

North Carolina  
**RESILIENT  
COASTAL  
COMMUNITIES  
PROGRAM**



# RESILIENCE STRATEGY

TOWN OF AURORA / RICHLAND TOWNSHIP

SPRING 2022

## INTRODUCTION

The [Resilient Coastal Communities Program \(RCCP\)](#) is funded through the North Carolina General Assembly and the National Fish and Wildlife Foundation and administered by the North Carolina Department of Environmental Quality – Division of Coastal Management. The RCCP is a component of the statewide North Carolina Resilient Communities Program, called for in the [North Carolina Climate Risk Assessment and Resilience Plan](#).

The RCCP was established with the objectives of providing financial grants and technical assistance to support a proactive, locally driven, and equitable approach to coastal resilience planning and project implementation. The RCCP provides a phased framework to assess coastal risks and vulnerabilities, engage community stakeholders, and develop projects to strategically improve the resiliency of communities and their natural and built infrastructure. The RCCP consists of four phases:

- Phase 1 – Community Engagement/Risk and Vulnerability Assessment
- Phase 2 – Planning, Project Identification and Prioritization
- Phase 3 – Engineering and Design
- Phase 4 – Implementation

In Spring 2021, the Town of Aurora was selected to participate in the first two phases of the RCCP. The first two phases of the RCCP were completed in Spring 2022 with the development of this Resiliency Strategy document, the main deliverable of the program's initial phases. This Resiliency Strategy consists of a combination of all the Phase 1 and 2 deliverables/materials including those for the defining of the community vision and goals, the Community Action Team Report, the Stakeholder Engagement Strategy, the inventory of existing local and regional plans, the Risk and Vulnerability Assessment Report, and the project profile portfolios. This plan provides a framework to:

- Document the resiliency planning process and outcomes and provide a clarity of purpose
- Identify opportunities for short-term and long-term resiliency actions based on community input
- Set project priorities for Phase 3 – Engineering and Design
- Identify and attract potential funding opportunities to facilitate a 'direct path' to project implementation



## VISION & GOALS

A resiliency strategy vision, goals, and objectives were developed to guide the planning process. Existing relevant plans were summarized for the Community Action Team (CAT). Vision statements and goals from each of the local and regional plans were reviewed. Example goals from resiliency plans outside the area were also reviewed. Example vision statements, goals, and themes were identified following review of existing plans. These examples were used to guide the CAT's brainstorming process during the first CAT meeting.

The team was encouraged to consider the triple bottom line approach to resiliency, including environmental, economic, and social factors. Worksheets were provided to CAT members for use in identifying draft vision statements, goals, and objectives. The team worked together during the first CAT meeting to complete the worksheets. Team members also had an opportunity to complete the worksheets following the CAT meeting.

Input from the CAT was used to finalize the resilience vision, goals, and objectives listed below.

## RESILIENCE VISION

The Aurora and Richland Township community is resilient to natural hazards and climate-related changes due to an intact network of natural resources, quality municipal infrastructure and services, a healthy and sustainable economy, and proactive, effective response and recovery capabilities.

## RESILIENCE GOALS & OBJECTIVES

### Economic

#### **GOAL 1: Protect and maintain critical infrastructure and ensure that critical infrastructure is resilient to anticipated hazards.**

##### *Objectives:*

- Identify key community assets that need increased protection (both physically and fiscally) from the major weather events and incremental climate change impacts we will face in the next 20-50 years.
- Protect, maintain, and enhance critical infrastructure.
- Protect the wastewater treatment lagoon.

#### **GOAL 2: Provide quality municipal infrastructure and services.**

##### *Objectives:*

- Improve and maintain the sewer system.
- Reduce electric outages due to downed trees on power lines.
- Improve communication/coordination with Duke Energy.
- Convert to an underground electric system.

**GOAL 3: Improve and maintain buildings to support resilience to hazards.***Objectives:*

- Incentivize the construction of “flood resistant” homes.
- Promote research and development of building construction and design standards to better withstand storm damage.
- Elevate flood prone homes.
- Floodproof flood prone businesses and other non-residential buildings.
- Provide guidance on how future development can minimize additional damages and recovery costs from hazard events.

**GOAL 4: Support healthy economic growth and sustainable businesses.***Objectives:*

- Market the Aurora Industrial Park.
- Involve the Aurora Industrial Park in planning efforts.
- Reverse the declining population trend by attracting more residents.
- Make Aurora more attractive for housing and education.
- Revitalize the historic downtown.
- Attract new, sustainable businesses.
- Promote the mining, tourism/ecotourism, and agriculture/aquaculture industries.
- Support industries in achieving natural hazard resilience and in recovery efforts when events occur.

**GOAL 5: Develop tourism and ecotourism industries.***Objectives:*

- Create viable waterfront access to support waterfront and tourism activities.
- Provide long-term boat parking.
- Reconnect communities by water.
- Market the Aurora and Richland area as a destination for ecotourism.

**GOAL 6: Improve internet access.***Objectives:*

- Develop infrastructure for broadband internet to reach all areas in the Aurora and Richland Township community.
- Ensure that connecting to the broadband system is affordable for all citizens and businesses.
- Explore grant opportunities available through the state and federal government for internet access.
- Consider developing a Broadband Taskforce to plan for and identify funding for broadband improvements.

**GOAL 7: Identify and obtain funding for resilience projects.***Objectives:*

- Develop a list of resilience projects suitable for funding.
- Identify funding and grant opportunities to implement resilience projects.

- Identify funding to reduce repetitive losses from previous hazard events, such as funding for building elevation/floodproofing and equitable buyouts.

## **Environmental**

### **GOAL 8: Reduce flooding.**

#### *Objectives:*

- Reduce the potential for flooding of homes.
- Identify both structural and non-structural solutions to flooding.
- Develop flood mitigation projects, including nature based and sustainable solutions.
- Plan for sea level rise.

### **GOAL 9: Improve stormwater management.**

#### *Objectives:*

- Improve drainage issues.
- Clear overgrown ditches to improve drainage from rain events and reduce infiltration to the sewer system.
- Demolish dilapidated homes.
- Remove impervious surfaces as practicable and feasible.
- Remove excess debris from streams to improve capacity.
- Prevent future debris in streams from accumulating.
- Improve construction and site design standards to reduce debris caused by flooding and storms.
- Encourage the construction of permeable surfaces to reduce flash flooding.

### **GOAL 10: Protect an intact network of natural resources.**

#### *Objectives:*

- Provide guidance on sustainable growth practices that respect the natural functions of the regional ecosystem and allow for their natural adaptation as the ecosystem undergoes relatively rapid change in coming decades. (See NC Wildlife's Green Growth Toolbox as a resource.)
- Incentivize reliance on "natural" protective systems as much as possible (i.e., leaving wetlands, forests and marshes as intact as possible to absorb floodwaters and mitigate storm surge).
- Plan for a network of natural lands that should be protected.

## **Social**

### **GOAL 11: Develop proactive, effective response and recovery capabilities.**

#### *Objectives:*

- Restore services quickly and efficiently following a hazard event.
- Minimize damage and loss of life from disasters.
- Rebound from hazard events quickly.
- Identify and obtain funding for emergency services to serve the Richland Township.



- Obtain equipment for efficient tree removal following storm events.
- Provide additional shelters in case of evacuations.
- Ensure that response and recovery efforts meet the needs of all residents and businesses.

**GOAL 12: Foster beneficial partnerships.**

*Objectives:*

- Improve interjurisdictional partnerships.
- Develop a partnership with Beaufort County to support resilience efforts.
- Develop a partnership with the City of Washington to develop ecotourism and connect the communities by water.
- Continue partnering with local community groups and non-profit organizations.

**GOAL 13: Serve vulnerable and disadvantaged populations.**

*Objectives:*

- Enhance public education about available transportation options during evacuations.
- Ensure that bedridden citizens, elderly non-drivers, and other vulnerable populations have information on available transport options.
- Provide the public, including the most vulnerable populations, with the tools needed to protect themselves from natural hazards.
- Conduct grassroots outreach efforts to share information and engage residents in resiliency efforts.
- Partner with local community groups and faith organizations.
- Ensure that all programs are equitable.

## COMMUNITY ACTION TEAM REPORT

Roles to fill on the Community Action Team (CAT) were based on guidance from the Resilient Coastal Communities Program Handbook. The goal was to build a multi-disciplinary Community Action Team with expertise in planning and community development, hazard mitigation, utility management, engineering, the community's economy, engaging with vulnerable and underrepresented populations, and nature-based solutions. Community Action Team members could include municipal/county managers, planners, elected officials, utility managers, community and economic developers, business community representatives, disaster recovery coalitions/groups, councils of governments (COGs), state and federal land managers, non-governmental organizations (NGOs), and others working with the community on resilience planning.

The first CAT member identified was the Town Administrator. The Town Administrator worked with the contractors to identify CAT members to fill the roles detailed above. Potential members were contacted by phone and/or email either by the contractors or the Town Administrator. The need for CAT members was announced to the public at Town Board of Commissioners' meetings. An elected official was selected to serve from the Board of Commissioners as well. Underserved community representatives were identified in partnership with a local community group, Citizens on the Southside Together (COST).

The selected Community Action Team members are listed below.

