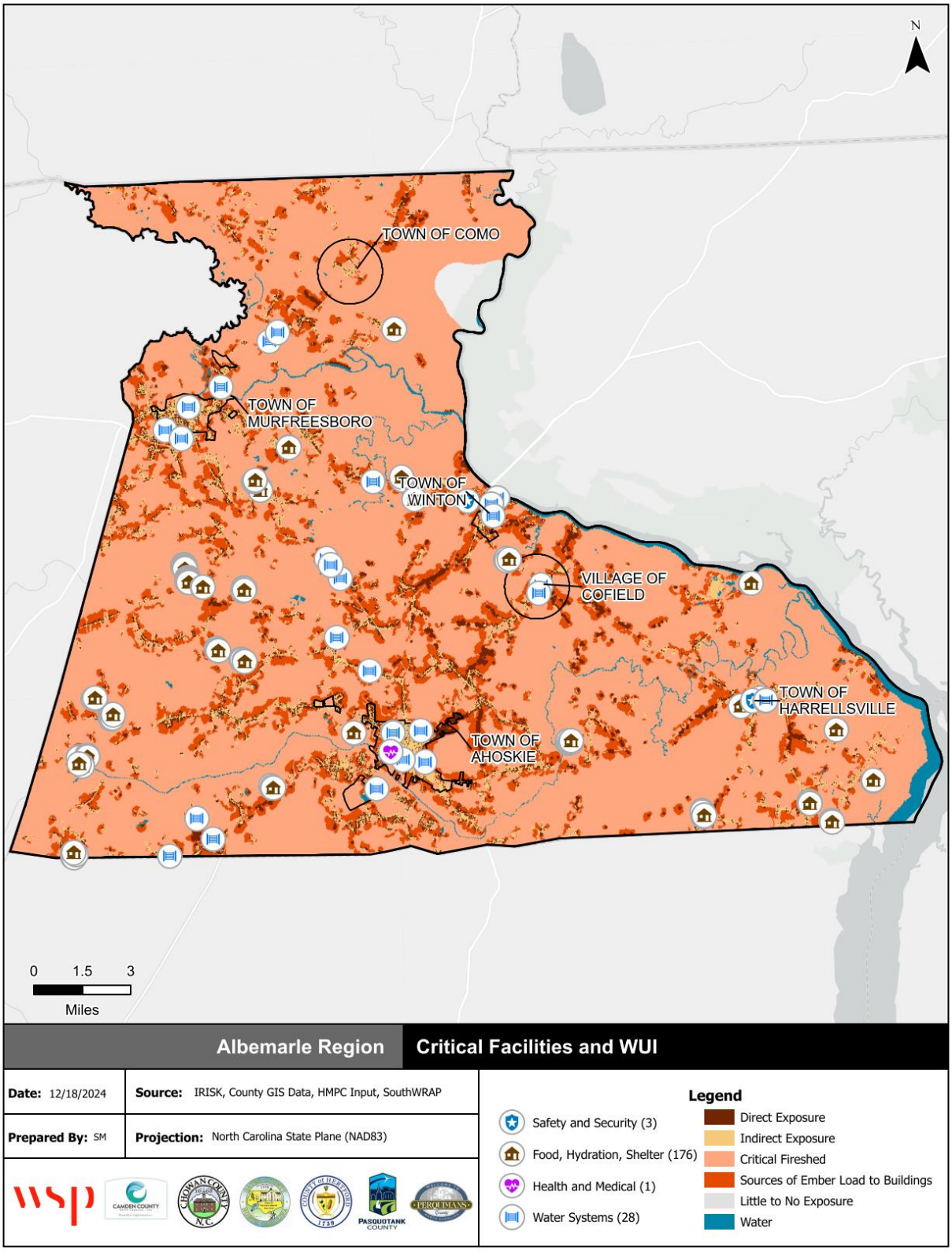
Source: Southern Wildfire Risk Assessment

Table D.30 – Critical Facilities Exposed to Wildfire, Town of Winton

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	1	$17,122
Total	**1**	**$17,122**

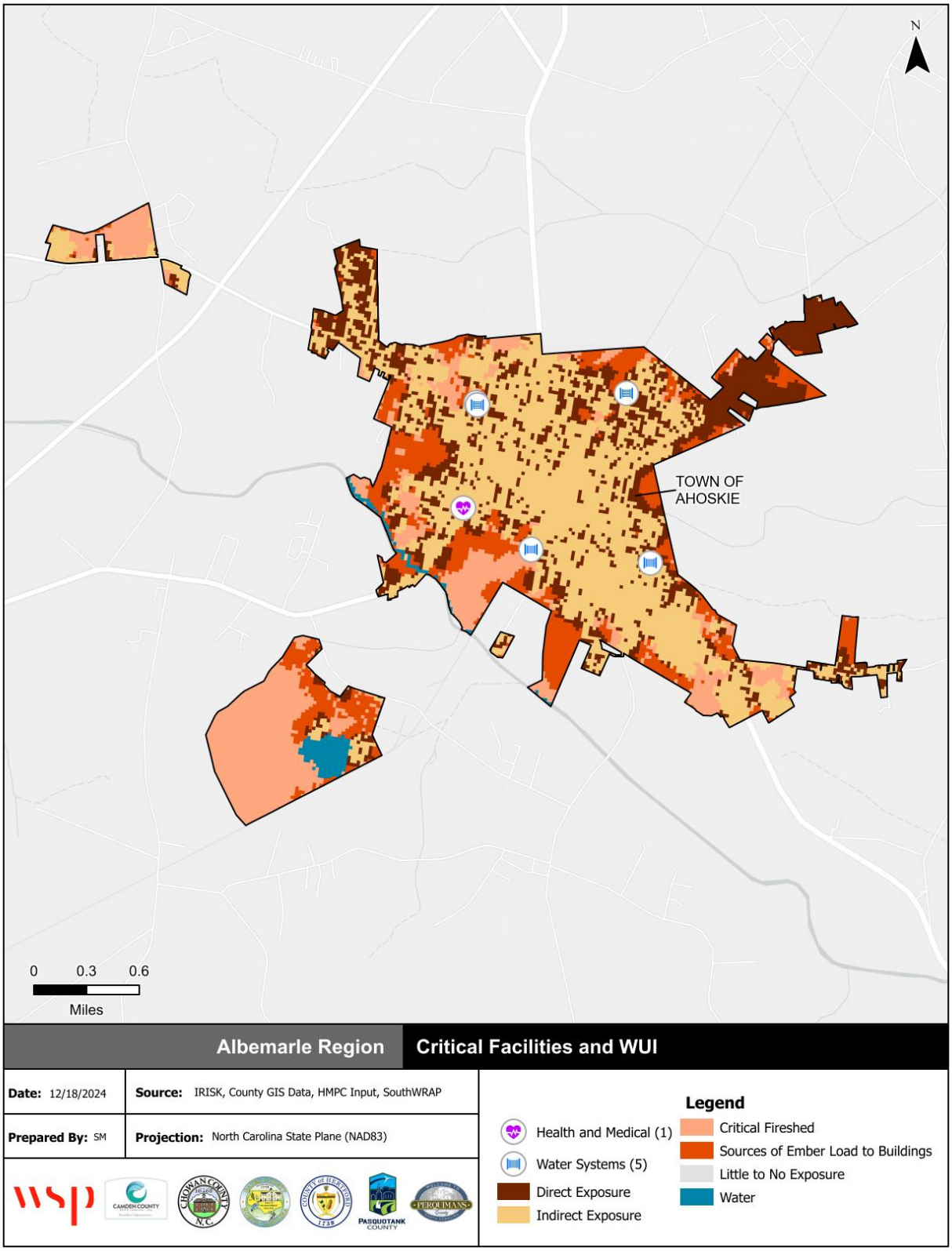
Source: Southern Wildfire Risk Assessment

Figure D.20 – Critical Facilities and Functional WUI, Unincorporated Hertford County



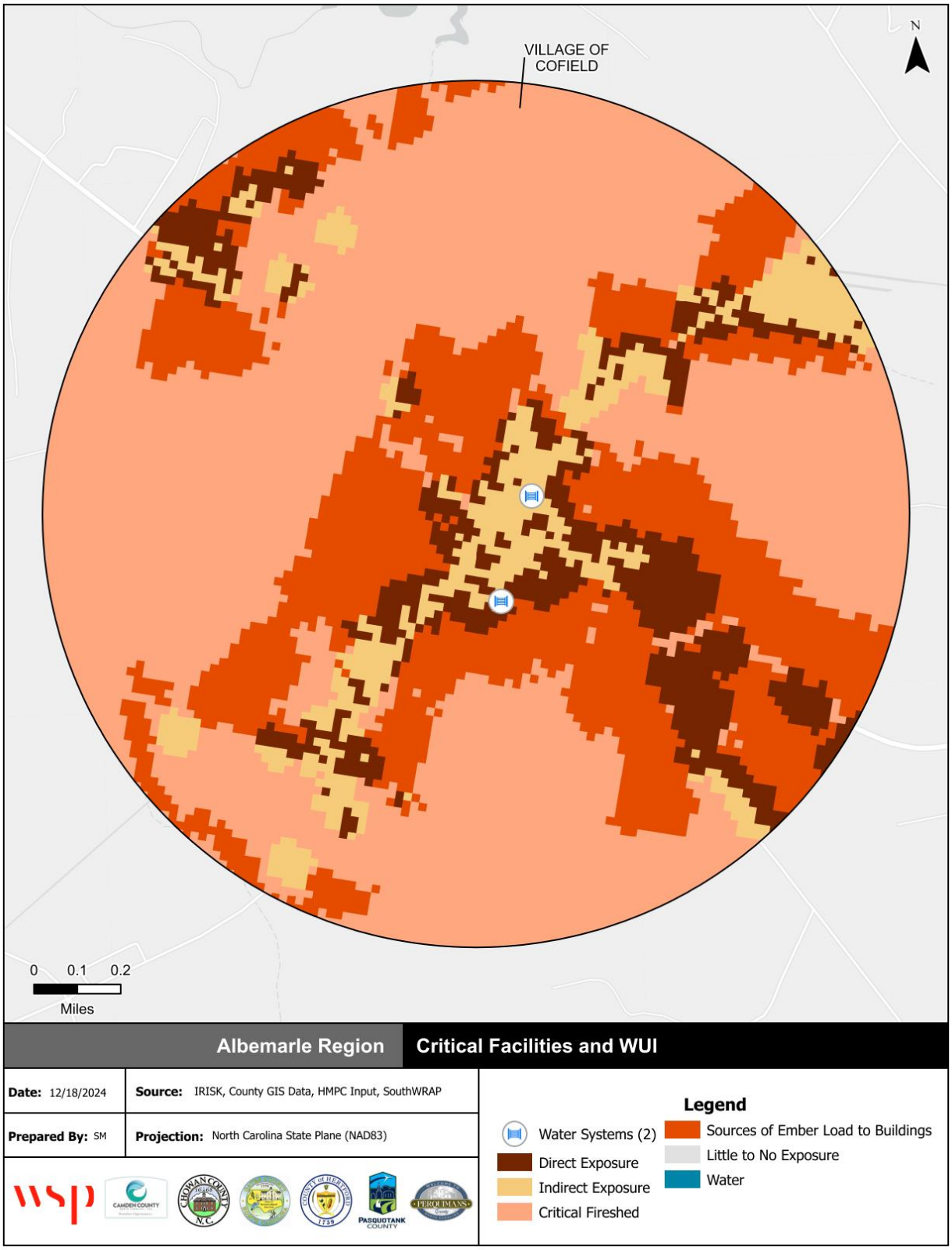
Source: Southern Wildfire Risk Assessment

Figure D.21 – Critical Facilities and Functional WUI, Town of Ahoskie



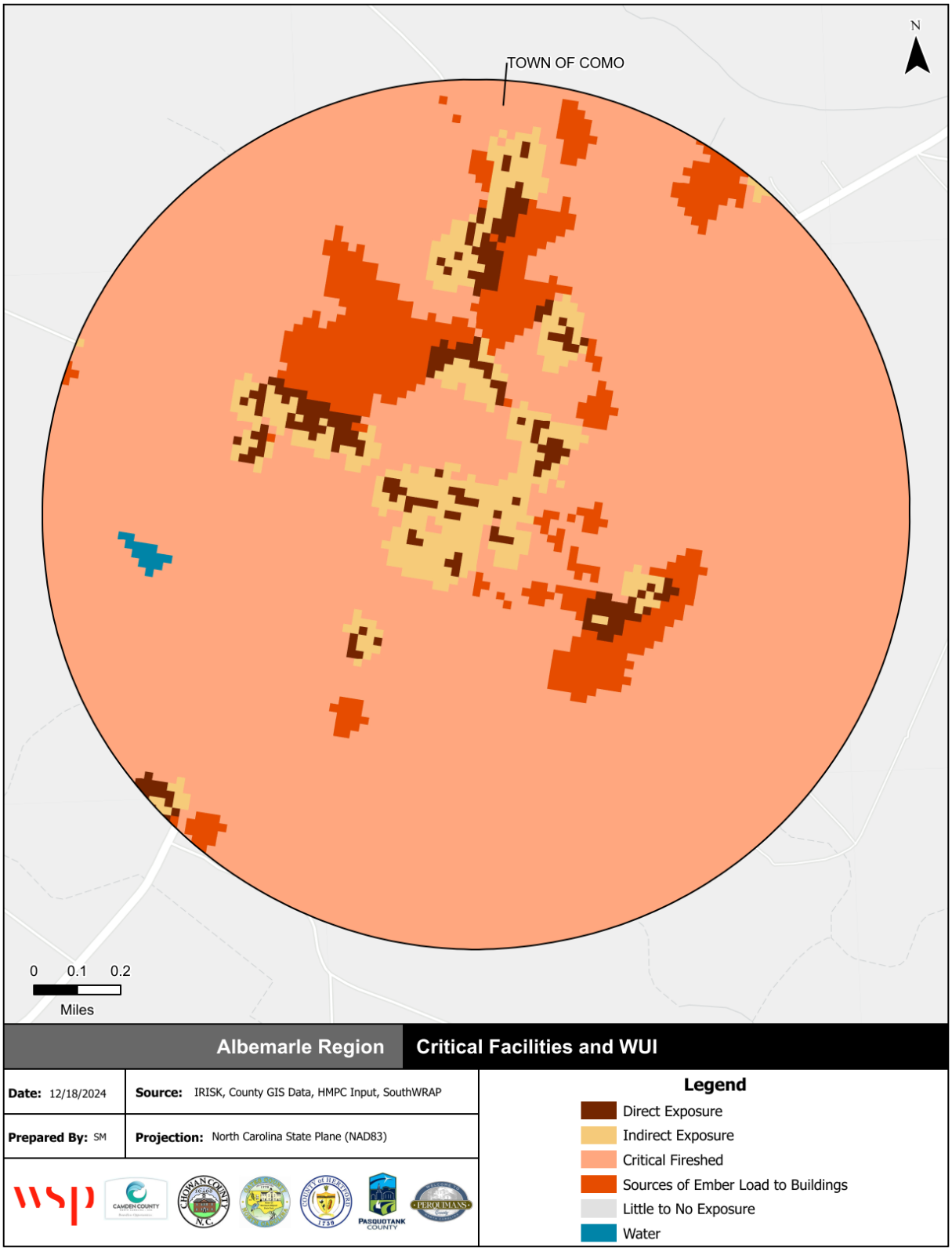
Source: Southern Wildfire Risk Assessment

Figure D.22 – Critical Facilities and Functional WUI, Village of Cofield



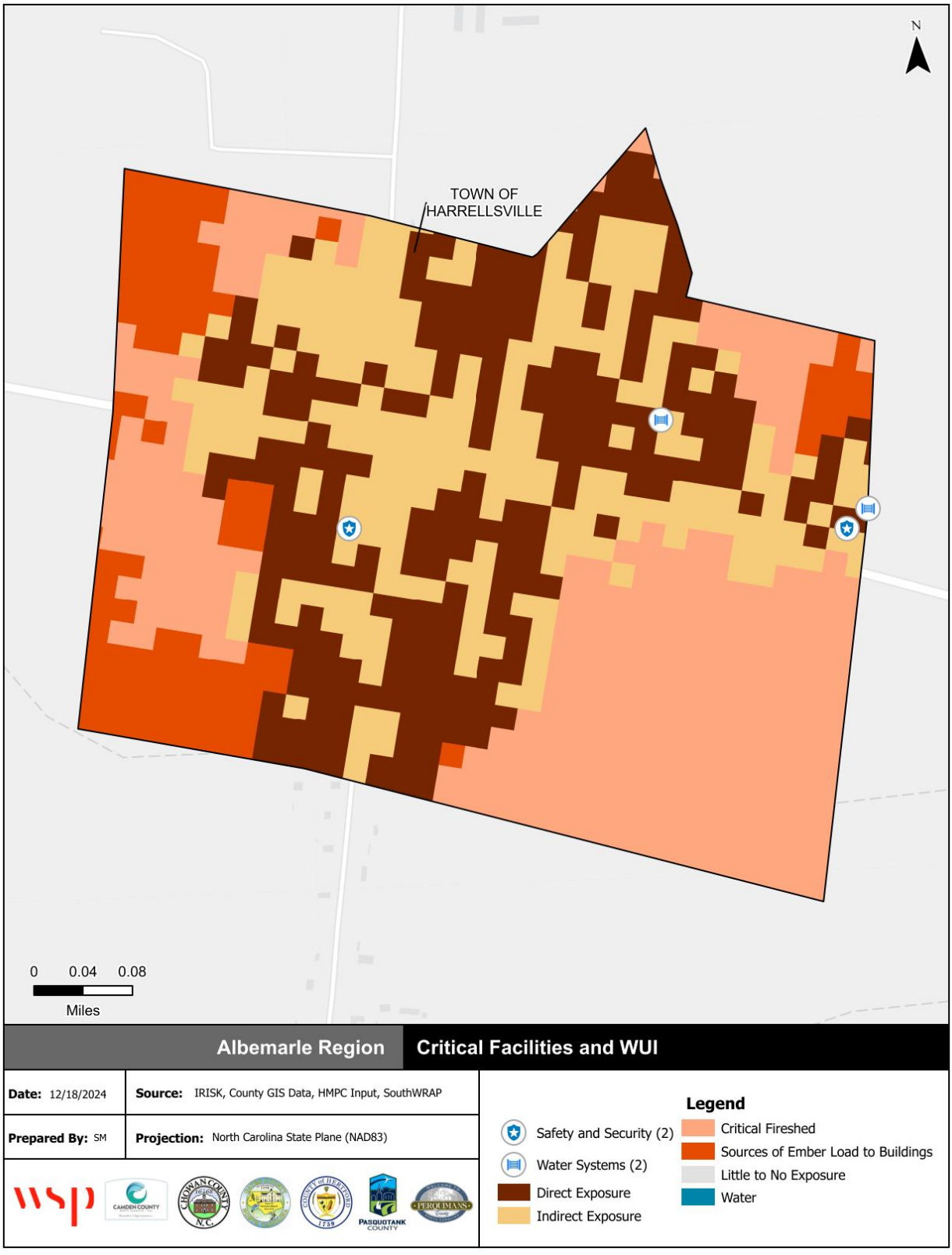
Source: Southern Wildfire Risk Assessment

Figure D.23 – Critical Facilities and Functional WUI, Town of Como



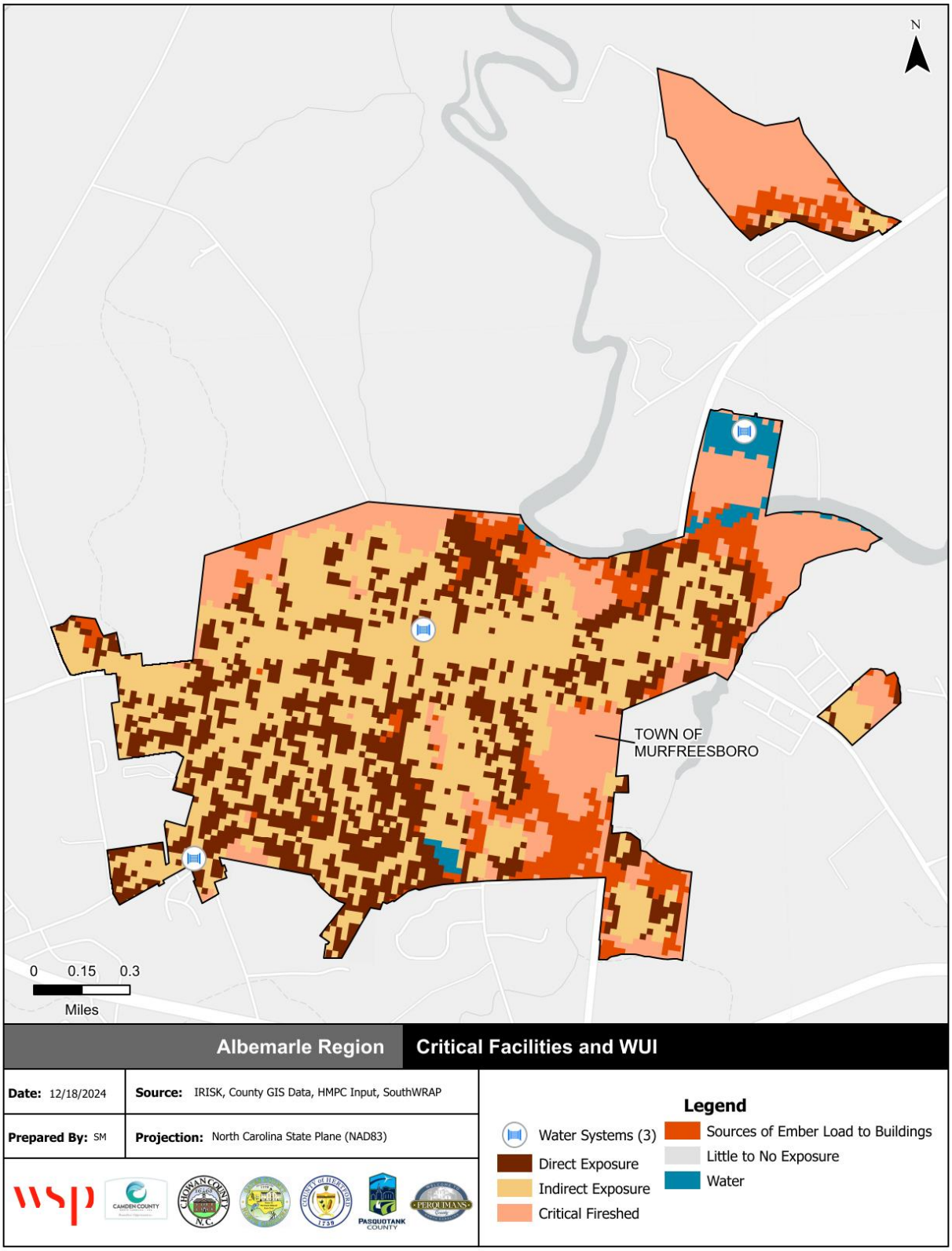
Source: Southern Wildfire Risk Assessment

Figure D.24 – Critical Facilities and Functional WUI, Town of Harrellsville



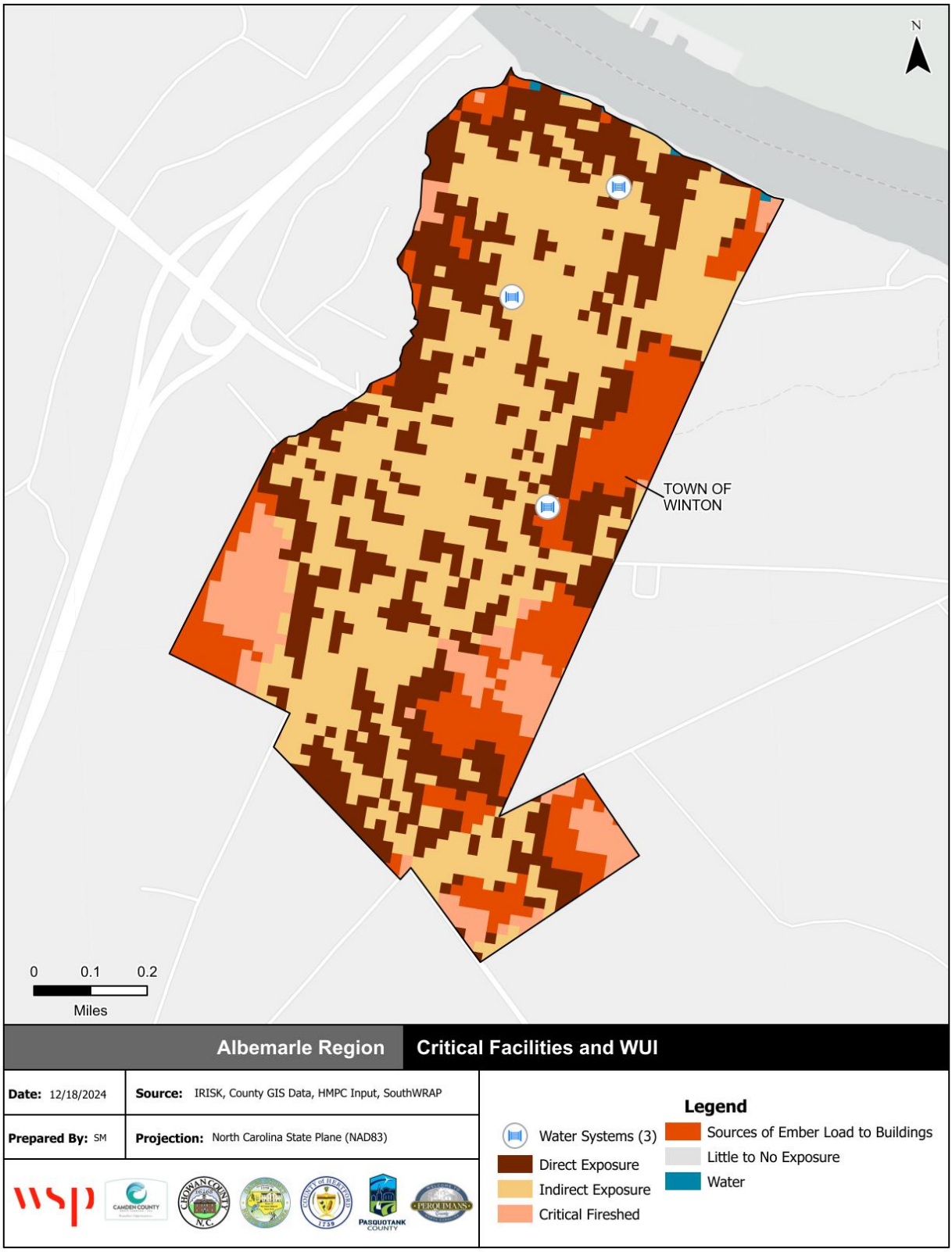
Source: Southern Wildfire Risk Assessment

Figure D.25 – Critical Facilities and Functional WUI, Town of Murfreesboro



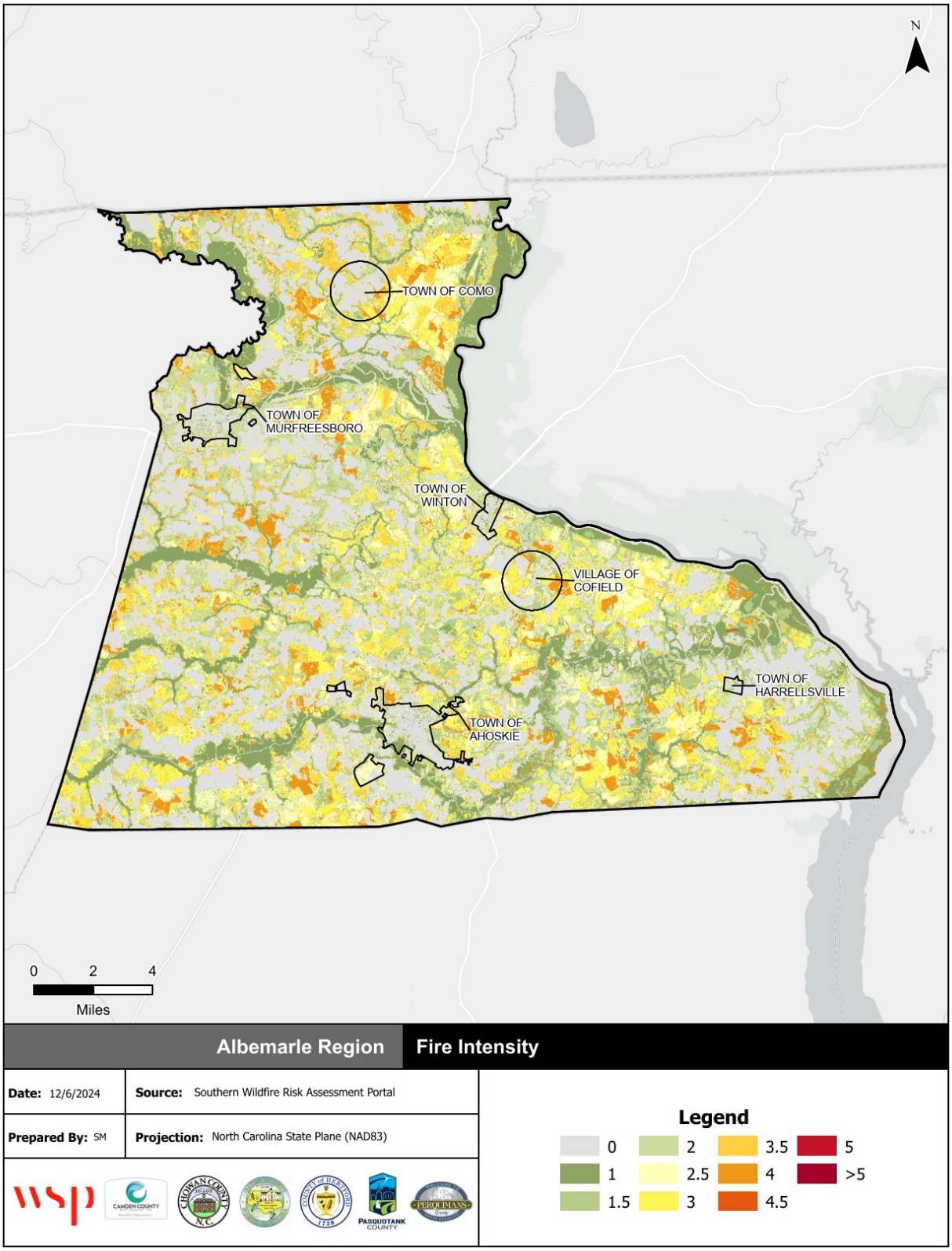
Source: Southern Wildfire Risk Assessment

Figure D.26 – Critical Facilities and Functional WUI, Town of Winton



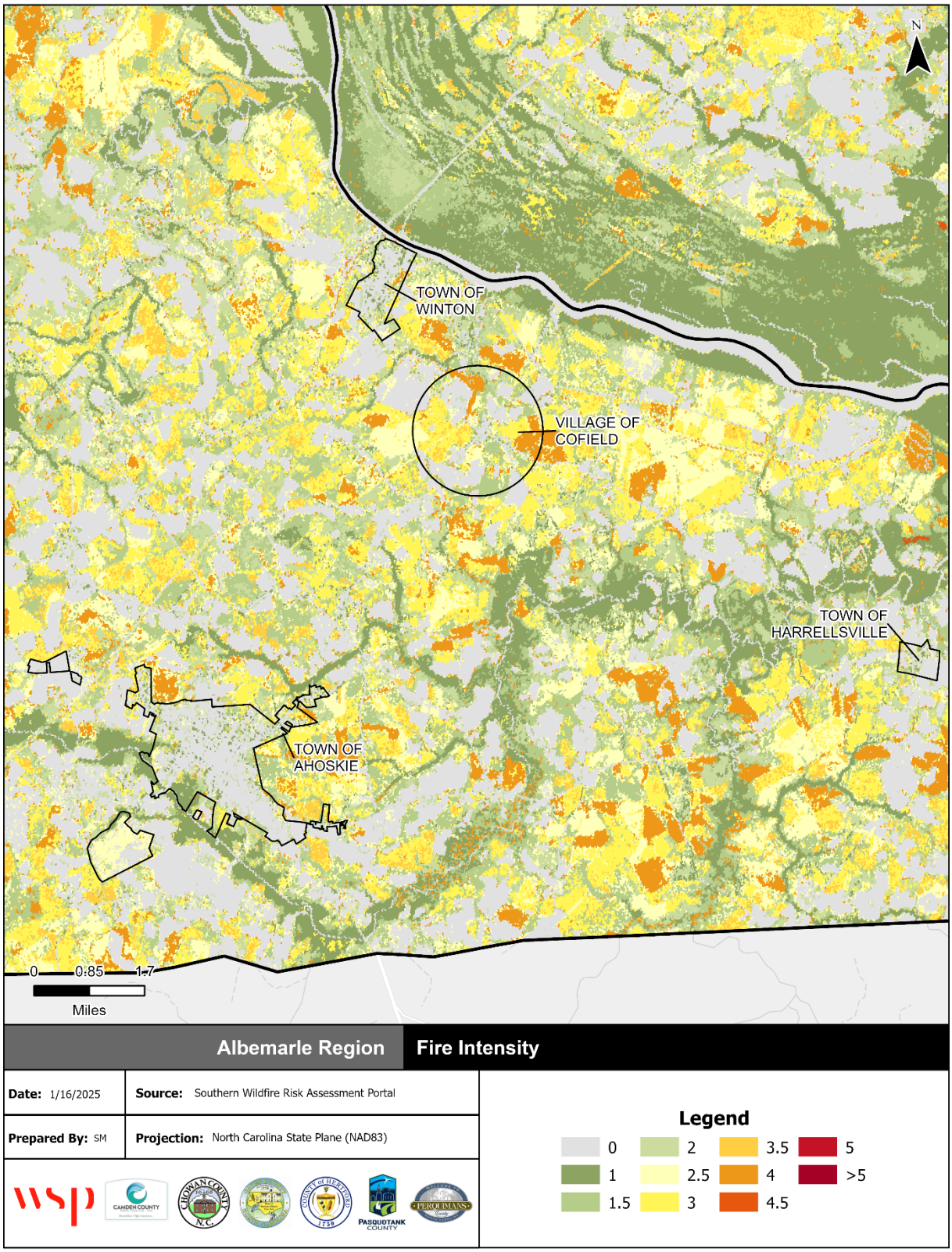
Source: Southern Wildfire Risk Assessment

Figure D.27 – Fire Intensity Scale, Unincorporated Hertford County



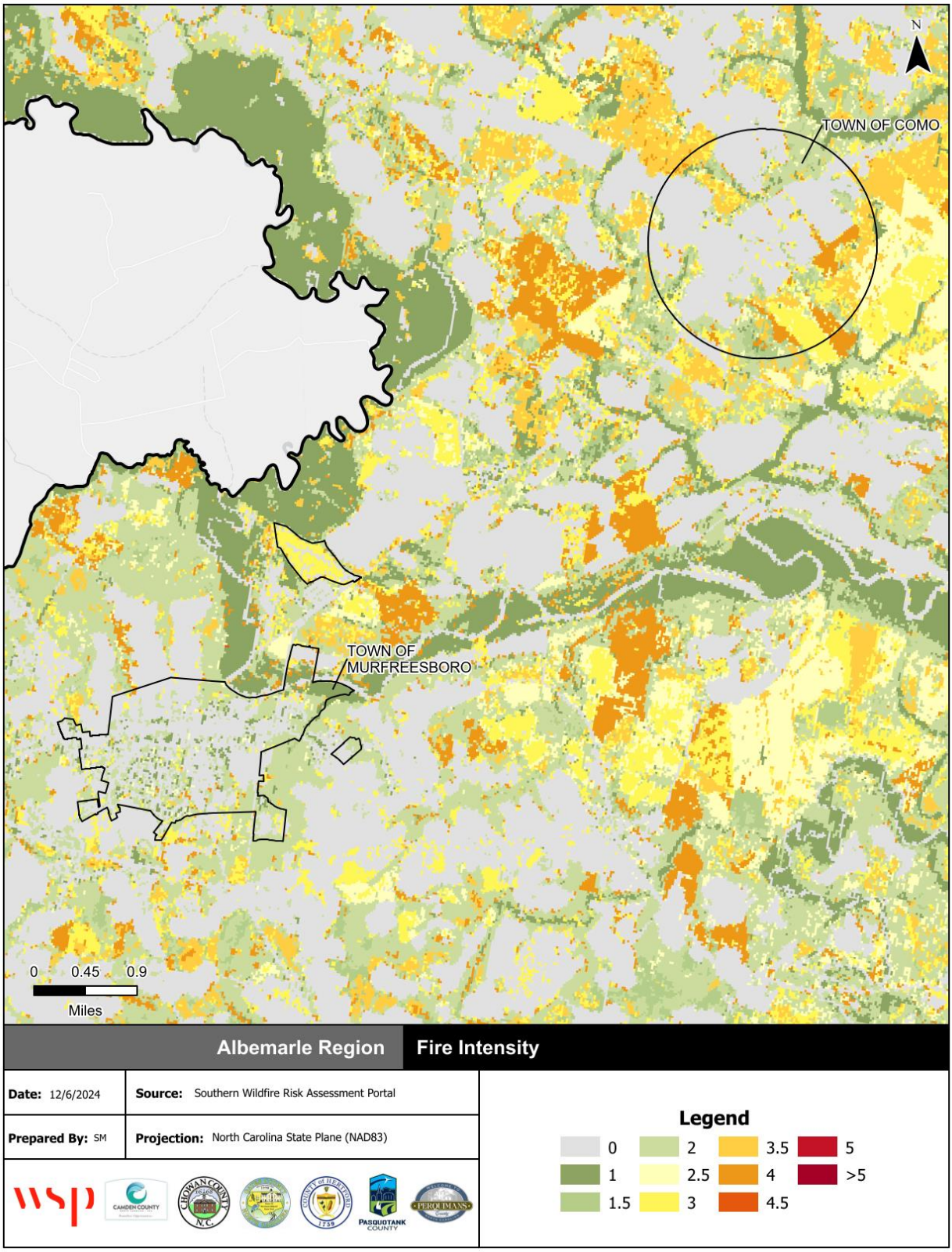
Source: Southern Wildfire Risk Assessment

Figure D.28 – Fire Intensity Scale, Village of Cofield, Towns of Ahoskie, Harrellsville, and Winton



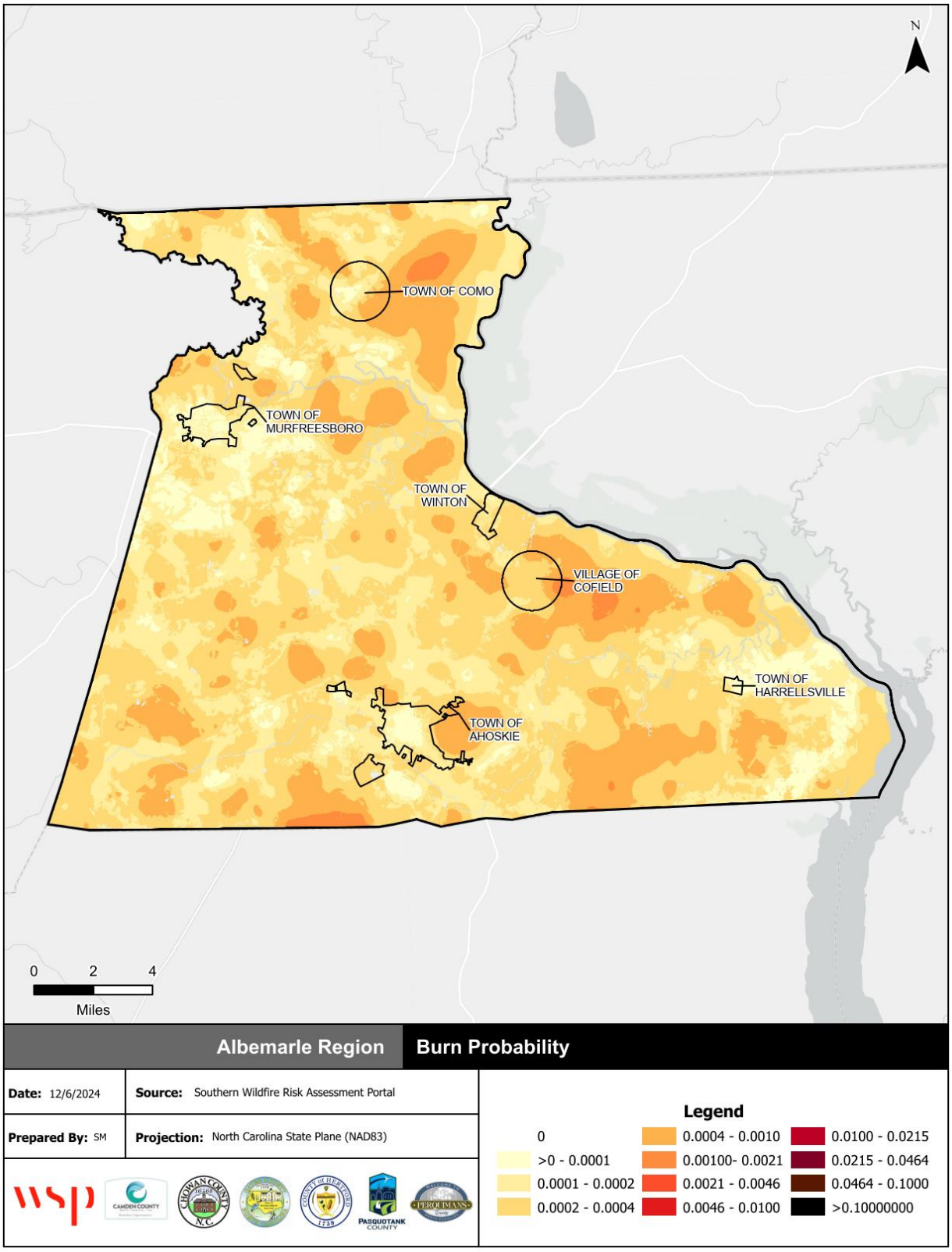
Source: Southern Wildfire Risk Assessment

Figure D.29 – Fire Intensity Scale, Towns of Como and Murfreesboro



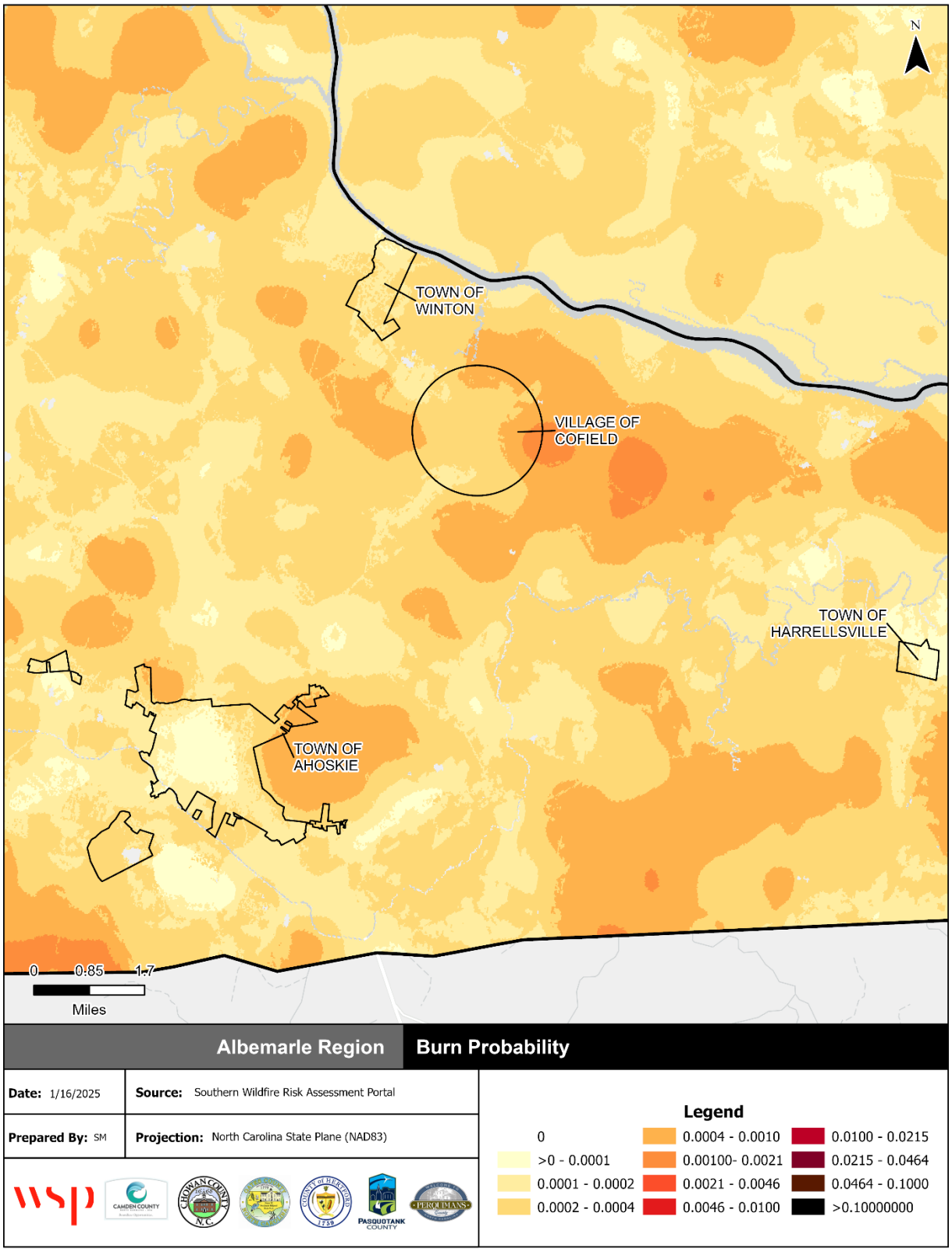
Source: Southern Wildfire Risk Assessment