### COMMUNITY ACTION TEAM MEMBERS

- Bill Cary, Town of Aurora Resident
- Carlton Gideon, Mid-East Commission
- Charles Cannon, Citizen's on Southside Together (COST) Community Group
- Chuck Bonner, Town of Aurora, Public Works Director
- Curt Hendrix, Town of Aurora, Recreation Coordinator
- Joe Calhoun, Citizen's on Southside Together (COST) Community Group
- Judi Lannon, Town of Aurora, Administrator
- Kurt Ryan, Town of Aurora Resident
- Martyn Johnson, Beaufort County Economic Development, Director
- Sue Squires, Beaufort County Economic Development, Economic Development Specialist
- Tina Taylor, Town of Aurora, Commissioner

**Refer to Appendix A for Community Action Team Materials.**

## STAKEHOLDER ENGAGEMENT STRATEGY

### Existing Conditions, Issues, and Opportunities

In fall 2021, a public survey was developed in partnership with the Community Action Team (CAT). Questions were based around resiliency to flooding and sea level rise. The survey was designed to be completed in 5 - 15 minutes depending on how much the respondent had to share. The public survey was available online and was also available in hard copy format.

The survey was advertised on the town's Facebook page as well as on the community website [AuroraLife.us](http://AuroraLife.us). Hard copies of the survey were available at Town Hall, the Citizens on Southside Together (COST) Community Center, the Aurora BHM Regional Library, the Richland Seniors Club, the Aurora-Richland Chamber of Commerce, and the Aurora branch US Post Office. Flyers advertising the survey were hung at these locations to draw attention from visitors. Flyers with the online survey link and a phone number to call for a hard copy survey were also hung at the Aurora Mini Mart and Terry's Mini Mart.

Contractors attended the Aurora Leadership Committee's meeting on October 21, 2021 to create awareness of the Resilient Coastal Communities Program and encourage participation in the survey. Hard copy surveys were available as well as flyers with the online survey link. A total of 38 residents responded to the survey.

Public input from the survey was used to identify existing conditions, issues, needs, and opportunities to enhance resiliency. Information was gathered on how residents' home and business properties have been affected by flooding, flooding seen in the community, how the respondents' personal lives have been affected by flooding, and what measures they have taken to prevent or avoid flooding. This information was used to recommend strategies for flooding resilience. For example, contractors reviewed specific areas where people had noticed flooding issues in the community to recommend strategies for those areas as appropriate, and program recommendations such as public education campaigns were recommended based on survey responses.

### Draft Resiliency Actions

In spring 2022, an online storymap was created using ArcGIS Online and was posted at [BeaufortCountyResiliency.org](http://BeaufortCountyResiliency.org). The storymap reviewed Resiliency 101, Aurora's vision statement, CAT members, building upon previous plans, the public survey, the risk and vulnerability assessment, the top flood related hazards, the STAPLEE analysis, and draft actions, all in an interactive storymap format. There was a comment form at the end of the storymap that the participant could fill out if desired, allowing them to comment on the draft actions and other elements of Aurora's Resilient Coastal Communities Program. The storymap was advertised in conjunction with the public open house, detailed below.



Two public open house events were held, one in person on February 14, 2022 and one virtually on Feb. 21, 2022. These events, along with the storymap at [BeaufortCountyResiliency.org](https://BeaufortCountyResiliency.org), were advertised through a press release, an article in the Washington Daily News, flyers hung at public locations in town, the town's Facebook page, and the community website [AuroraLife.us](https://AuroraLife.us).

The virtual open house utilized the storymap to engage participants. For the in-person open house, posters were displayed which duplicated the information contained in the online storymap, including the following:

- What is resiliency?
- Flooding in Beaufort County
- What does resiliency mean to you? (interactive)
- North Carolina Resilient Coastal Communities Program
- A Community Plan – Resiliency Vision, Community Action Team, Building Upon Previous Plans
- Public Survey Results
- Risk and Vulnerability – Vulnerable Community Assets and Top Flood Related Hazards
- Map – Critical Assets overlaid with Category 3 Storm Surge
- Map – Critical Assets overlaid with 1 ft. Sea Level Rise
- Projects and Priorities – Suite of Potential Solutions
- Preliminary Strategies and their Feasibility
- Action Strategy Areas
- Provide input on your top (3) preferred actions (interactive)
- Provide input on your top (1) nature-based or hybrid action (interactive)

In addition to the interactive posters, there were comment forms available at the public open house to solicit feedback on preferred projects and other aspects of the community's resiliency program. There was also a resource table with handouts on topics such as flood readiness, stormwater education, creating home rain gardens, septic maintenance, mold remediation, etc. Some of these materials were made available in Spanish. Contractors and CAT members were available to interact with the public during the in person and virtual events.

Comment forms could be submitted at the open house event and could be submitted online or by postal mail until February 25, 2022.

Public input indicates that the most popular project for the community is the "Drainage Ditch and Tributary Maintenance Plan". The second most popular project, and the most popular nature-based or hybrid project, is "Wetland Restoration at the Wastewater Treatment Plant."

## ENGAGEMENT TOOLS

- Public Survey
- Webpage/Online Storymap
- Notifications (news release, social media ads, flyers)

- Public Open Houses (In-person and Virtual)

**Refer to Appendix B for Stakeholder Engagement Materials.**

## REVIEW OF EXISTING LOCAL & REGIONAL EFFORTS

To avoid the duplication of work and to build upon and remain consistent with previous resiliency efforts, existing resources/plans/policies/ordinances were reviewed, incorporated, and augmented as part of the community driven RCCP. The Pamlico Sound Hazard Mitigation Plan contains a baseline vulnerability and risk assessment and served as a reference point for conducting the RCCP Phase I and II assessment while considering additional factors and the local context.

## RELEVANT PLANS, ORDINANCES, POLICIES, AND PROGRAMS

- **Albemarle-Pamlico Comprehensive Conservation and Management Plan (CCMP) (2012)**  
*The CCMP considers and analyzes four basic questions: 1) What is a healthy Albemarle-Pamlico system, 2) What is the current condition of the system, 3) What are the most significant challenges facing the system over the next 10 years, and 4) What actions should be implemented to best achieve a healthy system?*
- **Aurora Industrial Park Plan (2021)**  
*This plan to establish an industrial park south of NC 33, which includes an updated site plan, was completed in order to promote economic development and educational opportunity in this section of Beaufort County which has experienced stagnant growth and population decline.*
- **Beaufort County Economic Development FY 21-22 Work Plan (2021)**  
*The purpose of the Beaufort County Economic Development Work Plan is to provide tools, strategies, and guidance to increase economic development through collaboration, resources, knowledge, flexibility, and innovation.*
- **Beaufort County CAMA Land Use Plan (2019)**  
*The purpose of the plan is to help the county and towns to manage growth and development, ensure that new land uses are compatible with land use plans/visions, plan for the expansion of services, and protect and conserve essential coastal resources.*
- **Beaufort County Comprehensive Transportation Plan (2013)**  
*The CTP is a long-range plan which identifies major transportation improvement needs and develops long term solutions for the next 25 to 30 years. It is a joint effort between Beaufort County, City of Washington, Town of Aurora, Town of Bath, Town of Belhaven, Town of Chocowinity, Town of Pantego, Town of Washington Park, the North Carolina Department of Transportation (NCDOT), and the Mid-East Rural Planning Organization.*



- **Beaufort County Comprehensive Bicycle Plan (2020)**  
*The Beaufort County Comprehensive Bicycle Plan provides a framework for the county, municipalities, residents, developers, NCDOT and other regional planning partners to build an improved bicycle network. It provides detailed recommendations for bicycle facilities, programs, policies, and implementations to improve mobility, safety, health, the economy, the environment, and overall quality of life.*
- **Hurricane Matthew Resilient Redevelopment Plan (2017)**  
*The purpose of the plan is to provide a roadmap for community rebuilding and revitalization assistance for the communities that were damaged by the hurricane. The program empowers communities to prepare locally driven recovery plans to identify redevelopment strategies, innovative reconstruction projects, and other needed actions.*
- **Pamlico Peninsula – Building Resilient Regions Report (2016)**  
*The International Economic Development Council (IEDC) contracted to assist Beaufort County and nine other Pamlico Peninsula Counties (PPCs) with developing and implementing resiliency measures. The IEDC provided specific advice on how to strengthen existing programs and develop new programs or strategies so that the county and region can be more resilient from an economic perspective to future crises.*
- **Pamlico Sound Regional Hazard Mitigation Plan (HMP) (2020)**  
*The HMP ensures that all possible activities are reviewed and implemented so that the problem is addressed by the most appropriate and efficient solutions. 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.*
- **Town of Aurora Code of Ordinances**
  - Building Regulations and Minimum Housing
  - Flood Damage Prevention Ordinance
  - Subdivision Ordinance
  - Zoning Ordinance
  - Streets, Sidewalks and Other Public Places
  - Utilities

## RISK AND VULNERABILITY ASSESSMENT REPORT

To assess risk and vulnerability, contractors identified critical assets within the Town of Aurora and the Richland Township. These critical assets included community assets, natural infrastructure, and vulnerable populations within the communities. (See Appendix C for the list of identified critical assets.)

### MAPPING ASSETS, NATURAL INFRASTRUCTURE, AND VULNERABLE POPULATIONS

#### Community Assets

Contractors worked with the Community Action Team (CAT) at the 2<sup>nd</sup> CAT meeting to identify community assets in list format, then researched what GIS data was available. In some cases, there was already a data layer available, while in some cases, the GIS data was created by the contractors based on CAT input on which assets to include. In sources below, “data created” is used to designate data that was developed by the contractor.

#### Sources:

- Fire and EMS Stations – NC Office of State Fire Marshall
- Government Services – data created
- Food – data created
- Water and Wastewater – NC Department of Environmental Quality, Division of Water Resources
- Electric Power Grid – Duke Energy (Tideland EMC data requested but not received)
- Fuel Stations – data created
- Propane Suppliers – data created
- Transportation – NC Dept. of Transportation, Beaufort County, some data for local transportation assets created
- Medical – data created
- Schools – data created
- Libraries – data created
- Churches – data created
- Community Buildings and Facilities – data created
- Hazardous, Leaking Underground Storage Tanks – NC Department of Environmental Quality
- Hazardous, Toxic Release Inventory – US Environmental Protection Agency
- Hazardous, Hazardous Waste Sites – NC Department of Environmental Quality

## Natural Infrastructure

Contractors researched existing natural infrastructure data and shared an initial list with the CAT. The team helped to add additional natural assets to the list. Contractors also worked with the team to identify local public land and private land used for public recreational purposes.

### Sources:

- Wetlands – US Fish and Wildlife Service
- Working Forest Lands – NC Natural Heritage Program
- Rural Forest Landscape – NC Natural Heritage Program
- Urban Forest Landscape – NC Natural Heritage Program
- 100-year Floodplain – FEMA
- 500-year Floodplain – FEMA
- Rivers and Streams – NC Department of Environmental Quality
- High Quality Waters – NC Department of Environmental Quality
- Primary and Secondary Fishery Nursery Areas – NC Dept. of Environmental Quality
- 303(d) Listed Waters – US Environmental Protection Agency
- Parks and Public Land – data created
- Public Boat Ramps – NC Wildlife Resources Commission
- Managed Areas – NC Natural Heritage Program
- Natural Areas – NC Natural Heritage Program

## Vulnerable Populations

Maps of vulnerable populations were downloaded from the Center for Disease Control including the overall Social Vulnerability Index, Socioeconomic Status, Household Composition/Disability, Race/Ethnicity/Language, and Housing Type/Transportation. The CAT reviewed the series of vulnerable populations maps. The team felt that the Socioeconomic Status map and the Housing Type/Transportation map should have shown the Town of Aurora and Richland Township at the highest vulnerability level.

### Sources:

- Social Vulnerability Index – US Center for Disease Control



## Identifying and Mapping Hazards

The Community Action Team chose to evaluate flooding, storm surge and sea level rise as community hazards to assess risk and vulnerability within the community.

### Floodplains

The Coastal Flood Risk model, 100-year floodplain, and 500-year floodplain data from the Federal Emergency Management Agency (FEMA) were used to identify potential flooding scenarios within the community. By selecting three flooding scenarios, the contractors were able to assign each scenario a high, medium, and low threshold to evaluate vulnerability to critical assets.

#### Sources:

- North Carolina Emergency Management Floodplain Mapping program

### Storm Surge

The potential storm surge flooding data from the National Oceanic and Atmospheric Administration (NOAA) was used to identify potential storm surge scenarios within the community. The contractors evaluated storm surge data from Hurricane Irene, which is known to be one of the most devastating storms that impacted the Town of Aurora and Richland Township in decades. This data was broken down to three scenarios; greater than 9ft, 9-3ft, and less than 3ft to evaluate storm surge vulnerability within a high, medium, and low threshold.

#### Sources:

- NOAA Hurricane Center and Central Pacific Hurricane Center – National Hurricane Center Data in GIS Formats

### Sea level rise

Sea level rise (SLR) data from the National Oceanic and Atmospheric Administration (NOAA) was used to identify and map potential 1ft, 2ft, and 3ft SLR scenarios within the community. By selecting three scenarios we were able to assign each scenario a high, medium, and low threshold to evaluate vulnerability to critical assets.

#### Sources:

- NOAA Sea Level Rise Data Download

## ASSESSING VULNERABILITY

### Vulnerability = Exposure + Sensitivity - Adaptive Capacity

**Exposure** refers to the probability of physical contact between an asset and a hazard.

**Sensitivity** is the degree to which an asset is impacted by a hazard.

**Adaptive Capacity** is the ability of an asset to change its characteristics or behavior in response to a hazard.

To assess vulnerability, contractors developed multiple vulnerability indexes which combined exposure, sensitivity, and adaptive capacity to estimate cumulative vulnerability of critical assets within four categories: Building Infrastructure, Natural Resources, Transportation Infrastructure, and Utility System Infrastructure.

Exposure and sensitivity were objective factors within the vulnerability equation.

For exposure, contractors analyzed direct effects of different coastal hazards (flooding, storm surge and sea level rise) on the community critical assets by categorizing each hazard exposure as high, medium, or low. For example, if a critical asset was exposed to a 1ft sea level rise (SLR) it would fall under the highly vulnerable category, while a 2ft. and 3 ft. SLR would indicate medium and low exposure, respectively.

For sensitivity, contractors analyzed the cumulative effects of the critical assets within each category by assigning a percent threshold or indicating a high/low need for that asset within the community. For example, high sensitivity for building infrastructure indicates that greater than 66% of the community asset building – within a certain subcategory (i.e., police stations) - were affected by the coastal hazard or that a particular building was highly sensitive to the function of the community.

Adaptive capacity was a subjective factor within our assessment that used objective data and community input to evaluate. Factors such as: Social vulnerability, feasibility of relocation, feasibility of retrofit, and possible alternatives were evaluated to give each critical asset an adaptive capacity score. Contractors relied on input from the Community Action Team to evaluate the adaptive capacity of each critical asset.

Asset	Exposure score 0-3	Sensitivity score 0-3	Adaptive Capacity 0-3	Vulnerability Score 0-6
<i>Asset name</i>	0 = no exposure 1 = low 2 = medium 3 = high	0 = no sensitivity 1 = low 2 = medium 3 = high	0 = no adaptive capacity 1 = low 2 = medium 3 = high	0 - 2 = Low 3 - 4 = Medium 5 - 6 = High

Critical assets were given a score based on the average exposure, sensitivity, and adaptive capacity scores. These scores were then used in the vulnerability equation to calculate cumulative vulnerability. The thresholds for each category are listed below:

### **Building Infrastructure**

- Exposure
  - High: Coastal Flood Risk (FEMA Model) / 9+ft Surge / 1ft SLR
  - Medium: 100YR floodplain / 3-9 ft Surge/ 2ft SLR
  - Low: 500 floodplains / >3ft Surge / 3ft SLR
- Sensitivity
  - High: >66%+ Facilities affected / Highly sensitive to community operations
  - Medium: 33%-66% Facilities affected / Alternative facilities available
  - Low: <33% Facilities affected / Facility not needed for community operations
- Adaptive Capacity
  - Social vulnerability index
  - Ability to relocate building infrastructure (Ex. From 25yr to 50yr floodplain)
  - The ability to raise structure
  - Accessibility to residents once moved
  - Land availability
  - Ability to Retrofit for flooding (Rise generator/sensitive components)
  - Another facility can be used in its place
  - Facility is not needed to operate

### **Natural Resources (Streams, Wetlands, Managed Areas, Natural Areas)**

- Exposure
  - High: Coastal Flood Risk (FEMA Model) / 9+ft Surge / 1ft SLR
  - Medium: 100YR floodplain / 3-9 ft Surge/ 2ft SLR
  - Low: 500 floodplains / >3ft Surge / 3ft SLR
- Sensitivity (Inundation from SLR with no ability to migrate or evolve)
  - High: 1 Ft / 25ft from structure / 50% effected
  - Med: 2 Ft / 50 ft from structure / 25%-50%
  - Low: 3+ ft / 100 ft from structure / >25%
- Adaptive Capacity
  - Restorative capacity
  - Ability to increase flood capacity
  - Alternative use capacity (Ex. Park and floodplain)

## Transportation Infrastructure

- Exposure
  - High: Coastal Flood Risk (FEMA Model) / 9+ft Surge / 1ft SLR
  - Medium: 100YR floodplain / 3-9 ft Surge/ 2ft SLR
  - Low: 500 floodplains / >3ft Surge / 3ft SLR
- Sensitivity
  - High: >50% of structures effected by natural hazards
  - Medium: 25% - 50% effected by natural hazards
  - Low: <25% effected by natural hazards
- Adaptive Capacity
  - Social vulnerability index
  - Ability to relocate transportation infrastructure (Ex. From 25yr to 50yr floodplain)
  - The ability to raise structure (Bridge)
  - Ability to retrofit the infrastructure to be more resilient to flooding

## Utility System Infrastructure (Sewer/Water/Electric/Communications)

- Exposure
  - High: Coastal Flood Risk (FEMA Model / 9+ft Surge / 1ft SLR
  - Medium: 100YR floodplain / 3-9 ft Surge / 2ft SLR
  - Low: 500Y floodplains / >3ft Surge / 3ft SLR
- Sensitivity
  - High: >50% of structures effected by natural hazards
  - Medium: 25% - 50% effected by natural hazards
  - Low: <25% effected by natural hazards
- Adaptive capacity
  - Social vulnerability index
  - Ability to relocate utility system infrastructure (Ex. From 25yr to 50yr floodplain)
  - The ability to increase capacity
  - Ability to retrofit the infrastructure to be more resilient to flooding

## ESTIMATING RISK

### Asset Values

Infrastructure assets were valued based on the total tax evaluation (structure and land). This methodology helped alleviate concerns voiced by the Community Action Team related to data used in the evaluation. Hazardous assets were also based on the total tax value of the property which acted as a mitigation proxy value. Transmission easement values were based on the property tax values of which the easement intersected. Natural and Managed areas were valued based on the total tax value of the properties within these areas. Roads and bridges were valued based on their average replacement rates of \$5,088,824/mile and \$783,480/bridge, respectively. These values are based on the Federal Highway Administration's average replacement cost per mile of roadway and the North Carolina Department of Transportation's (NCDOT) average replacement cost per bridge. Wetlands and streams were valued based on the mitigation rate set by the NC. Division of Mitigation Services at \$67,442.06/ac. and \$603.87/ft., respectively.