Figure D.30 – Burn Probability, Unincorporated Hertford County



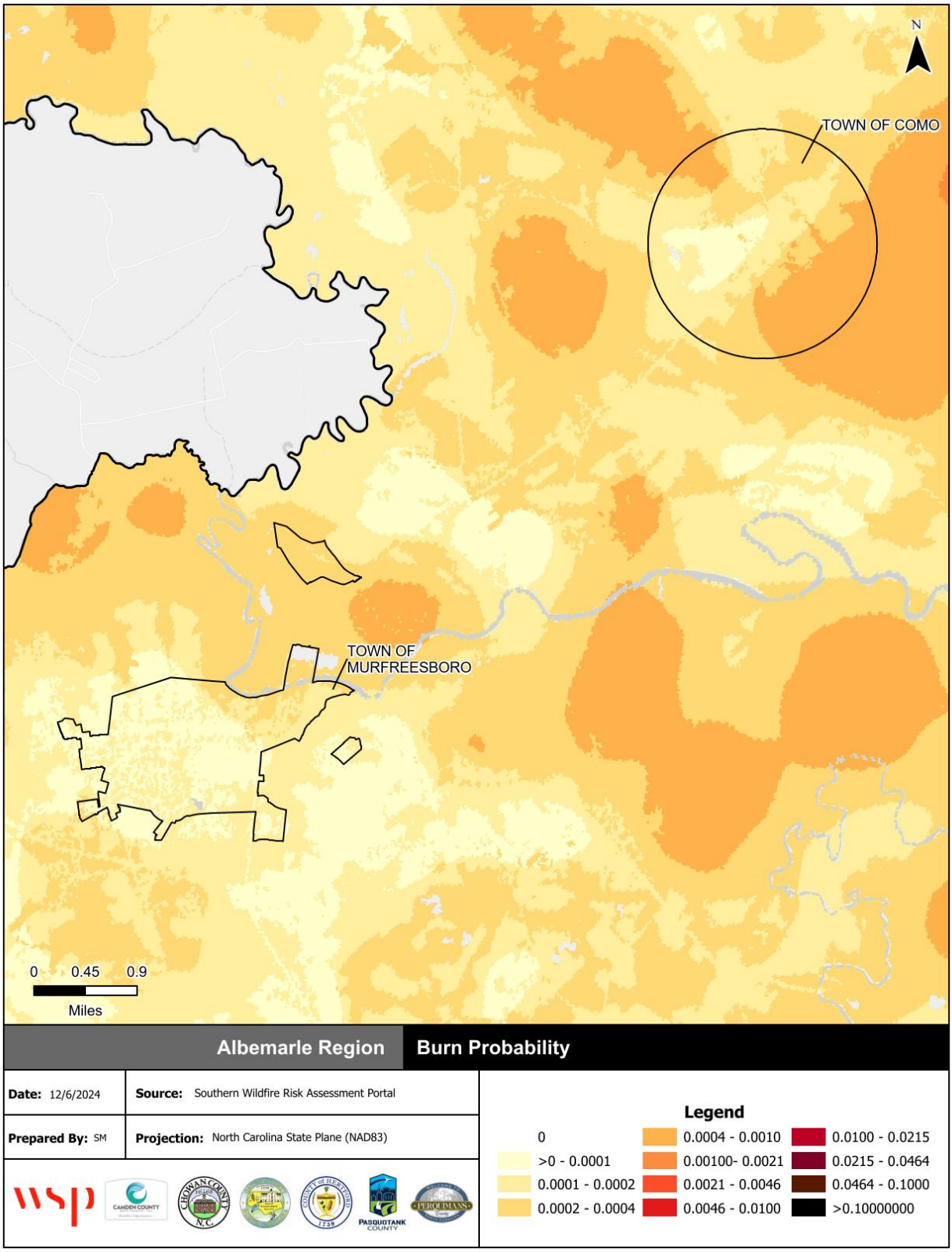
Source: Southern Wildfire Risk Assessment

Figure D.31 – Burn Probability, Village of Cofield, Towns of Ahoskie, Harrellsville, and Winton



Source: Southern Wildfire Risk Assessment

Figure D.32 – Burn Probability, Towns of Como and Murfreesboro



Source: Southern Wildfire Risk Assessment

D.3 MITIGATION STRATEGY

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
HER1	Improve upon efforts to inform citizens of the location and availability of shelters and evacuation routes in the event of a natural disaster. These efforts will utilize local print and television media outlets, social networking, as well as Town and County websites. The County will also evaluate all shelter facilities to ensure that they all meet American Red Cross standards.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Dam & Levee Failure, Severe Winter Weather	High	2.1	ES	County Emergency Management, Municipal Administration, County Public Works, Municipal Public Works	Staff Time	GF, Grant Funds, American Red Cross	Ongoing – next 5 years	Carry Forward	The County will continue to work towards improving upon the availability and education regarding established shelter facilities throughout the County.
HER2	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.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Dam & Levee Failure, Severe Winter Weather	Med	4.2	P	County Emergency Management, Municipal Administration, Electrical Utility Providers	Staff Time	GF, Electric Service Providers	Ongoing – Annually	Carry Forward	The County will establish a protocol to meet with Utility Service Provides annually to prepare for the impact of natural disasters, in particular tropical storms and hurricanes.
HER3	Maintain, and where necessary, establish backup generators at all identified critical facilities. Additionally, County Emergency Services will evaluate the equipment on a regular basis to assure it continues to meet operational demands at county facilities.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	High	1.1	PP	County Emergency Management, Municipal Administrations, County Public Works, Municipal Public Works	To Be Determined	GF, Grant Funds, Utility Providers	Ongoing – As Funding Becomes Available	Carry Forward	The County will continue to establish backup generators in locations that do not currently have one as funding becomes available.
HER4	Retrofit all County and Municipal facilities for lightning protection.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Tornadoes & Thunderstorms	Med	1.1	PP	County Emergency Management, Municipal Administrations, County Public Works, Municipal Public Works	To Be Determined	GF, Grant Funds, Utility Providers	Ongoing – As Funding Becomes Available	Carry Forward	The County will work with electric service providers to establish funding and a solution for addressing this strategy.
HER5	Support through local ordinances conservation easements on all flood-prone property and impose such easements on all properties acquired with public assistance funds.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.2	NRP	County Emergency Management, Municipal Administrations, County Public Works, Municipal Public Works	Staff Time	Acquired through donation	Ongoing – as opportunities arise	Carry Forward	The County will continue to accept conservation easements as opportunities arise through the development process.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
HER6	Provide annual review of development restrictions in floodplain areas and maintain initiatives to ensure limited residential and commercial development in the floodplain and optimal protection of critical facilities.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Dam & Levee Failure, Severe Winter Weather	Med	1.3	P	County Emergency Management, County Administration, Municipal Administrations	Staff Time	GF, Grant Funds	Ongoing - Annually	Carry Forward	The County will review development regulations annually in an attempt to identify methods to improve the resiliency of development in flood prone areas.
HER7	The HMPC will review "firewise" zoning and subdivision standards and recommend their appropriateness for incorporation into existing or new zoning or subdivision ordinances. (Source http://www.firewise.org)	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Wildfire	Med	4.1	P	County Emergency Management, Municipal Administrations	Staff Time	GF, Grant Funds, US Forest Service	2 to 3 years	Carry Forward	The County will make it apriority to undertake this effort during the planning period.
HER8	Review county and municipal zoning, subdivision, and flood damage prevention ordinances for improved control of flooding hazards and improvement of drainage.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	P	County Inspections, County Administration, Municipal Administrations	Staff Time	GF, NCDPS	Ongoing – as need arises	Carry Forward	The County will undertake this effort as the need arises.
HER9	Adopt and annually update a capital improvements plan with an emphasis on mitigation for critical facilities.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	High	1.1	PP, SP	County Administration, Municipal Administrations	Staff Time	GF	Ongoing - Annually	Carry Forward	This will be addressed through the County's annual budgeting process.
HER10	At the local government staff level, work with the North Carolina Dept. of Transportation (NCDOT) and the Regional Planning Organization to identify drainage problem areas; develop resolutions for drainage issues created by NCDOT facilities, including inspections of channels, retention basins; and, as needed, pursue debris removal.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	NRP, SP	County Emergency Management, County Administration, Municipal Administrations, NCDOT	Staff Time	GF	Ongoing – as need arises	Carry Forward	The County will work with NCDOT, as well as all participating municipal jurisdictions to carry out this strategy.
HER11	Apply for all available funding from the Hazard Mitigation Grant Program (HMGP) and other funds to assist with the mitigation of severe repetitive loss properties and other high risk properties by acquiring, elevating, or relocating structures out of the floodplain.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	3.2	PP	County Emergency Management, County Administration, Municipal Administrations	To Be Determined	GF, Grant Funding	Ongoing – As opportunities arise	Carry Forward	The County will continue to carry out this strategy as is necessary following natural hazard events.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
HER12	Inspect debris blockage problems and secure funds for the clearance of debris from rivers, streams and tributaries.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	NRP	County Soil and Water Conservation, County Administration, Municipal Administrations	To Be Determined	GF	2 to 3 years	Carry Forward	The County will continue these efforts. The County carries out this process through its annual capital improvements campaign.
HER13	Mail once annually a notice to all property owners whose land is located within a special flood hazard area. This notice should clearly state that the recipients' property is susceptible to flooding. The County will also maintain a flood map information service, whereby County residents can call or come by to receive information regarding their property in relation to the defined floodplain.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	2.2	PIO	County Inspections, Municipal Inspections	$2,500	GF	Ongoing – Annually	Carry Forward	The County will initiate these annual mailings through implementation of this plan.
HER14	Make information regarding hazards and development regulations within the floodplain available through the following: (1) The County Planning Director will ensure that the local library maintains information relating to flooding and flood protection. (Maintain dates of distribution and librarian certification of availability); (2) The County will provide a link on their website to FEMA resources addressing flooding and flood protection. This information will be made available to citizens, realtors, developers, and contractors.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	2.2	PIO	County Inspections	Staff Time	GF, NCDPS	Ongoing – next 5 years	Carry Forward	This program is in place and will continue to be provided.
HER15	Coordinate with the Hertford County School System to establish a Hazards Awareness Educational Program for use by educators within the Hertford County School System.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	Med	2.2	PIO	County Emergency Management, Municipal Administration, County Board of Education	Staff Time	General Fund	Ongoing – Annually	Carry Forward	Hertford County will initiate this program through the implementation of this plan.
HER16	Maintain a registry of special needs individuals which has been coordinated with the Hertford 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.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	High	4.2	ES	County Emergency Management	Staff Time	GF	Ongoing – Annually	Carry Forward	This effort is underway, and the County will continue to expand upon these efforts through implementation of this plan.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
HER17	Maintain a list of all hazardous material sites or transport corridors in Hertford County. This effort will be carried out through the efforts of the County LEPC.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	Med	4.2	ES	County Emergency Management	Staff Time	GF	Ongoing – next 5 years	Carry Forward	The County maintains an active LEPC and will continue to do so through implementation of this plan.
HER18	Actively work with Federal, State, local and private partners to identify mitigation measures and secure funding via grants to alleviate flooding. These efforts should focus on the following areas: • US 13 at Ahoskie Creek • Harrellsville Island • Ahoskie Creek and DT Road • Murfreesboro Drainage and Culverts • Ebo Road Drainage and Culverts • Como Drainage and Culverts	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	SP	County Planning & Zoning, County Board of Commissioners	To Be Determined	General Fund, NCDPS, HMGP, NCDENR	3 to 5 years	Carry Forward	Efforts are ongoing by Towns to keep drainage and culverts clear of debris to alleviate and/or reduce flooding. Efforts are ongoing to reduce the flooding impact at Ahoskie Creek, Harrellsville Island, and Ebo Road drainage.
HER19	Annually review and update the County's Emergency Operations Plan (EOP) to ensure compliance with all NCEM and NCOEMS procedures and policies. Through these updates, the County will work closely with participating municipal jurisdictions to ensure that all jurisdictions continue to be educated and prepared for activation of the EOP in the event of a disaster event.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	Med	3.2	ES	County Emergency Management, County Board of Commissioners, Town Administrations	Staff Time	General Fund, Staff Time, NCDPS	Other – Once Annually	Carry Forward	Hertford County reviews County EOP annually to include outside supporting agencies.
HER20	Hertford County, and all participating jurisdictions, will work to implement all recommendations defined within the Hurricane Matthew Resiliency Redevelopment Plan	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	Med	3.1	P	County Emergency Management, County Board of Commissioners, Town Administrations	Staff Time	General Fund, Staff Time, NCDPS, NCDEQ, NCDOT	Other – Once Annually	Carry Forward	Progress is ongoing as efforts are being made to reduce the issues of flood impacts on areas in Hertford County, with the replacement of culverts to reduce road flooding and debris removal from Ahoskie Creek and Potecasi Creek. Other flood prone areas within the plan will be included as funding becomes available.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
HER21	Increase awareness regarding the impacts of natural disasters by educating and informing residents, businesses and visitors via public education, social media and print materials. These efforts should focus on ways to mitigate disaster impacts to both person and property.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	All Hazards	High	2.1	PIO	County Emergency Management, County Planning & Zoning, Municipal Administrations	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	Efforts are underway to keep the public informed of the impacts of natural disasters through social media and printed educational materials available for the public.
HER22	Create or Update Community Wildfire Protection Plans in each fire district.	Hertford County, Ahoskie, Cofield, Como, Harrellsville, Murfreesboro, Winton	Wildfire	Med	4.1	P	County Emergency Management, Fire Departments, NC Forest Service	To Be Determined	Grant Funds	5 years	New	

ANNEX E PASQUOTANK COUNTY

E.1 ASSET INVENTORY

Pasquotank County and the HMPC provided a local inventory of critical facilities and community lifelines, which are a priority for mitigation planning and emergency management. Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. Table E.1 through Table E.2 provides a count of critical facilities by FEMA lifeline category by jurisdiction in Pasquotank County. Figure E.1 through Figure E.2 shows the locations of all critical facilities in Pasquotank County and participating jurisdictions.

Table E.3 provides a detailed inventory of the critical facilities in Pasquotank County, indicating each facility's FEMA lifeline category, flood zone, 1% annual chance flood depth, and vulnerability to storm surge, sea level rise, and wildfire. More information on hazard vulnerability is provided in the hazard profiles.

Table E.1 – Critical Facilities by Type, Unincorporated Pasquotank County

Facility Type	Count of Facility Type	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	5	$41,990,900
Hazardous Materials	0	$0
Health and Medical	2	$446,100
Safety and Security	8	$161,036,100
Transportation	1	$100,000,000
Water Systems	3	$1,231,500
Total	**19**	**$304,704,600**

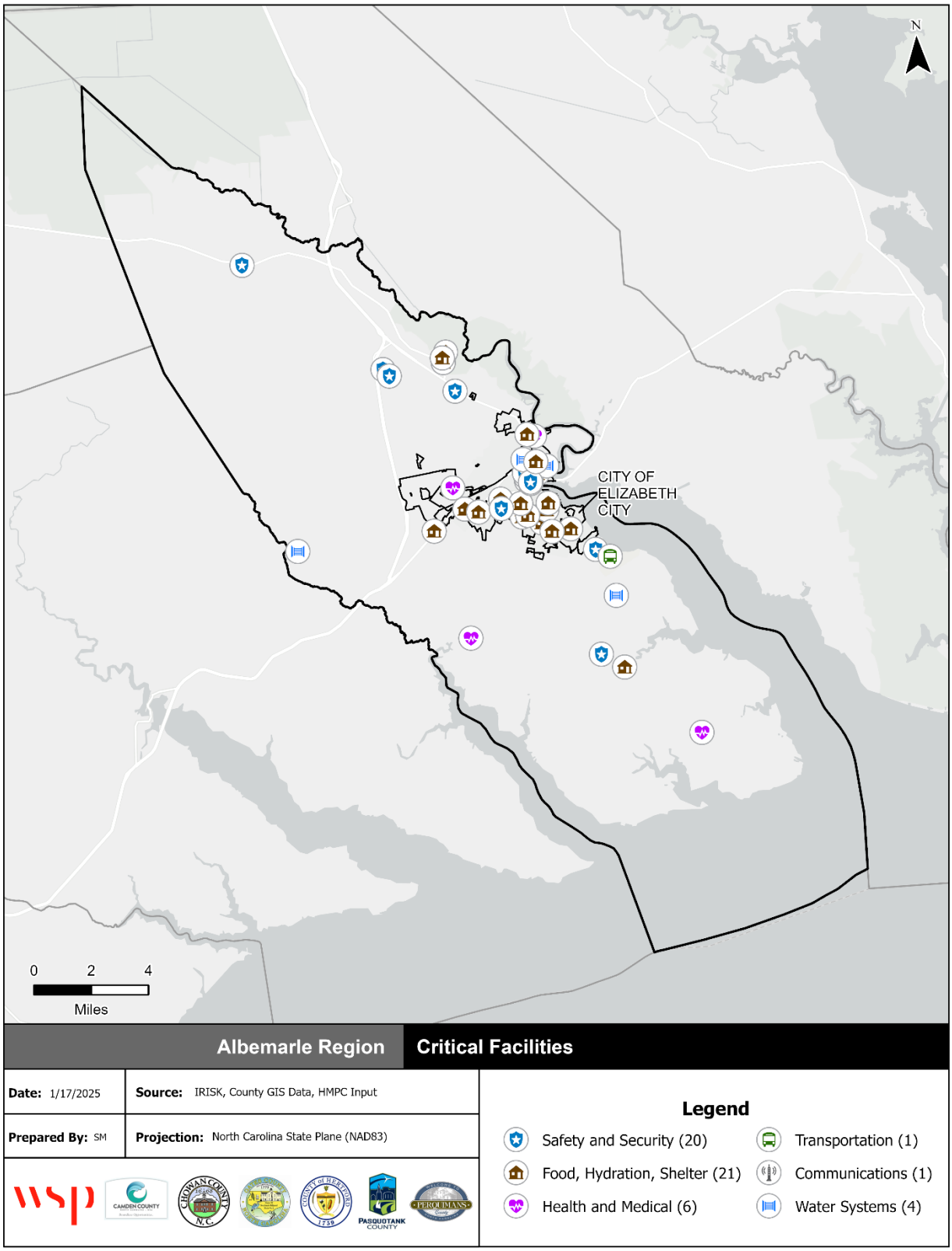
Source: Pasquotank County, HMPC

Table E.2 – Critical Facilities by Type, City of Elizabeth City

Facility Type	Count of Facility Type	Structure Value
Communications	2	$170,00
Energy	0	$0
Food, Hydration, Shelter	16	$126,002,000
Hazardous Materials	0	$0
Health and Medical	4	$203,319,900
Safety and Security	13	$17,661,400
Transportation	0	$0
Water Systems	1	$0
Total	**36**	**$347,000,300**

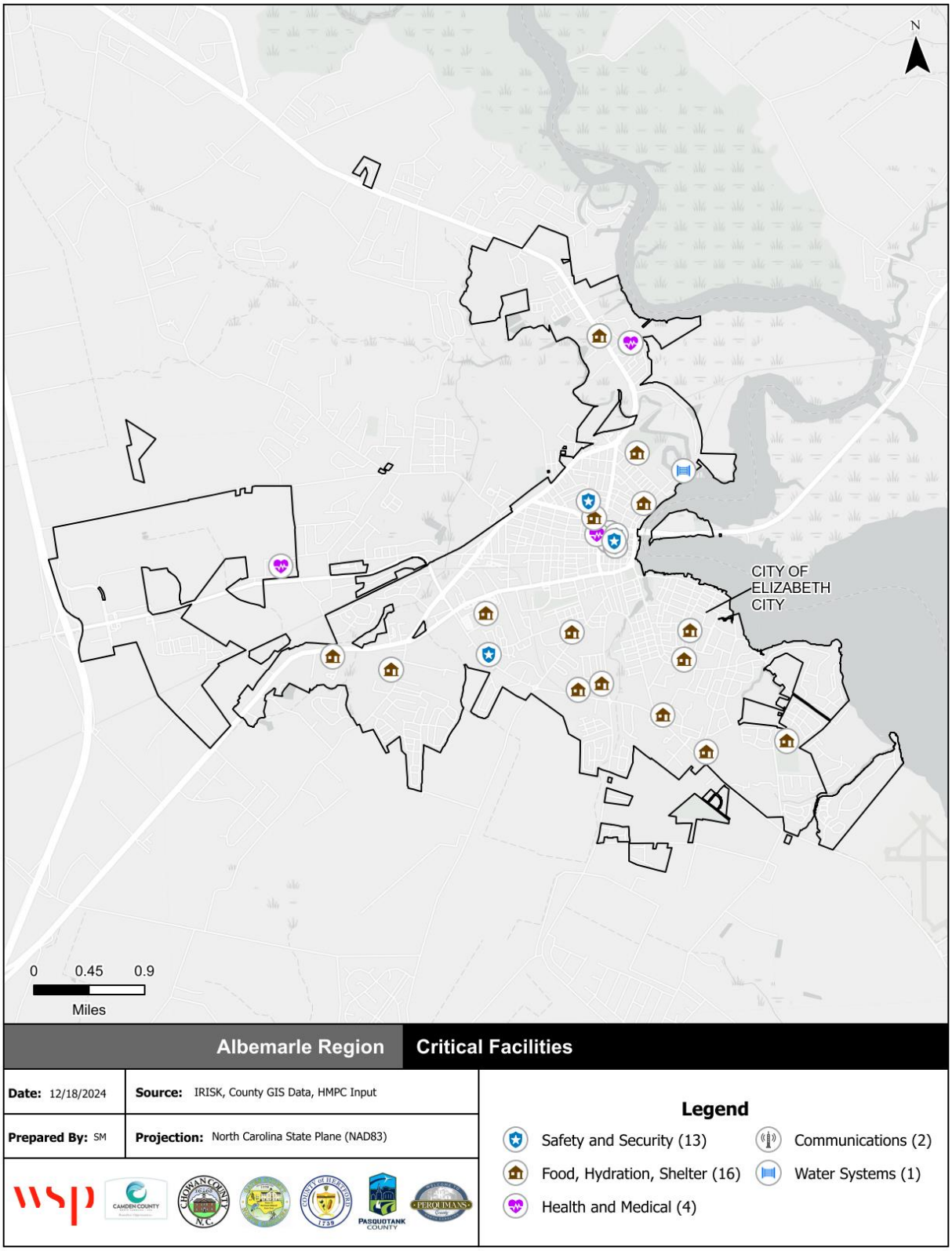
Source: Pasquotank County, HMPC

Figure E.1 – Critical Facilities, Unincorporated Pasquotank County



Source: NCEM IRISK Database, HMPC input, GIS Analysis

Figure E.2 – Critical Facilities, City of Elizabeth City



Source: NCEM IRISK Database, HMPC input, GIS Analysis

Table E.3 – Pasquotank County Critical Facilities Inventory

FEMA Lifeline	Facility Type	Address	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Unincorporated Pasquotank County									
Safety & Security	Fire	721 US Hwy 158, Elizabeth City	$206,000	0.1	AE	NA	3	Indirect Exposure	0
Safety & Security	Fire	1995 N. Road St., Elizabeth City	$213,900	0.1	X Unshaded	NA	3	Indirect Exposure	0
Safety & Security	Fire	2742 Peartree Rd., Elizabeth City	$216,800	1.151	AE	3	1	Indirect Exposure	0
Safety & Security	Fire	1422 Soundneck Rd., Elizabeth City	$279,900	0.1	AE	4	1	Direct Exposure	2
Safety & Security	Fire	1316 Four Forks Rd., Elizabeth City	$166,200	0.1	X Unshaded	10	3	Indirect Exposure	0
Health and Medical	Emergency Medical Services	1316 Four Forks Rd., Elizabeth City	$166,200	0.1	X Unshaded	10	3	Indirect Exposure	0
Health and Medical	Emergency Medical Services	1422 Soundneck Rd., Elizabeth City	$279,900	0.1	AE	4	1	Direct Exposure	2
Food, Hydration, Shelter	School	1210 US-17 S., Elizabeth City	$1,745,500	0.1	X Unshaded	NA	3	Indirect Exposure	0
Food, Hydration, Shelter	School	1066 Northside Rd., Elizabeth City	$87,900	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	School	1062 Northside Rd., Elizabeth City	$13,257,700	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	School	1064 Northside Rd., Elizabeth City	$23,450,800	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	School	1170 Salem Church Rd., Elizabeth City	$3,449,000	0.1	X Unshaded	7	2	Indirect Exposure	0
Water Systems	Water	1466 Weeksville Rd., Elizabeth City	$1,162,000	0.1	X Unshaded	8	3	Indirect Exposure	0
Water Systems	Water	581 Foreman Bundy Rd., Elizabeth City	$7,600	0.1	X Unshaded	NA	3	Indirect Exposure	0
Water Systems	Water	1 Wilson St., Elizabeth City	$61,900	0.1	X Unshaded	7	2	Indirect Exposure	0
Safety & Security	Jail/Prison	527 Commerce Dr., Elizabeth City	$50,588,600	0.1	X Unshaded	NA	4	Indirect Exposure	0
Safety & Security	Jail/Prison	210 Executive Dr., Elizabeth City	$9,364,700	0.1	X Unshaded	NA	3	Direct Exposure	2
Safety & Security	Military Installation	1664 Weeksville Rd., Elizabeth City	$100,000,000	0.1	X Unshaded	9	3	Indirect Exposure	0
Transportation	Airport	1028 Consolidated Rd., Elizabeth City	$100,000,000	0.1	X Unshaded	10	4	Critical Fireshed	2
Elizabeth City									
Safety and Security[1]	Emergency Management	200 E. Colonial Ave., Elizabeth City	$8,500	0.1	X Unshaded	8	3	Indirect Exposure	0

FEMA Lifeline	Facility Type	Address	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Communications[1]	Communications/ PSAP	200 E. Colonial Ave., Elizabeth City	$8,500	0.1	X Unshaded	8	3	Indirect Exposure	0
Safety & Security	Emergency Ops Center	200 E. Colonial Ave, Elizabeth City	$8,500	0.1	X Unshaded	8	3	Indirect Exposure	0
Safety & Security	Sheriff's Office	200 E. Colonial Ave, Elizabeth City	$8,500	0.1	X Unshaded	8	3	Indirect Exposure	0
Safety & Security	Emergency Management	200 E. Colonial Ave., Elizabeth City	$8,500	0.1	X Unshaded	8	3	Indirect Exposure	0
Communications	Communications/PSAP	200 E. Colonial Ave., Elizabeth City	$8,500	0.1	X Unshaded	8	3	Indirect Exposure	0
Safety & Security	Courts	206 E. Main St., Elizabeth City	$5,165,500	0.1	X Unshaded	7	3	Indirect Exposure	0
Safety & Security	Administration	206 E. Main St., Elizabeth City	$5,165,500	0.1	X Unshaded	7	3	Indirect Exposure	0
Health & Medical	Emergency Medical Services	1144 B N. Road St., Elizabeth City	$98,469,700	0.1	X Unshaded	NA	5	Indirect Exposure	0
Health & Medical	Emergency Medical Services	104 W. Colonial Ave, Elizabeth City	$48,400	0.1	X Unshaded	7	2	Indirect Exposure	0
Health & Medical	Hospital	1144 N. Road St., Elizabeth City	$98,469,700	0.1	X Unshaded	NA	5	Indirect Exposure	0
Health & Medical	Hospital	905 Thunder Rd., Elizabeth City	$6,332,100	0.1	X Unshaded	NA	3	Critical Fireshed	0
Food, Hydration, Shelter	Community College	1209 N. Road St., Elizabeth City	-	0.1	X Shaded	6	2	Indirect Exposure	0
Food, Hydration, Shelter	University	1704 Weeksville Rd., Elizabeth City	$74,702,400	0.1	X Unshaded	10	3	Indirect Exposure	0
Food, Hydration, Shelter	University	715 N. Poindexter St., Elizabeth City	$6,985,000	0.1	X Unshaded	6	2	Indirect Exposure	0
Food, Hydration, Shelter	School	1413 W. Ehringhaus St., Elizabeth City	$2,505,800	0.1	X Unshaded	NA	3	Indirect Exposure	0
Food, Hydration, Shelter	School	1200 Halstead Blvd., Elizabeth City	$2,975,100	0.1	X Unshaded	10	3	Indirect Exposure	0
Food, Hydration, Shelter	School	1059 US Highway 17S, Elizabeth City	$203,400	0.1	AE	9	2	Indirect Exposure	0
Food, Hydration, Shelter	School	1209 N. Road St., Elizabeth City	-	0.1	X Shaded	6	2	Indirect Exposure	0
Food, Hydration, Shelter	School	1004 Parkview Dr., Elizabeth City	$1,614,100	0.1	X Unshaded	9	3	Indirect Exposure	0
Food, Hydration, Shelter	School	1007 Park St., Elizabeth City	$2,501,400	0.1	X Unshaded	6	2	Indirect Exposure	0
Food, Hydration, Shelter	School	963 Oak Stump Rd., Elizabeth City	$203,400	0.1	X Unshaded	NA	3	Indirect Exposure	0
Food, Hydration, Shelter	School	1407 Peartree Rd., Elizabeth City	$2,975,100	0.1	X Unshaded	10	3	Indirect Exposure	0

FEMA Lifeline	Facility Type	Address	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	School	606 Roanoke Ave., Elizabeth City	$3,201,400	0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	School	1701 River Rd., Elizabeth City	$15,278,200	0.1	X Unshaded	9	2	Indirect Exposure	0
Food, Hydration, Shelter	School	200 W. Elizabeth St., Elizabeth City	$10,203,700	0.1	X Unshaded	7	2	Indirect Exposure	0
Safety & Security	Administration	306 E. Colonial Ave, Elizabeth City	$1,151,300	0.1	X Shaded	7	2	Indirect Exposure	0
Safety & Security	Police Department	305 E. Main St., Elizabeth City	$874,100	0.1	X Shaded	6	2	Indirect Exposure	0
Safety & Security	Emergency Services	305 E. Main St., Elizabeth City	$874,100	0.1	X Shaded	6	2	Indirect Exposure	0
Safety & Security	Fire	305 E. Main St., Elizabeth City	$874,100	0.1	X Shaded	6	2	Indirect Exposure	0
Safety & Security	Fire	902 Halstead Blvd., Elizabeth City	$226,600	0.1	X Unshaded	10	3	Indirect Exposure	0
Safety & Security	Fire	410 Harney St., Elizabeth City	$323,400	0.1	X Shaded	6	2	Indirect Exposure	0
Water Systems	Treatment Plant	450 Knobbs Creek Dr., Elizabeth City	-	2.699	AE	3	1	Indirect Exposure	0
Safety & Security	Courts	306 E. Main St., Elizabeth City	$2,972,800	0.1	X Unshaded	8	3	Indirect Exposure	0
Food, Hydration, Shelter	Shelter	1862 Edgewood Dr., Elizabeth City	$198,300	0.1	X Unshaded	NA	3	Indirect Exposure	0
Food, Hydration, Shelter	Shelter	200 E. Ward St., Elizabeth City	$2,454,700	0.1	X Unshaded	7	3	Indirect Exposure	0

[1]Note: These facilities are located in the portion of Elizabeth City that is within Camden County.

E.2 RISK ASSESSMENT

This section contains a hazard profile and vulnerability assessment for those hazards that were rated with a higher priority by jurisdiction in Pasquotank County than for the Albemarle Region as a whole. Risk and vulnerability findings are also presented here for those hazards that are spatially defined and have variations in risk that could be evaluated quantitatively on a jurisdictional level. The hazards included in this section are flooding and wildfire.

E.2.1 FLOODING

Table E.4 details the acreage of Pasquotank County's total area by jurisdiction and flood zone on the Effective DFIRM. Per this assessment roughly a quarter of both unincorporated Pasquotank County and Elizabeth City are within the 1%-annual-chance floodplain.

Table E.4 – Flood Zone Acreage by Jurisdiction, Pasquotank County

Flood Zone	Acreage	Percent of Total (%)
Unincorporated Pasquotank County		
Zone A	7,355.9	4.2
Zone AE	36,718.1	20.9
Zone AO	19.8	0.0
Zone VE	624.8	0.4
Zone X (500-year)	6,541.5	3.7
Zone X (unshaded)	103,206.4	58.7
Total	**175,878.5**	--
City of Elizabeth City		
Zone AE	1,753.7	24.6
Zone X (500-year)	623.2	8.7
Zone X (unshaded)	4,747.9	66.6
Total	**7,124.8**	--

Source: FEMA Effective DFIRMs; GIS analysis

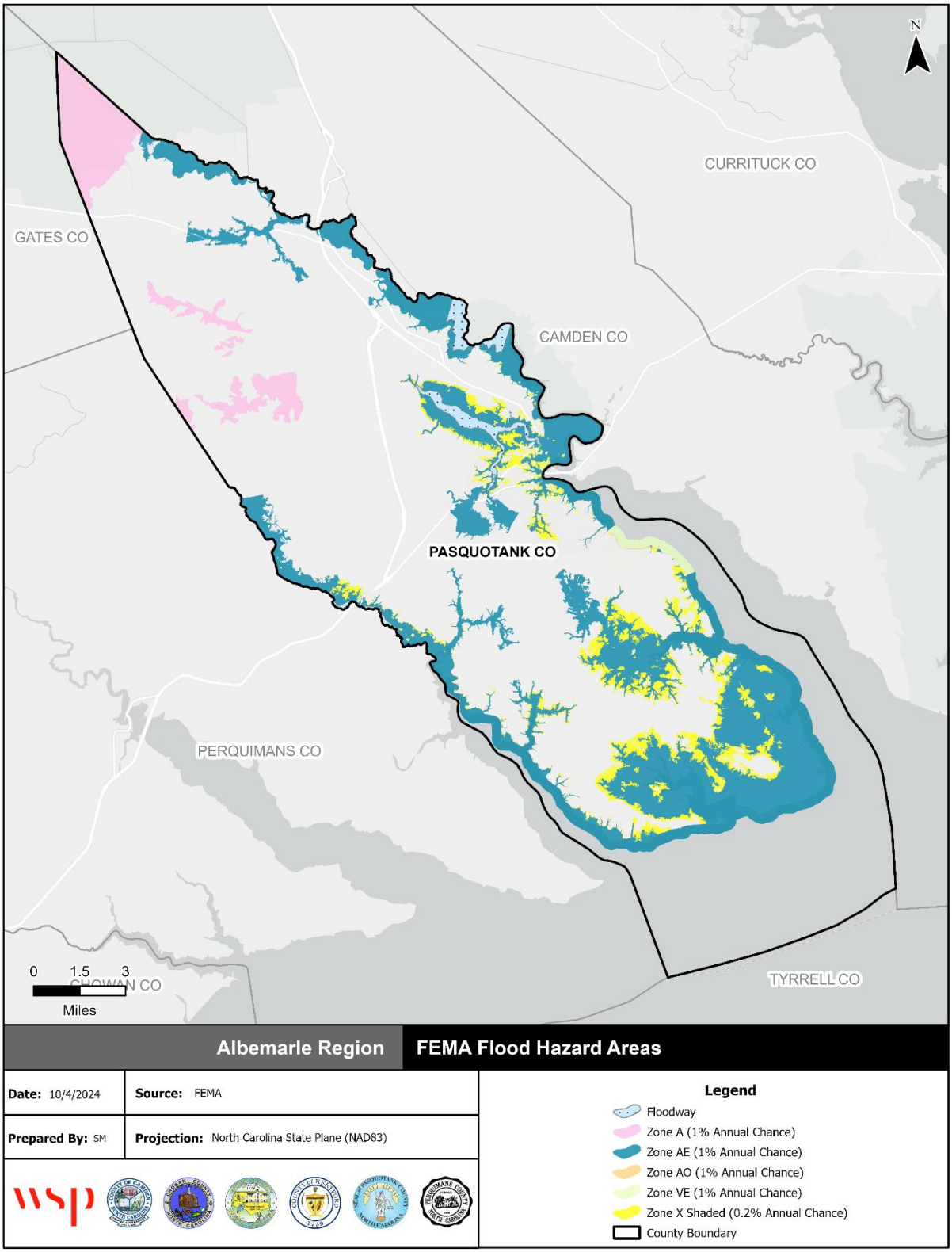
Figure E.3 and Figure E.4 reflect the effective mapped flood hazard zones for Pasquotank County and Elizabeth City, and Figure E.5 and Figure E.6 display the depth of flooding estimated to occur in these areas during the 1%-annual-chance flood.Table E.5 provides building counts and values for critical facilities by flood zone in Pasquotank County and Elizabeth City.

Table E.5 – Critical Facilities Exposed to Flooding, Pasquotank County

Flood Zone	Critical Facility Count	Structure Value
Pasquotank County		
Zone AE	4	$982,600
Zone X (unshaded)	15	$303,722,000
Total	**19**	**$30,4704,600**
City of Elizabeth City		
Zone AE	2	$203,400
Zone X (shaded)	7	$4,097,000
Zone X (unshaded)	25	$342,699,900
Total	**36**	**$ 347,000,300**

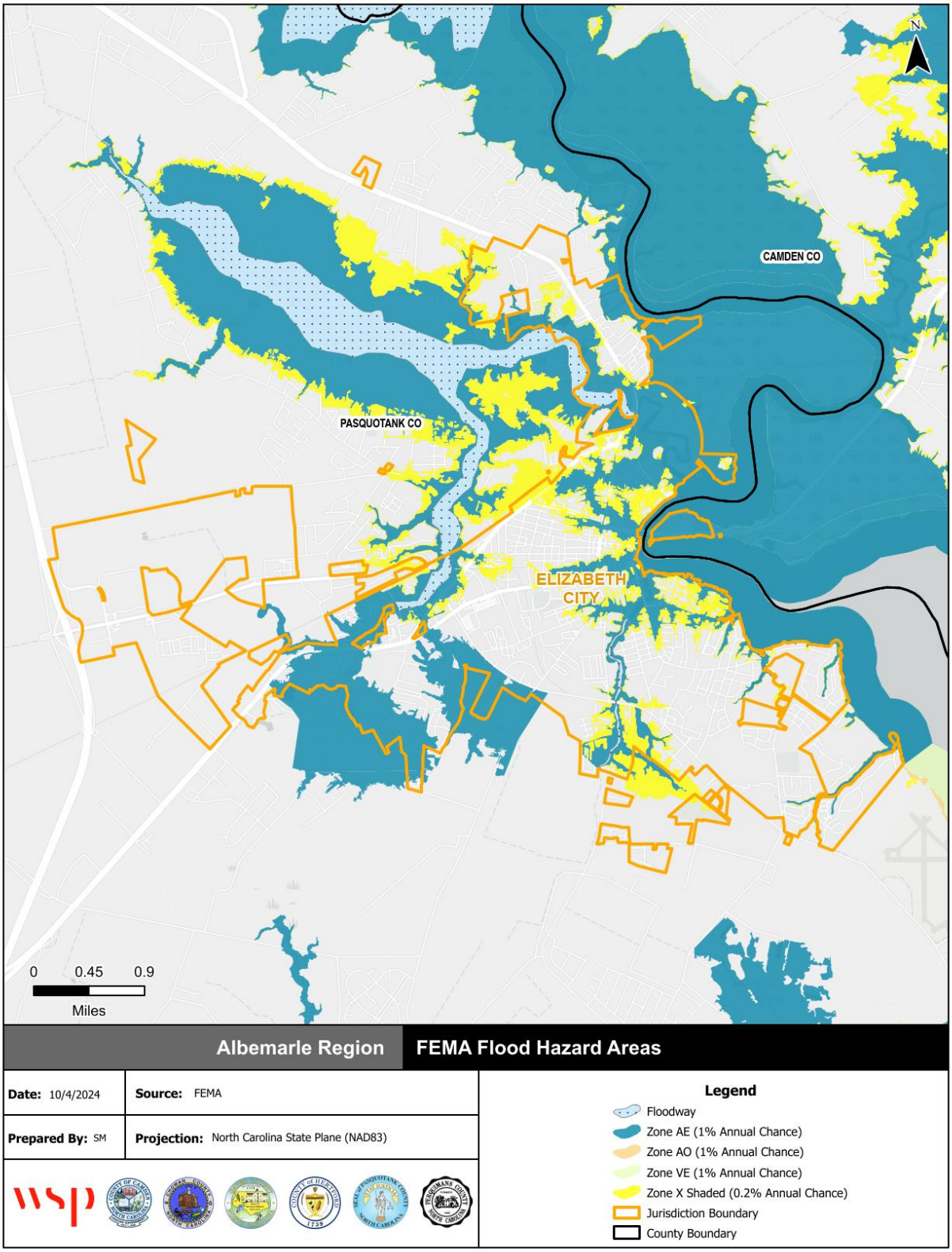
Source: FEMA Effective FIRM

Figure E.3 – FEMA Flood Hazard Areas, Unincorporated Pasquotank County



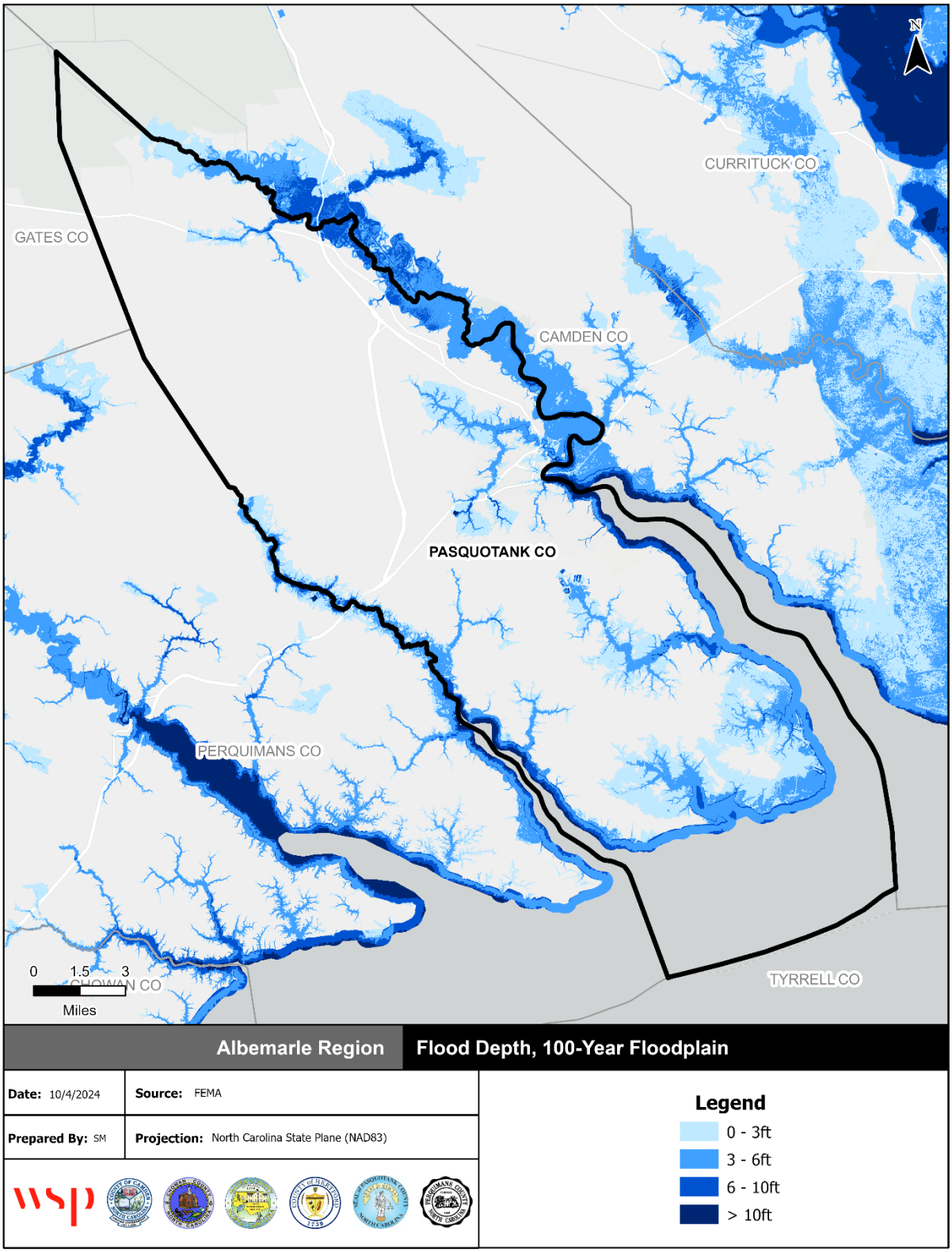
Source: FEMA Effective DFIRM

Figure E.4 – FEMA Flood Hazard Areas, City of Elizabeth City



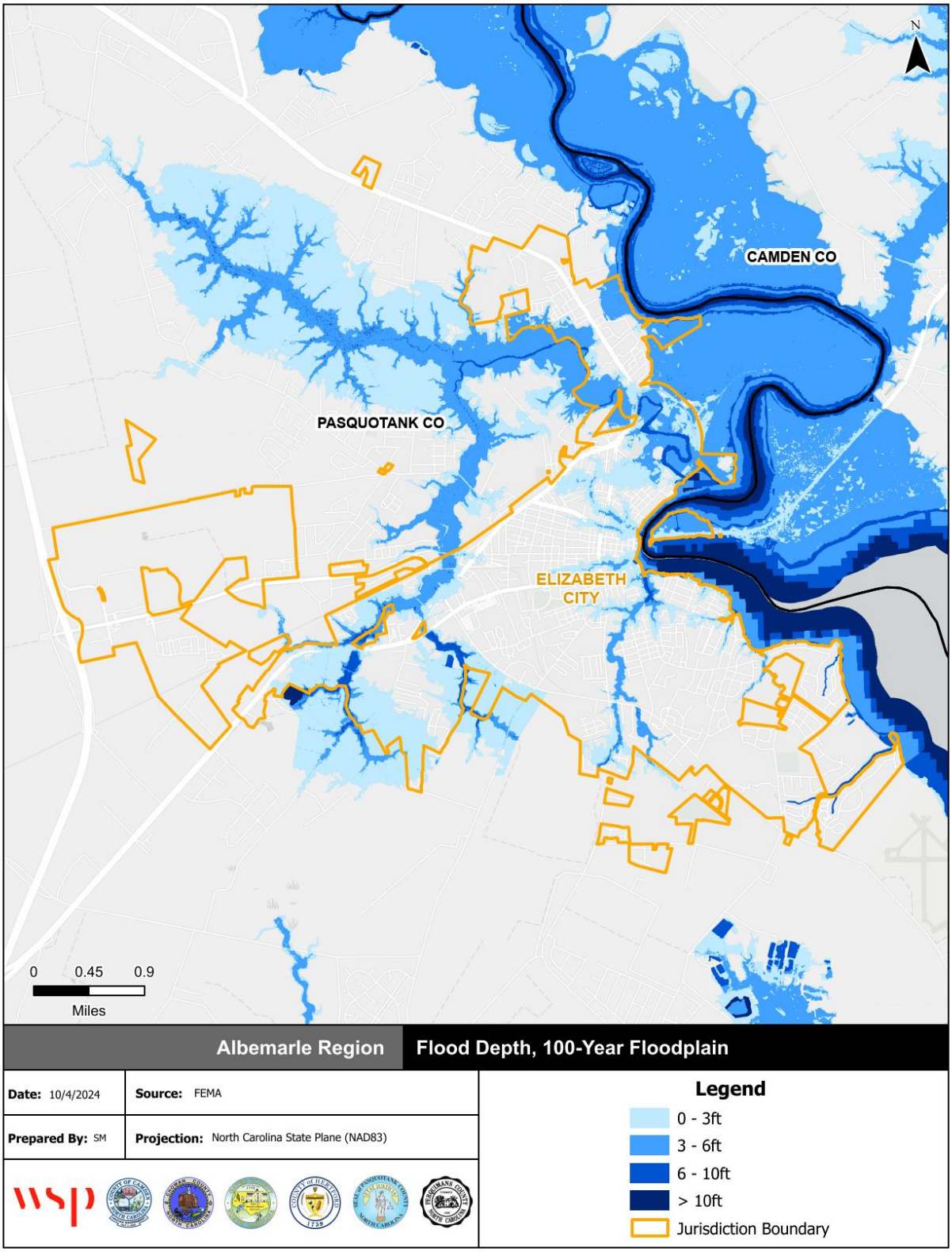
Source: FEMA Effective DFIRM

Figure E.5 – Flood Depth, 1%-Annual-Chance Floodplain, Unincorporated Pasquotank County



Source: FEMA Effective DFIRM

Figure E.6 – Flood Depth, 1%-Annual-Chance Floodplain, City of Elizabeth City



Source: FEMA Effective DFIRM

E.2.1.1 *FLOOD INSURANCE DATA*

The following tables reflect NFIP entry dates as well as policy and claims data for Pasquotank County and Elizabeth City, categorized by structure type, flood zone, Pre-FIRM and Post-FIRM.