### Call to Action

A call to action was determined based on risk value and vulnerability to the critical asset. From the evaluation of the critical action team these assets called for action:

- Town of Aurora System Well #1
- Town of Aurora System Well #2
- Town of Aurora Wastewater Treatment Plant
- Aurora Ferry Terminal
- Potter Oil
- Roads
- Wetlands
- Streams

### Sources:

- Beaufort County 2021 tax values (GIS / Land Records | Beaufort County, NC)
- Division of Mitigation Services rate schedule (Current Rate Schedules | North Carolina Department of Environmental Quality)
- Federal Highway Administration
- Improving Replacement Cost Data for NCDOT Highway Bridges (Microsoft Word - FinalReportRP2017-09 (ncdot.gov))

**Refer to Appendix C for Risk and Vulnerability Assessment Materials.**



## PROJECT PORTFOLIO

The assembled project portfolio details 7 shovel-ready priority projects, addressing hazards, type of strategy area and approach, priority rating, potential sources of funding, cost and project duration estimates, and action items. These projects were developed to coincide with the top priority solution that would help make the community more resilient to the hazards identified: sea level rise, storm surge, riverine flooding, tidal flooding, and nuisance flooding. One nature-based or hybrid solution project is eligible to move forward into phase three of the Resilient Coastal Communities Program, Engineering and Design. The Town of Aurora and Richland Township communities along with the community action team of Aurora choose to move forward with restoring the wetlands and the wastewater treatment plant. Below we show the steps taken to assemble the project portfolio that led to the communities and the Community Action Team choosing this project.

### Identify a Suite of Potential Solution

The first step to assembling the project portfolio was to identify a suite of potential solutions. The contractors helped the Community Action Team identify 62 potential solutions. The Pamlico Sound Hazard Mitigation Strategies identified an additional 27 potential solutions that could also be carried forward. These solutions were categorized by the 'related asset,' 'strategy area,' and 'strategy approach' and presented to the Community Action Team at the 4th CAT meeting. Each Community Action Team member then identified their top 10 solutions and 17 solutions moved forward to the consolidation and prioritization phase.

### Consolidate and Prioritize Projects

The second step in assembling the project portfolio was to consolidate and prioritize the project solutions. The Community Action Team identified 17 solutions from the suite of potential solution that could move forward. The contractor then used the STAPLEE Method and a simple cost/benefit rating system to help consolidate and prioritize all the potential project solutions. The STAPLEE Method takes into consideration the Social, Technical, Administration, Political, Legal, Economic, and Environmental impacts of each project solution. While the cost/benefit rating system used a high/medium/low scoring system to predict benefits and costs of each project solution. Many of the project solutions, identified by the community action team, scored well in both metrics. An additional 6 projects scored well on both metrics and 23 potential priority projects were presented to the community action team during the 5<sup>th</sup> meeting where the STAPLEE and cost/benefit rating metrics were reviewed and finalized. These projects were then brought to the community for additional feedback. The Town of Aurora and Richland Township communities along with the Community Action Team identified 7 priority projects to be presented in the project portfolio.

### **Priority Projects**

- Wetland Restoration at Wastewater Treatment Plant (WWTP)
- Bailey Creek Tributary Improvements
- South Creek Flood Controls
- Community Retreat Parking Lot
- Drainage Ditch and Tributary Maintenance Plan
- Easement for Ditches and Tributaries
- Aurora and Richland Township Master Plan

**Refer to Appendix D for the Project Portfolios.**



## **APPENDIX A**

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### Community Action Team Materials



**Community Action Team**  
Meeting #1 Materials



# Town of Aurora

## Community Action Team - Meeting #1

### AGENDA

Thursday, Sept. 16, 2021, 10:00 AM - 12:00 PM

Location: Aurora Town Hall, 295 Main Street, Aurora, NC 27806

**10:00 – 10:15 AM**

#### **Introduction to Resilient Coastal Communities Program**

- Introduction of contractors and team members
- Review of Resilient Coastal Communities Program
- Review of Community Action Team meeting schedule and tasks
  - See Community Action Team Meeting Framework document

**10:15 – 10:30 AM**

#### **Review of Existing Plans and Ordinances**

**10:30 – 10:50 AM**

#### **Community Vision Statement Exercise**

- Review Vision Statements from adopted plans and other vision statement examples
- Exercise: Community Vision Statement

**10:50 – 11:15 AM**

#### **Community Goals Exercise**

- Review goals from adopted plans and other resiliency goal examples
- Goals should address all three points; economic, environmental, social
- Exercise: Community Goals

**11:15 – 11:20 AM**

#### **BREAK**

**11:20 – 11:30 AM**

#### **CDC's Social Vulnerability Index**

**11:30 – 11:50 AM**

#### **Community Engagement Strategy**

- Public Survey
- Public Open House
- Strategies to engage the community, including vulnerable populations

**11:50 AM – NOON**

#### **Discussion / Adjournment**



# Town of Aurora

## Community Action Team - Meeting Framework

*Each meeting is anticipated to be approximately 2-hours in duration. Meeting dates, times, and locations are noted below. Material review and coordination will occur between each meeting. Meeting agendas will be provided in advance of each meeting. Meeting topics are subject to change.*

### PHASE 1 COMMUNITY ENGAGEMENT AND RISK/VULNERABILITY ASSESSMENT

#### MEETING 1

*Date:* Thurs. Sept. 16, 2021

*Time:* 10:00 am – 12:00 pm

*Location:* Aurora Town Hall,  
295 Main Street  
Aurora, NC 27806

#### VISION AND GOALS, EXISTING PLANS & COMMUNITY ENGAGEMENT

- Develop community-specific Vision Statement and goals
- Identify existing plans, ordinances, policies and programs
- Discuss CDC’s Social Vulnerability Index
- Discuss community engagement strategy, including tools, techniques and strategies to engage the community, including vulnerable populations

#### MEETING 2

*Date:* Thurs. Oct. 21, 2021

*Time:* 10:00 am – 12:00 pm

*Location:* Aurora Town Hall,  
295 Main Street  
Aurora, NC 27806

#### EXISTING CONDITIONS – CRITICAL ASSETS & NATURAL INFRASTRUCTURE

- Review inventory of relevant resources
- Review and discuss critical assets, natural resources, social vulnerability, available risk assessments, and resiliency related projects
- Review draft mapping of critical assets and natural infrastructure
- Select critical assets and natural infrastructure to include in the RCCP Risk and Vulnerability Assessment
- Discuss hazards to include in the Risk and Vulnerability Assessment

#### MEETING 3

*Date:* TBD

*Time:* 10:00 am – 12:00 pm

*Location:* Aurora Town Hall,  
295 Main Street  
Aurora, NC 27806

#### RISK & VULNERABILITY ASSESSMENT

- Review draft mapping of hazards
- Discuss the draft vulnerability index thresholds and index to measure exposure, sensitivity, and adaptive capacity
- Collaborate to develop a table to quantitatively estimate risk

### PHASE 2 PLANNING, PROJECT IDENTIFICATION, AND PRIORITIZATION

#### MEETING 4

*Date:* TBD

*Time:* 10:00 am – 12:00 pm

#### SUITE OF POTENTIAL STRATEGIES & PUBLIC MEETING PLANNING

- Brainstorm a suite of potential solutions
- Collaborate to further define the solutions
- Discuss development of resiliency projects and actions portfolio

*Location:* Aurora Town Hall,  
295 Main Street  
Aurora, NC 27806

- Plan for the Public Meeting to obtain input on strategies and priorities

### MEETING 5

*Date:* TBD

*Time:* 10:00 am – 12:00 pm

*Location:* Aurora Town Hall,  
295 Main Street  
Aurora, NC 27806

### PRELIMINARY PROJECT PRIORITIZATION

- Review preliminary evaluation of strategies and their feasibility
- Discuss the cost-benefit analysis
- Discuss preliminary project priorities
- Plan for the Public Meeting to obtain input on strategies and priorities

### MEETING 6

*Date:* TBD

*Time:* 10:00 am – 12:00 pm

*Location:* Aurora Town Hall,  
295 Main Street  
Aurora, NC 27806

### PUBLIC INPUT & DRAFT RESILIENCY STRATEGY ELEMENTS

- Consider public input and select priority actions
- Identify at least five (5) priority projects per community
- Discuss mapping for each project site
- Review elements of the Draft Resilience Strategy Document
- Discuss Phases 3-4 application process (if available)

### MEETING 7

*Date:* TBD

*Time:* 10:00 am - 12:00 pm

*Location:* Aurora Town Hall,  
295 Main Street  
Aurora, NC 27806

### MEETING TO BE ADDED IF NEEDED

### RESILIENCY STRATEGY DOCUMENT

Following Meeting 6, the Contractor team will develop the Town of Aurora Resiliency Strategy Document. Elements of the document will be shared with the CAT as developed throughout the planning process. The CAT will be provided the entire draft Resiliency Strategy Document for review and comment before the plan is finalized.