Table E.6 – NFIP Program Entry Dates

Community	Emergency Entry	Regular Entry Date
Pasquotank County	February 9, 1976	December 4, 1985
City of Elizabeth City	June 20, 1973	April 3, 1978

Source: FEMA Community Information System

Table E.7 – NFIP Policy and Claims Data by Structure Type

Structure Type	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Pasquotank County Unincorporated Area					
Single Family	627	$405,150	$163,515,000	215	$1,287,999.53
2-4 Family	0	$0	$0	0	$0.00
All Other Residential	1	$2,296	$306,000	0	$0.00
Non-Residential	8	$6,020	$1,743,000	3	$50,277.41
Total	**636**	**$413,466**	**$165,564,000**	**218**	**$1,338,276.94**
City of Elizabeth City					
Single Family	572	$326,755	$122,204,000	228	$2,538,568.18
2-4 Family	25	$15,985	$5,060,000	9	$13,788.32
All Other Residential	30	$15,556	$7,073,000	6	$337,004.86
Non-Residential	103	$166,376	$41,676,000	71	$2,413,510.46
Total	**730**	**$524,672**	**$176,013,000**	**314**	**$5,302,871.82**

Source: FEMA Community Information System, accessed January 2025

Table E.8 – NFIP Policy and Claims Data by Flood Zone

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Pasquotank County Unincorporated Area					
A01-30 & AE Zones	404	$256,201	$91,120,000	174	$1,160,742.78
A Zones	3	$1,993	$496,000	9	$64,143.46
AO Zones	1	$1,016	$275,000	0	$0.00
B, C & X Zone					
Standard	228	$154,256	$73,673,000	6	$16,575.29
Preferred	0	$0	$0	21	$87,139.89
Total	**636**	**$413,466**	**$165,564,000**	**210**	**$1,328,601.42**
City of Elizabeth City					
A01-30 & AE Zones	497	$331,875	$101,417,000	270	$4,948,859.22
A Zones	0	$0	$0	7	$86,564.80
V01-30 & VE Zones	0	$0	$0	6	$55,976.91
B, C & X Zone					
Standard	233	$192,797	$74,596,000	11	$50,054.82
Preferred	0	$0	$0	19	$157,927.62
Total	**730**	**$524,672**	**$176,013,000**	**313**	**$5,299,383.37**

Source: FEMA Community Information System, accessed January 2025

Table E.9 – NFIP Policy and Claims Data Pre-FIRM

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Pasquotank County Unincorporated Area					
A01-30 & AE Zones	91	$70,138	$18,415,000	99	$785,628.72
A Zones	1	$893	$235,000	6	$26,404.65
B, C & X Zone	55	$38,201	$17,095,000	16	$52,979.26
Standard	55	$38,201	$17,095,000	3	$13,332.31
Preferred	0	$0	$0	13	$39,646.95
Total	**147**	**$109,232**	**$35,745,000**	**121**	**$865,012.63**
City of Elizabeth City					
A01-30 & AE Zones	184	$137,789	$33,667,000	197	$4,045,958.54
A Zones	0	$0	$0	3	$32,652.12
V01-30 & VE Zones	0	$0	$0	6	$55,976.91
B, C & X Zone	118	$101,856	$35,345,000	24	$155,090.71
Standard	118	$101,856	$35,345,000	10	$50,054.82
Preferred	0	$0	$0	14	$105,035.89
Total	**302**	**$239,645**	**$69,012,000**	**230**	**$4,289,678.28**

Source: FEMA Community Information System, accessed January 2025

Table E.10 – NFIP Policy and Claims Data Post-FIRM

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Pasquotank County Unincorporated Area					
A01-30 & AE Zones	313	$186,063	$72,705,000	75	$375,114.06
A Zones	2	$1,100	$261,000	3	$37,738.81
B, C & X Zone	1	$1,016	$275,000	0	$0.00
Standard	173	$116,055	$56,578,000	11	$50,735.92
Preferred	173	$116,055	$56,578,000	3	$3,242.98
Total	**0**	**$0**	**$0**	**8**	**$47,492.94**
City of Elizabeth City					
A01-30 & AE Zones	313	$194,086	$67,750,000	73	$902,900.68
A Zones	0	$0	$0	4	$53,912.68
B, C & X Zone	115	$90,941	$39,251,000	6	$52,891.73
Standard	115	$90,941	$39,251,000	1	$0.00
Preferred	0	$0	$0	5	$52,891.73
Total	**428**	**$285,027**	**$107,001,000**	**83**	**$1,009,705.09**

Source: FEMA Community Information System, accessed January 2025

E.2.2 WILDFIRE

Table E.11 summarizes the acreage in Pasquotank County that falls within the Functional Wildland Urban Interface (WUI), categorized into zones that describe the wildfire risk mitigation activities appropriate for each zone. Areas in the Functional WUI are those areas where development and building structures may

intermix with burnable land cover. Approximately, 5.3 percent of Pasquotank County is categorized as having direct exposure to wildfire risk within the Functional WUI.

Table E.11 – Functional Wildland Urban Interface Acreage, Pasquotank County

	Functional Wildland Urban Interface (WUI) Category	Acres	Percent
	Direct Exposure	7,906	5.30%
	Indirect Exposure	15,541	10.30%
	Critical Fireshed	102,004	67.90%
	Sources of Ember Load to Buildings	12,749	8.50%
	Little to No Exposure	0	0.00%
	Water	12,123	8.10%
	Total	**150,323**	**100.00%**

Source: Southern Wildfire Risk Assessment

Figure E.7 and Figure E.8 depicts the Functional WUI with the location of critical facilities for unincorporated Pasquotank County and all participating jurisdictions. Figure E.9 and Figure E.10 depicts the Fire Intensity Scale, which indicates the potential severity of fire based on fuel loads, topography, and other factors. Figure E.11 and Figure E.12 depicts Burn Probability based on landscape conditions, percentile weather, historical ignition patterns, and historical prevention and suppression efforts.

Potential fire intensity is moderate to low in Pasquotank County, without any significant clusters of heightened risk. Much of the county is not burnable or has a very low burn probability with the largest cluster occurring on the northwest side of the County. Functional WUI is spread throughout much of the county but areas of direct and indirect exposure within the Functional WUI rarely overlaps with any significant burn probability or high potential fire intensity. Therefore, Pasquotank County might not pose as high a risk to human settlement and the built environment.

Table E.12 and Table E.13 provide the count and estimated value of all structures that intersect with areas of unincorporated Pasquotank County and participating jurisdictions that are rated with direct exposure on the Functional WUI scale. Table E.14 provides building counts and values for critical facilities in Pasquotank County that are located in areas categorized with direct exposure to wildfire risk on the Functional WUI scale. Note that no critical facilities in Elizabeth City are in areas with direct exposure to wildfire risk.

Table E.12 – Structures at Risk to Direct Exposure Functional WUI, Unincorporated Pasquotank County

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	265	$8,529,854.00	$8,529,854.00	$17,059,708.00
Commercial	90	$16,903,476.00	$16,903,476.00	$33,806,952.00
Education	1	$254,900.00	$254,900.00	$509,800.00
Government	15	$16,784,815.00	$16,784,815.00	$33,569,630.00
Industrial	49	$8,858,570.00	$13,287,855.00	$22,146,425.00
Religious	28	$4,881,320.00	$4,881,320.00	$9,762,640.00
Residential	3,964	$365,265,499.00	$182,632,749.50	$547,898,248.50
Total	**4,412**	**$421,478,434.00**	**$243,274,969.50**	**$664,753,403.50**

Source: Southern Wildfire Risk Assessment

Table E.13 – Structures at Risk to Direct Exposure Functional WUI, City of Elizabeth City

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	2	$109,233.00	$109,233.00	$218,466.00
Commercial	64	$9,392,711.00	$9,392,711.00	$18,785,422.00
Education	4	$509,548.00	$509,548.00	$1,019,096.00
Government	5	$1,113,600.00	$1,113,600.00	$2,227,200.00
Industrial	19	$2,351,833.00	$3,527,749.50	$5,879,582.50
Religious	19	$3,985,037.00	$3,985,037.00	$7,970,074.00
Residential	1,483	$140,221,119.00	$70,110,559.50	$210,331,678.50
Total	**1,596**	**$157,683,081.00**	**$88,748,438.00**	**$246,431,519.00**

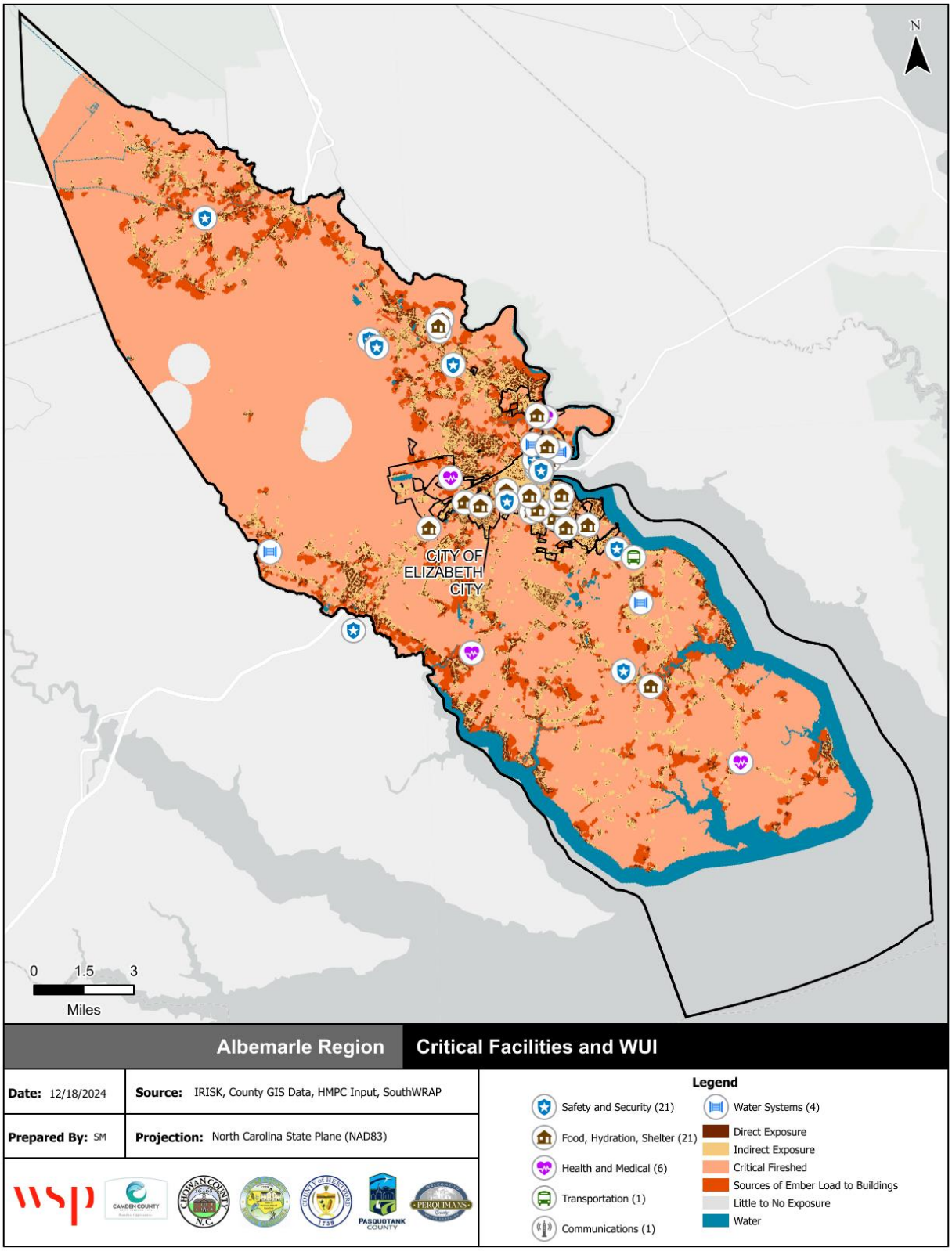
Source: Southern Wildfire Risk Assessment

Table E.14 – Critical Facilities Exposed to Wildfire, Unincorporated Pasquotank County

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	1	$279,900
Safety and Security	2	$9,644,600
Transportation	0	$0
Water Systems	0	$0
Total	**3**	**$9,924,500**

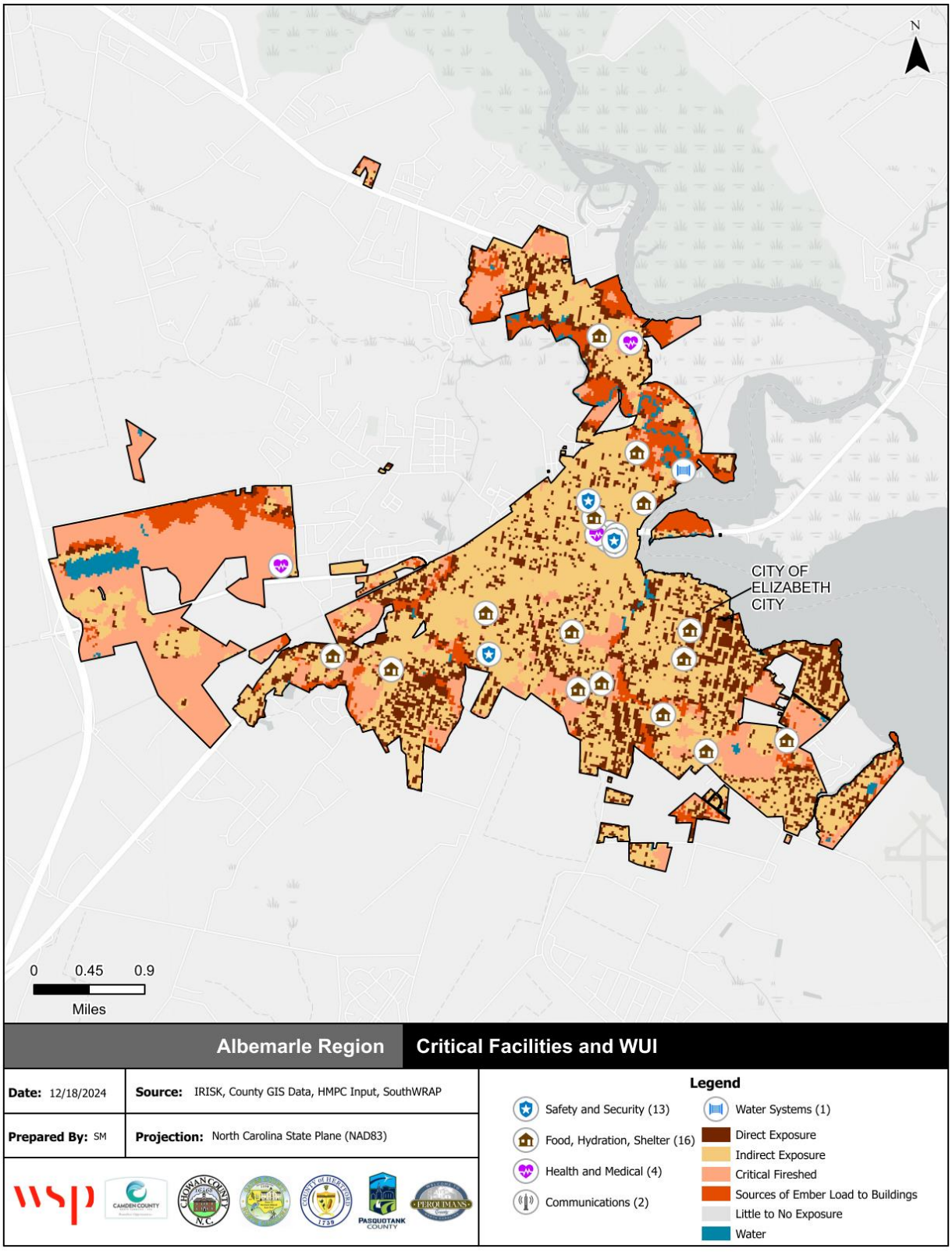
Source: Southern Wildfire Risk Assessment

Figure E.7 – Critical Facilities and Functional WUI, Pasquotank County



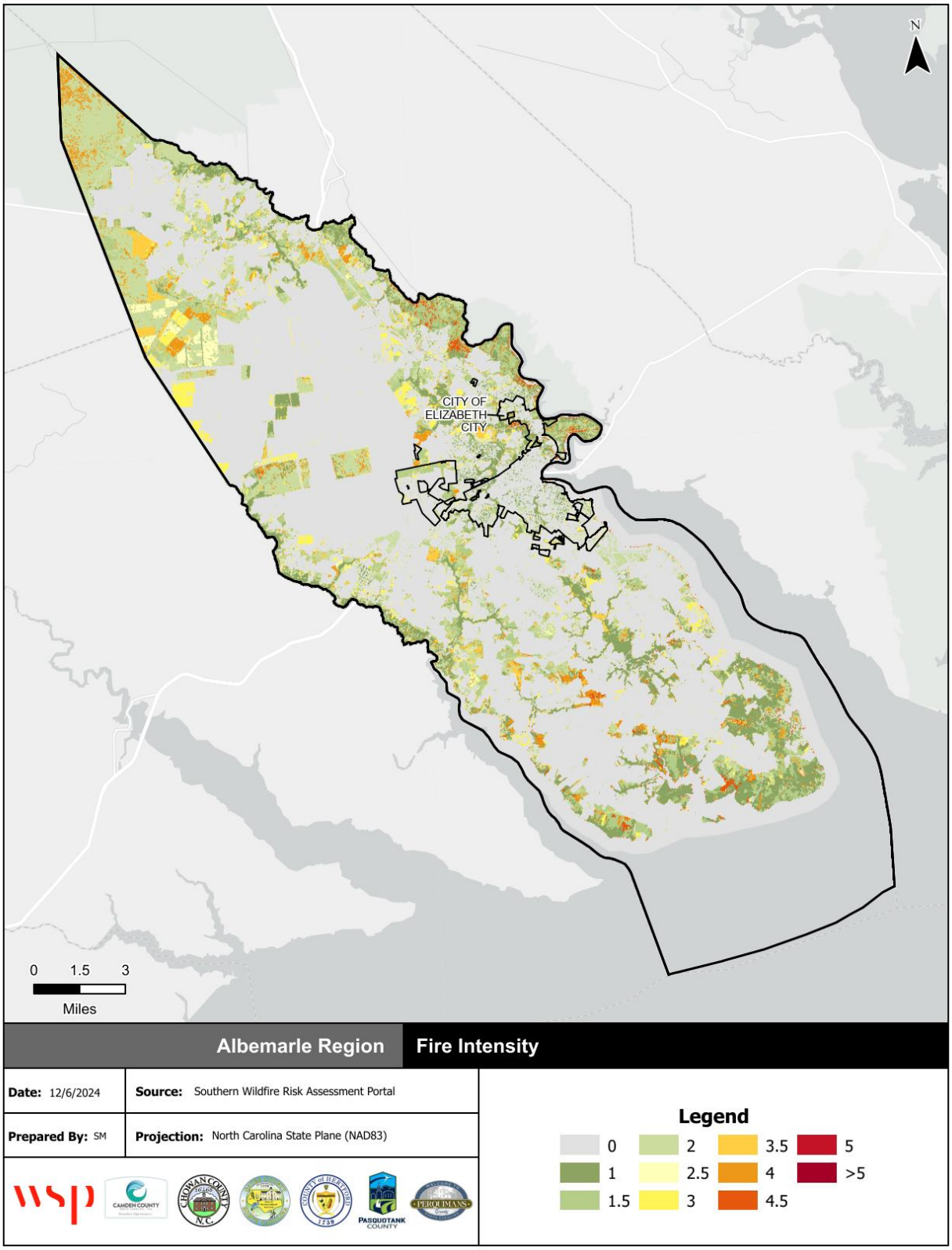
Source: Southern Wildfire Risk Assessment

Figure E.8 – Critical Facilities and Functional WUI, City of Elizabeth



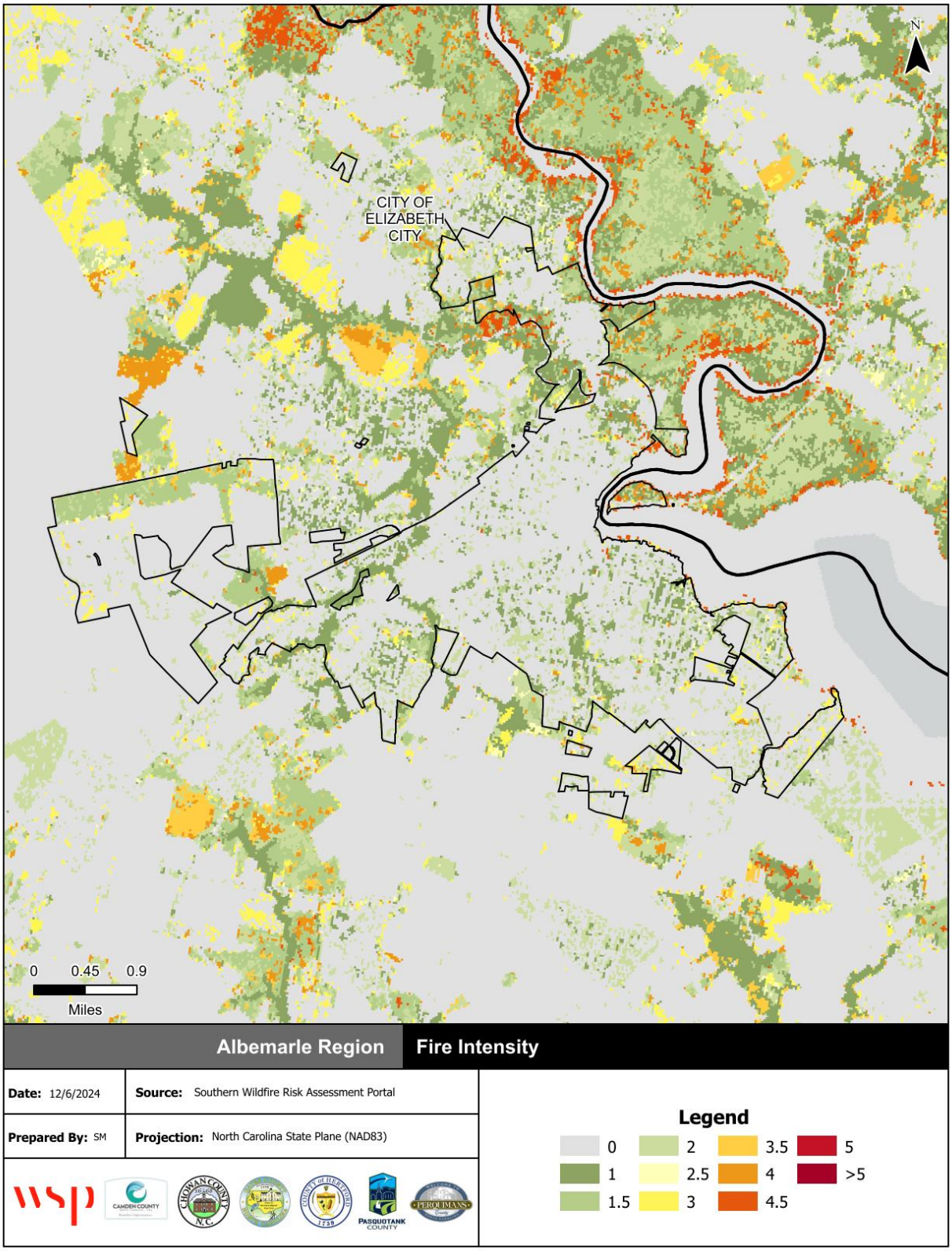
Source: Southern Wildfire Risk Assessment

Figure E.9 – Fire Intensity Scale, Unincorporated Pasquotank County



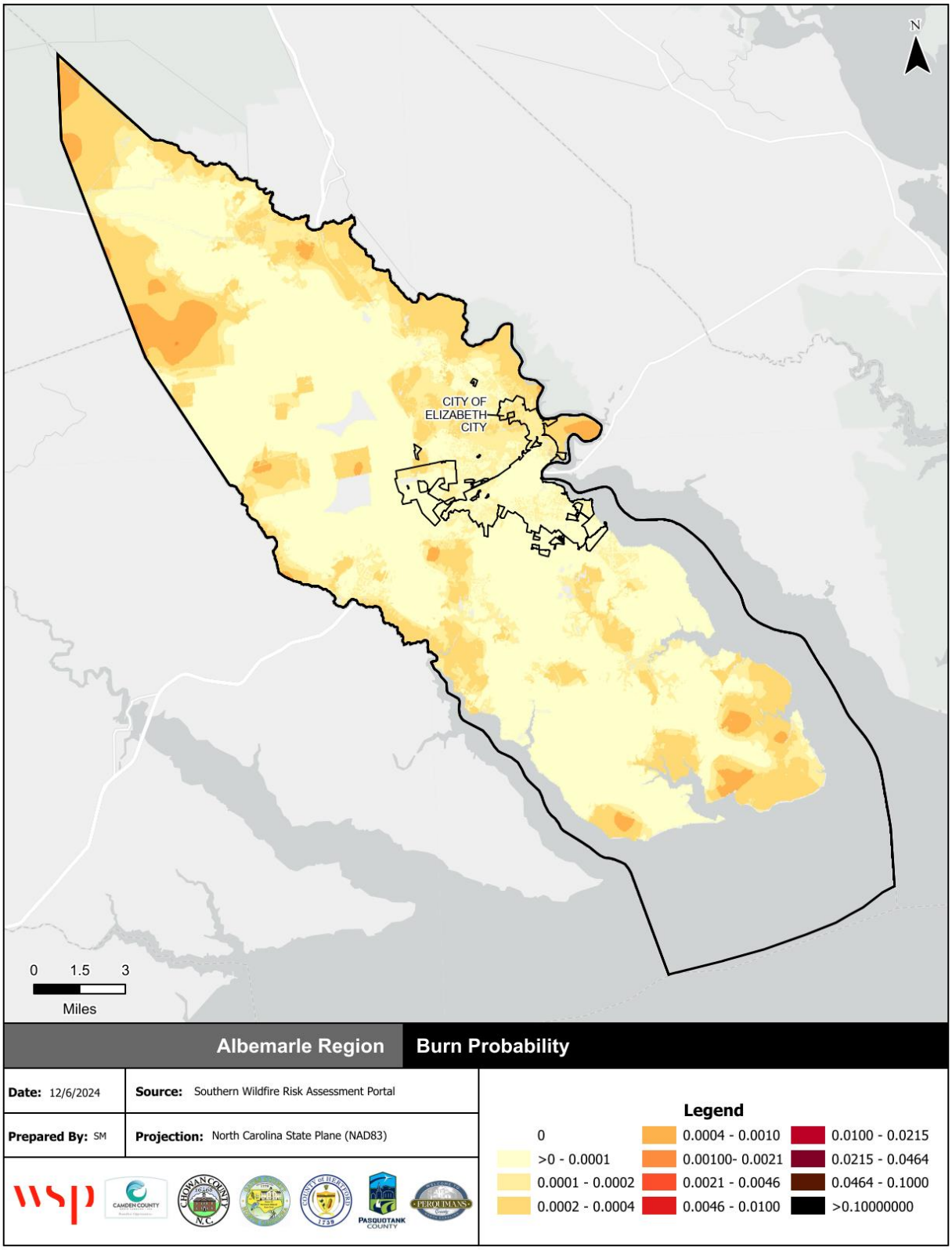
Source: Southern Wildfire Risk Assessment

Figure E.10 – Fire Intensity Scale, City of Elizabeth City



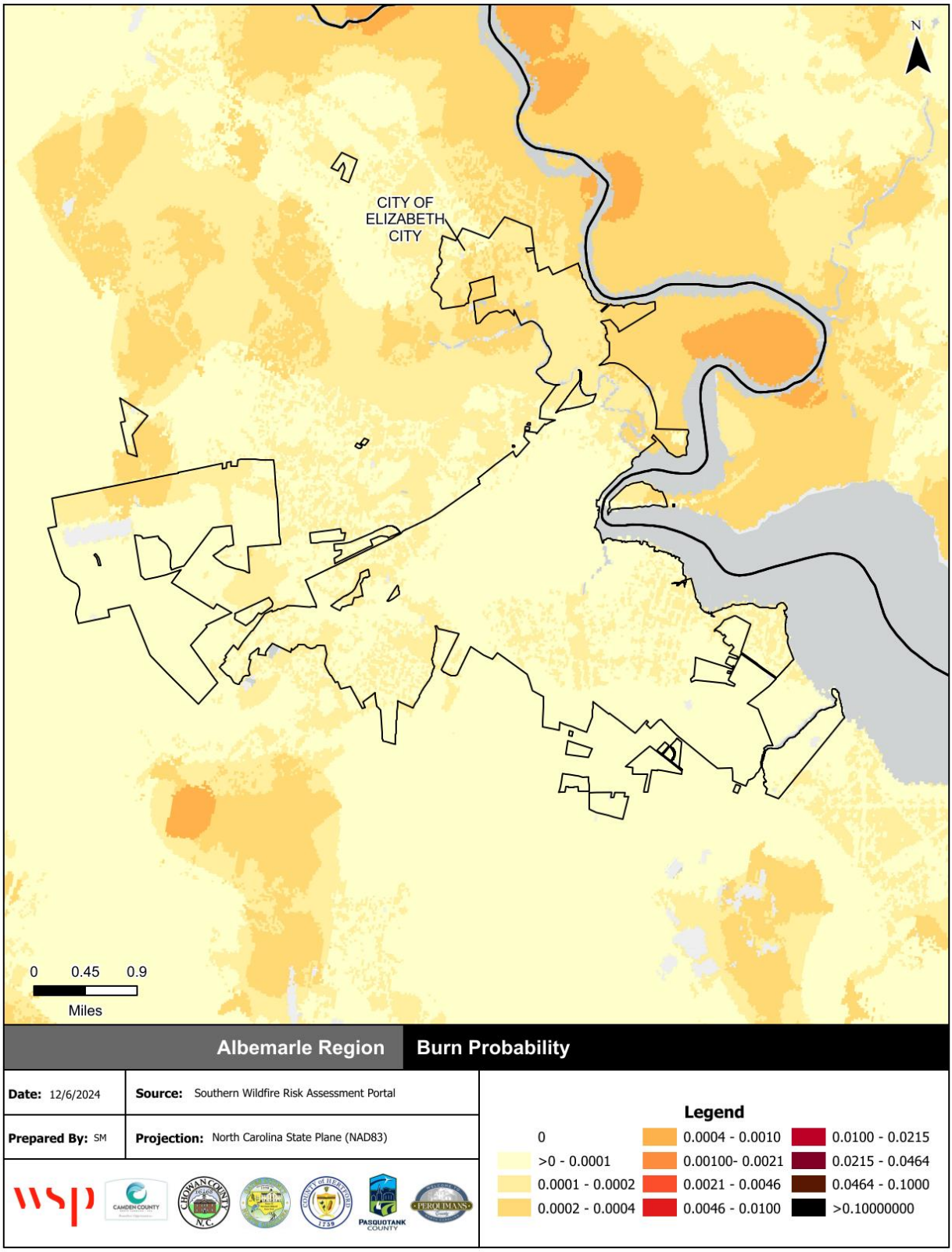
Source: Southern Wildfire Risk Assessment

Figure E.11 – Burn Probability, Unincorporated Pasquotank County



Source: Southern Wildfire Risk Assessment

Figure E.12 – Burn Probability, City of Elizabeth City



Source: Southern Wildfire Risk Assessment

E.3 MITIGATION STRATEGY

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
PAS1	Engage in comprehensive pre- and post-storm planning efforts utilizing the most accurate and thorough data available. These efforts will involve the review and incorporation of all existing policy and regulatory tools currently in place in an effort to identify cost effective and environmentally sound mitigation projects for implementation.	Pasquotank County, Elizabeth City	All Hazards	Med	1.3	P	County Planning Office, City Planning Division, County Board of Commissioners/City Council	Staff Time	General Fund	Ongoing – Annually	Carry Forward	This effort will be undertaken as events occur within the County.
PAS2	Maintain "Storm Ready Community" Status	Pasquotank County, Elizabeth City	Flooding, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Dam & Levee Failure, Severe Winter Weather	Med	2.1	ES	County Emergency Management	Staff Time	General Fund	Ongoing – next 5 years	Carry Forward	Pasquotank County continues to maintain the County's Storm Ready Status and will continue to do so through implementation of this plan. Currently in place with an expiration date of April 15, 2026.
PAS3	Join the Community Rating System (CRS).	Pasquotank County, Elizabeth City	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	3.2	P	County Board of Commissioners, City Council, County/City Staff	Staff Time	General Fund	2 to 3 years	Carry Forward	The County, as well as Elizabeth City, will consider joining the Community Rating System (CRS) through implementation of this plan. Challenge = contingent on identifying available staffing.
PAS4	Develop and maintain comprehensive water management policies for Pasquotank County/Elizabeth City considering the connections between land use, urban growth, and surface water, and groundwater issues.	Pasquotank County, Elizabeth City	Drought	High	1.1	NRP	County Planning Office, County Emergency Management, County Board of Commissioners/City Council, NCDCM – Coastal Area Management Act, Public Utilities	Staff Time	General Fund, Grant Funds	Ongoing – next 5 years	Carry Forward	The County will continue to carry out these efforts through implementation of this plan.
PAS5	Continue to utilize annual, as well as post-disaster, Federal (FEMA) and State mitigation funds to both acquire and elevate structures impacted by excessive flooding.	Pasquotank County, Elizabeth City	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	3.1	PP	County Public Works, County Board of Commissioners, City Administration	To Be Determined	General Fund, NCDENR, NCDPS	Ongoing – As opportunities arise	Carry Forward	Projects are ongoing and determined by available grant funding.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
PAS6	Encourage new or renovated critical facilities to apply structural hazard mitigation and sustainability concepts when building or remodeling their facilities, to include back-up power sources.	Pasquotank County, Elizabeth City	All Hazards	High	1.2	PP	County Planning and Inspections Department, City Planning and Inspections Department	Staff Time	General Fund, Grants	Ongoing – next 5 years	Carry Forward	The County and City will continue to promote the integration of these concepts into the design consideration of new or renovated critical facilities.
PAS7	Increase awareness regarding the impacts of natural disasters by educating and informing residents, businesses, contractors, realtors, developers, and visitors via public education, social media and print materials. These efforts should focus on ways to mitigate disaster impacts to both persons and property.	Pasquotank County, Elizabeth City	All Hazards	High	2.2	PIO	County Emergency Management, City Administration, County Administration	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	The County undertakes these efforts but will aim to improve upon its outreach and education efforts through implementation of this plan.
PAS8	Encourage the use of weather radios/severe weather warning apps – especially in schools, rest homes, convalescent homes, retirement centers and other locations where people congregate – to inform them of approaching severe weather.	Pasquotank County, Elizabeth City	Flood, Hurricane & Coastal Hazards, Tornadoes & Thunderstorms, Dam & Levee Failure, Severe Winter Weather	Med	2.1	PIO	County Emergency Management	Staff Time	General Fund, Grant Funds, American Red Cross	Ongoing – next 5 years	Carry Forward	This program is already in place and is considered important enough to carry forward into the implementation of this plan.
PAS9	Work to improve its emergency notification system in an effort to increase awareness regarding the locations of shelters and evacuation routes during natural hazard events.	Pasquotank County, Elizabeth City	All Hazards	High	2.1	PIO	County Emergency Management, City Administration	$25,000	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	The County's Emergency Alert System is in place; however, the effectiveness of the system is reviewed annually, as well as following natural hazard events.
PAS10	Review the Pasquotank-Camden-Elizabeth City Multi- Hazard Emergency Operations Plan annually and update the plan as necessary. Ensure all County and City departments continue to develop guidelines for response to emergencies and to maintain departmental operations. Work with County and City departments to ensure each department possesses a clear understanding of department responsibilities as outlined in the Pasquotank-Camden-Elizabeth City Multi-Hazard Emergency Operations Plan.	Pasquotank County, Elizabeth City	All Hazards	Med	3.2	ES	County Emergency Management, County Board of Commissioners, Elizabeth City	Staff Time	General Fund, Staff Time, NCDPS	Other – Once Annually	Carry Forward	Pasquotank County, in conjunction with Elizabeth City will review its Emergency Operations Plan annually, specifically the County addresses issues identified through past storm experiences.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
PAS11	Continue efforts to develop continuity of operational plans (COOP) for county/city departments.	Pasquotank County, Elizabeth City	All Hazards	Med	3.2	ES	County Board of Commissioner/City Council, County/City Planning Boards, Department Heads, County Emergency Management	Staff Time	General Fund, NCDPS	Other – Once Annually	Carry Forward	The Continuity of Operations Plan is reviewed annually in concert with the Emergency Operations Plan. This effort is based on the results of a staged table top exercise, and/or any events that have occurred over the past year.
PAS12	Encourage the installation of generator switches in new construction critical facilities. As projects go through Technical Review Committee, applicants can be encouraged to pre-wire facilities for a generator. New construction critical facilities that would benefit from pre-wiring include, but are not limited to, public schools, local government facilities, facilities that may be utilized as storm shelters, adult care facilities, etc.	Pasquotank County, Elizabeth City	All Hazards	High	1.1	PP	City/County Planning and Inspections, City/County Planning Board	Staff Time	General Fund, NCDPS	Other – As funding is available and need determined	Carry Forward	The County and City will continue to work on establishing backup power supplies at all critical facilities. This will be undertaken as funding becomes available.
PAS13	Incorporate shoreline vegetation protection buffers into the City of Elizabeth City's Unified Development Ordinance as a stipulation to development in and near areas of environmental concern.	Pasquotank County, Elizabeth City	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	NRP	City Planning Department, City Council	Staff Time	General Fund	2 to 3 years	Carry Forward	This regulation has not been established to date, but will be considered through implementation of this plan.
PAS15	Information is distributed during public events and via social media. All structures rehabilitated greater than 50% damage or reconstructed greater than 50% have to meet present wind load requirements in NC Building Code.	Pasquotank County, Elizabeth City	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	2.2	PIO	County Emergency Management, City Administration, County/City Planning and Inspections	Staff Time	General Fund, NCDPS	1 year	Carry Forward	The County and City will continue to disseminate this information and carry that effort out through implementation of this plan.
PAS16	Reduce the vulnerability of infrastructure and the built environment by identifying infrastructure (i.e., pumping stations, roads) in the city/county that is repetitively damaged by flooding and consider ways to reduce those vulnerabilities.	Pasquotank County, Elizabeth City	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.1	SP	County Public Works, County Board of Commissioners, City Administration	To Be Determined	General Fund, NCDPS, NCDEQ	Ongoing, as needed	Carry Forward	This strategy will continue to be carried out by the County and City as opportunities arise.
PAS17	Actively work with Federal, State, local and private partners to identify mitigation measures and secure funding via grants to alleviate flooding.	Pasquotank County, Elizabeth City	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	SP	County Public Works, County Board of Commissioners, City Administration	To Be Determined	General Fund, NCDENR, NCDPS	5 years	Carry Forward	Continue to seek grants to assist with mitigation efforts.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
PAS19	Work with the Drainage Committee to address stormwater/drainage issues in Pasquotank County, outside of the city limits of Elizabeth City	Pasquotank County	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	NRP, SP	County Planning Department, County Board of Commissioners	To Be Determined	General Fund, NCDPS, NCDEQ	Ongoing, as needed	New	Continue to work with the established drainage committee to identify areas that need feasibility study and improvement funding.
PAS20	Create or Update Community Wildfire Protection Plans in each fire district.	Pasquotank County, Elizabeth City	Wildfire	Med	4.1	P	County Emergency Management, Fire Departments, NC Forest Service	To Be Determined	Grant Funds	5 years	New	
PAS21	Restore waterfront facilities at Wharf Park	Elizabeth City	Flooding, Hurricane & Coastal Hazards	High	1.1	SP	Elizabeth City Development Services	$2 million+	Grant Funds	2-3 years	New	
PAS22	Improve and raise street surfaces and drainageways to reduce stormwater flooding.	Elizabeth City	Flooding, Hurricane & Coastal Hazards	High	1.3	SP	Elizabeth City Development Services	$750,000+	Grant Funds	5 years	New	Received a grant for improvements at the intersection of Flora Street and Riverside Ave
PAS23	Compile a Vulnerability Index for city facilities and critical assets.	Elizabeth City	All Hazards	High	1.1	P	Elizabeth City Development Services	To Be Determined	General Fund	1-2 years	New	

ANNEX F PERQUIMANS COUNTY

F.1 ASSET INVENTORY

Perquimans County and the HMPC provided a local inventory of critical facilities and community lifelines, which are a priority for mitigation planning and emergency management. Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. Table F.1 through Table F.3 provides a count of critical facilities by FEMA lifeline category by jurisdiction in Perquimans County. Figure F.1 through Figure F.3 shows the locations of all critical facilities in Perquimans County and participating jurisdictions.

Table F.4 provides a detailed inventory of the critical facilities in Perquimans County, indicating each facility's FEMA lifeline category, flood zone, 1% annual chance flood depth, and vulnerability to storm surge, sea level rise, and wildfire. More information on hazard vulnerability is provided in the hazard profiles.

Table F.1 – Critical Facilities by Type, Unincorporated Perquimans County

Facility Type	Count of Facility Type	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	102	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	4	$0
Transportation	0	$0
Water Systems	2	$0
Total	**108**	**$0**

Source: Perquimans County, HMPC

Table F.2 – Critical Facilities by Type, Town of Hertford

Facility Type	Count of Facility Type	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	12	$0
Hazardous Materials	0	$0
Health and Medical	1	$0
Safety and Security	7	$0
Transportation	0	$0
Water Systems	2	$0
Total	**22**	**$0**

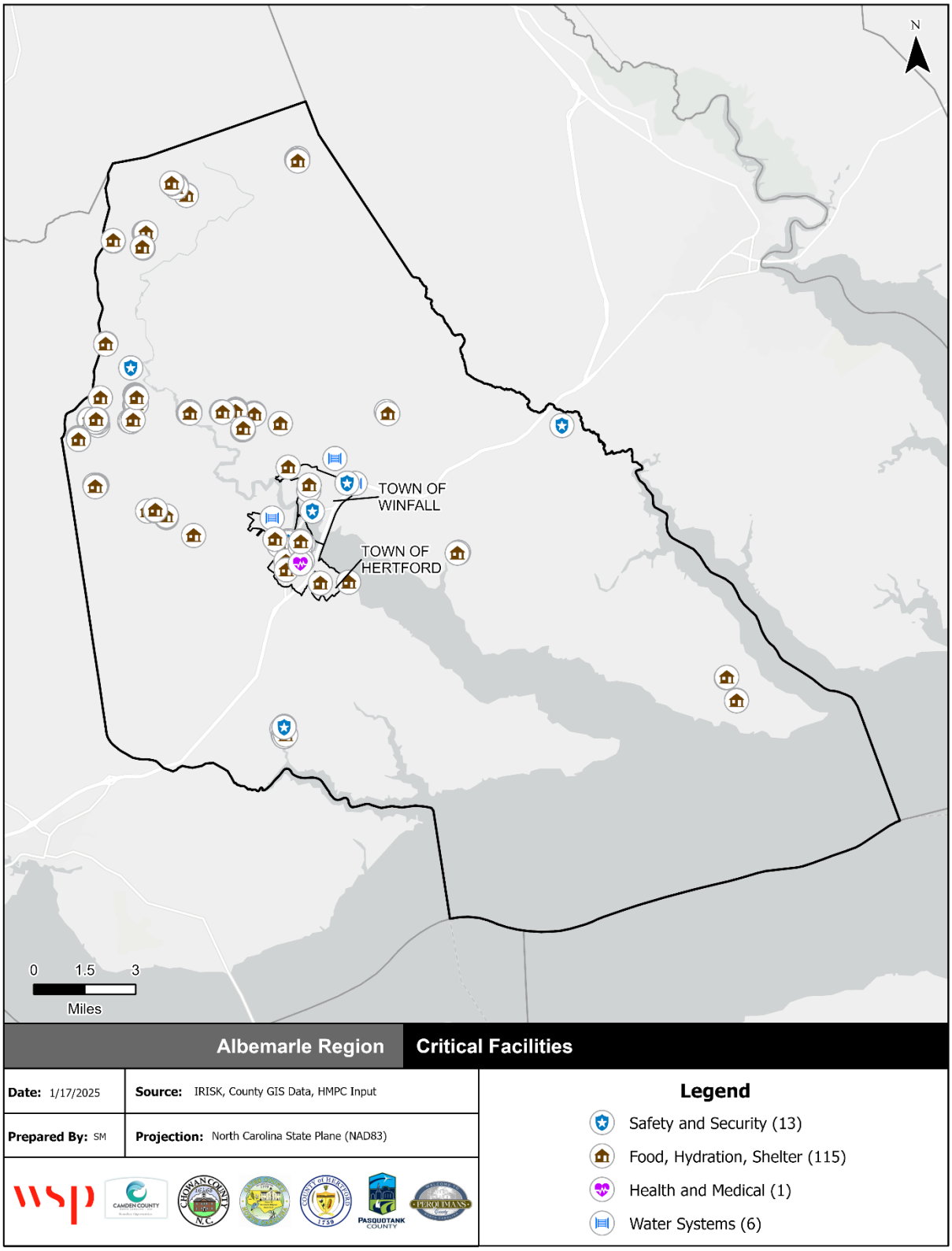
Source: Perquimans County, HMPC

Table F.3 – Critical Facilities by Type, Town of Winfall

Facility Type	Count of Facility Type	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	1	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	2	$0
Transportation	0	$0
Water Systems	2	$0
Total	**5**	**$0**

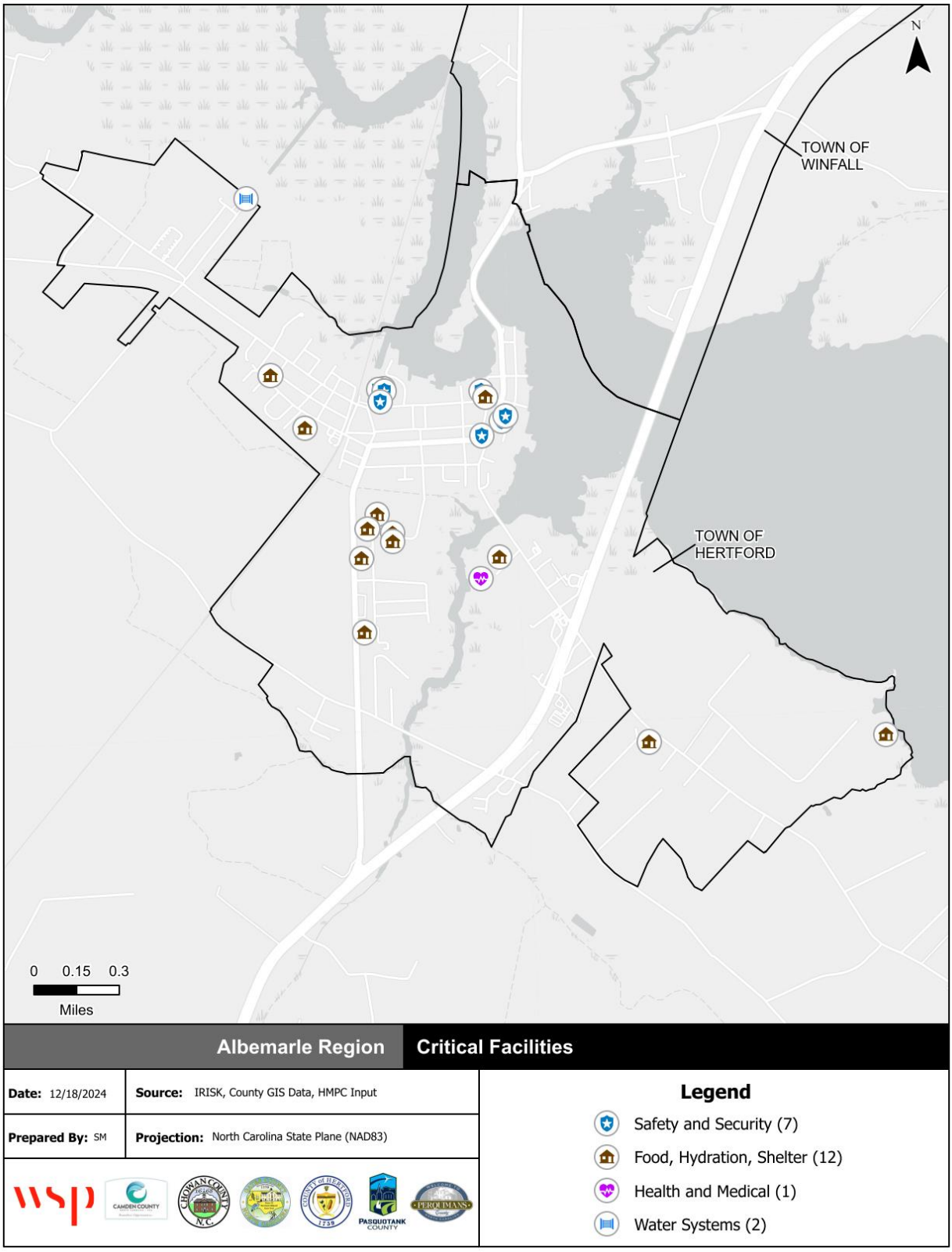
Source: Perquimans County, HMPC

Figure F.1 – Critical Facilities, Unincorporated Perquimans County



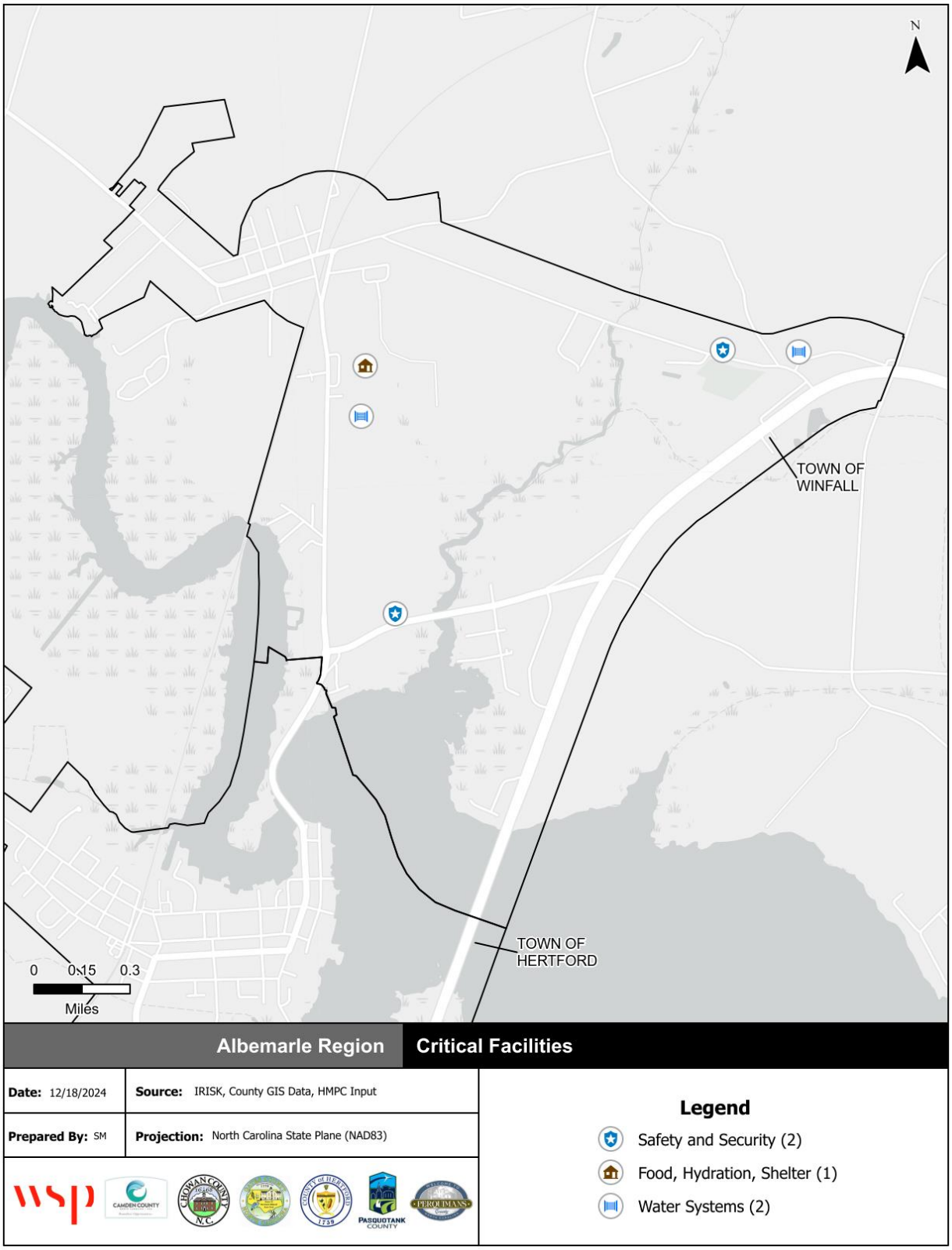
Source: NCEM IRISK Database, HMPC input, GIS Analysis

Figure F.2 – Critical Facilities, Town of Hertford



Source: NCEM IRISK Database, HMPC input, GIS Analysis

Figure F.3 – Critical Facilities, Town of Winfall



Source: NCEM IRISK Database, HMPC input, GIS Analysis

Table F.4 – Perquimans County Critical Facility Inventory

FEMA Lifeline	Facility Type	Address	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Unincorporated Perquimans County									
Water Systems	Water	458 Snug Harbor Rd		0.1	X Unshaded	NA	5	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-	$29,452	0.1	X Unshaded	NA	4	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-	$19,660	0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$41,736	0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$9,252	0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$500,032	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$437,948	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-	$464,315	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$8,358	0.1	X Unshaded	NA	3	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$15,546	0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-	$9,096	0.1	X Unshaded	NA	3	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	5	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	NA	Direct Exposure	3
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	5	Direct Exposure	2

FEMA Lifeline	Facility Type	Address	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	5	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	5	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	10	5	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	10	5	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Direct Exposure	2.5
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	3	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	3	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	6	3	Direct Exposure	2
Food, Hydration, Shelter	Hog Farm	-		0.1	X Unshaded	7	3	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	AE	5	3	Indirect Exposure	0
Food, Hydration, Shelter	Hog Farm	-		0.1	AE	5	3	Indirect Exposure	0
Safety and Security	Fire Station	-	$214,580	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Safety and Security	Fire Station	-	$57,520	0.1	X Unshaded	NA	5	Direct Exposure	2
Food, Hydration, Shelter	School	-	$146,812	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$35,624	0.1	X Unshaded	9	3	Critical Fireshed	2
Food, Hydration, Shelter	Chicken House	-	$38,497	0.1	X Unshaded	NA	4	Critical Fireshed	2
Food, Hydration, Shelter	Chicken House	-	$17,899	0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$12,553	0.1	X Unshaded	NA	4	Indirect Exposure	0

FEMA Lifeline	Facility Type	Address	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Chicken House	-	$11,607	0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$46,156	0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$43,415	0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$41,979	0.1	X Unshaded	NA	4	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	-	$13,036	0.1	X Unshaded	NA	4	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	-	$52,303	0.1	X Unshaded	NA	4	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	-	$12,178	0.1	X Unshaded	NA	4	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	-	$14,104	0.1	X Unshaded	NA	5	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	-	$14,576	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$48,299	0.1	X Unshaded	NA	3	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$51,070	0.1	X Unshaded	NA	3	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	-	$55,025	0.1	X Unshaded	NA	4	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	-	$50,623	0.1	X Unshaded	NA	4	Direct Exposure	3
Food, Hydration, Shelter	Chicken House	-	$47,173	0.1	X Unshaded	NA	4	Direct Exposure	3
Food, Hydration, Shelter	Chicken House	-	$53,846	0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$54,807	0.1	X Unshaded	NA	5	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	-	$63,208	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$71,446	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$70,539	0.1	X Unshaded	NA	5	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	-	$3,020	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$65,950	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$70,726	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$68,954	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$74,973	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$76,578	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$9,488	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$10,446	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	-	$69,222	0.1	X Unshaded	NA	NA	Indirect Exposure	0

FEMA Lifeline	Facility Type	Address	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Food, Hydration, Shelter	Chicken House	-	$94,066	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$95,494	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$99,731	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$104,085	0.1	X Unshaded	NA	NA	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	-	$105,820	0.1	X Unshaded	NA	5	Direct Exposure	2
Food, Hydration, Shelter	Chicken House	-	$105,525	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$80,377	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$80,580	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$81,423	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$83,620	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$22,655	0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-	$72,782	0.1	X Unshaded	10	4	Critical Fireshed	0
Food, Hydration, Shelter	Chicken House	-	$80,152	0.1	X Unshaded	10	4	Critical Fireshed	0
Food, Hydration, Shelter	Chicken House	-	$109,787	0.1	X Unshaded	NA	4	Critical Fireshed	0
Food, Hydration, Shelter	Chicken House	-		0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-		0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-		0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-		0.1	X Unshaded	8	5	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-		0.1	X Unshaded	8	4	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-		0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-		0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-		0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Chicken House	-		0.1	X Unshaded	NA	NA	Direct Exposure	2
Safety and Security	Fire	118 Woodville Rd., Hertford		0.1	X Unshaded	6	3	Indirect Exposure	0
Water Systems	Water	314 Lake Road	$369,144	0.1	X Unshaded	NA	5	Indirect Exposure	0
Safety and Security	Fire Station	143 Drinking Hole Rd	$232,300	0.1	X Unshaded	NA	4	Indirect Exposure	0
Town of Hertford									
Water Systems	Water	-		0.1	X Unshaded	NA	4	Direct Exposure	2

FEMA Lifeline	Facility Type	Address	Structure Value	Flood Depth	Flood Zone	Min. Sea Level Rise	Min. Storm Surge Cat.	Wildfire Exposure	Fire Intensity
Water Systems	Water	-		0.1	X Unshaded	NA	5	Indirect Exposure	0
Safety and Security	Police Station	-	$264,006	0.1	X Unshaded	8	3	Indirect Exposure	0
Safety and Security	Fire Station	-	$3,110,516	0.1	X Unshaded	NA	4	Indirect Exposure	0
Safety and Security	Fire Station	-	$1,190,660	0.1	X Unshaded	NA	5	Indirect Exposure	0
Safety and Security	Fire Station	-	$954,275	0.1	X Unshaded	NA	4	Indirect Exposure	0
Safety and Security	Emergency Operations	-		0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$492,884	0.1	X Unshaded	10	4	Direct Exposure	2
Food, Hydration, Shelter	School	-	$3,898,253	0.1	X Unshaded	10	4	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$49,884	0.1	X Unshaded	7	3	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$9,792,671	0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$3,680,300	0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	School	-	$1,154,448	0.1	X Unshaded	10	4	Indirect Exposure	0
Safety and Security	Municipal	128 North Church Street	$2,770,100	0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Municipal	601A Edenton Road Street	$364,835	0.1	X Unshaded	NA	4	Indirect Exposure	0
Food, Hydration, Shelter	Shelter	1072 Harvey Point Rd	$282,800	0.1	X Unshaded	NA	NA	Critical Fireshed	0
Food, Hydration, Shelter	Shelter	310 Granby St	$1,400,833	0.1	X Unshaded	NA	NA	Indirect Exposure	0
Food, Hydration, Shelter	Municipal	103 Charles St	$346,200	0.1	X Unshaded	NA	5	Indirect Exposure	0
Safety and Security	Municipal	104 Dobbs St	$481,400	0.1	X Unshaded	NA	5	Indirect Exposure	0
Food, Hydration, Shelter	Municipal	512 S Church St	$5,743,536	0.1	X Unshaded	NA	5	Indirect Exposure	0
Health and Medical	Medical	103 ARPDC St	$1,244,196	0.1	X Unshaded	NA	4	Direct Exposure	2
Food, Hydration, Shelter	Municipal	114 W Grubb St	$73,300	0.1	X Unshaded	NA	4	Indirect Exposure	0
Town of Winfall									
Water Systems	Water	-		0.1	X Unshaded	NA	4	Critical Fireshed	0
Water Systems	Water	109 Melton Grove Rd		0.1	X Unshaded	NA	NA	Indirect Exposure	0
Safety and Security	Fire Station	-	$245,200	0.1	X Unshaded	NA	5	Indirect Exposure	0
Safety and Security	Emergency Services	159 Creek Dr	$515,463	0.1	X Unshaded	10	4	Indirect Exposure	0
Food, Hydration, Shelter	School	181 Winfall Blvd	$6,809,100	0.1	X Unshaded	NA	5	Indirect Exposure	0

F.2 RISK ASSESSMENT

This section contains a hazard profile and vulnerability assessment for those hazards that were rated with a higher priority by jurisdiction in Perquimans County than for the Albemarle Region as a whole. Risk and vulnerability findings are also presented here for those hazards that are spatially defined and have variations in risk that could be evaluated quantitatively on a jurisdictional level. The hazards included in this section are flooding and wildfire.

F.2.1 FLOODING

Table F.5 details the acreage of Perquimans County's total area by jurisdiction and flood zone on the Effective DFIRM. Per this assessment, over 18 percent of Perquimans County and over a quarter of both incorporated jurisdictions fall within the mapped 1%-annual-chance floodplain.

Table F.5 – Flood Zone Acreage by Jurisdiction, Perquimans County

Flood Zone	Acreage	Percent of Total (%)
Unincorporated Perquimans County		
Zone A	622.8	0.3
Zone AE	34,097.0	17.8
Zone AO	18.2	0.0
Zone VE	1,426.3	0.7
Zone X (500-year)	1,514.7	0.8
Zone X (unshaded)	138,384.2	72.2
Total	**191,713.3**	--
Town of Herford		
Zone AE	585.4	27.5
Zone X (500-year)	28.7	1.3
Zone X (unshaded)	1,514.0	71.1
Total	**2,128.0**	--
Town of Winfall		
Zone AE	433.4	25.7
Zone X (500-year)	19.4	1.2
Zone X (unshaded)	1,232.2	73.1
Total	**1,685.0**	--

Source: FEMA Effective DFIRMs; GIS analysis

Figure F.4 through Figure F.6 reflect the effective mapped flood hazard zones for all jurisdictions with land in the Special Flood Hazard Area in Perquimans County, and Figure F.7 through Figure F.9 display the depth of flooding estimated to occur in these areas during the 1%-annual-chance flood.

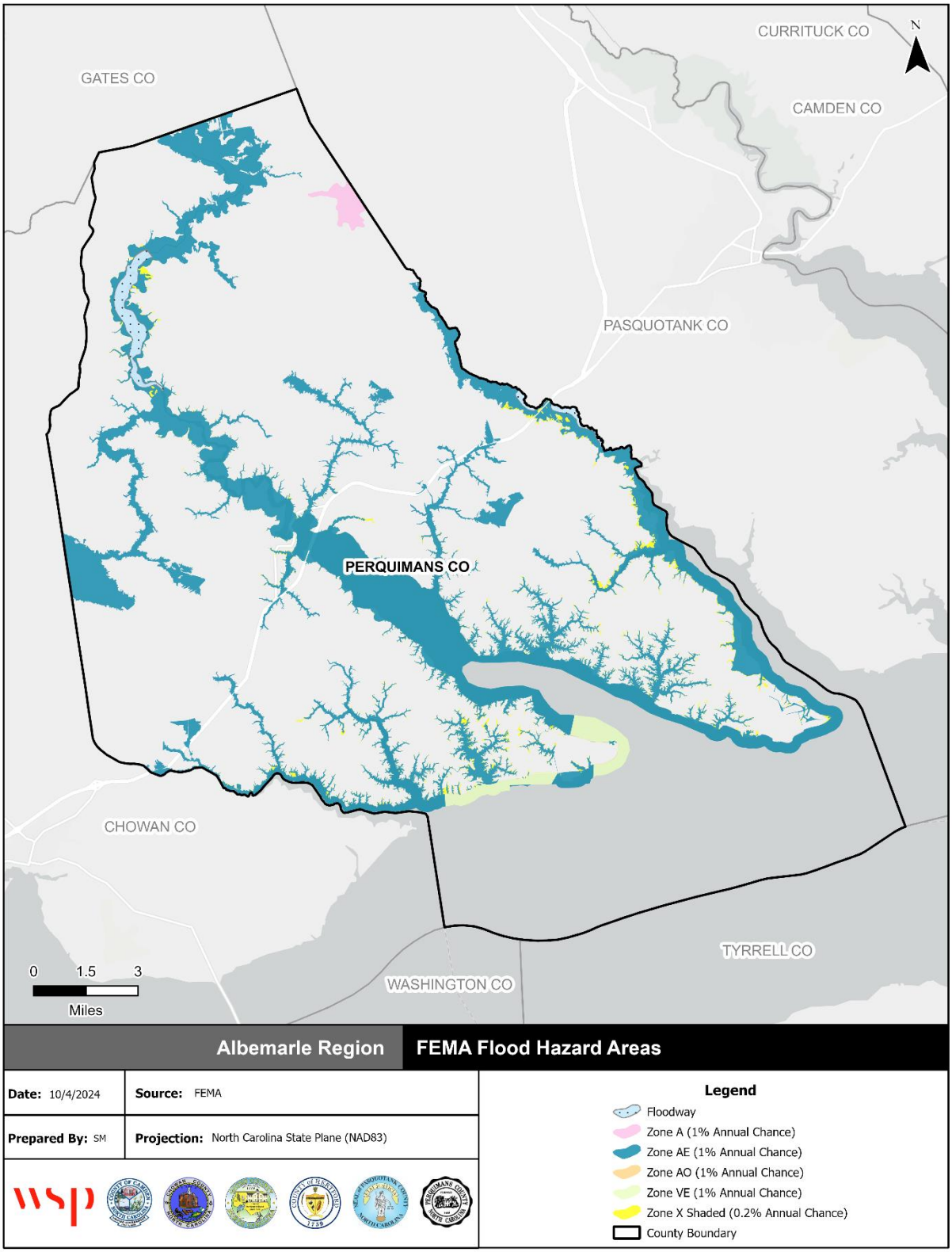
Table F.6 provides building counts and values for critical facilities by flood zone in Perquimans County and Elizabeth City.

Table F.6 – Critical Facilities Exposed to Flooding, Perquimans County

Flood Zone	Critical Facility Count	Structure Value
Perquimans County		
Zone AE	2	$0
Zone X (unshaded)	106	$0
Total	**108**	**$0**
Town of Hertford		
Zone X (unshaded)	22	$0
Total	**22**	**$0**
Town of Winfall		
Zone X (unshaded)	5	$0
Total	**5**	**$0**

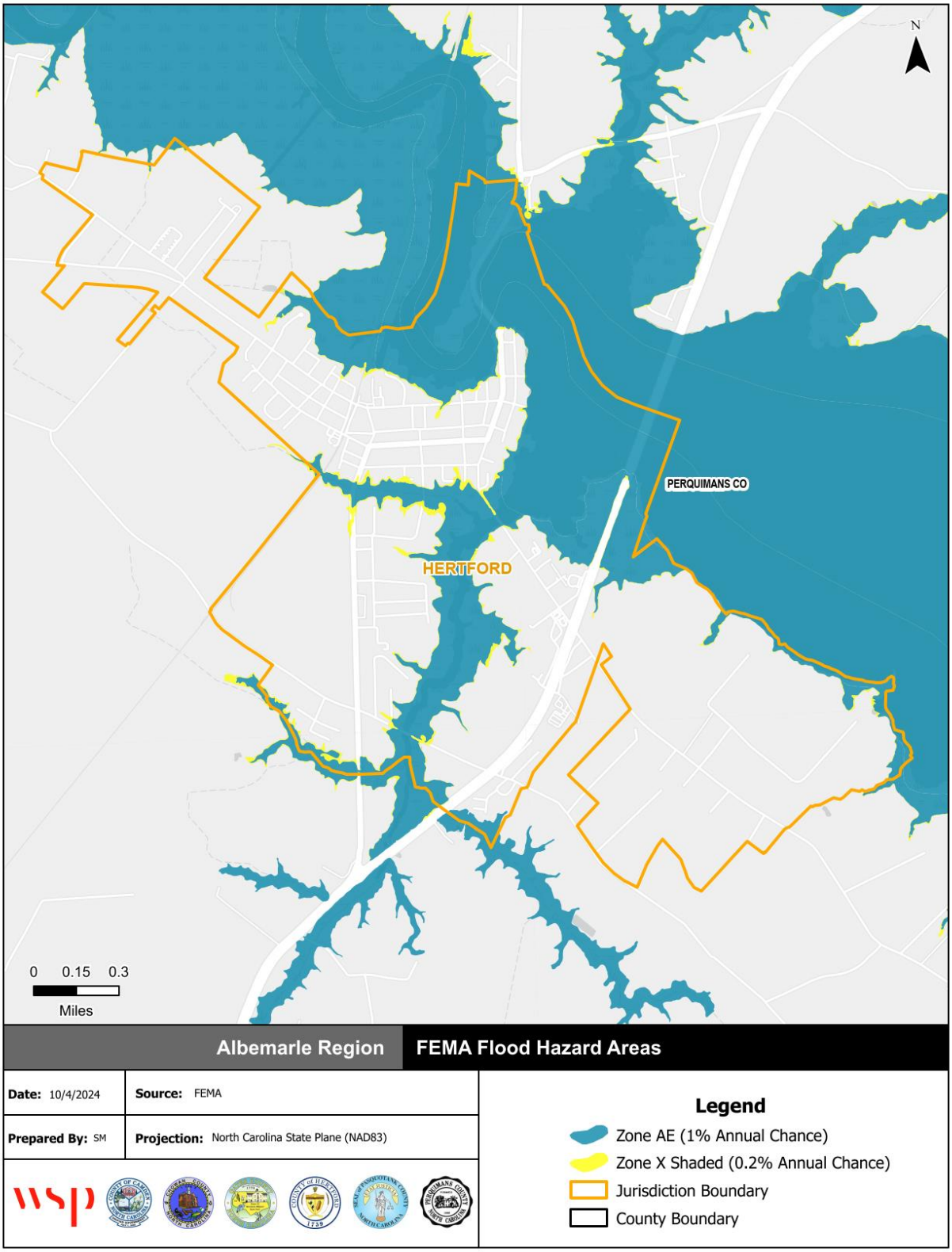
Source: FEMA Effective FIRM

Figure F.4 – FEMA Flood Hazard Areas, Unincorporated Perquimans County



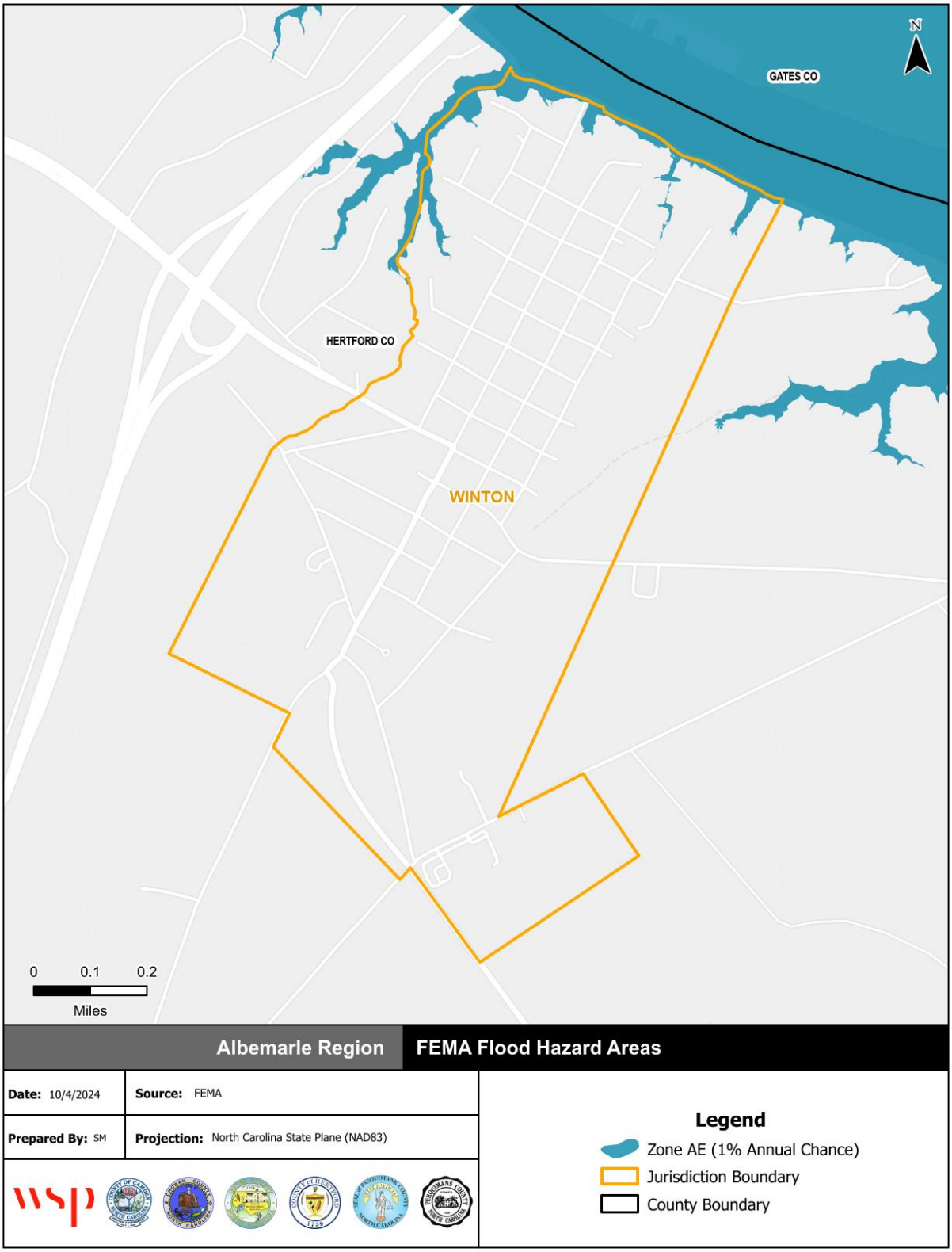
Source: FEMA Effective DFIRM

Figure F.5 – FEMA Flood Hazard Areas, Town of Hertford



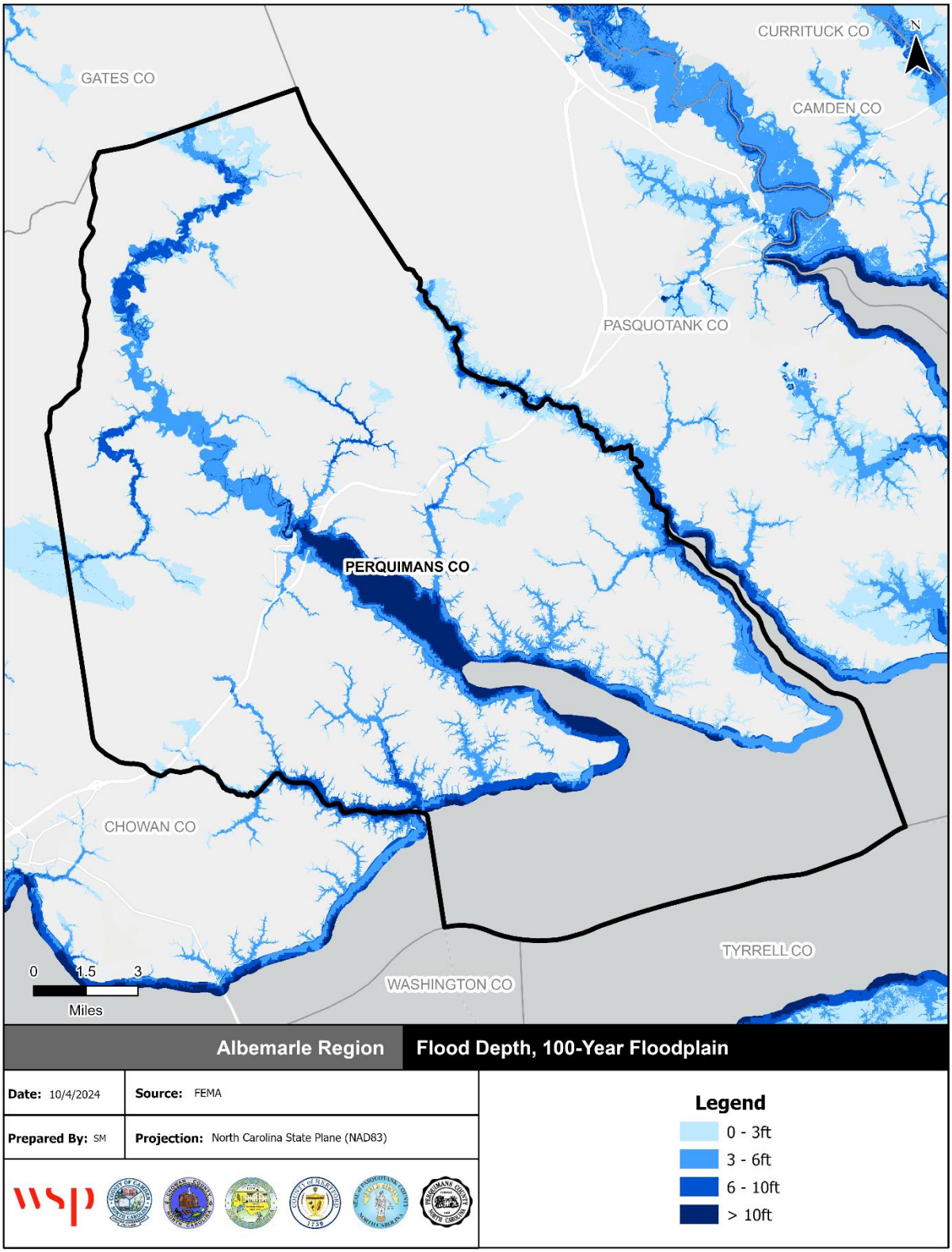
Source: FEMA Effective DFIRM

Figure F.6 – FEMA Flood Hazard Areas, Town of Winfall



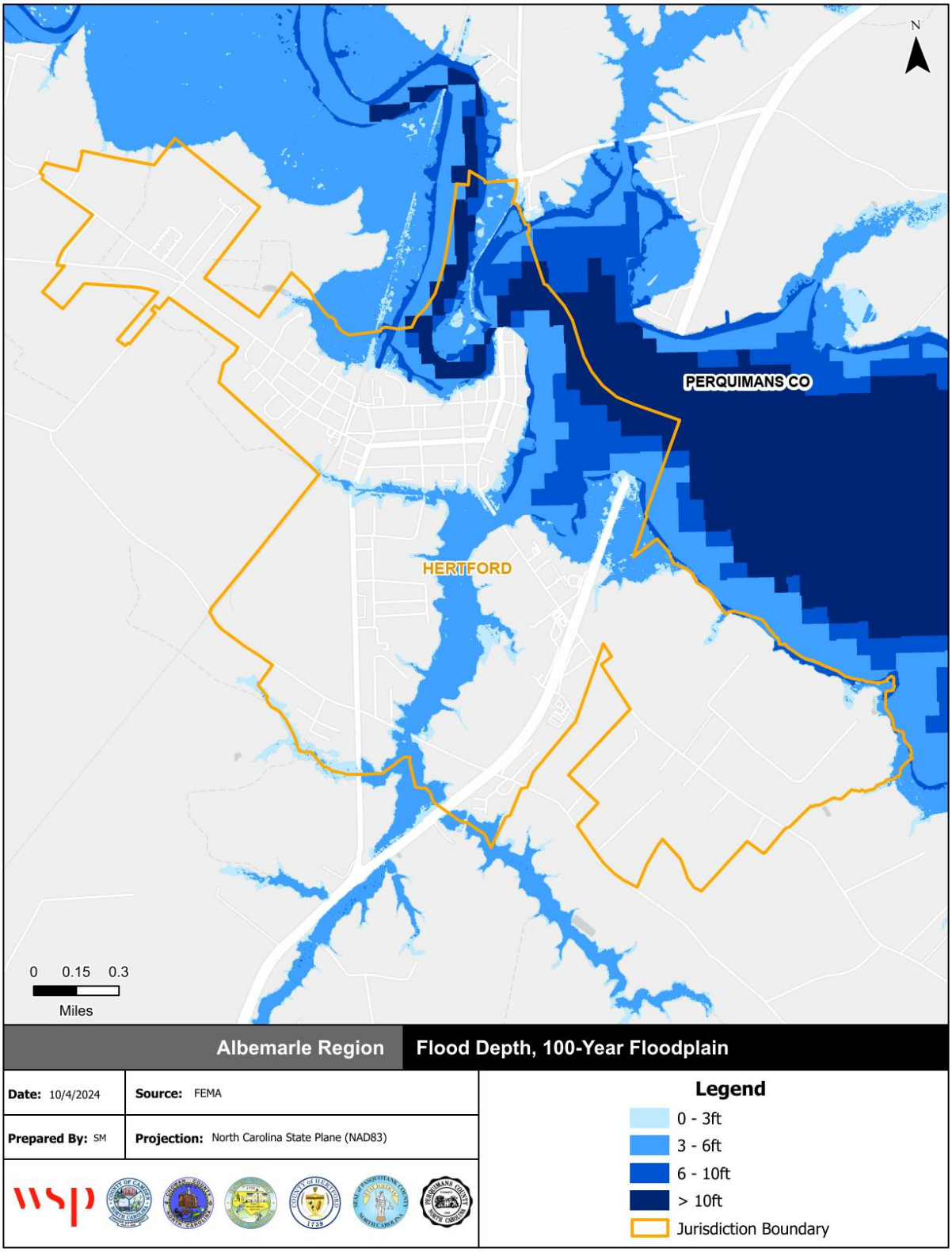
Source: FEMA Effective DFIRM

Figure F.7 – Flood Depth, 1%-Annual-Chance Floodplain, Unincorporated Perquimans County



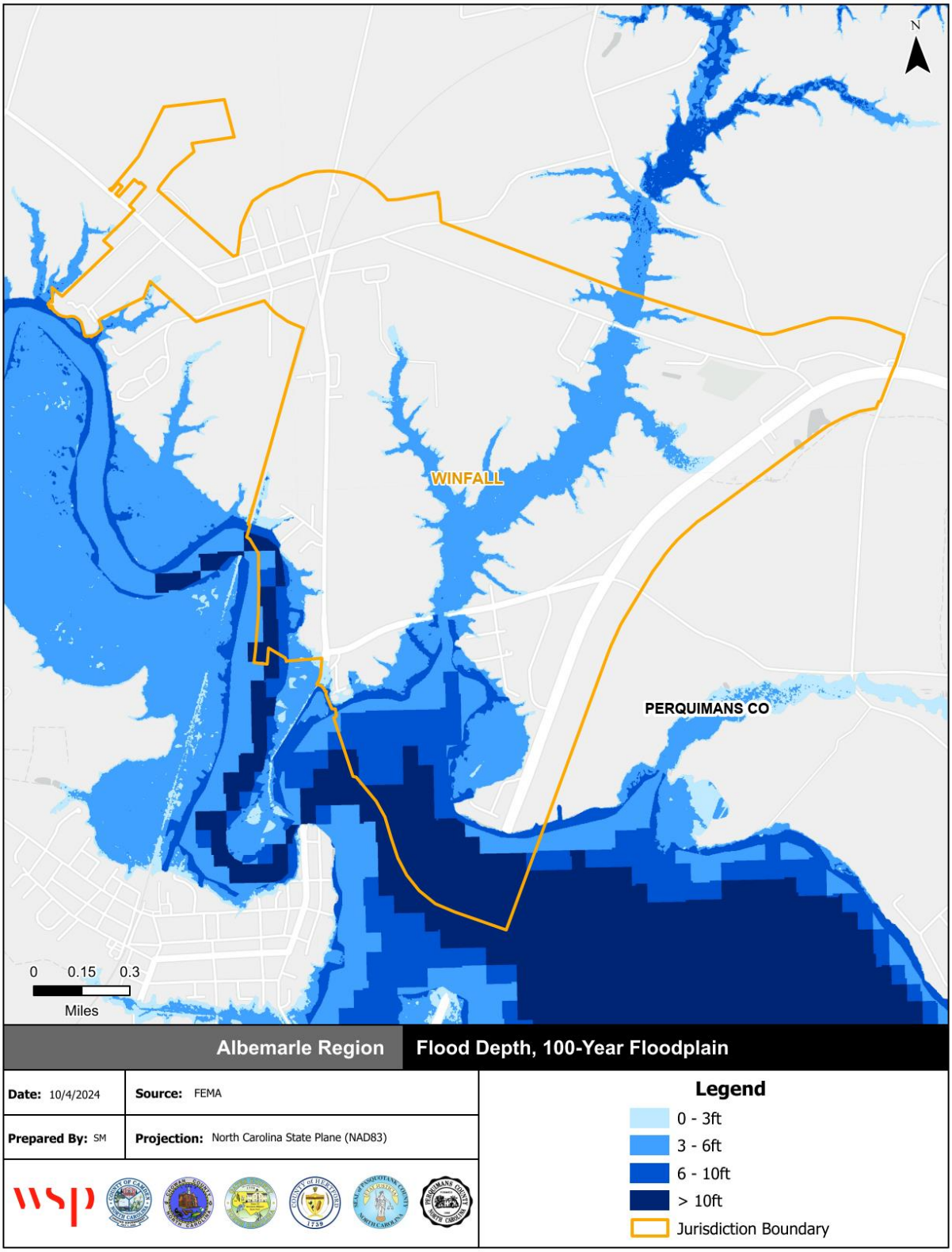
Source: FEMA Effective DFIRM

Figure F.8 – Flood Depth, 1%-Annual-Chance Floodplain, Town of Hertford



Source: FEMA Effective DFIRM

Figure F.9 – Flood Depth, 1%-Annual-Chance Floodplain, Town of Winfall



Source: FEMA Effective DFIRM

F.2.1.1 *FLOOD INSURANCE DATA*

The following tables reflect NFIP entry dates as well as policy and claims data for Perquimans County and incorporated jurisdictions, categorized by structure type, flood zone, Pre-FIRM and Post-FIRM.