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**Thank you for participating on the Town of Aurora Community Action Team!**  
**We appreciate your involvement as we plan for a more resilient community.**

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## NORTH CAROLINA RESILIENT COASTAL COMMUNITIES PROGRAM



## PROGRAM BASICS

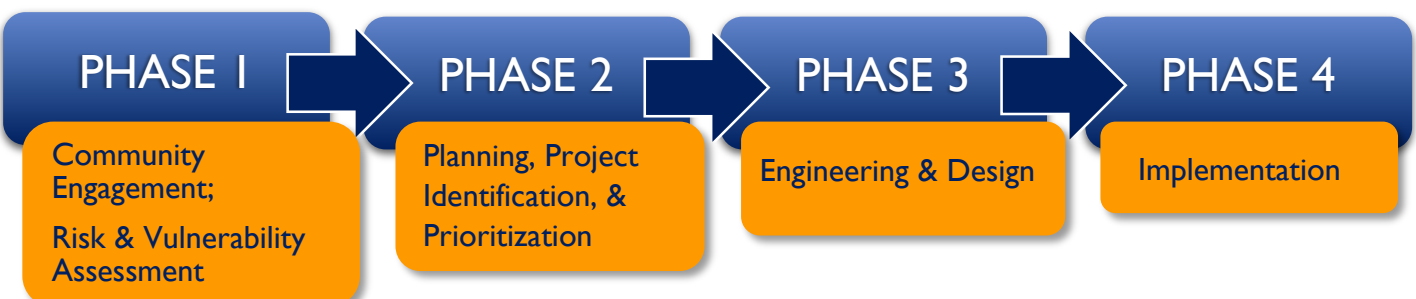
**THE ISSUE:** Flooding and other coastal hazards have devastating impacts on the economies and livelihoods of communities across eastern North Carolina. Coastal development and climate change continue to amplify these risks, and several barriers like economic and capacity constraints hinder the actions needed to enhance resilience and reduce vulnerability.

*Building resilience to natural hazards is vital for communities to help maintain quality of life, healthy growth, durable systems, and conservation of resources for present and future generations.*

**OBJECTIVES:** The NC Resilient Coastal Communities Program provides **financial grants and technical assistance** to support a proactive, locally-driven, and equitable approach to coastal resilience planning and project implementation.

**ELIGIBILITY:** County and municipal governments in the 20 CAMA counties are eligible to receive assistance through the RCCP. Any qualified organizations may apply to provide technical assistance.

**FRAMEWORK:** The RCCP provides a phased framework to assess coastal risks and vulnerabilities, engage community stakeholders, and develop projects to strategically improve the resiliency of communities and their natural and built infrastructure. The four phases of the program include:



### NC'S FUTURE

Intensity of tropical storms and hurricanes, storm surge flooding, heavy precipitation events, sea level rise, and tidal flooding are all expected to increase in our state (NC Climate Science Report 2020). More must be done to safeguard communities from loss of life, economic hardships, and the destructive impacts of intensifying coastal and climate risks.

## Program Goals:

- Address barriers to coastal resilience in North Carolina at the local level, such as limited capacity, economic constraints, and social inequities;
- Assist communities with risk and vulnerability assessments and developing a portfolio of well-planned and prioritized projects;
- Advance coastal resilience projects to “shovel-ready” status, or ready for implementation; and
- Provide funding for project implementation and link to additional funding streams.

**PROGRAM ORIGINS:** The Resilient Coastal Communities Program is a component of the statewide North Carolina Resilient Communities Program, called for in the North Carolina Climate Risk Assessment and Resilience Plan. It is also a continuation of several years of coastal resiliency work at DCM.

## PROGRAM PARTNERS:



## PROGRAM FUNDERS:



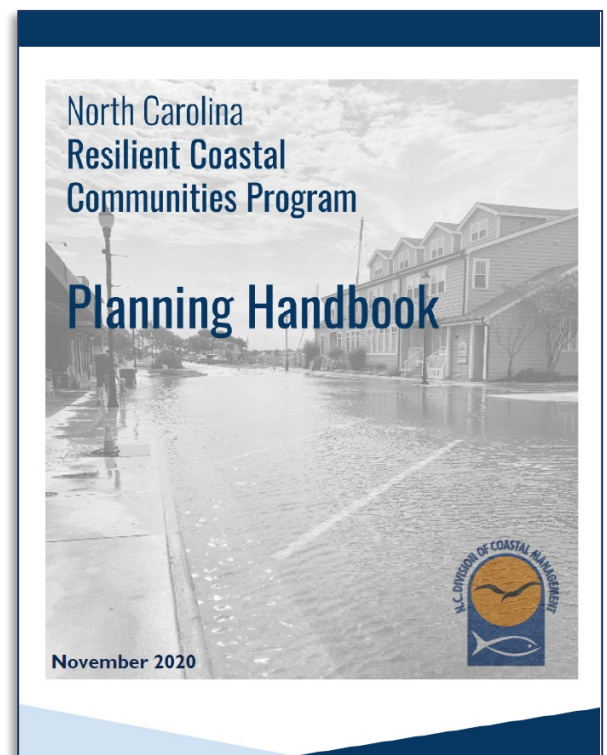
## PROGRAM PLANNING HANDBOOK:

Communities and contractors participating in this program are provided guidance to complete Phases 1 and 2 in DCM’s Program Planning Handbook, available [here](#).

**HOW TO APPLY:** Applications for Phases 1 and 2 are closed for the current round. Applications for grant funding to complete Phases 3 and/or 4 will open in Winter 2021. Communities wishing to receive funding for engineering, design, and/or implementation must complete the requirements of the RCCP Planning Handbook – via Phase I and 2 participation or independently.

**PROGRAM CONTACT:** Email us at [RCCP@ncdner.gov](mailto:RCCP@ncdner.gov) with any questions about the program.

**WEBSITE:** Also visit our website [here](#) for updates.





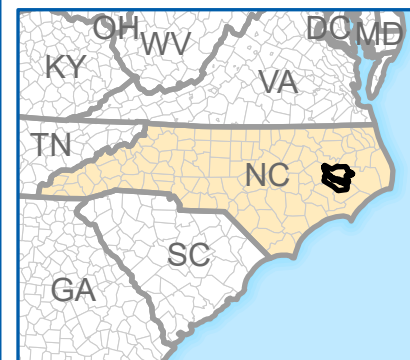
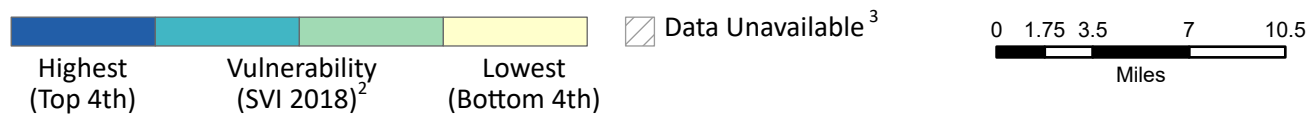
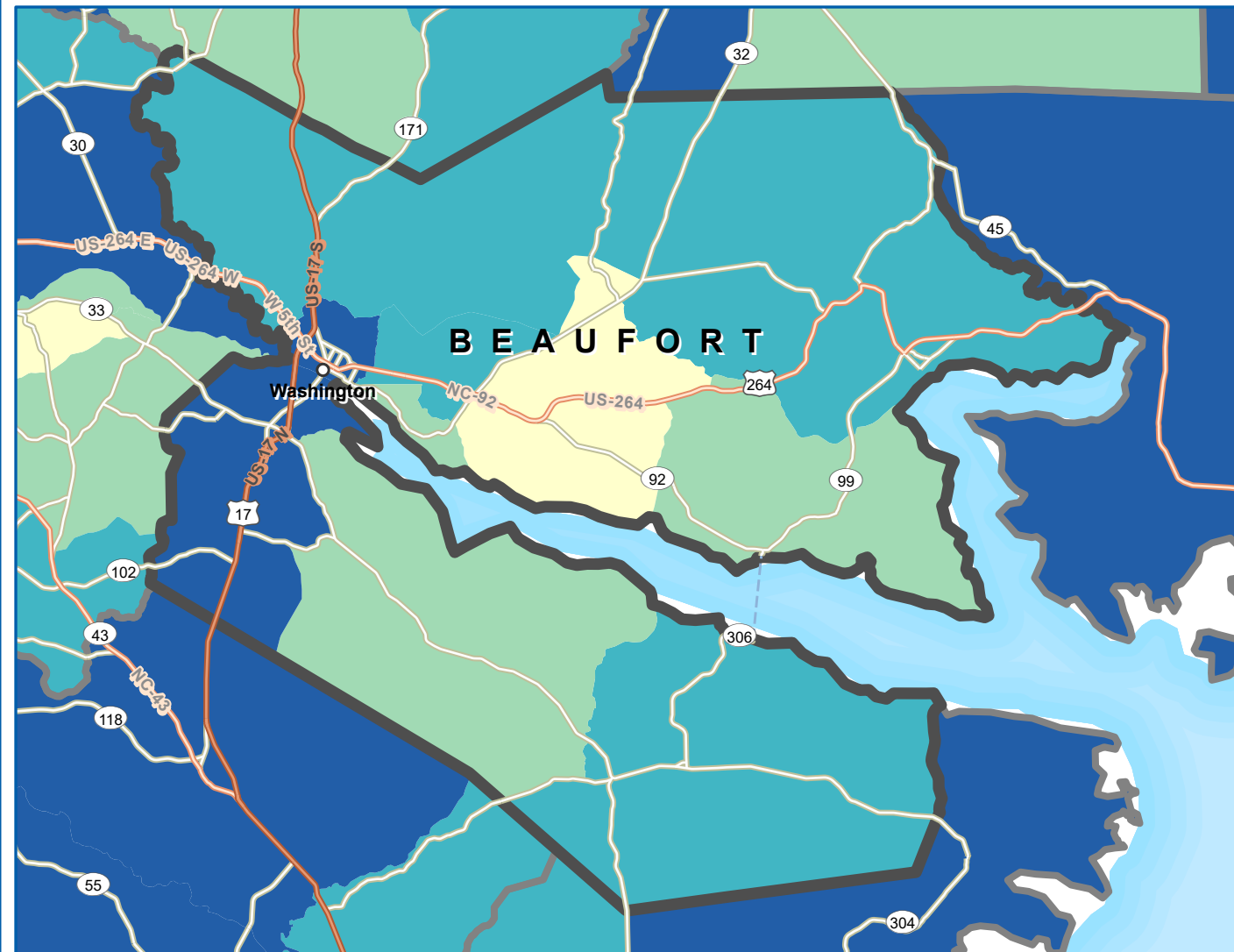
# CDC Social Vulnerability Index 2018

Beaufort County, North Carolina

PART 1



## Overall Social Vulnerability<sup>1</sup>



**Social vulnerability** refers to a community's capacity to prepare for and respond to the stress of hazardous events ranging from natural disasters, such as tornadoes or disease outbreaks, to human-caused threats, such as toxic chemical spills. The **CDC Social Vulnerability Index (CDC SVI 2018)<sup>4</sup> County Map** depicts the social vulnerability of communities, at census tract level, within a specified county. CDC SVI

2018 groups **fifteen census-derived factors** into **four themes** that summarize the extent to which the area is socially vulnerable to disaster. The factors include economic data as well as data regarding education, family characteristics, housing, language ability, ethnicity, and vehicle access. Overall Social Vulnerability combines all the variables to provide a comprehensive assessment.

MAP PRODUCED 3/12/2020

Agency for Toxic Substances and Disease Registry  
Division of Toxicology and Human Health Sciences



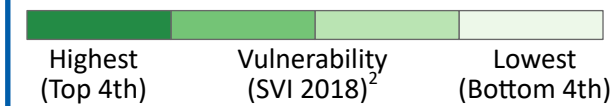
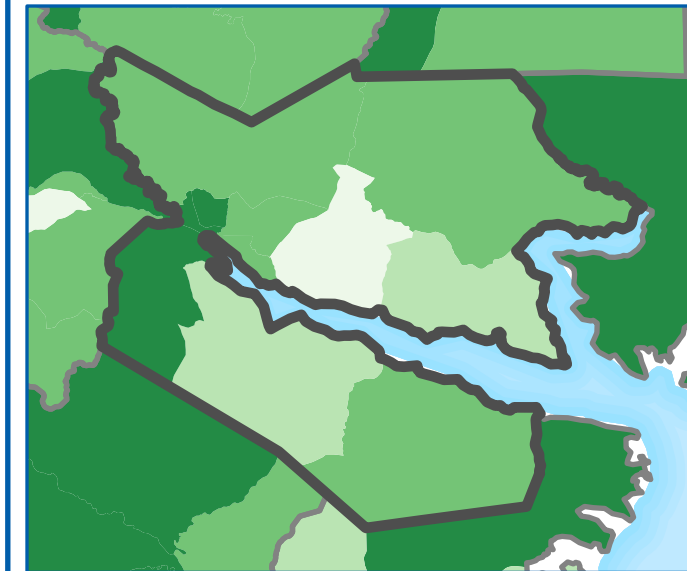
FINAL - FOR EXTERNAL USE

CDC SVI 2018 – BEAUFORT COUNTY, NORTH CAROLINA

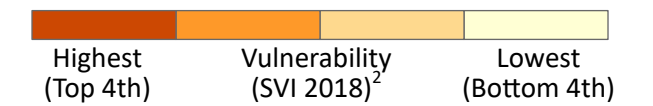
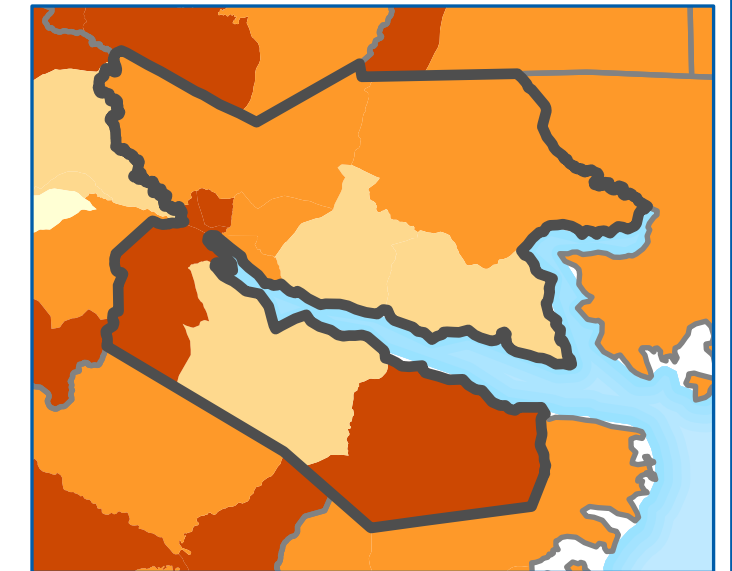
PART 2

## CDC SVI Themes

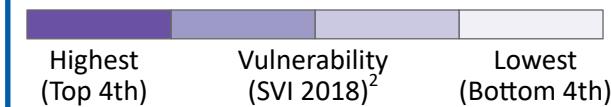
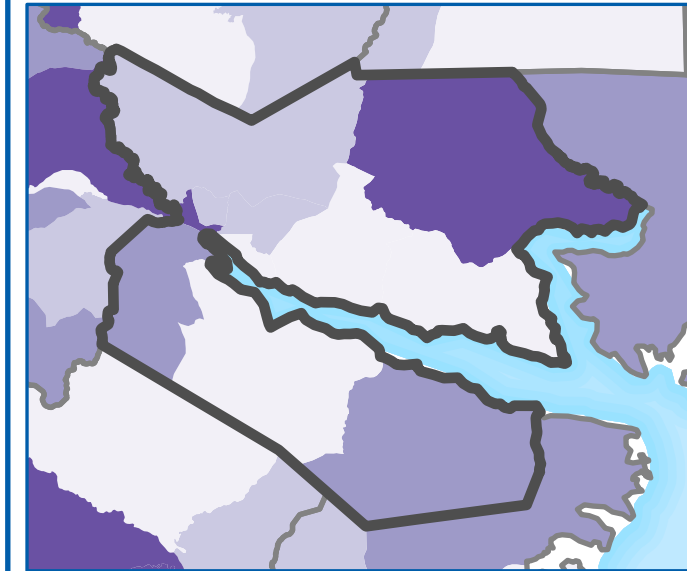
### Socioeconomic Status<sup>5</sup>



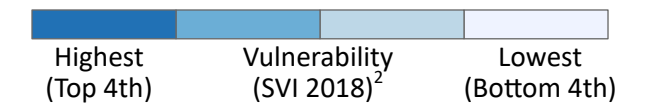
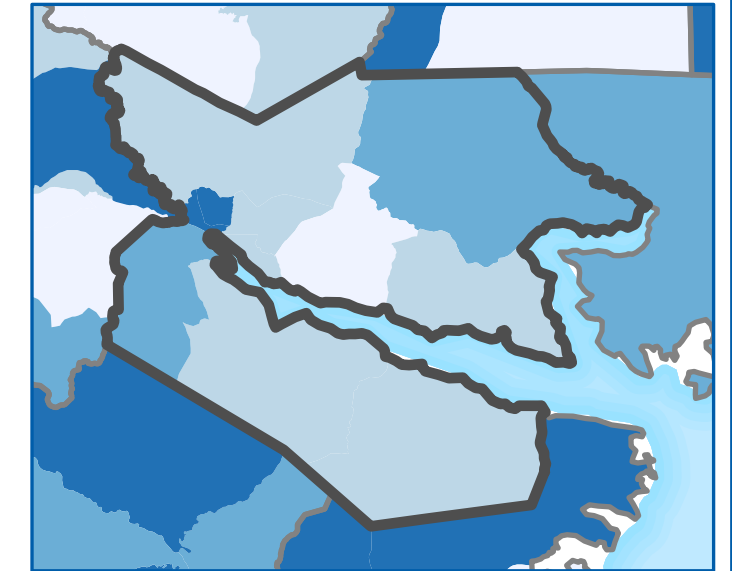
### Household Composition/Disability<sup>6</sup>



### Race/Ethnicity/Language<sup>7</sup>



### Housing Type/Transportation<sup>8</sup>



**Data Sources:** <sup>2</sup>CDC/ATSDR/GRASP, U.S. Census Bureau, Esri® StreetMap™ Premium.  
**Notes:** <sup>1</sup>Overall Social Vulnerability: All 15 variables. <sup>3</sup>Census tracts with 0 population. <sup>4</sup>The CDC SVI combines percentile rankings of US Census American Community Survey (ACS) 2014-2018 variables, for the state, at the census tract level. <sup>5</sup>Socioeconomic Status: Poverty, Unemployed, Per Capita Income, No High School Diploma. <sup>6</sup>Household Composition/Disability: Aged 65 and Over, Aged 17 and Younger, Single-parent Household, Aged 5 and over with a Disability. <sup>7</sup>Race/Ethnicity/Language: Minority, English Language Ability. <sup>8</sup>Housing Type/Transportation: Multi-unit, Mobile Homes, Crowding, No Vehicle, Group Quarters.  
**Projection:** NAD 1983 StatePlane North Carolina FIPS 3200.  
**References:** Flanagan, B.E., et al., A Social Vulnerability Index for Disaster Management. *Journal of Homeland Security and Emergency Management*, 2011. 8(1).  
CDC SVI web page: <http://svi.cdc.gov>.

FINAL - FOR EXTERNAL USE



# Town of Aurora Community Action Team

## Vision Statement Worksheet

Please list 5 – 10 words or short phrases that should be incorporated into the Community Vision Statement. Remember to include social, environmental, and economic factors.