Table F.7 – NFIP Program Entry Dates

Community	Emergency Entry	Regular Entry Date
Perquimans County	October 21, 1981	July 3, 1985
Town of Hertford	April 8, 1974	July 3, 1985
Town of Winfall	--	November 5, 1992

Source: FEMA Community Information System

Table F.8 – NFIP Policy and Claims Data by Structure Type

Structure Type	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Perquimans County Unincorporated Area					
Single Family	321	$216,797	$90,111,000	129	$590,948.99
2-4 Family	0	$0	$0	0	$0.00
All Other Residential	0	$0	$0	0	$0.00
Non-Residential	2	$1,604	$452,000	2	$0.00
Total	**323**	**$218,401**	**$90,563,000**	**131**	**$590,948.99**
Town of Hertford					
Single Family	21	$14,366	$5,204,000	25	$348,912.75
2-4 Family	4	$3,799	$1,088,000	5	$49,621.59
All Other Residential	0	$0	$0	0	$0.00
Non-Residential	1	$1,702	$200,000	0	$0.00
Total	**26**	**$19,867**	**$6,492,000**	**30**	**$398,534.34**
Town of Winfall					
Single Family	6	$4,599	$1,801,000	3	$61,684.17
2-4 Family	0	$0	$0	0	$0.00
All Other Residential	0	$0	$0	0	$0.00
Non-Residential	1	$4,068	$658,000	0	$0.00
Total	**7**	**$8,667**	**$2,459,000**	**3**	**$61,684.17**

Source: FEMA Community Information System, accessed January 2025

Table F.9 – NFIP Policy and Claims Data by Flood Zone

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Perquimans County Unincorporated Area					
A01-30 & AE Zones	170	$111,957	$42,273,000	105	$457,070.16
A Zones	1	$353	$75,000	1	$0.00
AO Zones	2	$1,868	$382,000	0	$0.00
B, C & X Zone					
Standard	148	$103,110	$47,370,000	7	$64,388.88
Preferred	0	$0	$0	16	$55,154.46
Total	**321**	**$217,288**	**$90,100,000**	**129**	**$576,613.50**

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Town of Hertford					
A01-30 & AE Zones	18	$14,919	$4,348,000	20	$336,238.76
A Zones	0	$0	$0	1	$17,358.58
B, C & X Zone					
Standard	8	$4,948	$2,144,000	1	$1,249.12
Preferred	0	$0	$0	7	$43,687.88
Total	**26**	**$19,867**	**$6,492,000**	**29**	**$398,534.34**
Town of Winfall					
A01-30 & AE Zones	2	$1,758	$502,000	3	$61,684.17
B, C & X Zone					
Standard	5	$6,909	$1,957,000	0	$0.00
Preferred	0	$0	$0	0	$0.00
Total	**7**	**$8,667**	**$2,459,000**	**3**	**$61,684.17**

Source: FEMA Community Information System, accessed January 2025

Table F.10 – NFIP Policy and Claims Data Pre-FIRM

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Perquimans County Unincorporated Area					
A01-30 & AE Zones	34	$23,233	$7,221,000	59	$278,007.65
A Zones	1	$353	$75,000	0	$0.00
AO Zones	2	$1,868	$382,000	0	$0.00
B, C & X Zone	23	$15,786	$7,285,000	9	$45,706.33
Standard	23	$15,786	$7,285,000	0	$0.00
Preferred	0	$0	$0	9	$45,706.33
Total	**60**	**$41,240**	**$14,963,000**	**68**	**$323,713.98**
Town of Hertford					
A01-30 & AE Zones	12	$11,666	$2,955,000	11	$93,267.51
A Zones	0	$0	$0	1	$17,358.58
B, C & X Zone	5	$3,139	$1,094,000	3	$10,689.69
Standard	5	$3,139	$1,094,000	0	$0.00
Preferred	0	$0	$0	3	$10,689.69
Total	**17**	**$14,805**	**$4,049,000**	**15**	**$121,315.78**
Town of Winfall					
A01-30 & AE Zones	2	$1,758	$502,000	3	$61,684.17
B, C & X Zone	3	$2,050	$949,000	0	$0.00
Standard	3	$2,050	$949,000	0	$0.00
Preferred	0	$0	$0	0	$0.00
Total	**5**	**$3,808**	**$1,451,000**	**3**	**$61,684.17**

Source: FEMA Community Information System, accessed January 2025

Table F.11 – NFIP Policy and Claims Data Post-FIRM

Flood Zone	Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Perquimans County Unincorporated Area					
A01-30 & AE Zones	136	$88,724	$35,052,000	46	$179,062.51
A Zones	0	$0	$0	1	$0.00
B, C & X Zone	125	$87,324	$40,085,000	14	$73,837.01
Standard	125	$87,324	$40,085,000	7	$64,388.88
Preferred	0	$0	$0	7	$9,448.13
Total	**261**	**$176,048**	**$75,137,000**	**61**	**$252,899.52**
Town of Hertford					
A01-30 & AE Zones	6	$3,253	$1,393,000	9	$242,971.25
B, C & X Zone	3	$1,809	$1,050,000	5	$34,247.31
Standard	3	$1,809	$1,050,000	1	$1,249.12
Preferred	0	$0	$0	4	$32,998.19
Total	**9**	**$5,062**	**$2,443,000**	**14**	**$277,218.56**
Town of Winfall					
B, C & X Zone	2	$4,859	$1,008,000	0	$0.00
Standard	2	$4,859	$1,008,000	0	$0.00
Preferred	0	$0	$0	0	$0.00
Total	**2**	**$4,859**	**$1,008,000**	**0**	**$0.00**

Source: FEMA Community Information System, accessed January 2025

F.2.2 WILDFIRE

Table F.12 summarizes the acreage in Perquimans County that falls within the Functional Wildland Urban Interface (WUI), categorized into zones that describe the wildfire risk mitigation activities appropriate for each zone. Areas in the Functional WUI are those areas where development and building structures may intermix with burnable land cover. Approximately, 3.9 percent of Perquimans County is categorized as having direct exposure to wildfire risk within the Functional WUI.

Table F.12 – Functional Wildland Urban Interface Acreage, Perquimans County

	Functional Wildland Urban Interface (WUI) Category	Acres	Percent
	Direct Exposure	6,743	3.90%
	Indirect Exposure	11,405	6.60%
	Critical Fireshed	120,569	70.00%
	Sources of Ember Load to Buildings	18,320	10.60%
	Little to No Exposure	0	0.00%
	Water	15,277	8.90%
	Total	**172,314**	**100.00%**

Source: Southern Wildfire Risk Assessment

Figure F.10 through Figure F.12 depicts the Functional WUI with the location of critical facilities for unincorporated Perquimans County and all participating jurisdictions. Figure F.13 and Figure F.14 depicts the Fire Intensity Scale, which indicates the potential severity of fire based on fuel loads, topography, and other factors. Figure F.15 and Figure F.16 depicts Burn Probability based on landscape conditions, percentile weather, historical ignition patterns, and historical prevention and suppression efforts.

Most of Perquimans County is non-burnable. However, there are three areas in the county where high potential fire intensity and moderate burn probability overlap: in the northeastern corner at the County border, along the western central border with Chowan County, and in the southeastern corner to the east of the Perquimans River. In the latter area, there is also overlap of areas in direct and indirect exposure within the Functional WUI, meaning wildfire risk may be greater here relative to the rest of the county.

Table F.13 through Table F.15 provides the count and estimated value of all structures that intersect with areas of unincorporated Perquimans County and participating jurisdictions that are rated with direct exposure on the Functional WUI scale. Table F.16 through Table F.18 provides building counts and values for critical facilities by FEMA lifeline that are located in areas categorized with direct exposure to wildfire risk on the Functional WUI scale. Note that no critical facilities with direct exposure to wildfire were identified within the Town of Winfall.

Table F.13 – Structures at Risk to Direct Exposure Functional WUI, Unincorporated Perquimans County

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	17	$1,251,668.00	$1,251,668.00	$2,503,336.00
Commercial	49	$16,619,875.00	$16,619,875.00	$33,239,750.00
Education	0	$0	$0	$0
Government	15	$10,217,592.00	$10,217,592.00	$20,435,184.00
Industrial	10	$1,813,319.00	$2,719,978.50	$4,533,297.50
Religious	31	$15,724,038.00	$15,724,038.00	$31,448,076.00
Residential	2,445	$276,708,132.00	$138,354,066.00	$415,062,198.00
Total	**2,567**	**$322,334,624.00**	**$184,887,217.50**	**$507,221,841.50**

Source: Southern Wildfire Risk Assessment

Table F.14 – Structures at Risk to Direct Exposure Functional WUI, Town of Hertford

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	2	$166,632.00	$166,632.00	$333,264.00
Commercial	15	$3,302,283.00	$3,302,283.00	$6,604,566.00
Education	3	$728,052.00	$728,052.00	$1,456,104.00
Government	1	$2,512,179.00	$2,512,179.00	$5,024,358.00
Industrial	5	$460,730.00	$691,095.00	$1,151,825.00
Religious	3	$453,792.00	$453,792.00	$907,584.00
Residential	228	$19,796,016.00	$9,898,008.00	$29,694,024.00
Total	**257**	**$27,419,684.00**	**$17,752,041.00**	**$45,171,725.00**

Source: Southern Wildfire Risk Assessment

Table F.15 – Structures at Risk to Direct Exposure Functional WUI, Town of Winfall

Occupancy	Structures at Risk	Structure Value	Estimated Content Value	Total Value
Agriculture	1	$17,630.00	$17,630.00	$35,260.00
Commercial	2	$675,804.00	$675,804.00	$1,351,608.00
Education	1	$122,500.00	$122,500.00	$245,000.00
Government	2	$1,805,600.00	$1,805,600.00	$3,611,200.00
Industrial	2	$89,522.00	$134,283.00	$223,805.00
Religious	2	$466,755.00	$466,755.00	$933,510.00
Residential	108	$11,475,987.00	$5,737,993.50	$17,213,980.50
Total	**118**	**$14,653,798.00**	**$8,960,565.50**	**$23,614,363.50**

Source: Southern Wildfire Risk Assessment

Table F.16 – Critical Facilities Exposed to Wildfire, Unincorporated Perquimans County

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	28	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	1	$0
Transportation	0	$0
Water Systems	1	$0
Total	**30**	**$0**

Source: Southern Wildfire Risk Assessment

Table F.17 – Critical Facilities Exposed to Wildfire, Town of Hertford

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	1	$0
Hazardous Materials	0	$0
Health and Medical	1	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	1	$0
Total	**3**	**$0**

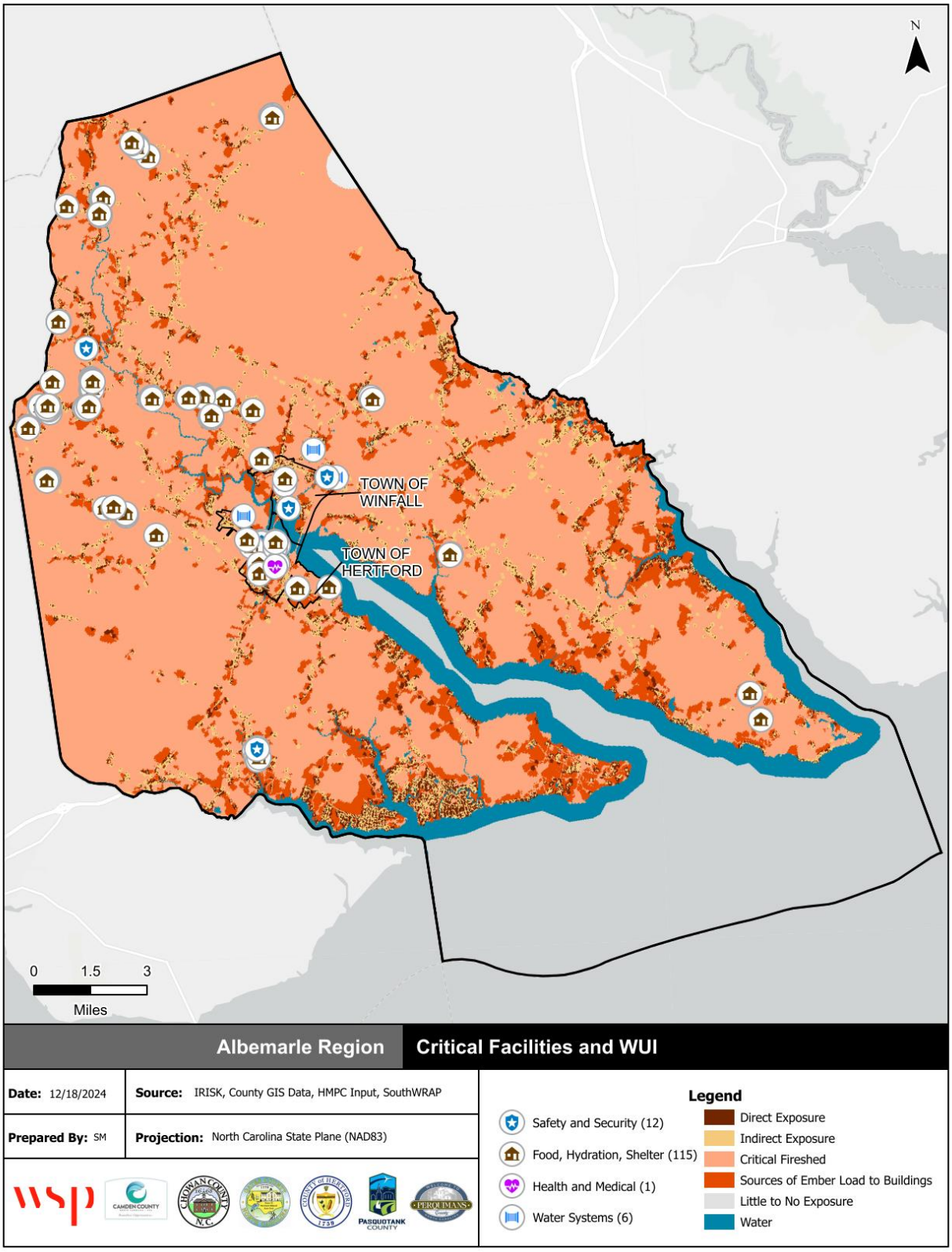
Source: Southern Wildfire Risk Assessment

Table F.18 – Critical Facilities Exposed to Wildfire, Town of Winfall

Type	Critical Facility Count	Structure Value
Communications	0	$0
Energy	0	$0
Food, Hydration, Shelter	0	$0
Hazardous Materials	0	$0
Health and Medical	0	$0
Safety and Security	0	$0
Transportation	0	$0
Water Systems	0	$0
Total	**0**	**$0**

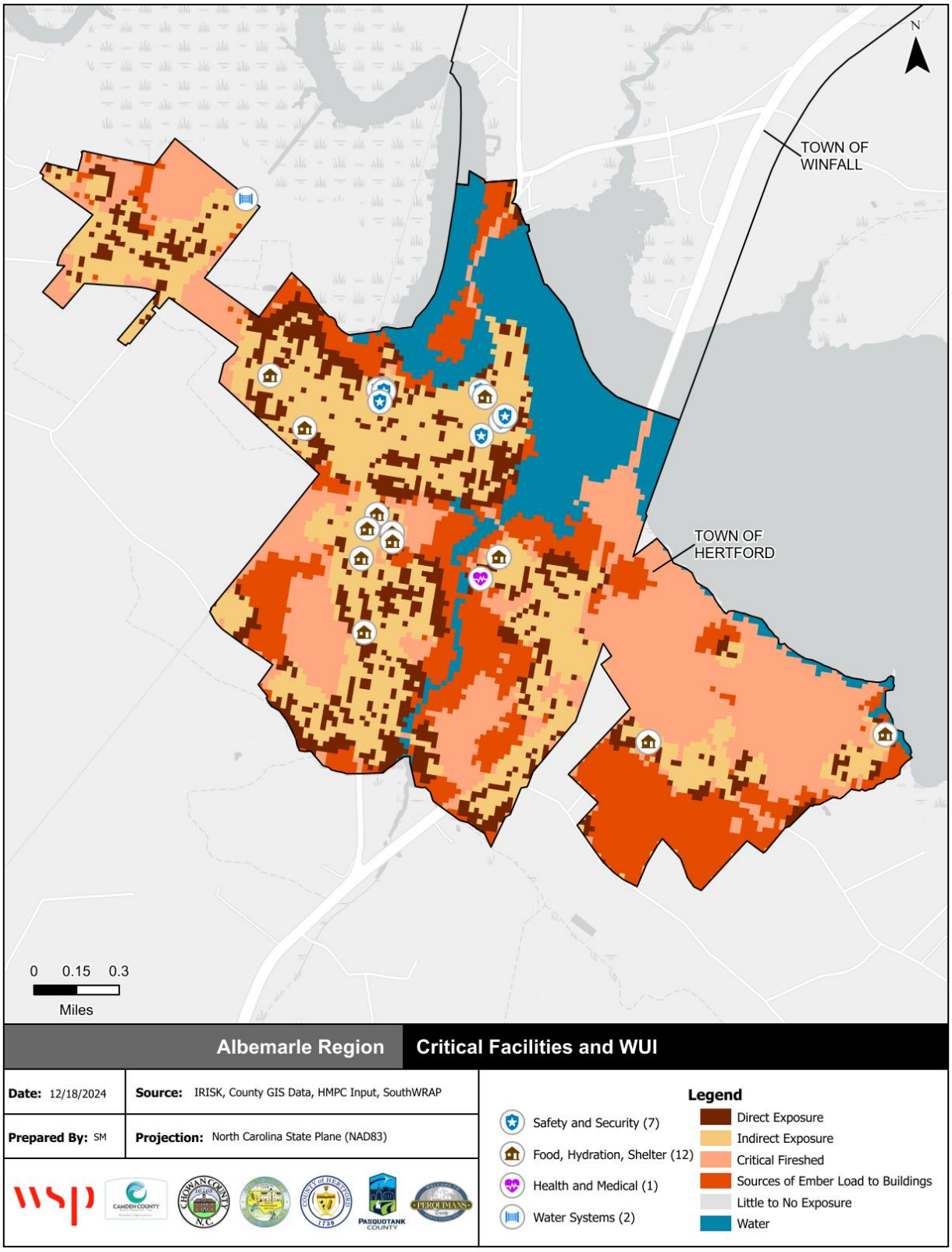
Source: Southern Wildfire Risk Assessment

Figure F.10 – Critical Facilities and Functional WUI, Unincorporated Perquimans County



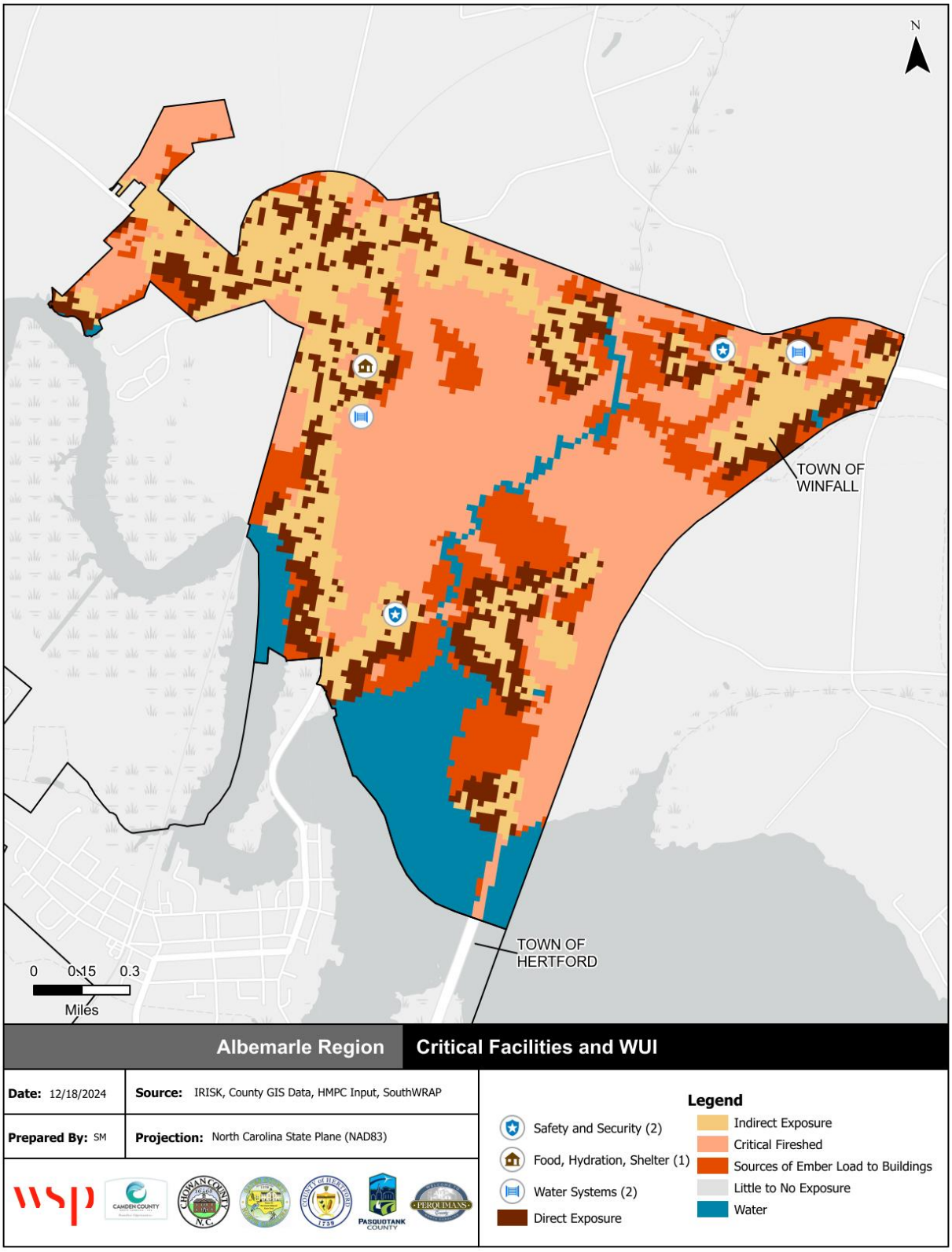
Source: Southern Wildfire Risk Assessment

Figure F.11 – Critical Facilities and Functional WUI, Town of Hertford



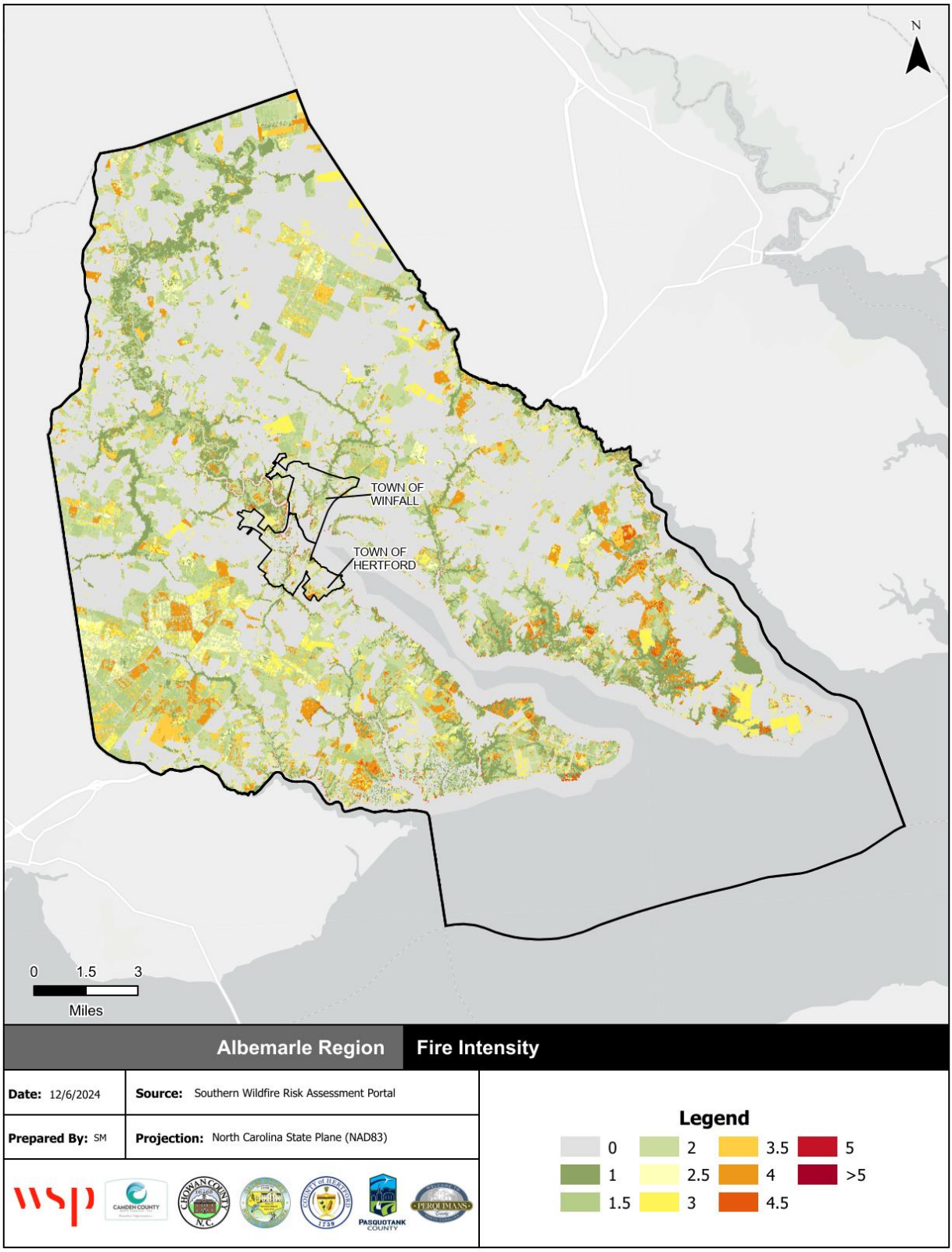
Source: Southern Wildfire Risk Assessment

Figure F.12 – Critical Facilities and Functional WUI, Town of Winfall



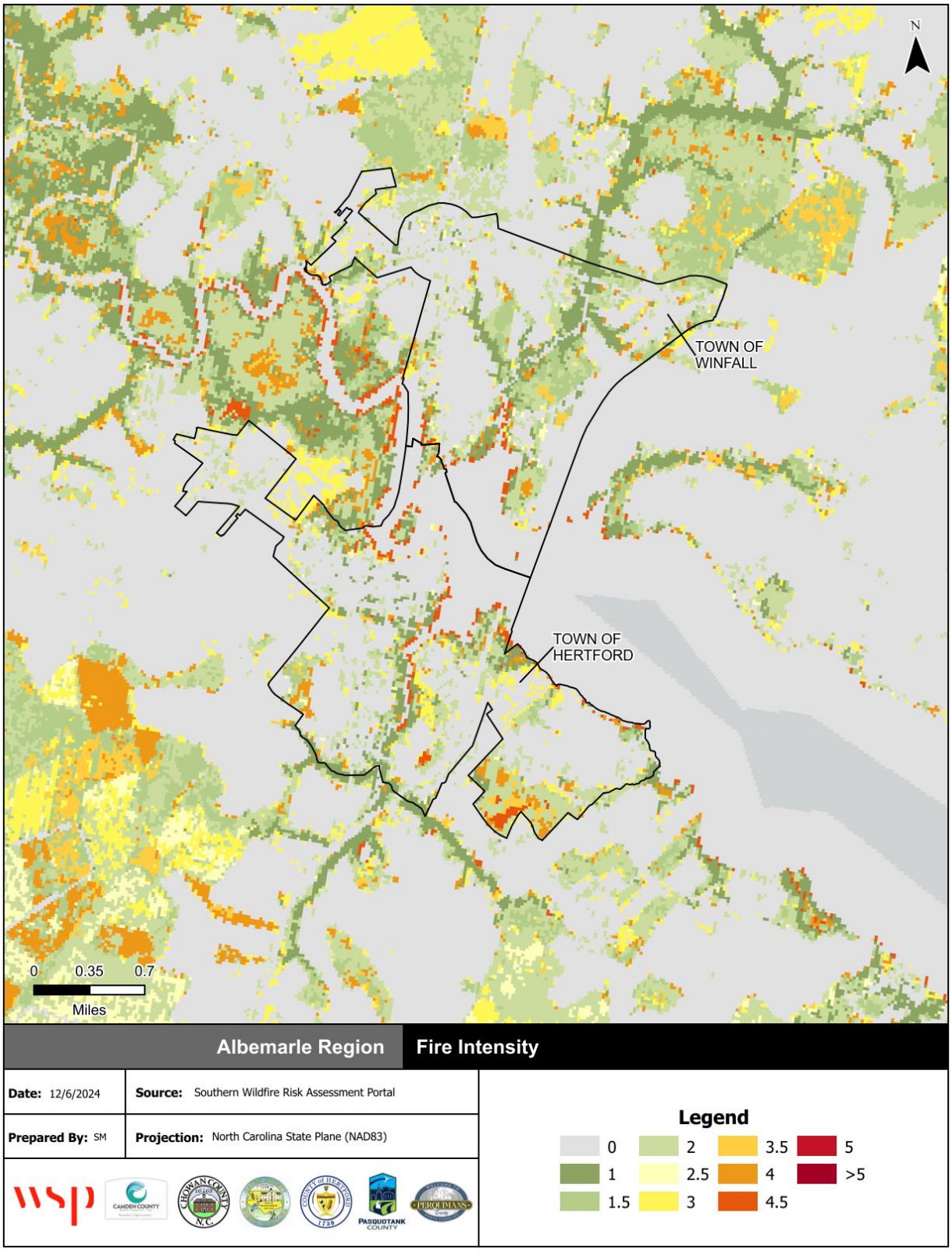
Source: Southern Wildfire Risk Assessment

Figure F.13 – Fire Intensity Scale, Unincorporated Perquimans County



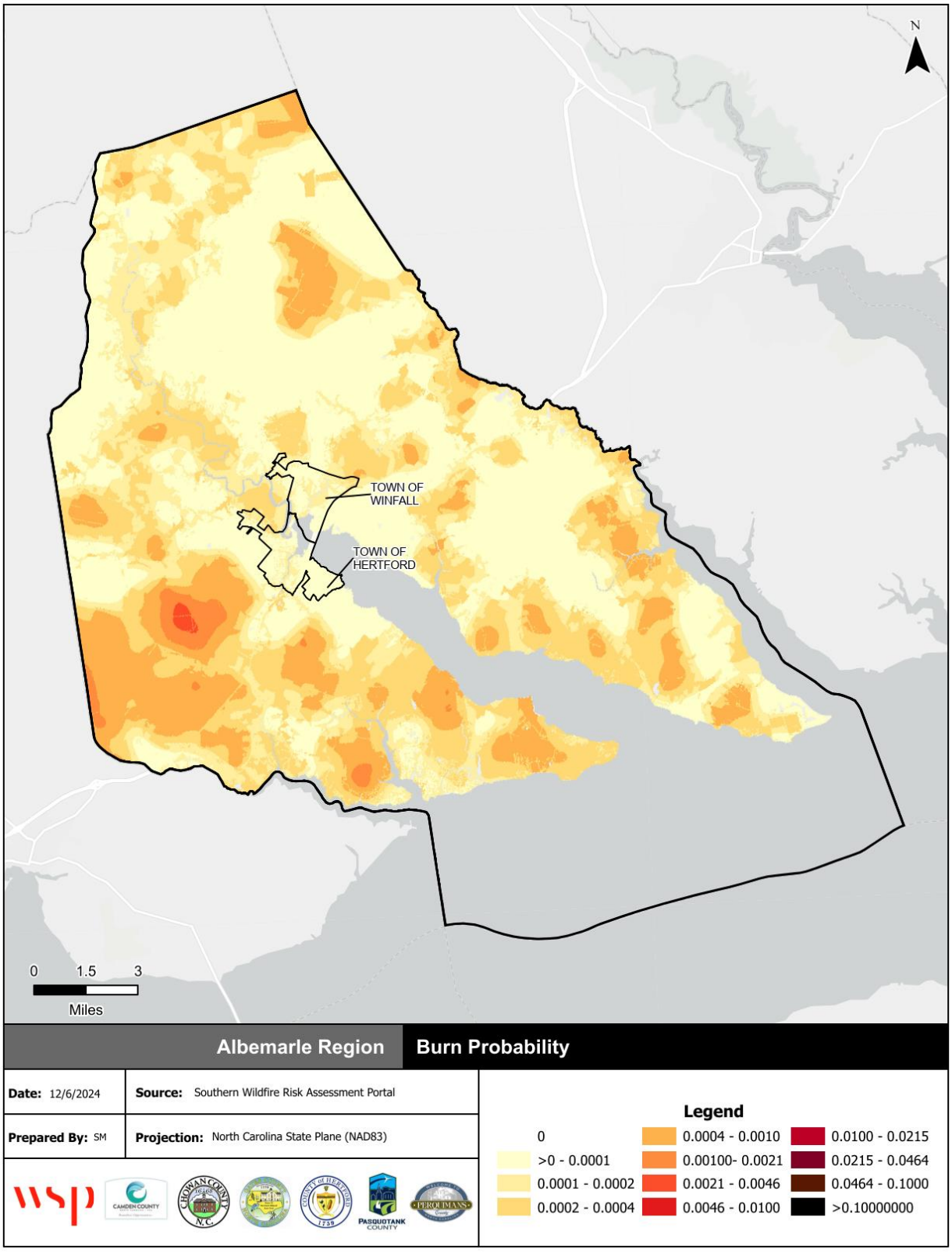
Source: Southern Wildfire Risk Assessment

Figure F.14 – Fire Intensity Scale, Towns of Hertford and Winfall



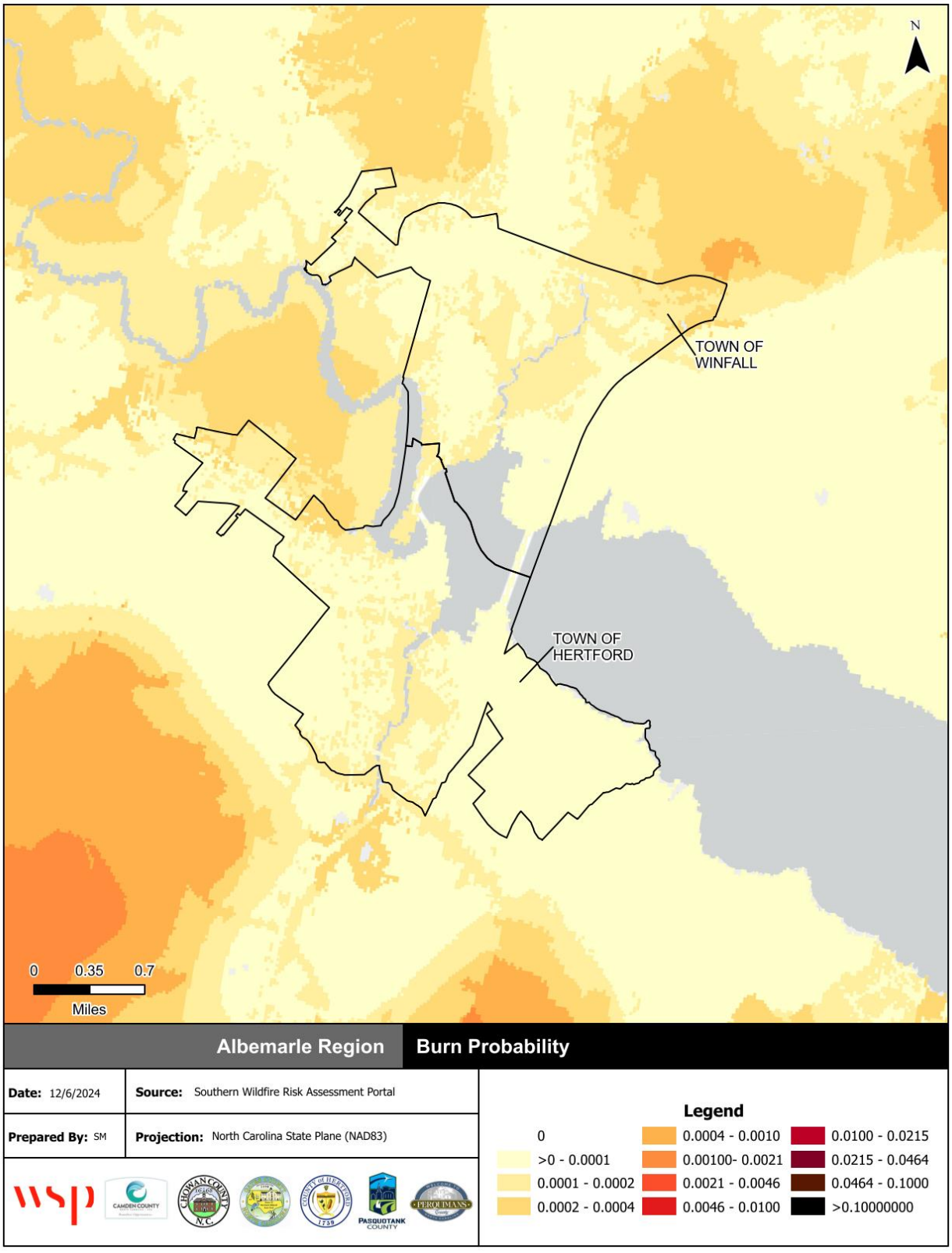
Source: Southern Wildfire Risk Assessment

Figure F.15 – Burn Probability, Unincorporated Perquimans County



Source: Southern Wildfire Risk Assessment

Figure F.16 – Burn Probability, Towns of Hertford and Winfall



Source: Southern Wildfire Risk Assessment

MITIGATION STRATEGY

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
Perquimans County and Jurisdictions												
PER2	Record all tax parcel information and floodplain locations in a GIS system including repetitive loss areas, areas of greatest risk, and vulnerable populations. Maintain and update GIS layers that identify critical facilities/infrastructure and other facilities to include childcare centers, mobile home parks/subdivisions, and senior care facilities.	Perquimans County, Hertford, Winfall	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	2.2	PIO	County GIS, Municipal Planning	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	In progress. The County GIS Department will continue to maintain this data and incorporate new information as natural disasters occur.
PER3	Consider participating in the Community Rating System (CRS).	Perquimans County	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	3.2	P	County Planning & Zoning, County Board of Commissioners, County Building Inspections	Staff Time	General Fund, NCDPS, NFIP	2 to 3 years	Carry Forward	Not implemented due to lack of staff availability. Perquimans County, as well as Hertford and Winfall will consider joining the CRS program through implementation of this plan.
PER4	Continue to acquire destroyed or substantially damaged properties and relocate households. Acquire or elevate structures that are at high risk of flooding. Seek State and Federal funding (voluntary program).	Perquimans County, Hertford, Winfall	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.2	SP	County Emergency Management, Municipal Administrations	To Be Determined	HMGP, FMA, CDBG, General Fund	Ongoing – next 5 years	Carry Forward	Perquimans County will continue to carry out the mitigation buyout/elevation programs.
PER5	Maintain and annually update the county Emergency Operations Plan. This plan should contain detailed information on responsible parties and contact information. This information should be updated as positions and contact information change.	Perquimans County, Hertford, Winfall	All Hazards	Med	3.2	ES	County Emergency Management, Municipal Administrations	Staff Time	General Fund, NCDPS	Ongoing - Annually	Carry Forward	This effort is carried out annually by Perquimans County Emergency Services. The review and amendments are based on the results of the County's annual tabletop exercise.
PER6	Work to improve/expand its emergency notification system in an effort to increase awareness regarding the locations of shelters and evacuation routes during natural hazard events.	Perquimans County, Hertford, Winfall	Hurricane & Coastal Hazards, Tornado & Thunderstorm, Severe Winter Weather	High	2.1	ES	County Emergency Management, Municipal Administrations	$20,000	General Fund, NCDPS	2 to 3 years	Carry Forward	The County will continue to work towards improving upon existing emergency notification system procedures, using the existing CodeRed Notification System and the Know Your Zone advertisements.
PER7	Promote and encourage the training of Community Emergency Response Teams (CERT) throughout the county.	Perquimans County, Hertford, Winfall	Hurricane & Coastal Hazards, Tornado & Thunderstorm, Severe Winter Weather	Med	2.2	ES	County Emergency Management, Municipal Administrations	$10,000	General Fund, NCDPS	Ongoing - Annually	Carry Forward	The County will continue efforts to expand upon its existing CERT program participation.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
PER8	Work to develop continuity of operations plans (COOP) for county/town departments, assisted living facilities, long-term care facilities, day care centers, etc.	Perquimans County, Hertford, Winfall	All Hazards	High	4.2	ES	County Emergency Management, Municipal Administrations	Staff Time	General Fund, NCDPS	2 to 3 years	Carry Forward	The County will review and update the County's Continuity of Operations Plan (COOP), following its annually scheduled tabletop exercise. In addition, the Gates and Perquimans Communications Centers have merged, as well as Chowan and Perquimans-Gates having mutual agreements to provide Communication Center backup sites for one another. Also, the Finance Office and Human Resources Office are both backed up off site in the event of a natural disaster.
PER10	Continue to monitor and maintain prewired generator switches in new construction critical facilities and existing shelters. As projects go through the County's development review process, applicants can be encouraged to pre-wire facilities for a generator.	Perquimans County, Hertford, Winfall	All Hazards	High	2.1	PP	County Emergency Management, Municipal Administrations, County Building Inspections	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	County Emergency Management maintains switches at all critical facilities, the County Building Inspections Department will require switches be installed during the construction of any new facility deemed critical or that will potentially be utilized as a shelter.
PER11	Sponsor a hazard mitigation symposium for county residents, including information on preparedness for all significant hazards. The symposium should address the options of elevation, relocation, and flood-proofing.	Perquimans County, Hertford, Winfall	Hurricane & Coastal Hazards, Tornado & Thunderstorm, Severe Winter Weather	Med	2.2	PIO	County Emergency Management, Municipal Administrations	Staff Time	General Fund, NCDPS	Ongoing - Annually	Carry Forward	The County will continue to host a symposium once annually prior to the start of hurricane season.
PER12	Continue to maintain a library of materials focused on educating property owners, contractors, realtors and developers about ways to mitigate the effects of high winds and flooding through the use of best management practices during the construction/ renovation of residential and non-residential structures. The County will also utilize print and social media for awareness and education. The County will also maintain staff educated in these issues to work with prospective builders.	Perquimans County, Hertford, Winfall	Hurricane & Coastal Hazards, Tornado & Thunderstorm, Severe Winter Weather	Med	2.2	PIO	County Planning & Zoning, Municipal Administrations	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	This activity is currently underway and will be maintained through the planning process.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
PER13	Increase awareness regarding the impacts of natural disasters by educating and informing residents, businesses and visitors via public education, social media and print materials. These efforts should focus on ways to mitigate disaster impacts to both person and property.	Perquimans County, Hertford, Winfall	All Hazards	High	2.1	PIO	County Emergency Management, County Planning & Zoning	Staff Time	General Fund, NCDPS	Ongoing – next 5 years	Carry Forward	The County will continue to carry out these efforts through continued outreach and public education efforts.
PER14	Develop and distribute information to the public regarding the requirements for anchoring LP gas tanks.	Perquimans County, Hertford, Winfall	All Hazards	High	2.2	PIO	County Planning & Zoning, Municipal Administrations	$1,000	General Fund, NCDPS	1 year	Carry Forward	Not yet implemented due to funding issues.
PER15	Actively working with Federal, State, local and private partners to identify mitigation measures and secure funding via grants to alleviate flooding. These efforts should focus on the following areas: • Property along the Perquimans River • Bear Swamp Watershed • Bagley Swamp Watershed • Burnt Mill Watershed	Perquimans County	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	P	County Planning & Zoning, County Board of Commissioners	To Be Determined	General Fund, NCDPS, HMGP, NCDENR	3 to 5 years	Carry Forward	Implementation delayed due to indeterminate cost. The county will continue to investigate the possibility of partnering with Federal, State, Local, and private partners to identify mitigation measures and secure funding.
PER17	Establish a county-wide Mosquito Abatement Program.	Perquimans County	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	ES	County Public Works	To Be Determined	General Fund	2 to 3 years	Carry Forward	Implementation delayed due to indeterminate cost.
PER18	Undertake a county-wide campaign to snag and clear all arterial creeks and canals of beaver dams and other problematic blockages.	Perquimans County	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	P	County Public Works, County Board of Commissioners	To Be Determined	General Fund, NCDPS, NCDEQ	2 to 3 years	Carry Forward	Implementation delayed due to indeterminate cost.
PAS20	Create or Update Community Wildfire Protection Plans in each fire district.	Perquimans County, Hertford, Winfall	Wildfire	Med	4.1	P	County Emergency Management, Fire Departments, NC Forest Service	To Be Determined	Grant Funds	5 years	New	
Town of Hertford												
HRT1	Update the CAMA Land Use Plan in conjunction with the County's Core Land Use Plan.	Town of Hertford	All Hazards	Med	1.3	P	Town Manager	Staff Time	General Fund	2 to 3 years	Carry Forward	The joint CAMA Land Use Plan has not been updated since 2016.
HRT2	Consider revising Hertford's Zoning Ordinance and Subdivision Regulations to improve stormwater management practices in developments to better address Mitigation Goals and Objectives.	Town of Hertford	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	P	Town Manager	Staff Time	General Fund	2 to 3 years	Carry Forward	The Town has not revised its zoning or subdivision regulations yet but still intends to consider changes to stormwater regulations.

Action #	Description	Applicable Jurisdictions	Hazards Addressed	Priority	Goal & Objective	Category	Lead/Participating Agencies	Estimated Cost	Potential Funding Sources	Implementation Schedule	2025 Status	2025 Status Comments/Explanation
HRT3	Work in conjunction with NCDOT and other agencies to ensure that stormwater facilities are maintained to allow for reasonable flows.	Town of Hertford	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	Med	1.3	P	Town Manager	Staff Time	General Fund	2 to 3 years	Carry Forward	The Town contracted Withers Ravenel for stormwater planning assistance. WithersRavenel has been working internally to identify gaps from the completion of the Stormwater Master Plan to the now completed AIA surveys. During a meeting with Hertford on 3/6/2025 six more areas of Town were identified as needing supplementary inventory information based on what was reported in the Stormwater Master Plan. WithersRavenel is working through a large backlog and has a delay of about 2 months for field crews to be scheduled. The Town of Herford has a project for the Hyde Park Culvert to help with the storm water flow and new construction to help with the flooding of Jennies gut. This project is currently in design phase. Final construction drawings should be complete by April 2025.
Town of Winfall												
WIN1	Review the Town's Land Use Plan, Land Development Regulations, and Water and Sewer Ordinances and ensure that hazard mitigation objectives are addressed.	Town of Winfall	All Hazards	Med	1.3	P	Mayor	Staff Time	General Fund	2 to 3 years	Carry Forward	The joint CAMA Land Use Plan has not been updated since 2016. Town will consider plan and ordinance updates.
WIN2	Minimize construction of impervious surfaces adjacent to floodplains or near storm water drainage routes that empty into the river.	Town of Winfall	Dam & Levee Failure, Flooding, Hurricane & Coastal Hazards	High	1.3	P	Mayor	Staff Time	General Fund	2 to 3 years	Carry Forward	The Town will seek opportunities to minimize impervious surface
WIN3	Continue to encourage efforts toward county-wide water systems with Perquimans County.	Town of Winfall	Drought	Med	1.3	P	Mayor	Staff Time	General Fund	2 to 3 years	Carry Forward	The Town will continue to work with the County on water system resources.
WIN4	Continue to evaluate those businesses with potential hazardous liquids for adequate protection of the public.	Town of Winfall	All Hazards	Low	4.2	ES	Town Council	Staff Time	General Fund	Ongoing – next 5 years	Carry Forward	This effort is also addressed through the County's standing Local Emergency Planning Committee (LEPC).

APPENDIX A PLAN REVIEW TOOL

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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)	Camden County, Chowan County, Gates County, Hertford County, Pasquotank County, and Perquimans County and incorporated jurisdictions
Title of Plan	Albemarle Regional Hazard Mitigation Plan
New Plan or Update	Update
Single- or Multi-Jurisdiction	Multi-jurisdiction
Date of Plan	3/31/2025
Local Point of Contact	
Title	David Stroud
Agency	WSP
Address	4021 Stirrup Creek Drive, Suite 100, Durham, NC 27703
Phone Number	919-325-6497
Email	david.stroud@wsp.com

Additional Point of Contact	
Title	
Agency	
Address	
Phone Number	
Email	

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

#	Jurisdiction Name	Requirements Met (Y/N)						
		A. Planning Process	B. Risk Assessment	C. Mitigation Strategy	D. Plan Maintenance	E. Plan Update	F. Plan Adoption	G. State Requirements
1	Camden County							
2	Chowan County							
3	Edenton							
4	Gates County							
5	Gatesville							
6	Hertford County							
7	Ahoskie							
8	Como							
9	Harrellsville							
10	Murfreesboro							
11	Winton							
12	Cofield							
13	Pasquotank County							
14	Elizabeth City							
15	Perquimans County							
16	Hertford							
17	Winfall							

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))		
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, p.7-17; Appendix B	Choose an item.
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 1.3, p.2; Section 2.3-2.9, p.7-20; Appendix B, B.1-B19	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))		
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 2.4, p.10-14; Section 2.5, p.14-15; Section 2.7-2.8, p.16-17, Appendix B, p.B.48-B.50	Choose an item.

Element A Requirements	Location in Plan (section and/or page number)	Met / Not Met
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))		
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?	Section 2.4-2.7, p.10-16; Appendix B, p.B.20-B.47	Choose an item.
A4. Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement 44 CFR § 201.6(b)(3))		
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?	Section 2.3.1, p.8-9	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))		
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?	Section 4.2, p.68-73, Section 4.5, p.90-271 (Hazard Description, Location, Extent, Hazard Summary by Jurisdiction)	Choose an item.
B1-b. Does the plan include information on the location of each identified hazard?	Section 4.5, p.90-271 ("Location" subheadings)	Choose an item.

Element B Requirements	Location in Plan (section and/or page number)	Met / Not Met
B1-c. Does the plan describe the extent for each identified hazard?	Section 4.5, p.90-271 ("Extent" subheadings)	Choose an item.
B1-d. Does the plan include the history of previous hazard events for each identified hazard?	Section 4.5, p.90-271 ("Historical Occurrences" subheadings)	Choose an item.
B1-e. Does the plan include the probability of future events for each identified hazard? Does the plan describe the effects of future conditions, including climate change (e.g., long-term weather patterns, average temperature and sea levels), on the type, location and range of anticipated intensities of identified hazards?	Section 4.5, p.90-271 ("Probability of Future Occurrence" subheadings)	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 4.5, p.90-271 ("Hazard Summary by Jurisdiction" subheadings); Annexes, p.367-515	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))		
B2-a. Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards?	Section 4.3, p.73-76; Section 4.4, p.77-89; Section 4.5, p.90-271 ("Vulnerability Assessment" subheadings); Annexes, p.367-515	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 4.5, p.90-271; Annexes, p.367-515	Choose an item.
B2-c. Does the plan address NFIP-insured structures within each jurisdiction that have been repetitively damaged by floods?	Section 4.5.5, p.160	Choose an item.

Element B Requirements	Location in Plan (section and/or page number)	Met / Not Met
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))		
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 5, p.274-289	Choose an item.
C1-b. Does the plan describe each participant's ability to expand and improve the identified capabilities to achieve mitigation?	Section 5, p.374-289	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))		
C2-a. Does the plan contain a narrative description or a table/list of their participation activities?	Section 5.3.1.3, p.280-283, Table 5.2	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))		
C3-a. Does the plan include goals to reduce the risk from the hazards identified in the plan?	Section 6.1, p.290-291	Choose an item.
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))		
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 7, p.294-319; Appendix C	Choose an item.

Element C Requirements	Location in Plan (section and/or page number)	Met / Not Met
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 7, p.294-319	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))		
C5-a. Does the plan describe the criteria used for prioritizing actions?	Section 6.2, p. 292-293	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 7, p.294-319	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))		
D1-a. Does the plan describe how communities will continue to seek future public participation after the plan has been approved?	Section 8.3, p.325	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))		
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 8.2, p.322-325	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 8.2, p.322-325	Choose an item.

Element D Requirements	Location in Plan (section and/or page number)	Met / Not Met
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 8.2, p.322-325	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))		
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 8.1, p. 320-322; Section 8.2, p.322-325	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 8.1, p. 320-322; Section 8.2, p.322-325	Choose an item.
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 8.1, p. 320-322; Section 8.2, p.322-325	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, p.21-66	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 2.1-2.2, p.5-7; Section 6, p.290-293, Section 7, p. 294-319	Choose an item.

Element E Requirements	Location in Plan (section and/or page number)	Met / Not Met
E2-b. Does the plan include a status update for all mitigation actions identified in the previous mitigation plan?	Section 7, p. 294-319; Section 2.9, p.17-20	Choose an item.
E2-c. Does the plan describe how jurisdictions integrated the mitigation plan, when appropriate, into other planning mechanisms?	Section 8.1, p.320-322	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?	Section 9, p.326-366	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?	Section 9, p.326-366	Choose an item.
ELEMENT F REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element G: High Hazard Potential Dams (Optional)

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?	N/A	Choose an item.

HHPD Requirements	Location in Plan (section and/or page number)	Met / Not Met
HHPD1-b. Does the plan incorporate information shared by the state and/or local dam owners?	N/A	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?	N/A	Choose an item.
HHPD2-b. Does the plan document the limitations and describe how to address deficiencies?	N/A	Choose an item.
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?	N/A	Choose an item.
HHPD3-b. Does the plan link proposed actions to reducing long-term vulnerabilities that are consistent with its goals?	N/A	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?	N/A	Choose an item.
HHPD4-b. Does the plan describe the criteria used to prioritize actions related to HHPDs?	N/A	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?	N/A	Choose an item.
HHPD Required Revisions		
Required Revision**:** Click or tap here to enter text.		

Element H: Additional State Requirements

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]

APPENDIX B PLANNING PROCESS DOCUMENTATION

B.1 PLANNING STEP 1: ORGANIZE TO PREPARE THE PLAN

Table B.1 – HMPC Meeting Topics, Dates, and Locations

Meeting Title	Meeting Topic	Meeting Date	Meeting Location
HMPC Mtg. #1 – Project Kick-Off	1) Introduction to DMA, CRS, and FMA requirements and the planning process 1) Review of HMPC responsibilities and the project schedule.	July 9, 2024	Pasquotank-Camden Emergency Management Center, 200 E. Colonial Ave, Elizabeth City, NC
HMPC Mtg. #2	1) Review Draft Hazard Identification & Risk Assessment (HIRA) 2) Solicit comments and feedback	October 31, 2024	Chowan County Government Center, 305 W. Freemason St, Edenton, NC
HMPC Mtg. #3	1) Review draft goals and objectives 2) Review mitigation alternatives and draft mitigation strategies 1) Discuss updates to local capabilities	December 12, 2024	Microsoft Teams
HMPC Mtg. #4	1) Review the Draft Hazard Mitigation Plan 2) Solicit comments and feedback	March 27, 2025	Microsoft Teams

Note: All HMPC Meetings were open to the public.

Meeting agendas, minutes, and sign in sheets are provided on the following pages. Presentations referenced in the minutes can be provided upon request.

HMPC MEETING AGENDAS, MINUTES, AND ATTENDANCE RECORDS

HMPC MEETING 1: JULY 9, 2024

Albemarle Regional Hazard Mitigation Plan
Hazard Mitigation Planning Committee Meeting #1
Tuesday, July 9th, 2024, 10:00 a.m.
Virtual Meeting through Microsoft Teams

Insight Attendees:
Ryan Cox, President/CEO
Danielle Taliaferro, Administrative Assistant (Scribe)

WSP Attendees:
David Stroud
Abby Moore
Kimmy Hansen

In Person Attendees:
Amber Curling, Camden County
Amy Durden, Elizabeth City
Rhonda Repanshek, Perquimans County
John Shannon, Pasquotank County
Joshua Wyse, Camden-Pasquotank County
Brian Parnell, Camden-Pasquotank County
Shelley Cox, Pasquotank County

Virtual Attendees:
Mayor June S. Wynn, Cofield
Dina Harrell, Harrellsville
John "Chris" Crew, NCEM
Billy Tutwiler, Gates County
Carl Baker, NCEM
Christopher Smith, Ahoskie
Jeff Edwards
Jennifer Bracy, Ahoskie
Kevin Howard, Chowan County
Lisa Cherry, Gates County
Pamela Carr, Hertford County
Carolyn Brown, Murfreesboro
Janice Cole, Hertford
Holly White, NCORR
Helene Wetherington, NCORR

Meeting Minutes:

- Ryan - Opening & Introductions
  - Meeting Objectives - Engage Community, Gather Input, Educate and Inform
  - YOUR plan
  - CRS community requirements - need to engage more
- What is Mitigation?
  - Standard definition
  - Look at hazards and reduce risks
  - Reduce loss of property and/or life with mitigation
- Basic Types

    - Houses, Businesses, Infrastructure, Critical Facilities
    - What type of mitigation is appropriate for each?
    - Critical Facilities - prepping for tornadoes - typically need grant funds to "harden" a facility
    - Ensure future development is conducted in way that does not increase vulnerability
- Mitigation Techniques
    - What areas do we mitigate?
    - Property Protection - relocation versus elevation
    - Natural resource Management
    - Structural projects
    - Emergency Management Services
- Purpose of Update
    - Required every 5 years
    - Reflect changes on Risk - changes in development
    - Increase community resilience - updating every 5 years makes for more comprehensive plan
- Pop Increase & Community Growth
    - Due to COVID, Census numbers may not be accurate
        - Greater exposure to hazard risk
    - Climate Change
        - New FEMA Requirement - Anticipated Increase in frequency
        - Have to include impacts to climate change
        - David Stroud - language in plan will be handled on their end
    - More Hazards - Technological, Civil Disturbance, Terrorism
- Community resilience
    - Include stakeholders
    - Churches
    - Community action groups
    - Mental Health, Homeless population, nursing homes (vulnerable populations) - groups to reach out to these folks
    - David Stroud- any organization that serves a disadvantaged & underserved populations should be part of the outreach process
    - Document what groups have been contacted - keep track of outreach efforts
- Disaster Mitigation Act of 2000 requires plans to be in place
    - Cannot receive some grant funds without a plan
- Planning
    - Public involvement & engagement - two central locations
    - Survey will also be available for public to provide input - QR at end of slide show, will send to members
    - Coordinating with local departments and agencies - police and fire departments
    - Finalizing list of stakeholders - can be anyone from elected officials to electric co-op. Anyone with a vested interest in the area can be a stakeholder and should be involved
- Risk Assessment
    - Identify hazards - previous and new
    - Vulnerability Assessment - what will be affected and/or impacted
        - Parcel data from each county will be used
        - David/Ryan to coordinate on this - Iris Data to be used as well (GIS based analysis)
    - Capability Assessment- Communities to self-assess, what mitigation actions are feasible?
        - Identify gaps
- Hazards from 2020 plan
    - Hurricane & Tropical Storms
    - Severe Weather
    - Extreme Heat, etc.

    - What's missing? Will add to list
        - Man made hazards - pandemics
        - Holly - local communities participating in RCCP program - solicit them to identify more potential hazards
- Develop a mitigation plan
    - Setting planning goals
    - Reviewing mitigation alternatives
    - Drafting action plan - need detailed input from communities - FEMA no longer accepts "ongoing" as a status update re: action plans
        - If something wasn't completed, need to state why
        - Consultants cannot speak to what communities have done over the last 5 years
    - FEMA likes to see mitigation plans in more than just a hazard mitigation plan
- Adoption implementation
    - Local government approval first followed by FEMA
    - Once approval letter is received, plan can be adopted
    - Approved plan must be in place to receive grand funds
    - Execute the identified mitigation actions
    - Continuously monitoring the progress of mitigation activities
- Project schedule
    - Kick off date - 3.4.24
    - Larger Stakeholder Meeting - 7.9.24
    - Public Mtg. #1 - TBD
    - Proposed Delivery of Draft - 12.16.24
    - Public Mtg. #2 - TBD
    - Existing Plan Expiration date - 6.17.25
- Goal to have to state in December
    - FEMA review takes up to 6 months
    - Will ask communities to adopt after State review
- Plan website - not up yet
    - Will ask communities to upload QR codes to websites to reach broader audience
        - QR Code to be sent out with copy of presentation
- Next Steps
    - Record and analyze input received during stakeholder meeting
    - Share public survey on municipal and county websites
        - Make sure to print hard copies for any folks that do not have internet access
        - Get hard copies back so surveys can be recorded
    - Select Date/Location of Public Meeting #1
    - Continue Working on the Risk Assessment (underway)
    - Continue working on Capability Assessment (underway)
    - Mitigation Strategy Development Meeting date (TBD)
    - Actionable Items for Stakeholders
        - Begin reviewing Mitigation Action Plan and updating status of each action
        - Brainstorm locations and dates for public meeting #1
        - Reach out to smaller communities to engage and include in process
- Stakeholders
- Communities identified that are not involved and should be - reach out
- Questions/Open floor
    - David - next meeting should be hybrid as well so we can have people in person and online participating
    - Should we ask about incorporation of future conditions such as groundwater elevation?
        - Abigail - Can definitely discuss and add to climate change, would need specifics

    - David - Are there existing worries about saltwater intrusions?
    - Holly - Still collecting data on that
- Close Meeting

Albemarle Regional Hazard Mitigation Plan
Hazard Mitigation Planning Committee Meeting

Tuesday, July 9, 2024, 10:00 AM

	Name	Organization	Phone	E-Mail
1.	Amber Curling	Camden County Planning	252-338-1919 ext 232	aycurling@camdencountync.gov
2.	Amy Durden	Elizabeth City	252-619-7369	adurden@elizabethcitync.gov
3.	Rhonda Reparshek	Perquimans County	252-426-2027	rhondarep@PerquimansCountyNC.gov
4.	John Shannon	Pasquotank Co.	252-335-0865	shannonj@co.pasquotank.nc.us
5.	Joshua Wyse	Pasq-Cam Emerg Mgmt	252-435-8112	wysej@co.pasquotank.nc.us
6.	Brian Parnell	Pasq-Cam Emerg Mgmt	252-340-6325	parnellb@co.pasquotank.nc.us
7.	Shelley Cox	Pasq. Co. Planning	252-335-1891	coxs@co.pasquotank.nc.us
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				

HMPC MEETING 2: OCTOBER 31, 2024

Albemarle Regional Hazard Mitigation Plan Update: HIRA Review Meeting

Meeting Minutes for Thursday, October 31, 2024 @ 10am EDT

Virtual Attendees	In Person Attendees
Danielle Taliaferro, Insight (Scribe)	Austin Brinkley, Insight (Presenter)
Carl Baker, NCEM	Joshua Wyse, Pasquotank
Carolyn Brown, Murfreesboro	Cordell Palmer, Chowan
John "Chris" Crew, NCEM	Kevin Howard, Chowan
Dina Askew, Harrellsville	Chris Smith, NCEM
Dylan Lloyd, Elizabeth City	Julie Solesbee, Perquimans
Jennifer Bracy, Ahoskie	Jonathan Nixon, Perquimans
Lisa Cherry, Gates County	
John Mello, NCEM	
Abby Moore, WSP	
Nathan Slaughter, ESP	
Pamela Carr, Hertford County	
Patrick Dilday, Hertford County	
Rhonda Repanshek, Pasquotank County	
Town of Winton	
Andrea Webster, NCORR	
Steven Porson, NCORR	

Start Meeting

I. Introduction/Opening
   a. Insight – subcontractor
II. Review Agenda
III. Planning Process
   a. Currently in steps 4 & 5
   b. Assessing hazards and problems
   c. Moving into goals and actions
IV. Identify what the risk is
   a. Factor in overall PRI
   b. Reviewing hazards, vulnerabilities, and exposure
V. HIRA Org.
   a. Section 4.2 - Hazard identification
   b. 4.3 - Risk Assessment Methodology and Assumptions
   c. 4.4 – Asset Inventory
   d. 4.5 - Hazard profiles, Analysis, & Vulnerability
   e. 4.6 – Conclusions on Hazard Risk
VI. Review of Major Disaster Declarations
   a. 13 total major declarations
   b. 7 Hurricanes
   c. 3 Winter Storms
   d. 3 Severe weather events
VII. Existing Plans
   a. Compares 2023 state plan
   b. Included in 2020 plan?

c. Will it be included in the new plan update?

VIII. Hazards not included in 2020 plan
- a. Landslide
- b. Sinkholes
- c. Rip currents
- d. Tsunami
- e. Hazardous Materials Incident

IX. Hazards included
- a. Dam & Levee Failure
- b. Drought
- c. Earthquake
- d. Extreme Heat
- e. Flood
- f. Hurricane & Coastal Hazards
- g. Tornadoes & Thunderstorms
- h. Severe Winter Storm
- i. Wildfire
- j. Radiological Incident

X. Asset Inventory
- a. Population counts
- b. Pasquotank most populated
- c. Most around 10-15k people

XI. Critical Infrastructure & Key Resources
- a. Collective totals for each county

XII. Critical facilities
- a. Assets that are community lifelines
- b. Essential to health and safety of economy

XIII. Camden County, Chowan County, Pasquotank County, Perquimans County,
- a. Food, hydration & shelters identified

XIV. Agriculture Risk and Exposure
- a. Breakdown by farm & acreage

XV. What is PRI?
- a. Prioirty Risk Index
- b. 2020 plan sets baseline for current score
- c. New plan will reflect any score changes

XVI. PRI Scale
- a. How things were graded in update
- b. Review of High, Moderate, and Low Risk

XVII. Hazard Profile Summary
- a. Numerical value in this update
- b. Coastal & Hurricane Hazards coming in with highest score
- c. Will review profile at some point and determine if reevaluation needs to be done

XVIII. Excluded Hazards
- a. Terrorism, Infectious Disease, Cyber Threat, Electromagnetic Pulse, etc..

XIX. Climate change effects and what effect they have on hazards

XX. John Crew on PRI
   a. Note at bottom of slide
   b. Wants to see range of PRI score – believes it would be more instructive. More accurate on a regional picture
   c. Abby mentions table that lists every jurisdiction

XXI. Slide 20 - Dam Failure
   a. Unlikely in this region
   b. 5-mile radius used to pull the number of dams in region
   c. 15 total in Albemarle region
   d. John – currently in "wrestling match" with FEMA
   e. John wants to review this in a week or two – to get past current expectations from FEMA
   f. FEMA looking for information on people at risk, buildings at risk, etc.
   g. Locals should identify what needs to be addressed

XXII. Drought Risk
   a. High probability
   b. Can last for extended period

XXIII. Earthquakes
   a. NC has experienced 5 since 1989
   b. None impacted Albemarle region

XXIV. Excessive Heat
   a. Highly Likely
   b. 20-30 day increase annually
   c. 13 reports of heat related incidents between 1998-2021
   d. Region averages about 96 hours of heat over 100 degrees F

XXV. Andrea Webster on Heat Vulnerability
   a. Intro
   b. North Carolina Office of Resiliency & Recovery (NCORR)

XXVI. Emergency still seeing heat related incidents
   a. Want to prevent these occurrences and educate

XXVII. Projections for all of NC
   a. State climate – temperatures will increase
   b. More days above 100 F

XXVIII. Snapshot from Resiliency exchange
   a. Chowan County extreme heat projections
   b. By 2060's residents of Chowan County will experience between 21-32 days above 95 degrees
   c. Projections are close to other regions

XXIX. Review of Pasquotank & Hertford County
   a. Nighttime temps will increase
   b. Will impact everyone
   c. Dangerous for residents without a home, or without adequate cooling systems

XXX. Snapshot of emergency room visits due to heat
   a. Men aged 22-44
   b. First week of June, Bertie County had highest number of emergency room visits
   c. Seeing impact on elderly generation

XXXI. Maximum Heat Index from May 1 – August 12, 2024
   a. Emergency room visits spiked when heat index is above 101

b. It takes time for people to acclimate to heat increase during summer months

XXXII. People can die due to extreme heat
   a. 2023 more people died of heat related incidents than any other year on record
   b. Some folks are at higher risks than others

XXXIII. Edenton/Chowan County
   a. High proportion of residents that are elderly
   b. Don't have access to a vehicle which makes it difficult to get to a cooling center if heat is excessive

XXXIV. Many residents at risk

XXXV. Urban Heat Island Effect
   a. Can happen anywhere there is development and/or asphalt

XXXVI. Utility impacts
   a. Higher temps impact the cost of utilities
   b. Income loss also a factor – Agriculture & animals suffer

XXXVII. Heatwave response protocol – questions to consider

XXXVIII. Questions for Andrea
   a. Contact info provided

XXXIX. Austin continues with Flood Hazards
   a. Types – Riverine, Coastal, and Flash Flooding

XL. Review of map covering each county and where flood zones exist

XLI. Impact on population for 100-year flood event

XLII. Critical Infrastructure and buildings at risk to 100-year flood
   a. Cost of damages

XLIII. Hurricanes
   a. Classified as likely now
   b. Storm Categories (1-5)
   c. Since 1900 there have been 90 hurricanes and tropical storms that have passed within 50 miles of Albemarle region.

XLIV. Potential crop losses

XLV. Severe Weather (Thunderstorm wind)
   a. Average single cell thunderstorm is approximately 15 miles in diameter
   b. Between 1996 – 2024, NCEI recorded 374 separate incidents of thunderstorm winds, strong winds, and high winds across 6 counties
   c. Events caused $2,360,000 in recorded property damage
   d. Building loss estimate from 50-year thunderstorm winds were approximately $154M
   e. Lightning events only included if injury or damages are reported

XLVI. Severe Winter storm threat
   a. Icy roadways
   b. Cost of snow and debris removal
   c. Indirect: loss of productivity

XLVII. Tornados
   a. 76 incidents between 1950 – 2024
   b. Highly likely

XLVIII. Wildfires
   a. Possible w/ limited impact

XLIX. Radiological event

a. Unlikely, however, impact would be critical
b. The Albemarle region is within 50 miles of Surry Power Station (Virginia)
c. People in close proximity to facilities and transportation routes face higher risk

L. Revisit PRI Index
a. How the scores are assigned
b. Probabilities determined

LI. Continue to reach out to stakeholders in communities
a. Need input and involvement
b. Review existing plan and provide updates

LII. Brainstorm on new mitigation strategies

LIII. Next steps
a. Develop goals and objectives
b. Develop New Mitigation Actions
c. Review Draft plan

LIV. Final meeting date TBD (December – January)
a. Working to get that scheduled ASAP

LV. Questions/Comments
a. Hazards such as terrorism and civil disturbance not included in mainly because it is better handled on a local emergency management structure rather than state wide. It can be included if that is desired, so it's addressed, and awareness is raised.
b. Interest in including hazards that are in the state plan to better align
i. Abby - What hazards? Cyber?
ii. Can include any additional hazards, just let her know
iii. Austin will confirm and let Abby know
c. More interest expressed to include hazards from state plan into regional plan
i. Funding may be available for some hazards that exist
ii. Will make sure regional plan is in line with state plan
d. Carl Baker – good conversations on funding – anything relative to a BRIC project -make sure those folks are involved in the hazard mitigation planning
e. John Mellow – this is a living document – anytime mitigation actions need to be added for the purpose of applying for a grant (any type of grant) – we can usually complete an amendment around 1-3 weeks. FEMA acknowledges addition, doesn't require approval
f. Abby on underserved pop. – wants to be aware of any communities that are trying to reach out. Please let them know, efforts need to be documented.

LVI. Close meeting

-END-

HMPC MEETING 3: DECEMBER 12, 2024

In person attendees
Austin Brinkley, Insight

Virtual attendees
Danielle Taliaferro (scribe)
Carl Baker, NCEM Hazard Mitigation
John Mello, Hazard Mitigation Planner, NCEM
Rhonda Repanshek, Perquimans County Planning
Carolyn Brown, Town Administrator, Murfreesboro
Abby Moore, WSP
Palmer Cord, Chowan County Emergency Management
Pamela Carr, Hertford County Emergency Management
Brian Parnell, Pasquotank-Camden Emergency Management
Shelley Cox, Pasquotank County Planning
Jennifer Bracy
Michele Garrett, Interim Town Manager, Town of Ahoskie
Joleatha Chestnutt, Town Clerk, Town of Ahoskie
Dina Harrell Askew, Town of Harrellsville
Jonathan Nixon, Perquimans County Emergency Services
Julie Solesbee, Perquimans County

Meeting Minutes

I. Austin Brinkley Intro/Opening
II. Agenda review & group intros
III. Meeting Objectives Review
    a. Capability Assessment
    b. Mitigation Strategy Development
IV. Plan Update Process - Organize Resources
    a. Currently in step one – Organize resources
V. Step Two – Risk & Capability Assessment
    a. Hazard Identification
    b. Vulnerability Assessment
    c. Capability Assessment
VI. What is Capability?
    a. Determine how equipped a unit of government can implement a mitigation strategy.
VII. Capability indicators
    a. Indicators help evaluate resources, capability, and readiness of a community to effectively implement and sustain mitigation activities.
    b. Examples (See slide 11)
VIII. Capability Assessment from 2020 Albemarle HMP (see slide 12)
IX. Capability Evaluation for Existing Plan
    a. Covers what jurisdictions have a plan in place and what type – will need to be updated.
X. New FEMA Requirement on Substantial Flood Estimates (SDE) for Capability Assessment
    a. Need input from everyone re: substantial damage procedures
    b. See example on slide 15
XI. Impact on Mitigation Plans
    a. Analysis of risks alongside capabilities is essential for informed decision-making and mitigation strategy development
    b. Identify gaps

XII. Step 3 – Mitigation Strategy Development (status of 3 tasks: Current)
    a. Setting Mitigation Goals
    b. Reviewing Mitigation Activities
    c. Drafting Action Plan
XIII. What is a Mitigation Strategy?
    a. Purpose – Reduce vulnerability and mitigate the impact of natural and man-made hazards on communities.
    b. What does it entail? Development, prioritization, and implementation of feasible measures to prevent, prepare for, respond to, and recover from potential disasters.
XIV. Basic Types of Mitigation
    a. Mitigating against hazard impacts on existing development
    b. Ensuring future development is conducted in a way that does not increase vulnerability
XV. Mitigation Techniques
    a. Prevention
    b. Property Protection
    c. Natural Resource Management
    d. Structural Projects
    e. Emergency Services
    f. Education and Awareness
XVI. Setting Mitigation Goals
    a. Goal 1 – See slide 23 – Reduce the risk of loss and life and personal injury from natural hazards through local land development regulations capital improvements, planning/investment, and proactive long-range planning regarding land use and post disaster redevelopment.
        i. Comments from group? None
        ii. Still relevant and objectives are still applicable
    b. Goal 2 – See slide 23 – Provide education and notification to citizens that empowers them to protect themselves and their families from natural hazards.
        i. Comments from group? None
        ii. Still relevant and objectives are still applicable
    c. Goal 3 – See slide 24 – Fulfill federal and state requirements for receipt of future disaster recovery and hazard mitigation assistance.
        i. Comments from group? None
        ii. Still relevant and objectives are still applicable
    d. Goal 4 – See slide 24 – Improve interjurisdictional/interagency cooperation and coordination, especially regarding the reduction of natural hazard impacts.
        i. Comments from group? None
        ii. Still relevant and objectives are still applicable
XVII. Reviewing Mitigation Alternatives
    a. Review previous plan to determine status of existing actions – FEMA REQUIREMENT
    b. Ide new mitigation actions to address evolving needs/vulnerabilities.
XVIII. Review previous plan (slide 26)
XIX. Developing a Mitigation Plan
XX. Identify new Mitigation Actions
    a. Brainstorm and discuss a full range of possible mitigation projects/available mitigation techniques
    b. John – reminder – items are not made up “willy-nilly” – they are FEMA Requirements

XXI. Mitigation Strategy – Examples
   a. Carl Baker – posts link to FEMA Mitigation Ideas Handbook in chat (https://www.resilienceexchange.nc.gov/identify-actions/actions-database
   b. Potential Actions to Mitigate Extreme Heat (tied for highest PRI as per Risk Assessment findings)
   c. Potential Actions to Mitigate Hurricane & Coastal Hazards (tied for highest PRI as per Risk Assessment findings)
   d. Potential Actions to Mitigate Flooding (tied for second highest PRI as per Risk Assessment findings)

XXII. Next Steps – see slide 32
   a. Submit Updated Mitigation Actions – As soon as possible, we need these back in a timely manner to provide NCEM with a DRAFT of the plan six months prior to expiration.
   b. Submit New Mitigation Actions (if any).
   c. Review Draft Capability Assessment – We will provide this assessment within the coming weeks.
   d. Submit Substantial Damage Estimate (SDE) Procedures.
   e. Draft Plan Submitted in January.

XXIII. Austin to Abby on update re: Capability Assessment
   a. Abby – No, still working on it on their end – will provide to committee for review
   b. Abby suggests the group send her an email regarding any plans that anyone has developed or updated in the last 5 years as well as any new staff positions that support mitigation efforts in their communities.

XXIV. Following Draft Plan Approval – move into Adoption and Implementation
   a. Lead into Step 4 (see slide 34)

XXV. Information needed for Capability Assessment – Send to Abby Moore (Abigail.moore@wsp.com)
   a. See slide 36 for additional contact info
   b. Abby – reminder – if you want to pursue federal mitigation grant funding, action that you want to pursue must be in THIS plan.
   c. Abby regarding capability and mitigation actions – when reviewing action plan if there are things in the action plan that refer to a "continued of enforcement" type of follow up – might consider moving them out of current mitigation action plan.

XXVI. Comments/Questions – Open floor
   a. Abby offers to stay on the line for questions specific to communities
   b. Carl – nothing to add
   c. Rhonda Repanshek – Map had "dots" critical facilities – a lot of those facilities are not in use. Can we remove? Abby – Yes. If not in use, should remove. Rhonda will send new map.
   d. Final Meeting – 2nd week of January 2025 – not confirmed.

XXVII. Wrap up/Close

-END-

HMPC MEETING 4: MARCH 27, 2025

ALBEMARLE REGIONAL HAZARD MITIGATION PLAN UPDATE

HAZARD MITIGATION PLANNING COMMITTEE – MEETING #4

March 27, 2025, 3pm, Microsoft Teams

ATTENDANCE

There were 21 attendees. The following individuals were in attendance:
Brian Parnell, Pasquotank-Camden Emergency Management
Carolyn Brown, Town Administrator, Murfreesboro
Dina Harrell Askew, Town of Harrellsville
Dylon Lloyd, City of Elizabeth City,Development Services
Elton Winslow, Mayor Town of Gatesville
Gina Durante, Town Clerk, Town of Herford
Lorie Higbee, Town of Como
William Tutwiler, Gates County Emergency Management
Rhonda Repanshek, Perquimans County Planning
Pamela Carr, Hertford County Emergency Management
Michele Garrett, Interim Town Manager, Town of Ahoskie
Joleatha Chestnutt, Town Clerk, Town of Ahoskie
Jonathan Nixon, Perquimans County Emergency Services
John Mello, NCEM, Hazard Mitigation Planner
Carl Baker, NCEM, Hazard Mitigation Planner
Danielle Taliaferro, Insight
Nathan Slaughter, ESP
David Stroud, WSP
Abby Moore, WSP
Ranger Ruffins, WSP
Kimmy Hansen, WSP

AGENDA

- Planning Process Update
- Structure of the Plan
- Review of Key Plan Components
  - Planning Process
  - Risk Assessment
  - Mitigation Strategy
- Plan Adoption & Implementation
- Next Steps
- Discussion / Feedback on Draft Plan

PLANNING PROCESS UPDATE

David Stroud with WSP began the presentation by explaining where we are in the planning process. We are nearing the end of the planning process as we have drafted the plan and now need to finalize it with any new mitigation actions that the communities wish to add. The plan will then need to be adopted and the HMPC and communities will work on implementation for the next five years.

STRUCTURE OF THE PLAN

David provided an overview of the structure of the draft plan including a summary of each section of the plan, as follows.

Section 1 Introduction provides background information on the plan, including context and justification for planning and the scope of the plan.

Section 2 Planning Process summarizes how the planning process was conducted and how all planning requirements were met, including how the communities, public, and stakeholders were involved in the plan. This section also documents implementation progress of the last plan in terms of completed and deleted mitigation actions.

Section 3 Planning Area Profile for summary information on the region and participating communities, including geographic, climate, demographic, and economic characteristics of the region.

Section 4 Risk Assessment contains the bulk of the plan. This section presents the hazard identification and profiles each hazard with information on the location at risk, past occurrences, probability of future occurrence, and vulnerability of people, property, and critical facilities.

Section 5 Capability Assessment summarizes each community's existing tools, staff, and other resources that can support the implementation of mitigation projects.

Section 6 Mitigation Strategy reviews the goals and objectives of the plan and details how mitigation actions were identified and prioritized. David explained that existing mitigation actions from the previous plan were reviewed and project status updates are reported in the plan. Some projects were carried forward. The HMPC also reviewed new mitigation projects to include in this plan update.

Section 7 Mitigation Action Plans presents the action plan tables for each community.

Section 8 Plan Maintenance describes past plan integration, opportunities for future plan integration, and the process for regular monitoring, maintenance, and implementation of the plan, including ongoing responsibilities of the HMPC.

Section 9 Plan Adoption will document each community's adoption of the plan update.

Annexes are provided for each participating community. The annexes provide an asset inventory with a full critical facility list, risk assessment data with vulnerability assessment results specific to the community for spatially defined hazards, and the mitigation action plan.

Appendix A provides the Local Mitigation Plan Review Tool, which documents for the plan reviewers where the planning requirements were met.

Appendix B provides planning process documentation demonstrating how the HMPC, public, and stakeholders were involved and engaged in the planning process.

Appendix C provides mitigation alternatives analysis, documenting the review of mitigation action options, which is important for the CRS program planning requirements.

Appendix D lists data and resources that were referenced in the plan.

KEY PLAN COMPONENTS

Abby reviewed key parts of the planning process, including the HMPC meetings, the public meetings, and all the participating communities' public outreach efforts. She noted that there is one more opportunity to get the public involved in the planning process with the review of the draft plan. It will be posted on the plan website. Communities can share this link and encourage folks to read and comment on the plan.

Abby reviewed some high-level survey results, which were previously presented to the HMPC. There were 43 responses overall, including responses from residents of each participating community. The hazard risk ratings from the public aligned with the findings of the risk and vulnerability assessment. Regarding past hazard experiences, many responses reference past hurricanes and flooding. Regarding recommended steps local governments could take to reduce hazard impacts, responses include

suggestions for drainage improvements, stormwater infrastructure, public information, and notification and warning of hazards.

Abby presented the Priority Risk Index results as a summary of the risk and vulnerability assessment. She explained that the PRI is a methodology for comparing the hazards based on five categories: probability, severity, spatial extent, warning time, and duration. Flood, severe winter weather, hurricane and coastal hazards, and excessive heat were rated as "High Risk" for the Albemarle Region.

Abby presented the goals and objectives which were largely carried forward from the previous plan with some small revisions. The goals and objectives are as follows:

Goal 1: Reduce the risk of loss of life and personal injury from natural hazards through local land development regulations, capital improvements, planning/investment, and proactive long-range planning regarding land use and post-disaster redevelopment

- Objective 1.1: Reduce the length of time that local infrastructure systems are deemed inoperable due to the impacts of natural hazards, and protect property and critical facilities from hazard impacts.
- Objective 1.2: Preserve open space in floodplain areas.
- Objective 1.3: Reduce flooding and erosion vulnerability through land development initiatives, maintenance, and improvement of storm drainage.

Goal 2: Provide education and notification to citizens that empowers them to protect themselves and their families from natural hazards.

- Objective 2.1: Ensure adequate warning and notification relating to hazards including efforts to establish well publicized, accessible shelter facilities that meet national standards for safety and supply.
- Objective 2.2: Improve the public awareness and understanding of local vulnerability to hazards and improve disaster warning/post-disaster information efforts.

Goal 3: Fulfill Federal and State requirements for receipt of future disaster recovery and hazard mitigation assistance.

- Objective 3.1: Improve all participating jurisdictions' general hazard mitigation capability.
- Objective 3.2: Work toward compliance with all State and Federal planning and regulatory requirements including standards for Local Emergency Operations Plans, Flood Damage Prevention Ordinances, Continuity of Operations Plans, and the Community Rating System.

Goal 4: Improve interjurisdictional/interagency cooperation and coordination, especially regarding the reduction of natural hazard impacts.

- Objective 4.1: Reduce the risk of damage from wildfires to existing and future development.
- Objective 4.2: Ensure effective local/interagency communication and response during disaster events.

Abby reviewed a sample of the mitigation action plan to explain the organization of the table and the information included for each project, such as the lead agency, timeline for implementation, and potential funding sources.

Abby noted that at a minimum, every community in the region will have a general elevation project and a general acquisition project in the plan. Every community will also have a general drainage improvement project in the plan.

Abby also shared an action for Community Wildfire Protection Plans recommended by NC Forest Service. All three of these actions will be added to each communities' plan if they are not already included.

PLAN ADOPTION AND IMPLEMENTATION

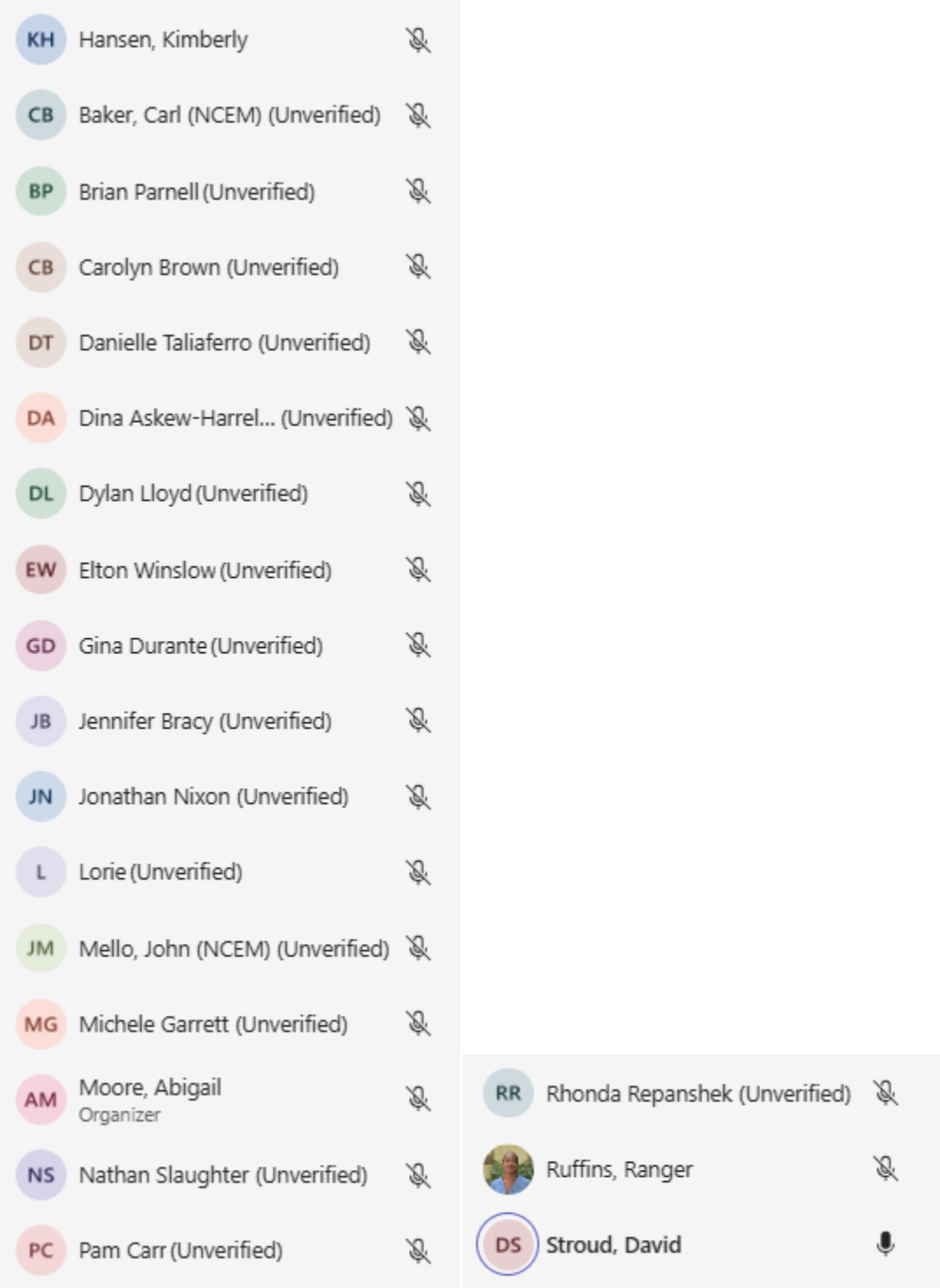
Abby explained that every community will need to adopt the plan. A template adoption resolution from NCEM will be provided to all communities. Once NCEM approves the plan, which is expected soon because NCEM has already completed a preliminary review, the communities are cleared to adopt the plan. WSP will follow up with guidance.

Moving forward, the HMPC should meet quarterly to report on progress toward implementation and help maximize CRS activity.

NEXT STEPS

The HMPC was asked to send any final mitigation actions or comments to Abby by April 2nd. Send any other draft plan comments by April 11th. Afterwards, WSP will provide an updated draft plan for the State to review and for all communities to adopt.