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# Town of Aurora Community Action Team

## Goals Worksheet

Please list 10 - 15 priorities that Resilient Coastal Communities Program goals should address. Remember to include social, environmental, and economic factors.

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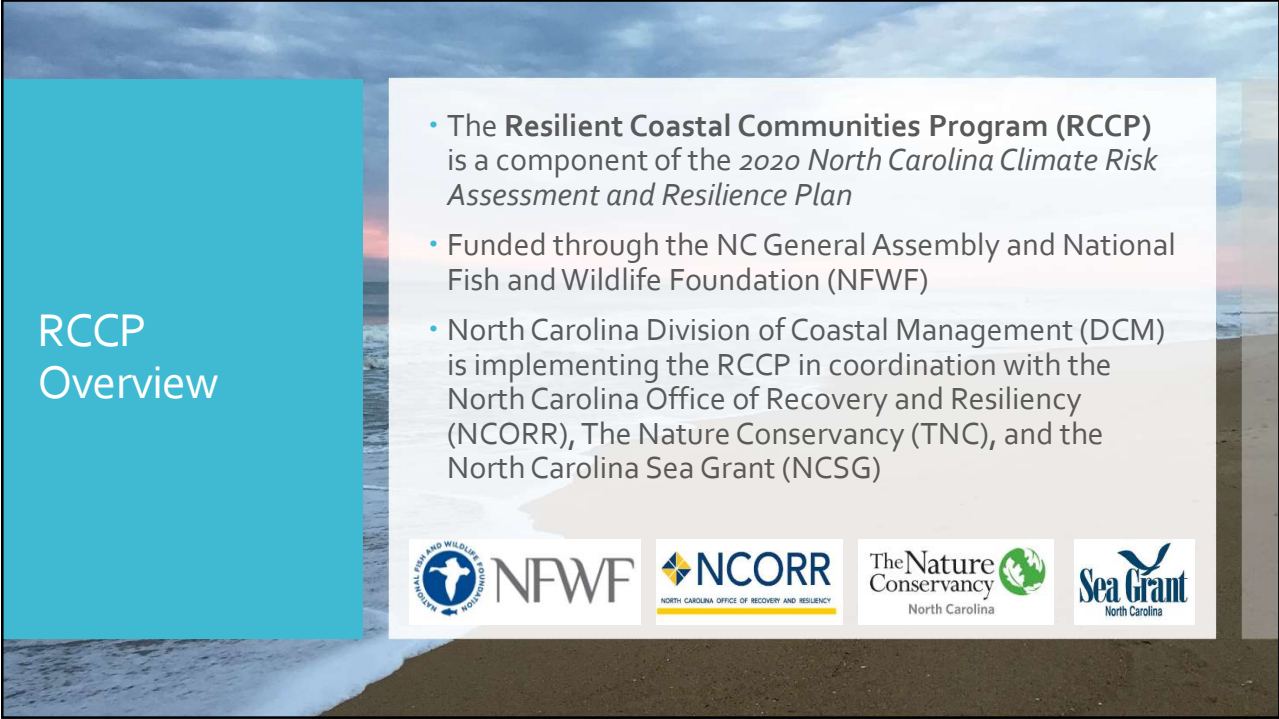
Town of Aurora  
Community Action Team Meeting

September 16, 2021

North Carolina  
**RESILIENT  
COASTAL  
COMMUNITIES  
PROGRAM**





1




RCCP  
Overview


- The **Resilient Coastal Communities Program (RCCP)** is a component of the *2020 North Carolina Climate Risk Assessment and Resilience Plan*
- Funded through the NC General Assembly and National Fish and Wildlife Foundation (NFWF)
- North Carolina Division of Coastal Management (DCM) is implementing the RCCP in coordination with the North Carolina Office of Recovery and Resiliency (NCORR), The Nature Conservancy (TNC), and the North Carolina Sea Grant (NCSG)




NFWF



NCORR  
NORTH CAROLINA OFFICE OF RECOVERY AND RESILIENCY



The Nature Conservancy  
North Carolina



Sea Grant  
North Carolina

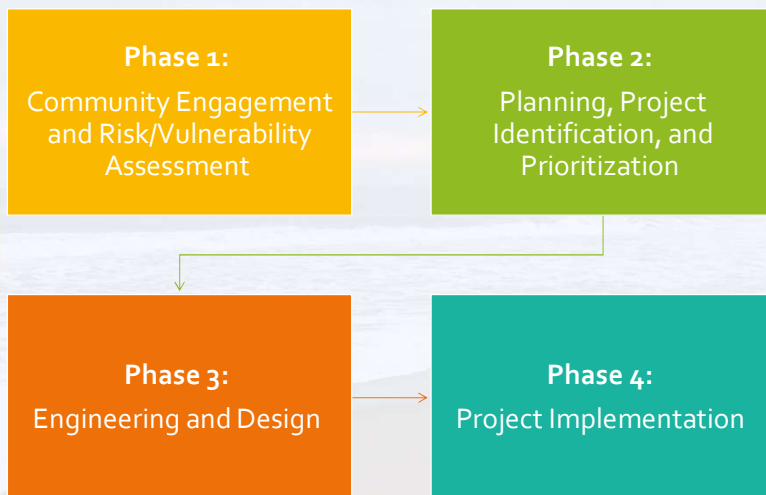
2

## RCCP Overview

- Provide technical and financial assistance to municipal and county governments to advance coastal resilience efforts throughout the 20 coastal counties in North Carolina
- \$600K allocated for RCCP Phases I and II; 20 communities were funded with an average of \$30K per community
- State and local partnership designed to help overcome barriers in coastal resilience and adaptation planning by bolstering local government capacity
- Support a proactive, sustainable and socially equitable approach to coastal resiliency planning and eventual project implementation

3

## RCCP Phases



4

## RCCP Phase I and II Objectives

- Perform community-driven, qualitative and quantitative risk and vulnerability assessments with special attention to socially vulnerable populations and critical assets
- Develop a portfolio of prioritized solutions/projects (policy, non-structural, structural, or hybrid) to address risks that reduce exposure and sensitivity or increase adaptive capacity to flooding and other hazards
- The *North Carolina Resilient Coastal Communities Program Planning Handbook* provides guidance for contractors and local governments to complete RCCP Phases I and II (September 2021 – March 2022)

*Once communities complete Phases 1 & 2, they become eligible to apply for Phase 3 funding for project engineering and design, and Phase 4 implementation funding*

5

## RCCP Objectives

### Address

- Address barriers to coastal resilience in North Carolina at the local level, such as limited capacity, economic constraints, and social inequities;

### Assist

- Assist communities with risk and vulnerability assessments and develop a portfolio of planned and prioritized projects;

### Advance

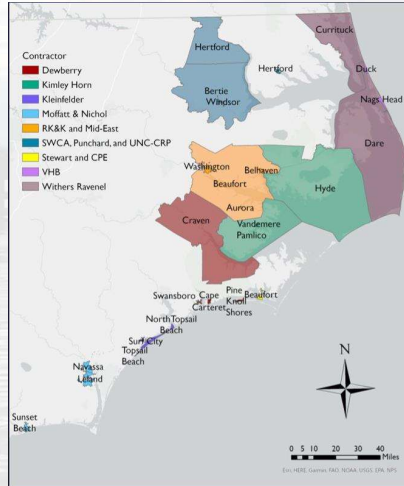
- Advance coastal resilience projects to “shovel-ready” status; and

### Link

- Link communities to funding streams for project implementation.

6

## RCCP Phase I and II Awards



7

## RCCP Phase I and II Steps

### Phase 1: Community Engagement and Risk/Vulnerability Assessment

- Step 1 – Develop a Community Action Team
- ★ Step 2 – Set Vision and Goals
- ★ Step 3 – Review Existing Plans and Efforts
- ★ Step 4 – Develop a Community Engagement Strategy
- Step 5 – Map Critical Assets and Natural Infrastructure
- Step 6 – Conduct Risk and Vulnerability Assessment

### Phase 2: Planning, Project Identification, and Prioritization

- Step 1 – Identify a Suite of Potential Solutions
- Step 2 – Consolidate and Prioritize Projects
- Step 3 – Develop the Resilience Strategy Document

8

## RCCP Triple-Bottom Line Approach

The RCCP reflects the **triple-bottom line** approach to resilience, which goes beyond traditional hazard mitigation and disaster recovery to develop a holistic strategy considering **social, environmental, and economic** factors.