HMPC Meeting 4 Attendance



B.2 PLANNING STEP 2: INVOLVE THE PUBLIC

Table B.2 – Public Meeting Topics, Dates, Locations

Meeting Title	Meeting Topic	Meeting Date	Meeting Location
Public Meeting #1	1) Introduction to DMA, CRS, and FMA requirements and the planning process 2) Review of HMPC responsibilities and the project schedule.	September 4, 2024 6pm	Microsoft Teams
Public Meeting #2	3) Review "Draft" Hazard Mitigation Plan 4) Solicit comments and feedback	March 27, 2025 5pm	Microsoft Teams

PUBLIC MEETING MINUTES AND ATTENDANCE RECORDS

PUBLIC MEETING 1: SEPTEMBER 4, 2024

Albemarle Public Meeting #1
9/4/2024, 6:00 PM – 6:30 PM
Virtual on Microsoft Teams

Insight Attendees:
Austin Brinkley, Presenter
Cindy Anderson
Danielle Taliaferro (scribe)

WSP Attendees:
Abigail Moore
Kimberly Hansen

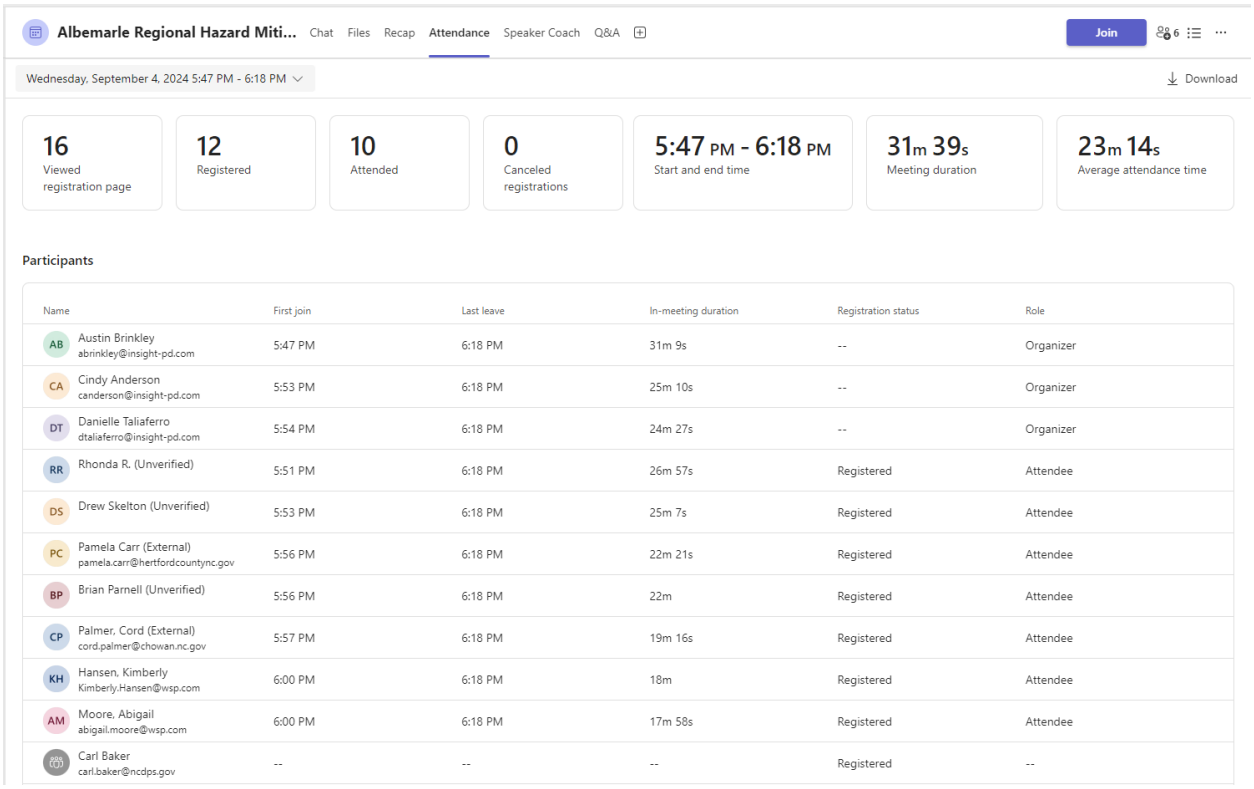
Other Attendees:
Brian Parnell, Camden-Pasquotank County
Drew Skelton
Cord Palmer, Chowan County
Pamela Carr, Hertford County
Rhonda Repanshek, Perquimans County

- Opening Comments/Introduction
    - Austin Brinkley with Insight Planning & Development
    - Hired through North Carolina Emergency Management (NCEM) to help facilitate update process
    - Working with WSP & ESP
    - Engaging the public to educate them on hazard mitigation
- Austin to begin presentation - Agenda overview
- Reminder to everyone for attendance purposes - make sure to register, drop information into the chat box
    - Will not send solicitation emails
- Meeting Objectives
    - Engaging community
    - Overview of hazard mitigation and how plan update process will work
    - learn about concerns the public may have
    - Gather input, educate, and inform on what happens specifically with the plan
- Definition of "mitigate" - Review
    - Make less severe or painful
    - Any sustained action to reduce or eliminate the long-term loss of life or property from hazards

- Two Types of Mitigation
    - Hazards against existing development
    - Ensuring future development is conducted in a way that does not increase vulnerability
    - Want to create a more resilient future for Albemarle
- Mitigation Techniques
    - Tie into actions and content of the plan
    - Prevention, Property Protection, Natural Resource Management, Structural Projects, Emergency Services, Education and Awareness
- Purpose of Update
    - Reflect on Changing Risks
    - Increase Community Resilience
    - Compliance and Funding
    - Ensure Preparedness
- Purpose of Update - Changing Risks
    - Pop increase and community growth
    - More Hazards - Man-made
    - Climate Change
    - Development Patterns
- Purpose of Update - Increase Community Resilience
    - Identification of New Vulnerabilities
    - Adopting Effective Mitigation Strategies
- Purpose of Update - Compliance and Funding
    - Ensure compliance with federal and state requirements
    - Maintain eligibility for disaster mitigation funding and assistance programs
- Purpose of Update - Ensure Preparedness
    - 2024 Plan Update ensures that the Albemarle region is better prepared to
        - Address existing and emerging hazards
        - protect lives and property
        - sustain continuity of essential services during and following an event
- Plan Update Process - Step One
    - Planning Phase for the public involvement
    - Coordinating with departments & agencies that make up planning committee
    - Stakeholders are key members of planning committee

- Step Two
    - Identify previous hazards as well as new hazards
    - Public can assist with this
    - How capable are we to deal with the hazards?
- Previously Identified Hazards (2020 Plan) listed for review
    - Ranking system - most extreme to low risk
- Step Three - Developing a plan
    - Setting goals
    - Reviewing Mitigation Alternatives
    - Drafting an Action Plan to effectively mitigate against potential hazards that exist
- Step 4 - Adoption and Implementation
    - Reviewed by public
    - Provided to NCEM & FEMA to perform compliance review
    - Counties and municipalities will adopt plan
    - Need to occur within the scheduled timeline
- Project Schedule
    - Kicked off March 2024
    - Preparing draft for public review
    - public meeting #2 TBD
    - June 2025 planned for adoption
- Project website - www.albemarlehmp.com
- Next Steps
    - Record and analyze input received during public meeting number 1
    - Share Public Survey
- Survey QR Code displayed
- Questions - open floor
    - No questions presented
- Closed meeting - Thank you

APPENDIX B: PLANNING PROCESS DOCUMENTATION



Albemarle Regional Hazard Miti... Chat Files Recap Attendance Speaker Coach Q&A Join

Wednesday, September 4, 2024 5:47 PM - 6:18 PM Download

16	12	10	0	5:47 PM - 6:18 PM	31m 39s	23m 14s
Viewed registration page	Registered	Attended	Canceled registrations	Start and end time	Meeting duration	Average attendance time

Participants

Name	First join	Last leave	In-meeting duration	Registration status	Role
Austin Brinkley abrinkley@insight-pd.com	5:47 PM	6:18 PM	31m 9s	--	Organizer
Cindy Anderson canderson@insight-pd.com	5:53 PM	6:18 PM	25m 10s	--	Organizer
Danielle Taliaferro dtaliaferro@insight-pd.com	5:54 PM	6:18 PM	24m 27s	--	Organizer
Rhonda R. (Unverified)	5:51 PM	6:18 PM	26m 57s	Registered	Attendee
Drew Skelton (Unverified)	5:53 PM	6:18 PM	25m 7s	Registered	Attendee
Pamela Carr (External) pamela.carr@hertfordcountync.gov	5:56 PM	6:18 PM	22m 21s	Registered	Attendee
Brian Parnell (Unverified)	5:56 PM	6:18 PM	22m	Registered	Attendee
Palmer, Cord (External) cord.palmer@chowan.nc.gov	5:57 PM	6:18 PM	19m 16s	Registered	Attendee
Hansen, Kimberly Kimberly.Hansen@wsp.com	6:00 PM	6:18 PM	18m	Registered	Attendee
Moore, Abigail abigail.moore@wsp.com	6:00 PM	6:18 PM	17m 58s	Registered	Attendee
Carl Baker carl.baker@ncdps.gov	--	--	--	Registered	--
Joyce Shotton jshot10@aol.com	--	--	--	Registered	--
Rebecca Soule assistant@elizaethcitydowntown.com	--	--	--	Registered	--
Jonathan Nixon jnixon@perquimanscountync.gov	--	--	--	Registered	--
Carolyn Brown cbrown@murfreesboronc.net	--	--	--	Registered	--

PUBLIC MEETING 2: MARCH 27, 2025

ALBEMARLE REGIONAL HAZARD MITIGATION PLAN UPDATE

PUBLIC MEETING #2

March 27, 2025, 5pm, Microsoft Teams

ATTENDANCE

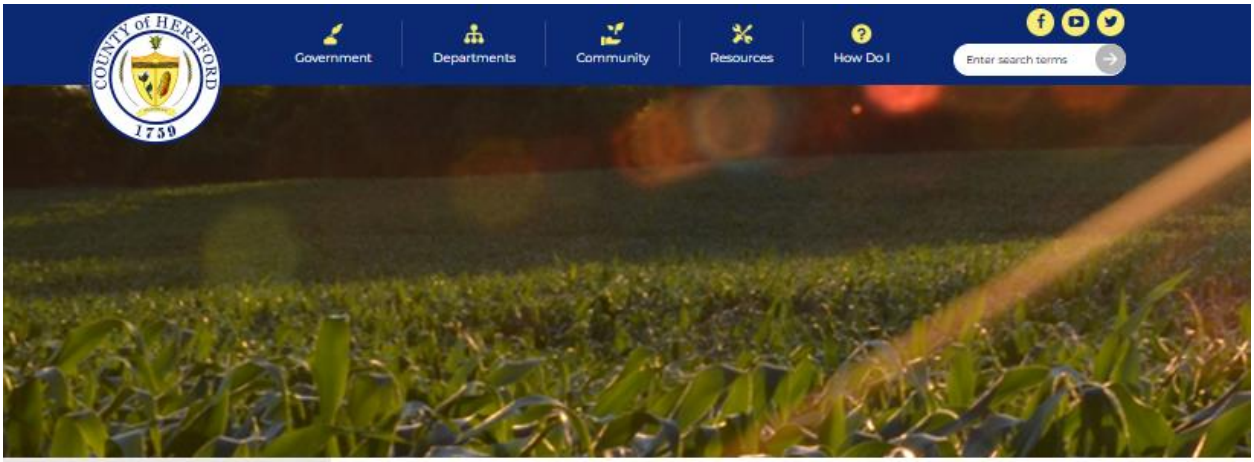
There were three attendees. No members of the public were in attendance. The following individuals were in attendance:
David Stroud, WSP
Abby Moore, WSP
Ranger Ruffins, WSP

AGENDA

- Planning Process Update
- Structure of the Plan
- Review of Key Plan Components
  - Planning Process
  - Risk Assessment
  - Mitigation Strategy
- Plan Adoption & Implementation
- Next Steps
- Discussion / Feedback on Draft Plan

PUBLIC MEETING 1 OUTREACH





Department Resources

Home › More News › Albermarle Regional Hazard Mitigation Plan Public Meeting - Wednesday, September 4, 2024

ALBERMARLE REGIONAL HAZARD MITIGATION PLAN PUBLIC MEETING - WEDNESDAY, SEPTEMBER 4, 2024

ALBEMARLE REGIONAL HAZARD MITIGATION PLAN PUBLIC MEETING

ONLINE EVENT

WEDNESDAY, SEPTEMBER 4, 2024

6:00 P.M. TO 7:00 P.M.

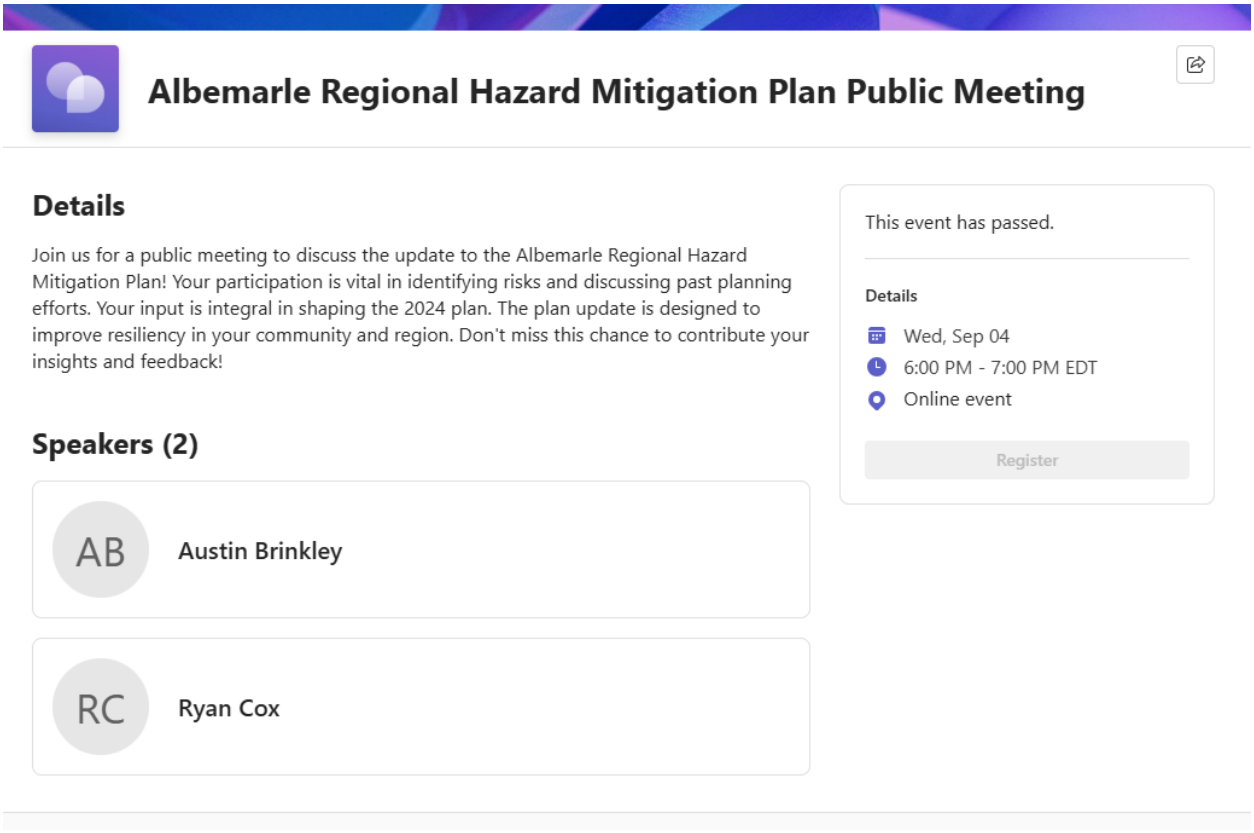
YOUR FEEDBACK IS CRUCIAL FOR A PLAN THAT REFLECTS OUR COMMUNITY'S NEEDS AND ENHANCES THE ALBEMARLE REGION'S RESILIENCY

PURPOSE OF THIS ONLINE MEETING IS TO ENGAGE THE COMMUNITY, PROVIDE PROJECT BACKGROUND AND GATHER INPUT ON HAZARDS AND RISKS.

DON'T MISS THIS CHANCE TO CONTRIBUTE YOUR INSIGHTS AND FEEDBACK

TO REGISTER CLICK THE LINK BELOW

https://events.teams.microsoft.com/event/de4d6ee0-fd53-4e4f-aab2-1c5f627dbc12@eb236729-549f-4448-9d80-ad173114d990



Albemarle Regional Hazard Mitigation Plan Public Meeting

Details

Join us for a public meeting to discuss the update to the Albemarle Regional Hazard Mitigation Plan! Your participation is vital in identifying risks and discussing past planning efforts. Your input is integral in shaping the 2024 plan. The plan update is designed to improve resiliency in your community and region. Don't miss this chance to contribute your insights and feedback!

Speakers (2)

AB Austin Brinkley

RC Ryan Cox

This event has passed.

Details

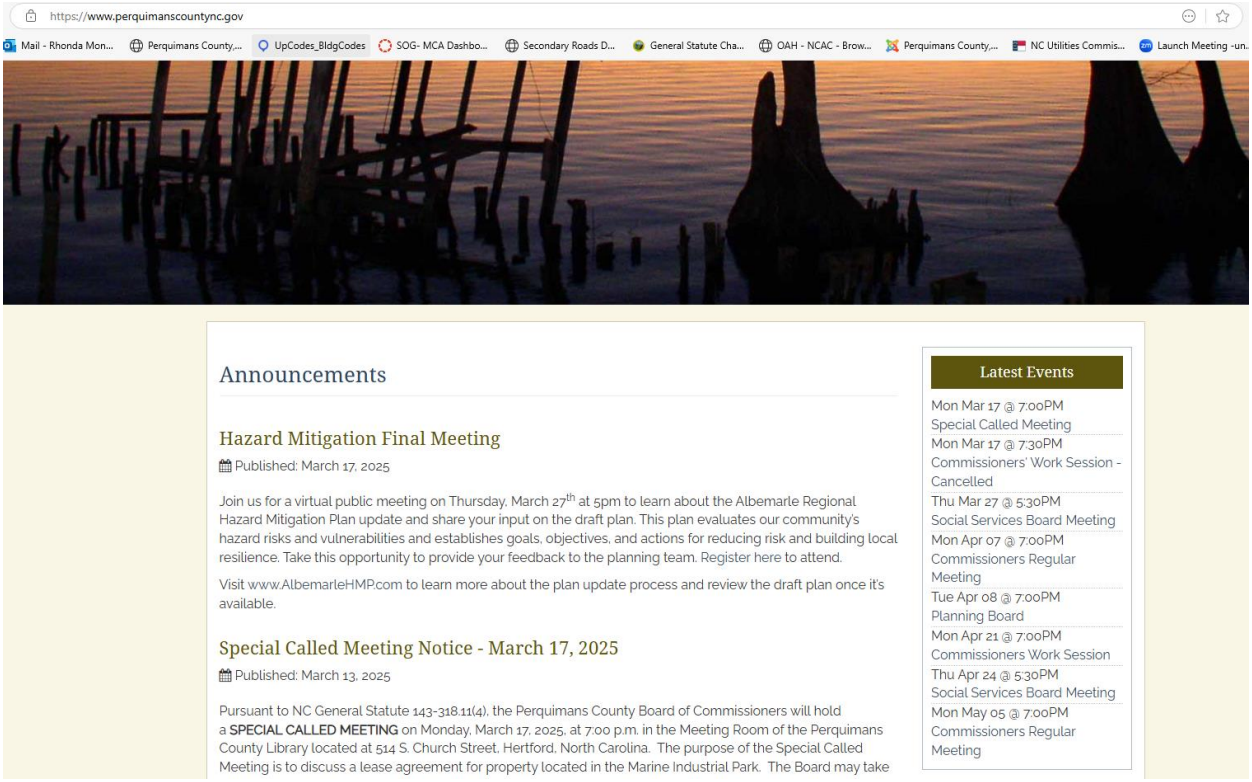
Wed, Sep 04

6:00 PM - 7:00 PM EDT

Online event

Register

PUBLIC MEETING 2 OUTREACH



https://www.perquimanscountync.gov

Mail - Rhonda Mon... | Perquimans County,... | UpCodes_BldgCodes | SOG- MCA Dashbo... | Secondary Roads D... | General Statute Cha... | OAH - NCAC - Brow... | Perquimans County,... | NC Utilities Commis... | Launch Meeting -un...

Announcements

Hazard Mitigation Final Meeting

Published: March 17, 2025

Join us for a virtual public meeting on Thursday, March 27th at 5pm to learn about the Albemarle Regional Hazard Mitigation Plan update and share your input on the draft plan. This plan evaluates our community's hazard risks and vulnerabilities and establishes goals, objectives, and actions for reducing risk and building local resilience. Take this opportunity to provide your feedback to the planning team. Register here to attend.

Visit www.AlbemarleHMP.com to learn more about the plan update process and review the draft plan once it's available.

Special Called Meeting Notice - March 17, 2025

Published: March 13, 2025

Pursuant to NC General Statute 143-318.11(4), the Perquimans County Board of Commissioners will hold a **SPECIAL CALLED MEETING** on Monday, March 17, 2025, at 7:00 p.m. in the Meeting Room of the Perquimans County Library located at 514 S. Church Street, Hertford, North Carolina. The purpose of the Special Called Meeting is to discuss a lease agreement for property located in the Marine Industrial Park. The Board may take

Latest Events

Mon Mar 17 @ 7:00PM
Special Called Meeting

Mon Mar 17 @ 7:30PM
Commissioners' Work Session - Cancelled

Thu Mar 27 @ 5:30PM
Social Services Board Meeting

Mon Apr 07 @ 7:00PM
Commissioners Regular Meeting

Tue Apr 08 @ 7:00PM
Planning Board

Mon Apr 21 @ 7:00PM
Commissioners Work Session

Thu Apr 24 @ 5:30PM
Social Services Board Meeting

Mon May 05 @ 7:00PM
Commissioners Regular Meeting

Perquimans County Emergency Services
1d ·

The Albemarle Regional Hazard Mitigation Plan update is nearly complete, and we want to hear from you.
This plan evaluates our community's risks and vulnerabilities and establishes goals, objectives, and actions for reducing risk and building local resilience. You can join online to learn about the draft plan and provide comments to the planning committee.

The meeting will be held virtually on Thursday, March 27 from 5pm - 6pm.
Register here to attend: https://urldefense.proofpoint.com/v2/url?u=https-3A__events.teams.microsoft.com_event_8aaa713e-2Df8a1-2D480c-2D837f-2D5b6b2035f189-403d234255-2De20f-2D4205-2D88a5-2D9658a402999b&d=DwMFAg&c=euGZstcaTDllvimEN8b7jXrwqOf-v5A_CdpgnVfiiMM&r=gTJ8f40VqbaCdk-aZOF_HKJ2sjZiOmjzxaRWUBMzQ5OEra9cZRSsGp-0VXZdOheM&m=U0q5mD23svivU6HGoNuGsF1RFc-C4ndbB6EGthiC6jVE2QWkQ030Z6sKQW12lEgW&s=XZ62-DTnhWUGFNEm5gcl9NEihFiHJEV-nDNOwzbKe-4&e=



Albemarle Regional Hazard Mitigation Plan Public Meeting

March 27, 2025 • 5:00 PM - 6:00 PM

Online event

2 shares

PLAN WEBSITE



DRAFT PLAN POSTED FOR PUBLIC REVIEW



PUBLIC SURVEY

The Albemarle Region distributed a public survey, shown below, that requested public input into the Hazard Mitigation Plan planning process and the identification of mitigation activities that could lessen the risk and impact of future flood hazard events. The survey was announced at the first public meeting, provided via a link on participating jurisdictions web and social media accounts, and made available online on the plan website.

Albemarle Regional Hazard Mitigation Plan Public Survey

Camden, Chowan, Gates, Hertford, Pasquotank, and Perquimans Counties and their incorporated communities are beginning to update the Albemarle Regional Hazard Mitigation Plan to identify and assess our region's risks from hazards such as flooding, drought, heat, hurricane, severe weather, winter weather, and other hazards. This plan will help determine how to best minimize or manage those risks. 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 local hazard risks and problems and can lead to mitigation activities that help lessen the impacts of future hazards. **Please help us by completing this survey by September 13, 2024 and returning it to:**

WSP – Attn: David Stroud, 4021 Stirrup Creek Drive, Suite 100, Durham, NC 27703
Or by email to: david.stroud@wsp.com

1. Where do you live?
   - ☐ Camden County
   - ☐ Chowan County
   - ☐ Gates County
   - ☐ Hertford County
   - ☐ Pasquotank County
   - ☐ Perquimans County
   - ☐ I live outside of the Albemarle Region but work or recreate in the region.
   - ☐ Other: _____

2. Have you ever experienced or been impacted by a hazard or disaster in the Albemarle Region?
   - ☐ Yes
   - ☐ No

   If yes, please explain your experience & where it occurred.

3. On a scale of 1-5, where 1 = not at all concerned and 5 = very concerned, how concerned are you about the possibility of your community being impacted by a hazard event?

4. Please review the list of hazards below and rate each hazard from 0-3 based on how much risk you think it poses to your community.
   0 = no risk, 1 = low, 2 = moderate, 3 = high
   - ___ Dam & Levee Failure
   - ___ Drought
   - ___ Earthquake
   - ___ Erosion
   - ___ Extreme Heat
   - ___ Flood
   - ___ Hurricane
   - ___ Severe Weather
   - ___ Winter Storm
   - ___ Tornado
   - ___ Wildfire
   - ___ Radiological Indicent

5. Is your home located in a floodplain?
   - ☐ Yes
   - ☐ No
   - ☐ No, but I still experience flooding
   - ☐ I don't know

6. Do you have flood insurance for your home and/or personal property?
   - ☐ Yes
   - ☐ No
   - ☐ I don't know

7. If you do NOT have flood insurance, what is the reason?
   - ☐ It's too expensive
   - ☐ I never really considered it
   - ☐ I don't need it because my home is elevated or otherwise protected
   - ☐ Other: _____

Albemarle Regional Hazard Mitigation Plan Public Survey

8. Have you taken any actions to protect your home or neighborhood from hazards?

   ☐ Yes
   ☐ No

   If yes, please explain what you implemented.

9. Do you know what government office to contact to learn more about your hazard risks and how to reduce vulnerability in your area?

   ☐ Yes
   ☐ No

10. What are some steps your local government could take to reduce the risk of future hazard damages in your neighborhood?

11. What is the best way for you to receive information about how to make your home or neighborhood more resistant to flood damage? Please select your top three choices.

    ☐ Newspaper
    ☐ TV Ads/Programming
    ☐ Radio Ads/Programming
    ☐ Public library
    ☐ Public workshop/meetings
    ☐ School meetings
    ☐ Mail
    ☐ Email
    ☐ Text message
    ☐ Local government website
    ☐ Local government social media

12. Many community-wide activities can reduce our risk from hazards. These activities generally fall into one of six broad categories. Please rank these categories from 1 (most important) to 6 (least important) by how important you think each one is for your community to consider pursuing.

    ___ **Prevention:** administrative and regulatory actions, plans, policies, and ordinances that influence how land is developed and buildings are built. *Examples include planning and zoning, building codes, open space preservation, land use, and floodplain regulations.*

    ___ **Property Protection**: actions that involve the modification of existing buildings to protect them from a hazard or remove them from a hazardous area. *Examples include acquisition, relocation, elevation, structural retrofits, and storm shutters.*

    ___ **Natural Resource Protection**: actions that minimize hazard losses and preserve or restore the functions of natural systems. *Examples include floodplain protection, habitat preservation, slope stabilization, stream buffers, wetland and marsh protection, and forest management.*

    ___ **Structural Projects**: actions that lessen the impact of a hazard by modifying the natural progression of a hazard. *Examples include dams, levees, floodwalls, berms, drainage infrastructure, detention/retention basins, channel modifications, retaining walls, and storm sewers.*

    ___ **Emergency Services**: actions that protect people and property during and immediately after a hazard event. *Examples include warning systems, evacuation planning, emergency response training, and protection of critical emergency facilities or systems.*

    ___ **Public Education and Awareness**: actions to inform the public about hazards and techniques they can use to protect themselves and their property. *Examples include outreach projects, school education programs, library materials, and demonstration events.*

The County received 43 responses to the survey. The following bullet points summarize significant findings from the survey. Key questions and responses are detailed in Figure B.1 through Figure B.12.

- 18 responses were from Pasquotank County, 6 were from Hertford County, 3 were from Perquimans County, and 12 was from Camden County.
- 60% (25) of respondents expressed that they had been impacted by a hazard in the Albemarle Region.
- On average, survey respondents ranked their concern regarding a hazard impacting the Albemarle community as 3.71 on a 1-5 scale.
- Hurricane was rated the most significant hazard, followed by flood, severe weather, and tornado. Dam & levee failure and earthquake were rated as the least significant hazards.
- 17.5% (7) of survey takers responded that their homes are in floodplains, and 27.5% (11) reported experiencing flooding even though they live outside of the floodplain. 27.5% of respondents (11) reported having flood insurance.
- 40% (16) of respondents reported having taken steps to mitigate risk at home or in their neighborhood.
- 62.5% (25) of respondents do not know which government office to contact to learn more about hazard risk.
- Respondents favored emergency services and prevention actions for mitigation.

Figure B.1 – Survey Response, County of Residence

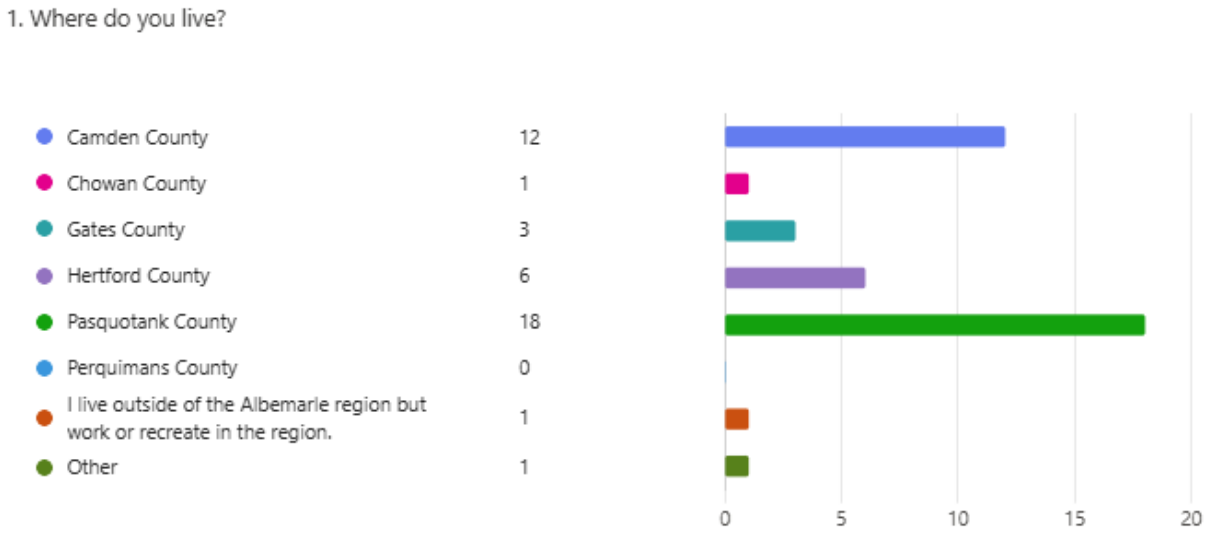


Figure B.2 – Survey Response, Disaster Impact

2. Have you ever experienced or been impacted by a hazard or disaster in the Albemarle Region?



Figure B.3 – Survey Response, Disaster Impact Explanation

3. If you answered "Yes" to question 2, please explain your experience and where it occurred. More details

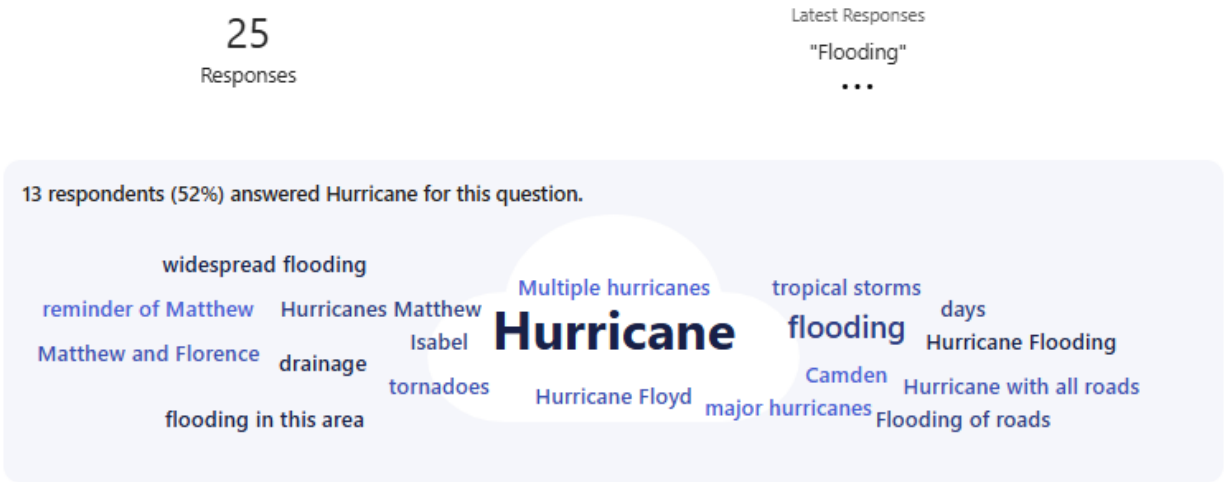


Figure B.4 – Survey Response, Hazard Concern

4. On a scale of 1-5, how concerned are you about the possibility of your community being impacted by a hazard event?

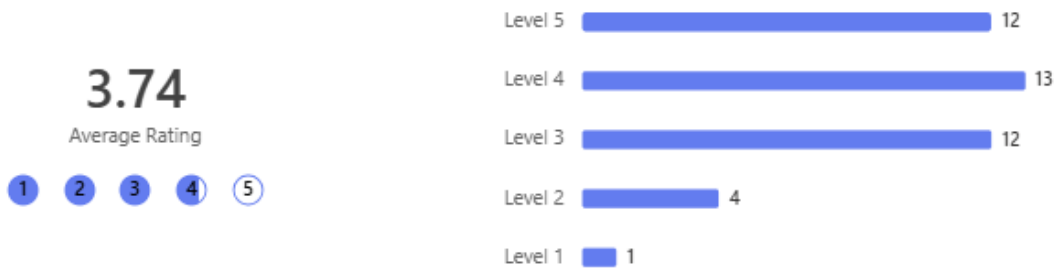


Figure B.5 – Survey Response, Hazard Significance Rating

5. Please review the list of hazards below and rate each hazard based on how much risk you think it poses to your comm unity.

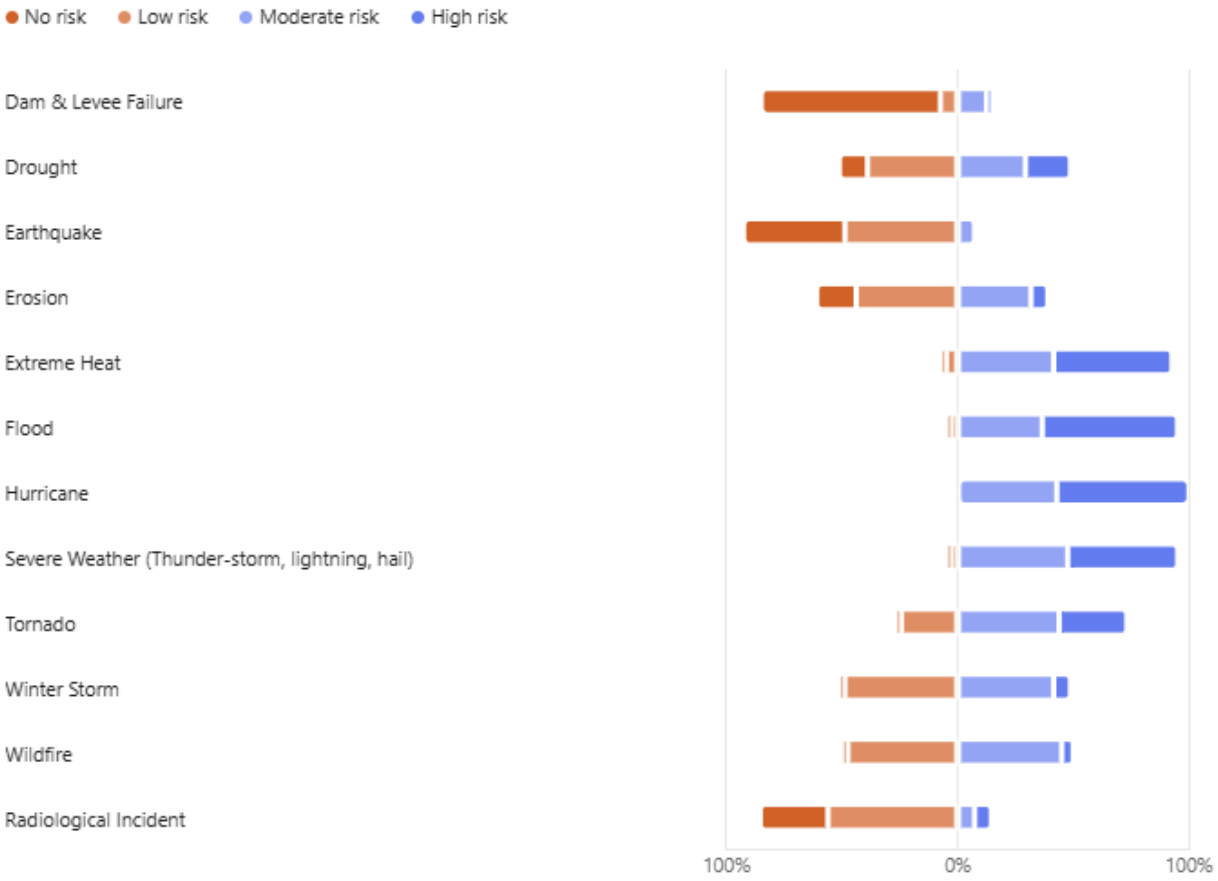


Figure B.6 – Survey Response, Floodplain Vulnerability

6. Is your home located in a floodplain?



Figure B.7 – Survey Response, Flood Insurance

7. Do you have flood insurance for your home and/or personal property?

Yes	11
No	29
I don't know	0

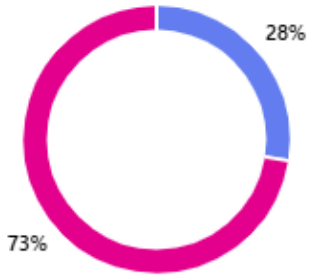


Figure B.8 – Survey Response, Lack of Flood Insurance

8. If you do NOT have flood insurance, what is the reason?

It's too expensive	4
I never really considered it	4
I don't need it because my home is elevated or otherwise protected	17
Other	4

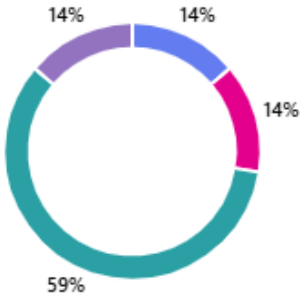


Figure B.9 – Survey Response, Personal Actions Taken for Mitigation

9. Have you taken any actions to protect your home or neighborhood from hazards?

Yes	17
No	24



Figure B.10 – Survey Response, Personal Actions Taken Continued

10. If you answered "Yes" to question 9, what actions have you implemented?

More details

17
Responses

Latest Responses
"There has been a canal dug forr drainage."
...

3 respondents (18%) answered flood for this question.



Figure B.11 – Survey Response, Government Contact

11. Do you know what government office to contact to learn more about your hazard risks and how to reduce vulnerability in your area?



Figure B.12 – Recommendations for Local Government Action

12. What are some steps your local government could take to reduce the risk of future hazard damages in your neighbor hood?

More details

26
Responses

Latest Responses

"Come out to e amine property in back area to see if it is safe. And if needs o... "

"Would be nice if the local government actually listen to the citizens and use ... "

...

4 respondents (15%) answered area for this question.



Figure B.13 – Preferred Mitigation Categories

13. Many community-wide activities can reduce our risk from hazards. These activities generally fall into one of the follo wing six broad categories:

- **Prevention:** administrative and regulatory actions, plans, policies, and ordinances that influence how land is de veloped and buildings are built. *Examples include planning and zoning, building codes, open space preservation, land use, and floodplain regulations.*
- **Property Protection**: actions that involve the modification of existing buildings to protect them from a hazard or remove them from a hazardous area. *Examples include acquisition, relocation, elevation, structural retrofits, a nd storm shutters.*
- **Natural Resource Protection**: actions that minimize hazard losses and preserve or restore the functions of nat ural systems. *Examples include floodplain protection, habitat preservation, slope stabilization, stream buffers, wet land and marsh protection, and forest management.*
- **Structural Projects**: actions that lessen the impact of a hazard by modifying the natural progression of a hazar d. *Examples include dams, levees, floodwalls, berms, drainage infrastructure, detention/retention basins, channel modifications, retaining walls, and storm sewers.*
- **Emergency Services**: actions that protect people and property during and immediately after a hazard event. *E xamples include warning systems, evacuation planning, emergency response training, and protection of critical e mergency facilities or systems.*
- **Public Education and Awareness**: actions to inform the public about hazards and techniques they can use to protect themselves and their property. *Examples include outreach projects, school education programs, library m aterials, and demonstration events.*

Please rank these categories by how important you think each one is for your community to consider pursuing.

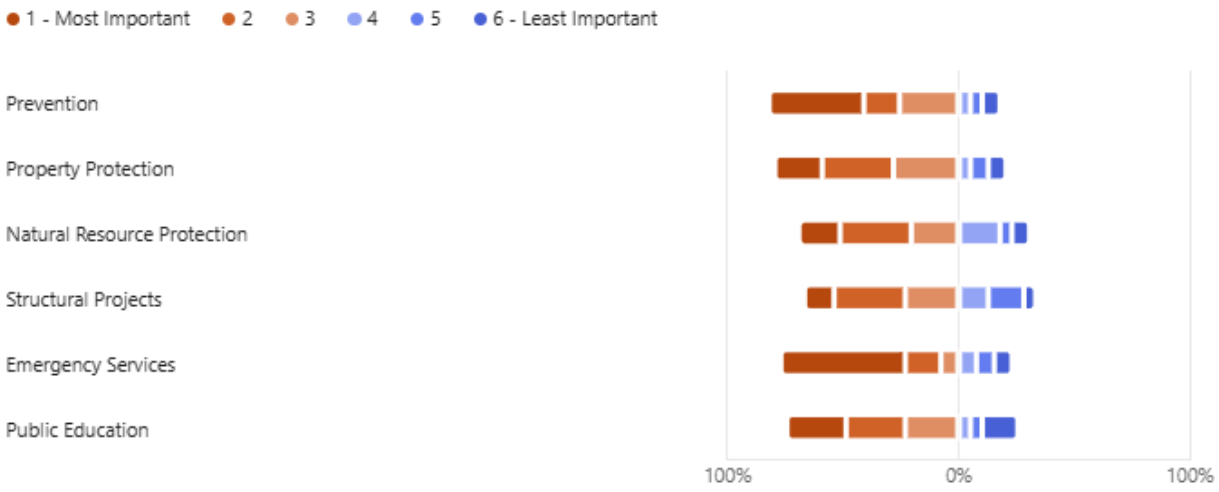
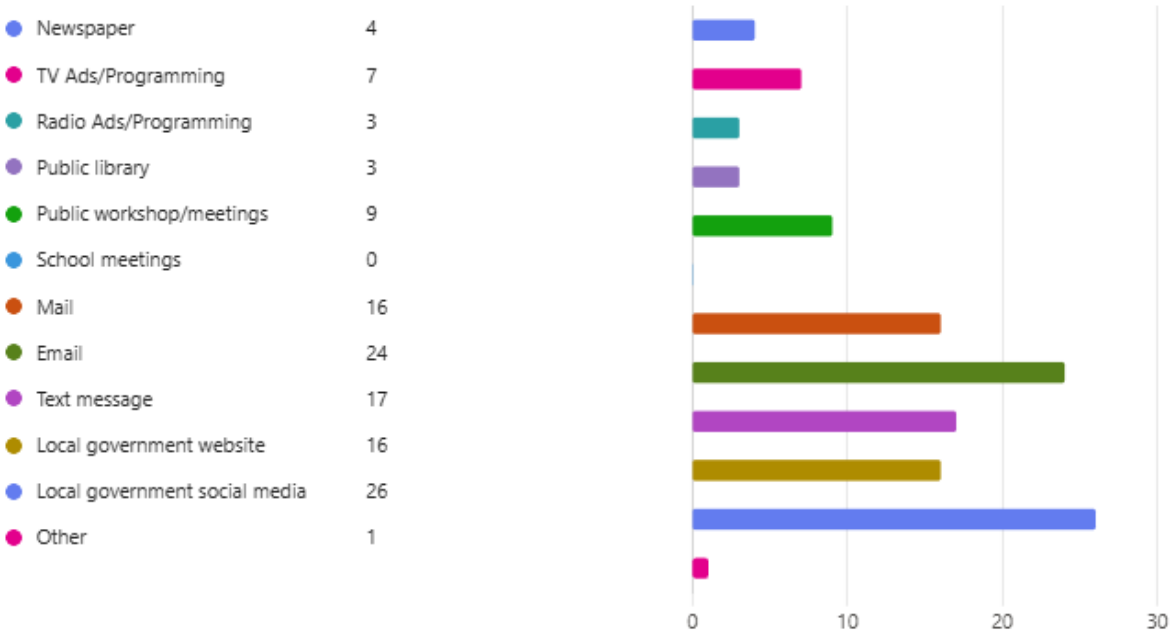


Figure B.14 – Preferred Public Outreach Methods

14. What is the best way for you to receive information about how to make your home or neighborhood more resistant t o flood damage? Please select your top three choices.



PLAN WEBSITE AND PUBLIC SURVEY OUTREACH





Public Survey for Albemarle Regional Hazard Mitigation Plan Update

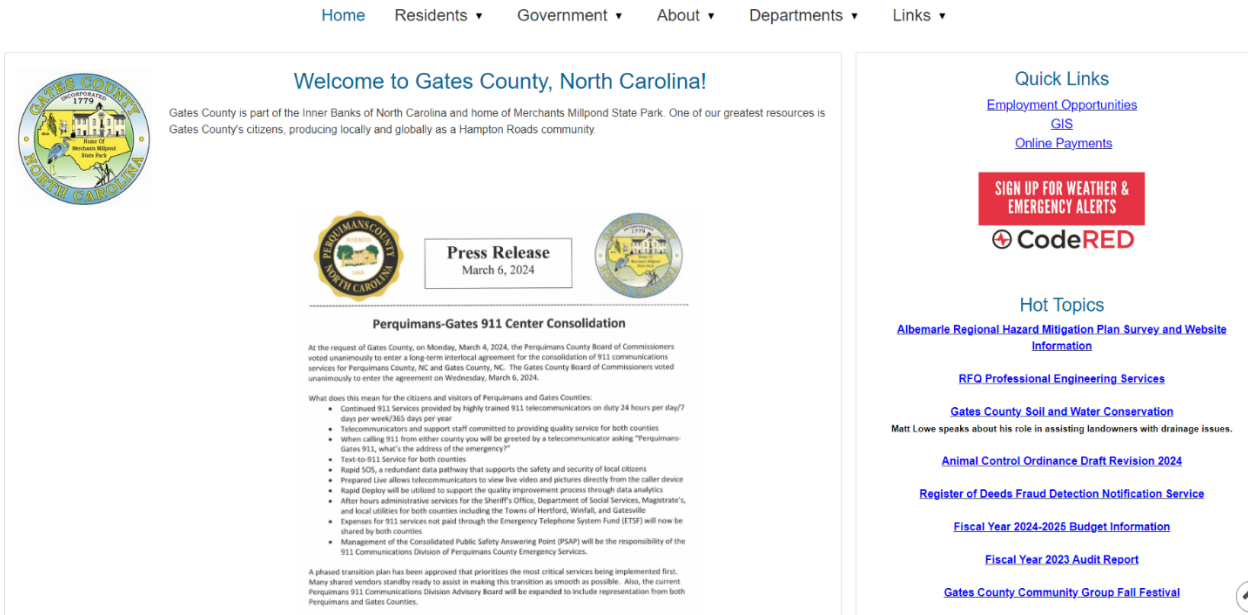
Camden County, Chowan County, Gates County, Hertford County, Pasquotank County, and Perquimans County, and their incorporated communities are updating the Albemarle Regional Hazard Mitigation Plan. Local governments are required to prepare and update hazard mitigation plans to be eligible for FEMA hazard mitigation assistance grants.

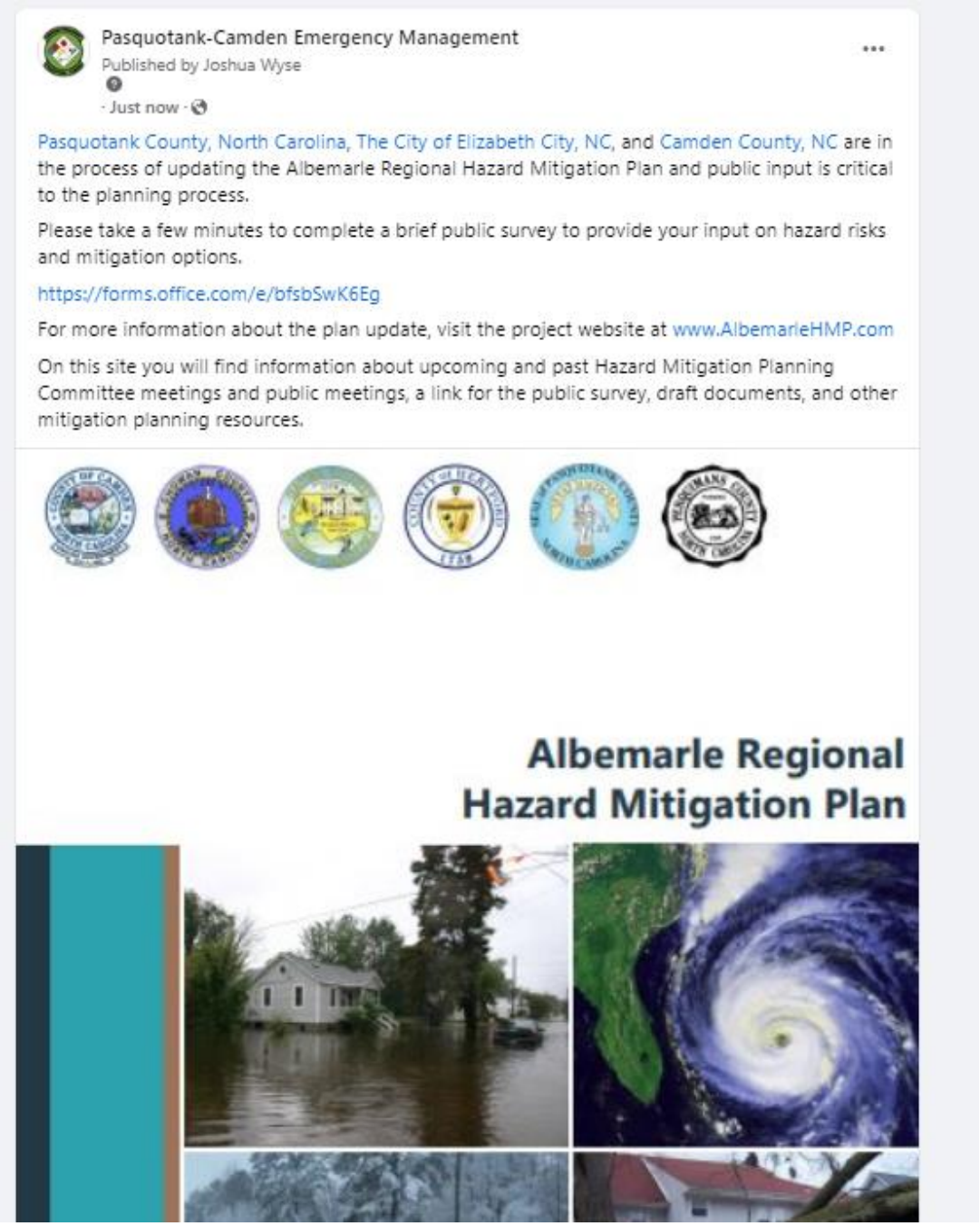
Public input is critical to the planning process. Please take a few minutes to complete a brief public survey to provide your input on hazard risks and mitigation options. Click HERE or scan the QR code (in the document linked below) for the survey.

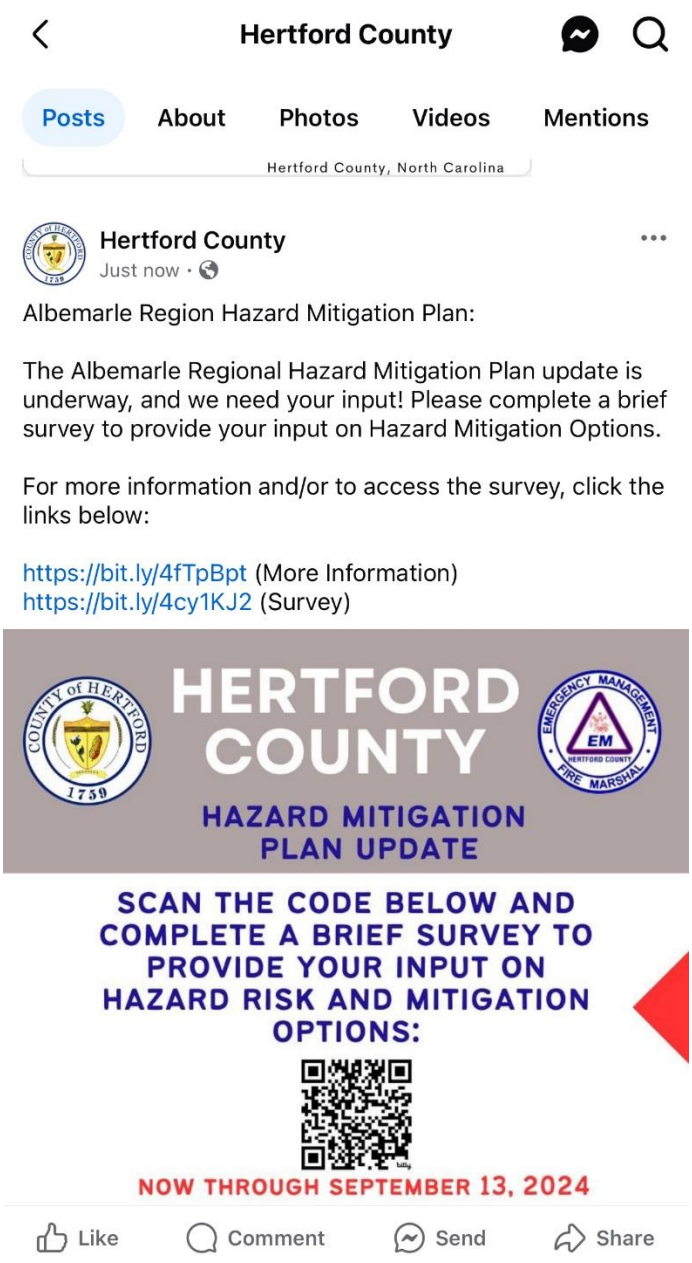
For more information about the plan update, visit the project website at www.AlbemarleHMP.com. On this site you will find information about upcoming and past Hazard Mitigation Planning Committee meetings and public meetings, a link for the public survey, draft documents, and other mitigation planning resources.

Link for QR Code





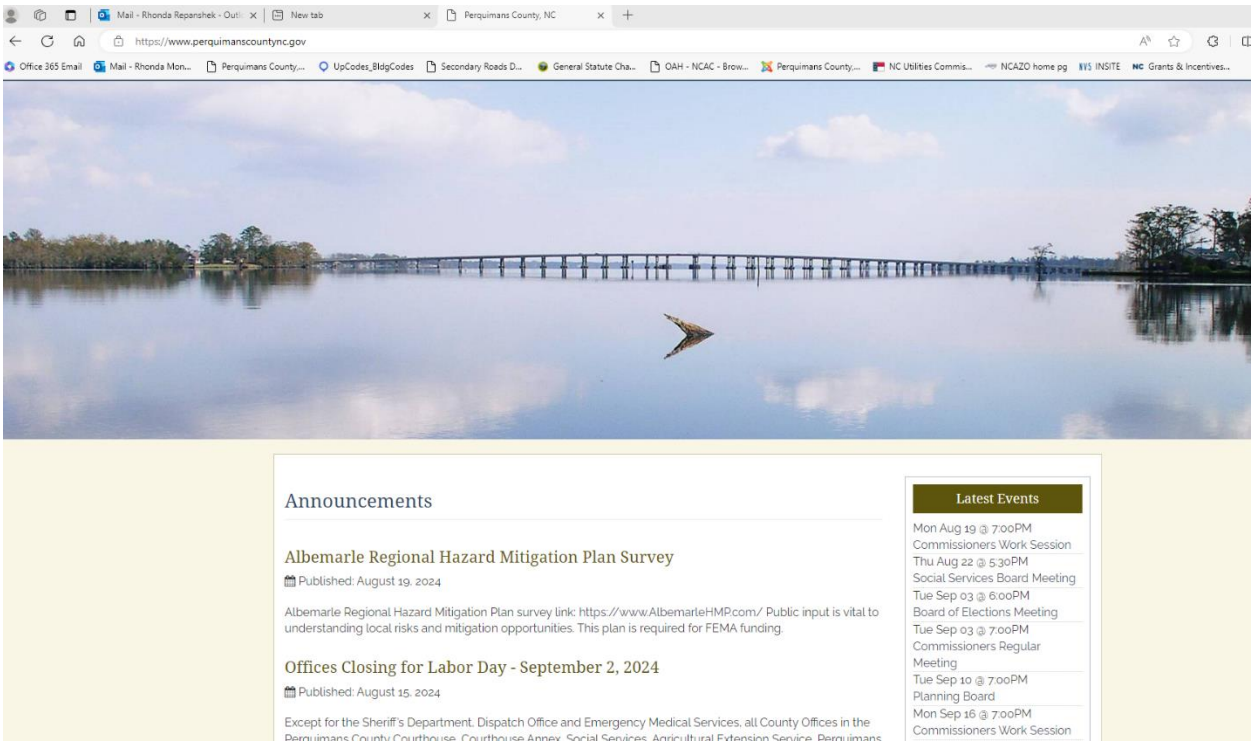

Pasquotank-Camden Emergency Management
Published by Joshua Wyse
· Just now ·
Pasquotank County, North Carolina, The City of Elizabeth City, NC, and Camden County, NC are in the process of updating the Albemarle Regional Hazard Mitigation Plan and public input is critical to the planning process.
Please take a few minutes to complete a brief public survey to provide your input on hazard risks and mitigation options.
https://forms.office.com/e/bfsbSwK6Eg
For more information about the plan update, visit the project website at www.AlbemarleHMP.com
On this site you will find information about upcoming and past Hazard Mitigation Planning Committee meetings and public meetings, a link for the public survey, draft documents, and other mitigation planning resources.
Albemarle Regional Hazard Mitigation Plan


Hertford County
Posts
About
Photos
Videos
Mentions
Hertford County, North Carolina
Hertford County
Just now
Albemarle Region Hazard Mitigation Plan:
The Albemarle Regional Hazard Mitigation Plan update is underway, and we need your input! Please complete a brief survey to provide your input on Hazard Mitigation Options.
For more information and/or to access the survey, click the links below:
https://bit.ly/4fTpBpt (More Information)
https://bit.ly/4cy1KJ2 (Survey)
HERTFORD COUNTY
HAZARD MITIGATION PLAN UPDATE
SCAN THE CODE BELOW AND COMPLETE A BRIEF SURVEY TO PROVIDE YOUR INPUT ON HAZARD RISK AND MITIGATION OPTIONS:
NOW THROUGH SEPTEMBER 13, 2024
Like
Comment
Send
Share

Camden County, Chowan County, Gates County, Hertford County, Pasquotank County, and Perquimans County, and their incorporated communities are updating the Albemarle Regional Hazard Mitigation Plan. Local governments are required to prepare and update hazard mitigation plans to be eligible for FEMA hazard mitigation assistance grants.

Public input is critical to the planning process. Please take a few minutes to complete a brief public survey to provide your input on hazard risks and mitigation options. Click here or scan the QR code for the survey.

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Mail - Rhonda Repanshek - Outl
New tab
Perquimans County, NC
https://www.perquimanscountync.gov
Office 365 Email
Mail - Rhonda Mon...
Perquimans County,...
UpCodes_BldgCodes
Secondary Roads D...
General Statute Cha...
OAH - NCAC - Brow...
Perquimans County,...
NC Utilities Commis...
NCAZO home pg
INSITE
Grants & Incentives...
Announcements
Albemarle Regional Hazard Mitigation Plan Survey
Published: August 19, 2024
Albemarle Regional Hazard Mitigation Plan survey link: https://www.AlbemarleHMP.com/ Public input is vital to understanding local risks and mitigation opportunities. This plan is required for FEMA funding.
Offices Closing for Labor Day - September 2, 2024
Published: August 15, 2024
Except for the Sheriff's Department, Dispatch Office and Emergency Medical Services, all County Offices in the
Latest Events
Mon Aug 19 @ 7:00PM Commissioners Work Session
Thu Aug 22 @ 5:30PM Social Services Board Meeting
Tue Sep 03 @ 6:00PM Board of Elections Meeting
Tue Sep 03 @ 7:00PM Commissioners Regular Meeting
Tue Sep 10 @ 7:00PM Planning Board
Mon Sep 16 @ 7:00PM Commissioners Work Session

B.3 PLANNING STEP 3: COORDINATE

This planning step credits the incorporation of other plans and other agencies' efforts into the development of the Hazard Mitigation Plan. Other agencies and organizations must be contacted to determine if they have studies, plans and information pertinent to the Hazard Mitigation Plan, to determine if their programs or initiatives may affect the community's program, and to see if they could support the community's efforts. To incorporate stakeholder input into the plan, a variety of stakeholders were identified by the HMPC and sent an email inviting them to attend a public meeting, review the draft plan, and provide feedback and comments. The coordination letter sent via email is provided below. A list of stakeholders detailing their involvement is provided in Table B.3.

Stakeholders were also involved through specific requests for data to support the development of the plan.

From: Moore, Abigail
Sent: Friday, March 28, 2025 9:34 AM
Subject: Albemarle Regional Hazard Mitigation Plan Stakeholder Notice

Good afternoon,

Camden, Chowan, Gates, Hertford, Pasquotank, and Perquimans Counties and their incorporated jurisdictions have updated the Albemarle Regional Hazard Mitigation Plan and are seeking stakeholder input on the draft plan. You are receiving this email because the plan participants identified you as a stakeholder of this plan. This plan update is required for all communities to maintain eligibility for pre- and post-disaster mitigation funding from FEMA, and it will also help the participating communities to understand vulnerabilities and proactively mitigate risk.

To learn more about the plan update and to review the draft plan, please visit www.AlbemarleHMP.com. If you would like to share any information or feedback that might be relevant to the plan and local mitigation efforts, please send it to me at abigail.moore@wsp.com by Friday April 11, 2025 or submit your comments via the plan website.

We appreciate any input you may wish to share and thank you for your assistance with this planning effort!

Abby Moore, AICP, CFM
Hazard Mitigation & Resilience Planner
She/Her

T +1 919-767-1112

WSP
4021 Stirrup Creek Drive, Suite 100
Durham, NC 27703

wsp.com

Table B.3 – Stakeholder List

First Name	Last Name	Organization
		Non-Profit Organizations
Bill	Blake	Albemarle Area United Way, Executive Director
Ron	Cummings	Chowan/Perquimans Habitat for Humanity, President
Dr. Landon	Mason	Economic Improvement Council, Executive Director
Lee	Leidy	NC Coastal Land Trust, Northeast Region Director
		Educational Institutions
Dr. Joe	Ferrell	Camden County Schools, Superintendent
Dr. Rob	Jackson	Edenton-Chowan Schools, Superintendent
Dr. Phillip Barry	Williams	Gates County Schools, Superintendent
Dr. William	Wright	Hertford County Public Schools, Superintendent
Rhonda	James-Davis	Elizabeth City-Pasquotank Public Schools, Interim Superintendent
James	Bunch	Perquimans County Schools, Interim Superintendent
John	Hinton	Chowan University, Vice President
Rickey	Freeman	Elizabeth City State University Emergency Management Professional
Dr. Robert	Wynegar	College of the Albemarle, President
		Surrounding Municipalities
Mary Beth	Newns	Currituck County, Emergency Management Director
Ronnie	Storey, Jr.	Northampton Emergency Management Coordinator
Phil	Ricks	Halifax County Emergency Services Director
Mitch	Cooper	Bertie County Emergency Services Director
Sharon	Chamberlain	Chesapeake, VA Emergency Management, Senior Planner
Erin	Sutton	Virginia Beach, VA Deputy Emergency Service Coordinator
Richard	Stephens	Suffolk County, VA Deputy Emergency Management Coordinator
		Federal Government
Jason	Hunter	FEMA Region IV, Chief, Floodplain Management & Insurance Branch
Valerie	Anderson	FEMA Region IV, Natural Hazards Program Specialist
Dewana	Davis	FEMA Region IV, Insurance Specialist
Roy	McClure	FEMA NFIP/CRS Specialist
Kymberly	Kudla	FEMA Mitigation Planning Specialist
David	Holcomb	ISO/CRS Specialist
Mike	Bratcher	ISO/CRS Specialist
Sherry	Harper	ISO/CRS Technical Coordinator
Katherine	Smith	USGS Climate Adaptation Science Center
		State Government
Steve	Garrett	State NFIP Coordinator
Steve	McGugan	State Hazard Mitigation Officer
Andrea	Webster	Resilience Policy Advisor
Holly	White	Resilience Planner
Helene	Weatherington	Resilient Communities Specialist
C.W. "Win"	Bridgers	NCDOT Division 1, Division Engineer
Adam	Carver	Dismal Swamp State Park, Park Superintendent
Hannah	Thompson-Welch	NC Forest Service, Wildfire Mitigation Specialist

First Name	Last Name	Organization
Business Community		
Daryl	Williams	Murfreesboro Chamber of Commerce, Executive Director
Scott	Hinton	Elizabeth City Regional Airport, Airport Director
Susan	Creed	Edenton Chowan Chamber of Commerce, Executive Director
Anya	Davis	Elizabeth City Chamber of Commerce, President

APPENDIX C MITIGATION ALTERNATIVES

44 CFR Subsection D §201.6(c)(3)(ii): [The mitigation strategy section shall include] a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

As part of the process of developing the mitigation action plans found in Section 7, the HMPC reviewed and considered a comprehensive range of mitigation options before selecting the actions identified for implementation. This section summarizes the full range of mitigation measures evaluated and considered by the HMPC, including a review of the categories of mitigation measures outlined in the 2017 CRS Coordinator's Manual, a discussion of current local implementation and CRS credits earned for those measures, and a list of the specific mitigation projects considered and recommended for implementation.

Mitigation alternatives identified for implementation by the HMPC were evaluated and prioritized using the criteria discussed in Section 6 of this plan.

C.1 CATEGORIES OF MITIGATION MEASURES CONSIDERED

The HMPC analyzed viable mitigation options that addressed each of the identified hazards and supported the identified goals and objectives. As part of the review of mitigation alternatives, the HMPC was presented with the following list of mitigation categories which are utilized as part of the CRS planning process.

- Prevention
- Property Protection
- Natural Resource Protection
- Structural Projects
- Emergency Services
- Public Information and Outreach

Action ideas within each of these categories were discussed and considered for inclusion in the plan. The HMPC was encouraged to select actions to pursue within most if not all of these categories so as to develop a comprehensive approach to hazard mitigation.

C.2 ALTERNATIVE MITIGATION MEASURES PER CATEGORY

This section presents a summary review of the mitigation measures that were considered by the HMPC. Note: the CRS credit recommendations are based on the 2017 CRS Coordinator's Manual and the 2021 Addendum.

C.2.1 PREVENTATIVE AND REGULATORY MEASURES

Preventative measures are designed to keep a problem - such as flooding - from occurring or from getting worse. The objective of preventative measures is to ensure that future development is not exposed to damage and does not cause an increase in damages to other properties. Building, zoning, planning and code enforcement offices usually administer preventative measures. Some examples of types of preventative measures include:

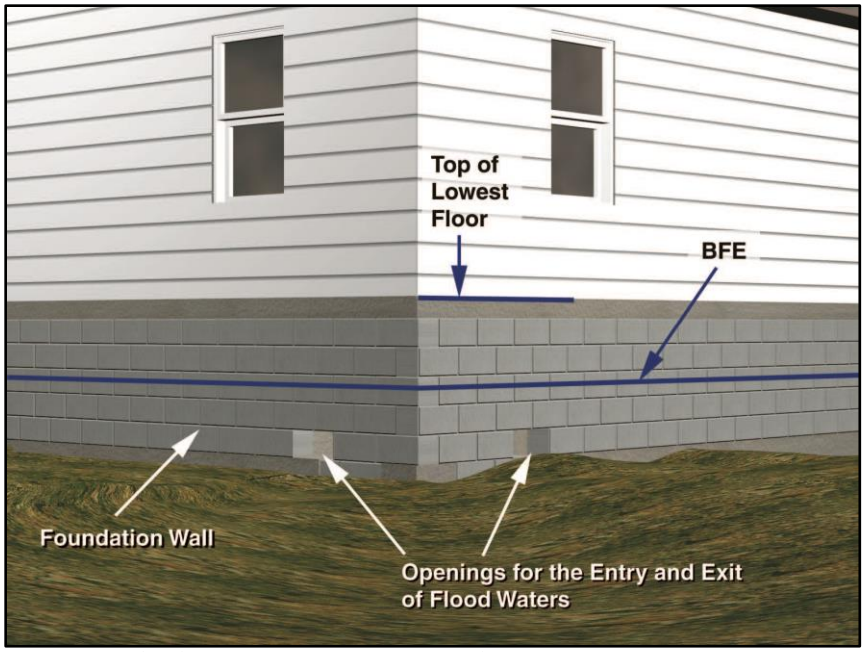
- Building codes
- Zoning ordinance
- Comprehensive or land use planning
- Open space preservation
- Floodplain regulations
- Subdivision regulations
- Stormwater management regulations

BUILDING CODES

Building codes provide one of the best methods for addressing natural hazards. When properly designed and constructed according to code, the average building can withstand many of the impacts of natural hazards. Hazard protection standards for all new and improved or repaired buildings can be incorporated into the local building code. Building codes can ensure that the first floors of new buildings are constructed to be higher than the elevation of the 100-year flood (the flood that is expected to have a one percent chance of occurring in any given year). This is shown in Figure C-1.

Just as important as having code standards is the enforcement of the code. Adequate inspections are needed during the course of construction to ensure that the builder understands the requirements and is following them. Making sure a structure is properly elevated and anchored requires site inspections at each step.

Figure C-1 – Building Codes and Flood Elevations



Source: FEMA Publication: Above the Flood: Elevating Your Floodprone House, 2000

ASCE 24 is a referenced standard in the International Building Code. Any building or structure that falls within the scope of the IBC that is proposed in a flood hazard area is to be designed in accordance with ASCE 24. Freeboard is required as a function of the nature of occupancy and the flood zone. Dwellings and most other buildings have 1-foot of freeboard; certain essential facilities have 2-3 feet; only agricultural facilities, temporary facilities and minor storage facilities are allowed to have their lowest floors at the BFE.

COMPREHENSIVE OR LAND USE PLAN

Building codes provide guidance on how to build in hazardous areas. Planning and zoning activities direct development away from these areas, particularly floodplains and wetlands. They do this by designating land uses that are compatible with the natural conditions of land that is prone to flooding, such as open space or recreation. Communities in the Albemarle Region prepare land use plans in compliance with North Carolina Coastal Area Management Act (CAMA) requirements. All communities updated their comprehensive land use plans within the past five years.

OPEN SPACE PRESERVATION

Keeping the floodplain and other hazardous areas open and free from development is the best approach to preventing damage to new developments. Open space can be maintained in agricultural use or can serve as parks, greenway corridors and golf courses.

Comprehensive and capital improvement plans should identify areas to be preserved by acquisition and other means, such as purchasing an easement. With an easement, the owner is free to develop and use private property, but property taxes are reduced or a payment is made to the owner if the owner agrees to not build on the part set aside in the easement.

Although there are some federal programs that can help acquire or reserve open lands, open space lands and easements do not always have to be purchased. Developers can be encouraged to dedicate park land and required to dedicate easements for drainage and maintenance purposes.

ZONING ORDINANCE

Zoning enables a community to designate what uses are acceptable on a given parcel. Zoning can ensure compatibility of land use with the land's level of suitability for development. Planning and zoning activities can also provide benefits by allowing developers more flexibility in arranging improvements on a parcel of land through the planned development approach. Zoning regulations describe what type of land use and specific activities are permitted in each district, and how to regulate how buildings, signs, parking, and other construction may be placed on a lot. Zoning regulations also provide procedures for rezoning and other planning applications. The zoning map and zoning regulations provide properties with certain rights to development. Zoning is tied to land use planning; rezonings generally must be in agreement with a community's future land use map.

FLOODPLAIN REGULATIONS

A Flood Damage Prevention Ordinance sets development standards for Special Flood Hazard Areas (SFHAs). Communities participating in the National Flood Insurance Program (NFIP) are required to adopt a flood damage prevention ordinance that meets at least the minimum standards of the NFIP; however, a community can incorporate higher standards for increased protection. For example, communities can adopt higher regulatory freeboard requirements, cumulative substantial damage definitions, fill restrictions, and other standards.

Another important consideration in floodplain regulations is the protection of natural and beneficial functions and the preservation of natural barriers such as vegetation. Vegetation along a stream bank is extremely beneficial for the health of the stream. Trees and other plants have an extensive root system that strengthen stream banks and help prevent erosion. Vegetation that has sprouted up near streams

should remain undisturbed unless removing it will significantly reduce a threat of flooding or further destruction of the stream channel.

SUBDIVISION REGULATIONS

Subdivision regulations govern how land can be divided into lots for sale and development and can include design standards and improvement requirements. Subdivision regulations can tie to mitigation in variety of ways, such as by incorporating open space conservation, encouraging cluster development, or requiring certain stormwater management standards and infrastructure.

STORMWATER MANAGEMENT REGULATIONS

Stormwater runoff is increased when natural ground cover is replaced by urban development. Development in the watershed that drains to a river can aggravate downstream flooding, overload the community's drainage system, cause erosion, and impair water quality. There are three ways to prevent flooding problems caused by stormwater runoff:

1. Regulating development in the floodplain to ensure that it will be protected from flooding and that it won't divert floodwaters onto other properties;
2. Regulating all development to ensure that the post-development peak runoff will not be greater than it was under pre-development conditions; and
3. Set construction standards so buildings are protected from shallow water.

REDUCING FUTURE FLOOD LOSSES

Zoning and comprehensive planning can work together to reduce future flood losses by directing development away from hazard prone areas. Creating or maintaining open space is the primary way to reduce future flood losses.

Planning for open space must also be supplemented with development regulations to ensure that stormwater runoff is managed and that development is protected from flooding. Enforcement of the flood damage prevention ordinance and the flood protection elevation requirement provides an extra level of protection for buildings constructed in the planning area.

Stormwater management and the requirement that post-development runoff cannot exceed pre-development conditions is one way to prevent future flood losses. Retention and detention requirements also help to reduce future flood losses.

LOCAL IMPLEMENTATION RECOMMENDATIONS

The CRS encourages strong building codes. It provides credit in two ways: points are awarded based on the community's Building Code Effectiveness Grading Schedule (BCEGS) classification and points are awarded for adopting the International Code series. In North Carolina, communities are limited by the State Building Code Council which has not implemented the most current version of the International Building Code.

CRS credits are available for regulations that encourage developers to preserve floodplains or other hazardous areas away from development. There is no credit for a plan, only for the enforceable regulations that are adopted pursuant to a plan. Communities in the Albemarle Region could receive credit for Activity 430 – Higher Regulatory Standards and for Activity 420 – Open Space Preservation for preserving parcels within the SFHA as open space. Preserving flood prone areas as open space is one of the highest priorities of the CRS. The credits in the 2017 manual have doubled for OSP (Open Space Preservation). The participating communities could also receive credit for Activity 450 – Stormwater Management for enforcing regulations for stormwater management and soil and erosion control. Prevention mitigation options considered by the HMPC are elaborated below.

Table C.1 – Prevention Mitigation Options and Recommended Projects

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
Prevention Measures Considered by HMPC and Not Recommended			
-	Zoning and Subdivision Ordinances should require storm shelters in all mobile home areas and subdivisions.	The County does not intend to pursue this strategy at this time.	n/a
-	Amend Flood Damage Prevention Ordinances to require higher standards such as increased freeboard and lower substantial damage threshold.	This strategy is not being pursued by the County at this time.	n/a
Prevention Measures and Funding Recommended for Implementation			
CAM11	Record all tax parcel information and floodplain locations in a GIS system including repetitive loss areas, areas of greatest risk, and vulnerable populations.	Camden County maintains all GIS data through its tax department. These efforts will continue through this plan update.	General Fund NCDPS
CAM16	Continue the Stormwater Advisory Committee's work in identifying major drainage issues in the four stormwater districts and work to identify what level of maintenance is needed in these areas.	Maintenance of stormwater hotspots will reduce flooding.	General Fund, NCDWR
CHO/ EDN4	Compile a map reflecting the "true" extent of past flooding events. This effort should document the flooding associated with each respective flooding event, and document flooding that coincides with defined NFIP Flood Hazard Areas. Additionally, impacted critical facilities, businesses, homes, and infrastructure should be catalogued.	Mapping problem areas and past flooding will enable better planning for prevention of future flood damages.	GF

C.2.2 PROPERTY PROTECTION MEASURES

Generally, natural hazards do not damage vacant areas; the major impact of hazards is to people and improved property. Property protection measures are used to modify buildings or property that are subject to damage in order to reduce their vulnerability. Property protection measures fall under three approaches:

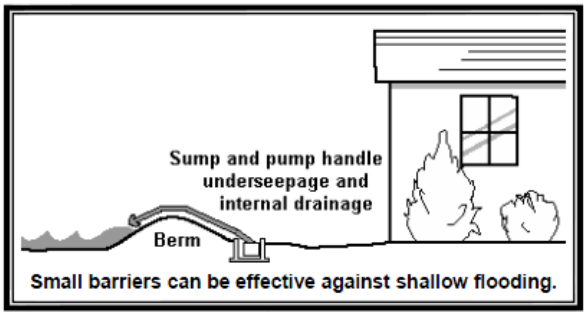
- Modify the site to keep the hazard from reaching the building;
- Modify the building (retrofit) so it can withstand the impacts of the hazard; and
- Insure the property to provide financial relief after the damage occurs.

Property protection measures are normally implemented by the property owner, although in many cases technical and financial assistance can be provided by a government agency.

KEEPING THE HAZARD AWAY

In some cases, properties can be modified so the hazard does not reach the damage-prone improvements. For example, a berm can be built to prevent floodwaters from reaching a house.

BARRIERS



Small barriers can be effective against shallow flooding.

A flood protection barrier can be built of dirt or soil (a "berm") or concrete or steel (a "floodwall"). Careful design is needed so as not to create flooding or drainage problems on neighboring properties. Depending on how porous the ground is, if floodwaters will stay 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 drain to collect the internal groundwater and surface water and a pump and pipe to pump the internal drainage over the barrier. Barriers can only be built so high. They can be overtopped by a flood higher than expected. Barriers made of earth are susceptible to erosion from rain and floodwaters if not properly sloped, covered with grass, and properly maintained.


This low floodwall has landscaping to minimize the adverse impact on the property's appearance.

MODIFY THE BUILDING

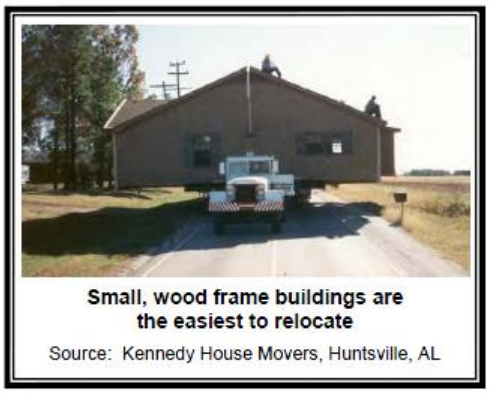
There are several common methods to keep a flood from damaging a building:

- Move the building out of the flood-prone area.
- Elevate the building above the flood level.
- Demolish the building.
- Replace the building with a new one that is elevated above the flood level.
- Retrofit the building to reduce the impact of flooding when it occurs.

Elevation, acquisition, and pilot reconstruction are the most effective types to consider for the planning area.

RELOCATION

Moving a building out of a flood prone area 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 flood-free lot (or portion of the existing lot) available.


Small, wood frame buildings are the easiest to relocate
Source: Kennedy House Movers, Huntsville, AL

BUILDING ELEVATION

Raising a building above the flood level can be almost as effective as moving it out of the floodplain. Water flows under 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.

DEMOLITION

Some buildings, especially heavily damaged or repetitively flooded ones, are not worth the expense to protect them from future damages. 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.



Demolishing a repetitively flooded home

PILOT RECONSTRUCTION

If a building is not in good shape, elevating it may not be worthwhile 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. FEMA funding programs refer to this approach as "pilot reconstruction." It is still a pilot program, and not a regularly funded option. Certain rules must be followed to qualify for federal funds for pilot reconstruction.

RETROFITTING

An alternative to keeping the hazard away from a building is to modify or retrofit the site or building to minimize or prevent damage. There are a variety of techniques to do this, as described below.

- **Dry Floodproofing**

  Dry floodproofing means making all areas below the flood protection level watertight. Walls are coated with waterproofing compounds or plastic sheeting. 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. Owners of buildings located outside the regulatory floodplain can always use dry floodproofing techniques.

  Dry floodproofing is only effective for shallow flooding, such as repetitive drainage problems. It does not protect from the deep flooding along lakes and larger rivers caused by hurricanes or other storms.

- **Wet Floodproofing**

  The alternative to dry floodproofing is wet floodproofing: water is let in 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. 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

Technically, insurance does not mitigate damage caused by a natural hazard. However, it does help the owner repair, rebuild, and hopefully afford to incorporate some of the other property protection measures in the process. Insurance offers the advantage of protecting the property, so long as the policy is in force, without requiring human intervention for the measure to work.

- **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 NFIP. 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.

LOCAL IMPLEMENTATION RECOMMENDATIONS

The CRS provides the most credit points for acquisition and relocation under Activity 520, because this measure permanently removes insurable buildings from the floodplain. Communities in the Albemarle Region could receive credit for Activity 520 – Acquisition and Relocation, for acquiring and relocating buildings from the SFHA. The HMPC recommended that communities pursue the purchase of repetitive loss buildings and other buildings which are subject to flood damage in order to return this land to open space.

The CRS also credits barriers and elevating existing buildings under Activity 530. The credit for Activity 530 is based on the combination of flood protection techniques used and the level of flood protection provided. Points are calculated for each protected building. Bonus points are provided for the protection of repetitive loss buildings and critical facilities. Communities could receive credit for Activity 360 – Flood Protection Assistance by providing advice and assistance to homeowners who may want to flood proof their home or business. Advice is provided both on property protection techniques and on financial assistance programs to help fund mitigation.

Flood insurance information for each community is provided in Section 5 and in greater detail in Annex B. There is no credit for purchasing flood insurance, but the CRS does provide credit for local public information programs that, among other topics, explain flood insurance to property owners. The CRS also reduces the premiums for those people who do buy NFIP coverage. Communities in the Albemarle Region could receive credit for Activity 330 – Outreach Projects.

A selection of property protection mitigation options considered by the HMPC are detailed below.

Table C.2 – Property Protection Mitigation Options and Recommended Projects

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
Property Protection Measures Considered by HMPC and Not Recommended			
-	Build berms and floodwalls to protect property from flood damage.	This is not a preferred strategy for widespread property protection.	n/a
Property Protection Measures and Funding Recommended for Implementation			
HER4	Retrofit all County and Municipal facilities for lightning protection.	The County will work with electric service providers to establish funding and a solution for addressing this strategy.	GF, Grant Funds, Utility Providers

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
CAM5	Encourage new or renovated critical facilities to apply structural hazard mitigation and sustainability concepts when building or remodeling their facilities; to include back-up power sources.	Critical facility protection will help ensure continuity of operations during hazard events.	General Fund, NCDPS, Grant Funds
CHO/ EDN6	Continue to proactively seek out grant funding through NCEM and FEMA for mitigation of repetitive loss properties (RLP's) and other high-risk properties from future flooding events. The County will maintain a list of RLP's, and on an annual basis, will apply for funding for all structures that meet cost-benefit thresholds as defined by FEMA. These efforts will be carried out in coordination with the Town of Edenton.	Mitigation of high-risk properties remains a priority to reduce future flood damages.	HMGP, FMA, General Fund

C.2.3 NATURAL RESOURCE PROTECTION

Resource protection activities are generally aimed at preserving (or in some cases restoring) natural areas. These activities enable the naturally beneficial functions of fields, floodplains, wetlands, and other natural lands to operate more effectively. Natural and beneficial functions of watersheds, floodplains and wetlands include:

- Reduction in runoff from rainwater and stormwater in pervious areas
- Infiltration that absorbs overland flood flow
- Removal and filtering of excess nutrients, pollutants and sediments
- Storage of floodwaters
- Absorption of flood energy and reduction in flood scour
- Water quality improvement
- Groundwater recharge
- Habitat for flora and fauna
- Recreational and aesthetic opportunities

As development occurs, many of the above benefits can be achieved through regulatory steps for protecting natural areas or natural functions. This section covers the resource protection programs and standards that can help mitigate the impact of natural hazards, while they improve the overall environment. Six areas were reviewed:

- Wetland protection
- Erosion and sedimentation control
- Stream/River restoration
- Best management practices
- Dumping regulations
- Farmland protection

WETLAND PROTECTION



Wetlands are often found in floodplains and topographically depressed areas of a watershed. Many wetlands receive and store floodwaters, thus slowing and reducing downstream flows. They also serve as a natural filter, which helps to improve water quality, and they provide habitat for many species of fish, wildlife and plants.

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 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.

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

Communities are required by state and federal regulations to monitor storm water drainage outfalls and control storm water runoff.

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 harder to regulate. Examples of nonpoint source pollutants are lawn fertilizers, pesticides, other chemicals, animal wastes, 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.

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.

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 re-grading 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 nonagricultural 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.

LOCAL IMPLEMENTATION RECOMMENDATIONS

There is credit for preserving open space in its natural condition or restored to a state approximating its natural condition. The credit is based on the percentage of the floodplain that can be documented as wetlands protected from development by ownership or local regulations. Communities in the Albemarle Region could receive credit for Activity 420 – Open Space Preservation for preserving a portion of the SFHA as open space.

Additionally, credit is available for Activity 540 – Drainage System Maintenance. Having a portion of the drainage system inspected regularly throughout the year and maintenance performed as needed would earn a community credit. Communities could also get credit under this activity for providing a listing of

problem sites that are inspected more frequently, and for implementing an ongoing Capital Improvements Program.

Table C.3 – Natural Resource Protection Mitigation Options and Recommended Projects

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
Natural Resource Protection Measures Considered by HMPC and Not Recommended			
-	Coordinate open space planning and preservation with all local certified CAMA land use plans	Regional coordination on open space planning is too difficult to pursue at this time due to administrative and fiscal limitations.	n/a
Natural Resource Protection Measures and Funding Recommended for Implementation			
CAM4	Develop and maintain comprehensive water management policies for the County considering the connections between land-use, urban growth, and surface water and ground water issues.	Camden County continues to monitor its water resources and will maintain a water shortage management plan to ensure the availability of resources during drought conditions.	General Fund, NCDEQ, NCDPS
CHO/ EDN10	Advocate the use of existing State and Federal regulatory programs for protecting and preserving coastal wetland Areas of Environmental Concern.	Local preservation capability is limited, but the County and Town can support outside efforts to preserve local natural resources.	General Fund, NCDOT
CAM23	Undertake efforts to reestablish hydrologic connections between the Perquimans River and the Great Dismal Swamp.	This effort will support the natural and beneficial functions of these important waterbodies and their floodplains.	GF
PAS13	Incorporate shoreline vegetation protection buffers into the City of Elizabeth City's Unified Development Ordinance as a stipulation to development in and near areas of environmental concern.	Vegetative buffer requirements can protect natural and beneficial floodplain functions on currently undeveloped parcels when they become developed.	GF

C.2.4 EMERGENCY SERVICES MEASURES

Emergency services measures protect people during and after a disaster. A good emergency management program addresses all hazards, and it involves all local government departments. This section reviews emergency services measures following a chronological order of responding to an emergency. It starts with identifying an impending problem (threat recognition) and continues through post-disaster activities.

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 detail.

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 a NWS StormReady community is a good measure of a community's emergency warning program for weather hazards.

RESPONSE

The protection of life and property is the most important task of emergency responders. Concurrent 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 a shelter 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.

LOCAL IMPLEMENTATION RECOMMENDATIONS

Flash flood warnings are issued by National Weather Service Offices, which have the local and county warning responsibility. Flood warnings are forecasts of coming floods, are distributed to the public by

the NOAA Weather Radio, commercial radio and television, and through local emergency agencies. The warning message tells the expected degree of flooding, the affected river, when and where flooding will begin, and the expected maximum river level at specific forecast points during flood crest.

Communities in the Albemarle Region could receive credit for Activity 610 – Flood Warning Program for maintaining a program that provides timely identification of impending flood threats, disseminates warnings to appropriate floodplain residents, and coordinates flood response activities. Community Rating System credits are based on the number and types of warning media that can reach the community's flood prone population. Depending on the location, communities can receive credit for the telephone calling system and more credits for additional measures, like telephone trees. Being designated as a StormReady community also provides additional credits.

Table C.4 – Emergency Services Mitigation Options and Recommended Projects

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
Emergency Services Measures Considered by HMPC and Not Recommended			
-	Encourage the practice of placing storm shelters in all mobile home areas and subdivisions.	The County/City is no longer pursuing this strategy.	n/a
Emergency Services Measures and Funding Recommended for Implementation			
CAM1	Maintain "Storm Ready Community" Status	Maintaining Storm Ready status ensures an important baseline of warning and preparedness.	General Fund
PER5	Maintain and annually update the county Emergency Operations Plan. This plan should contain detailed information on responsible parties and contact information. This information should be updated as positions and contact information change.	This effort is carried out annually by Perquimans County Emergency Services. The review and amendments are based on the results of the County's annual tabletop exercise.	General Fund, NCDPS
CAM9	Review the Pasquotank-Camden-Elizabeth City Multi-Hazard Operations Plan annually and update the plan as necessary. Ensure all departments establish guidelines for response to emergencies and to maintain departmental operations. Work with County departments to ensure each department possesses a clear understanding of department responsibilities as outlined in the Pasquotank-Camden- Elizabeth City Multi-Hazard Operations Plan.	This action supports multi-jurisdictional coordination and preparedness.	General Fund, NCDPS
GAT2	Support the expansion of US Highway 13/158 to facilitate greater evacuation capacity.	The County continues to support this strategy and will do so until the project is funded and constructed through efforts associated with the County Transportation Improvement Plan.	GF, NCDOT

C.2.5 STRUCTURAL PROJECTS

Four general types of flood control projects are reviewed here: levees, reservoirs, diversions, and dredging. These projects have three advantages not provided by other mitigation measures:

- They can stop most flooding, protecting streets and landscaping in addition to buildings.
- Many projects can be built without disrupting citizens' homes and businesses.
- They are constructed and maintained by a government agency, a more dependable long-term management arrangement than depending on many individual private property owners.

However, as shown below, structural measures also have shortcomings. The appropriateness of using flood control depends on individual project area circumstances.

Advantages

- They may provide the greatest amount of protection for land area used
- Because of land limitations, they may be the only practical solution in some circumstances
- They can incorporate other benefits into structural project design, such as water supply and recreational uses
- Regional detention may be more cost-efficient and effective than requiring numerous small detention basins

Disadvantages

- They can disturb the land and disrupt the natural water flows, often destroying wildlife habitat
- They require regular maintenance
- They are built to a certain flood protection level that can be exceeded by larger floods
- They can create a false sense of security
- They promote more intensive land use and development in the floodplain

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. 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).



Retention pond

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 floodwaters 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.

LOCAL IMPLEMENTATION RECOMMENDATIONS

Structural flood control projects that provide at least 100-year flood protection and that result in revisions to the Flood Insurance Rate Map are not credited by the CRS so as not to duplicate the larger premium reduction provided by removing properties from the mapped floodplain. Other flood control projects can be accepted by offering a 25-year flood protection.

Table C.5 – Structural Projects Mitigation Options and Recommended Projects

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
Structural Project Measures Considered by HMPC and Not Recommended			
-	Research possible seawall options to prevent tidal flooding.	The County is not pursuing this strategy at this time.	n/a
-	Monitor and inspect all dams to ensure that all dam facilities, both public and private, are properly maintained and stable.	Although the Region supports this effort, it is a function of the Office of Dam Safety and not within the region's administrative capabilities.	n/a
Structural Project Measures and Funding Recommended for Implementation			
CHO/ EDN2	Work to improve drainage conditions throughout the County through the identification and implementation of capital improvements projects. A variety of funding mechanisms will be utilized to carry out these efforts and when possible, grant funding will be utilized.	Specific locations have been identified where drainage improvements are needed. Funding is available to support this type of mitigation.	General Fund, NCDPS, HMGP, NCDENR
CHO/ EDN3	Repair and upgrade all facilities and equipment associated with both Bennett and Dillard Millpond.	Structural improvements will reduce vulnerability and protect life safety.	General Fund, NCDPS, NCDEQ
PAS16	Reduce the vulnerability of infrastructure and the built environment by identifying infrastructure (i.e., pumping stations, roads) in the city/county that is repetitively damaged by flooding and consider ways to reduce those vulnerabilities.	Infrastructure improvements will reduce damages and support continuity of operations of critical infrastructure.	General Fund, NCDPS, NCDEQ

C.2.6 PUBLIC INFORMATION

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 and 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 a hazard. 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.

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 or repetitive loss property owners. 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.

In addition to online floodplain maps, websites can link to information for homeowners on how to retrofit for floods or a website about floods 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 staffs 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 staffs 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
- 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:

- 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
- The process that will be followed to monitor and evaluate the projects

LOCAL IMPLEMENTATION RECOMMENDATIONS

Communities in the Albemarle Region could receive credit under Activity 330 – Outreach Projects as well as Activity 350 – Flood Protection Information. Credit is available for targeted and general outreach projects. Credit is also provided for making publications relating to floodplain management available in the reference section of the local library.

Table C.6 – Public Information and Outreach Mitigation Options and Recommended Projects

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
Public Information and Outreach Measures Considered by HMPC and Not Recommended			
-	Undertake a multi-jurisdictional Program for Public Information	Regional coordination for public information is not being pursued at this time. Local governments have their own methods of outreach.	n/a
Public Information and Outreach Measures and Funding Recommended for Implementation			
CAM21	Work to improve its emergency notification system in an effort to increase awareness regarding the locations of shelters and evacuation routes during natural hazard events.	Targeted information regarding evacuation and sheltering is considered a priority.	GF, NCDPS

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
CHO/ EDN8	Work to educate and inform local residents about current and potential threats associated with natural hazard events through the use of social media, news media outlets, County and Town distribution list, and television media. These efforts will include providing information regarding the dangers associated with residing within defined flood hazard areas.	Using a variety of outreach mediums increases the reach of public information.	General Fund, NCDPS
CHO/ EDN12	Work with the curriculum directors of both the public and private schools to add all mitigation hazards prevention and preparedness information.	Providing hazard preparedness and mitigation information to school children will help information reach families throughout the county.	GF

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