9

## Existing Plans / Resiliency Reports & Studies



### Albemarle-Pamlico National Estuary Partnership (APNEP) Comprehensive Conservation and Management Plan, 2012-2022

- The CCMP is organized by asking and then answering four basic questions: what is a healthy Albemarle-Pamlico system, what is the current condition of the system, what are the most significant challenges facing the system over the next 10 years, and what actions should be implemented to best achieve a healthy system?
- Triple-Bottom Line Approach: Environmental

10



## Existing Plans / Resiliency Reports & Studies



### **Pamlico Peninsula Resilient Regions Report,** April 2016

- The International Economic Development Council (IEDC) contracted to assist Beaufort County and nine other Pamlico Peninsula Counties (PPCs) with developing and implementing resiliency measures. IEDC provided specific advice on how to strengthen existing programs and develop new programs or strategies so that county and region can be more resilient from an economic perspective to future crisis.
- Triple bottom line Approach: Economic

11

## Existing Plans / Resiliency Reports & Studies



### **Pamlico Sound Regional Hazard Mitigation Plan,** June 2020

- The HMP ensures that all possible activities are reviewed and implemented so that the problem is addressed by the most appropriate and efficient solutions. 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.
- Triple bottom line Approach: Economic, Environmental, Social

12

## Existing Plans / Resiliency Reports & Studies



### **Hurricane Matthew Resilient Redevelopment Plan: Beaufort County, May 2017**

- The purpose of the plan is to provide a roadmap for community rebuilding and revitalization assistance for the communities that were damaged by the hurricane. The program empowers communities to prepare locally driven recovery plans to identify redevelopment strategies, innovative reconstruction projects, and other needed actions.
- Triple bottom line approach: Economic, Environmental, Social

13

## Existing Plans / Resiliency Reports & Studies



### **Hurricane Matthew Resilient Redevelopment Plan: Northeast Region, August 2017**

- As part of the program, NCEM facilitated development of regional resilient redevelopment plans for four "prosperity zones" as identified by the NC Dept of Commerce. Prosperity zones were created to facilitate collaborative and coordinated planning and use of resources.
- Triple bottom line Approach: Economic, Environmental, Social

14

## Existing Plans / Resiliency Reports & Studies



- **Beaufort County CAMA Land Use Plan**, October 2009
- **Beaufort County Comprehensive Transportation Plan**, October 2013
- **Beaufort County Comprehensive Bicycle Plan**, September 2020
- All of these include municipalities

15

## Existing Ordinances

### Town of Aurora Code of Ordinances

- Building Regulations & Minimum Housing
- Flood Damage Prevention Ordinance
- Subdivision Ordinance
- Zoning Ordinance
- Streets, Sidewalks and Other Public Places
- Utilities

16





## Vision Statement Guidance

- Where does the community want to be in the future (e.g., the next 10 or more years), particularly in relation to coastal hazards
- Address all three: Economic, Environmental, Social
- Succinct: 1-2 sentences
  - Goals will go into more details, the Vision Statement shows the big picture

17



## Vision Statement Examples

- To identify, restore, and protect the significant resources of the Albemarle-Pamlico estuarine system. (Albemarle-Pamlico CCMP)
- The vision of the Pamlico Sound Regional Hazard Mitigation Plan is to establish sound public policy to protect life, property, and the quality of the natural environment; to reduce risk and prevent loss from future hazard events.

18



## Vision Statement Examples

- Beaufort County is an interconnected bicycle-friendly community where residents and visitors alike safely travel by a convenient bicycle network that includes both on and off-road bicycle facilities between all municipalities, townships, major commercial and employment destinations, and scenic and leisure destinations throughout the county. Community health, economic growth, and environmental conditions are improved through strategic investments in increased mobility, recognizing the diversity of resident and visitor needs across the county. (Beaufort County Comprehensive Bicycle Plan)

19



## Vision Statement Examples

- A resilient North Carolina is a state where our communities, economies, and ecosystems are better able to rebound, positively adapt to, and thrive amid changing conditions and challenges, including disasters and climate change; to maintain quality of life, healthy growth, and durable systems; and to conserve resources for present and future generations. (NC Climate Risk Assessment and Resilience Plan)

20



## Vision Statement Examples

- Genesee County's communities are resilient to climate-related changes due to an intact network of natural resources, quality municipal infrastructure and services, sustainable businesses, and effective response and recovery capabilities. (Genesee Countywide Resilience Plan)

21



## Vision Statement Examples

- To reduce the vulnerability to natural hazards in order to protect the health, safety, welfare and economy of the Ada County community. (Ada County Hazard Mitigation Plan)
- To enrich lives through effective and caring service. (County of Los Angeles All Hazard Mitigation Plan)

22



## Vision Statement Themes

- Natural hazard events such as hurricanes and flooding
- Climate change
- Serving vulnerable and disadvantaged populations
- Protection of natural infrastructure and ecosystem services
- Protection of critical infrastructure
- Economic resilience
- Preparedness
- Partnerships
- Effective response and recovery
- Community engagement
- Future generations
- Construction and restoration
- Strategic investments

23



## Vision Statement Themes

- Reduce risk and prevent loss
- Sound public policy
- Public education and outreach
- Protect life, property, and the quality of the natural environment
- Rebound, positively adapt to, and thrive amid changing conditions and challenges
- Community health
- Healthy economic growth
- Durable systems
- Recognize diversity of needs
- Intact network of natural resources
- Quality infrastructure and services
- Sustainable businesses

24





## Vision Statement Worksheet & Draft Vision Statement

- Worksheets will be used to form the **Draft Vision Statement**, which will be sent to the CAT by email within one week (by Thurs. Sept. 23<sup>rd</sup>)
  - Available via mail if preferred
- Please reply with any comments on the Draft Vision Statement by **Thurs. Sept. 30<sup>th</sup>**
- The Draft Vision Statement will be revisited after receiving public input.

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## Vision Statement Word Cloud

- <https://www.wordclouds.com/>

26



## Resiliency Goal Examples

### Albemarle-Pamlico Comprehensive Conservation and Management Plan

- **Goal 1:** A region where human communities are sustained by a functioning ecosystem
- **Goal 2:** A region where aquatic, wetland, and upland habitats support viable populations of native species
- **Goal 3:** A region where water quantity and quality maintain ecological integrity
- Measurable outcomes are included for each goal.

27



## Resiliency Goal Examples

### Pamlico Sound Regional Hazard Mitigation Plan

- **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.
- **Goal 2:** Provide education and notification to citizens that empowers them to protect themselves and their families from natural hazards.
- **Goal 3:** Fulfill Federal and State requirements for receipt of future disaster recovery and hazard mitigation assistance.
- **Goal 4:** Improve interjurisdictional/interagency cooperation and coordination, especially regarding the reduction of natural hazard impacts.

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## Resiliency Goal Examples

### Beaufort County Comprehensive Bicycle Plan

- **Goal 1:** Develop a bicycle and greenway network that is an integral part of the transportation system and provides an alternative means of transportation as well as recreation opportunities for citizens and visitors alike.
- **Goal 2:** Recognize the economic benefits of a bicycle-friendly community and capitalize on the return on investment for bicycle facilities and greenways.
- **Goal 3:** Create a robust bicycle program that incorporates engineering, education, encouragement, enforcement, and evaluation programs.
- **Goal 4:** Recognize the environmental benefits of living in a bicycle friendly community.
- **Goal 5:** Provide opportunities for bicycling which promote healthy and active lifestyles.
- **Goal 6:** Create a safe, comfortable, and convenient network of bicycle facilities that aid and encourage cycling for people of all ages, abilities, and interests, in all areas of the county.
- **Goal 7:** Create a culture that promotes and welcomes bicycling.
- **Goal 8:** Increase bicyclist safety by reducing the number of bicycle related accidents each year.

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## Resiliency Goal Examples

### NC Climate Risk Assessment and Resilience Plan

- **Principle 1:** Act quickly and decisively to reduce the most harmful impacts of climate change – flooding, drought, landslides and wildfires.
- **Principle 2:** Act thoughtfully and collaboratively to develop equitable solutions for the most socially challenging effects of climate change.
- **Principle 3:** Invest in safe, affordable, and connected communities.
- **Principle 4:** Strengthen regional economies
- **Principle 5:** Support healthy communities, local identity, and recreational access to nature.
- **Principle 6:** Implement resilience best practices

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## Resiliency Goal Examples

### Genesee Countywide Resilience Plan (Phase I)

- **Goal 1:** Protect a connected network of undeveloped land including water resources, prime agricultural soils, and forests from adverse impacts, conversion, and development.
- **Goal 2:** Integrate the unique natural assets of Genesee County and resiliency into economic policy and investment decisions.
- **Goal 3:** Improve performance and resiliency of natural systems under normal and extreme conditions.
- **Goal 4:** Provide a foundation for the development of meaningful and achievable conservation goals, measurable objectives, and implementation strategies in Genesee County municipalities with an emphasis on strong inter-municipal relationships and planning.

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## Resiliency Goal Examples

### Ada County Hazard Mitigation Plan

- **Goal 1:** Protect lives and reduce hazard related injuries
- **Goal 2:** Minimize or reduce current and future damage from natural hazards to property, including critical facilities and environment
- **Goal 3:** Encourage the development and implementation of long-term, cost-effective mitigation projects
- **Goal 4:** Maintain, enhance, and restore the natural environment's capacity to deal with the impacts of natural hazard events.
- **Goal 5:** Improve emergency management preparedness, collaboration, and outreach within the planning area.

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## Resiliency Goal Examples

### “OurCounty” – Los Angeles County Sustainability Plan

- **Goal 1:** Resilient and healthy community environments where residents thrive in place.
- **Goal 2:** Buildings and infrastructure that support human health and resilience
- **Goal 3:** Equitable and sustainable land use and development without displacement
- **Goal 4:** A prosperous LA County that provides opportunities for all residents and businesses and supports the transition to a green economy
- **Goal 5:** Thriving ecosystems, habitats, and biodiversity
- **Goal 6:** Accessible parks, beaches, recreational waters, public lands, and public spaces that create opportunities for respite, recreation, ecological discovery, and cultural activities

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## Resiliency Goal Examples

### “OurCounty” – Los Angeles County Sustainability Plan (cont’d)

- **Goal 7:** A fossil fuel-free LA County
- **Goal 8:** A convenient, safe, clean, and affordable transportation system that enhances mobility while reducing car dependency
- **Goal 9:** Sustainable production and consumption of resources
- **Goal 10:** A sustainable and just food system that enhances access to affordable, local, and healthy food
- **Goal 11:** Inclusive, transparent, and accountable governance that facilitates participation in sustainability efforts, especially by disempowered communities
- **Goal 12:** A commitment to realize OurCounty sustainability goals through creative, equitable, and coordinated funding and partnerships

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The slide titled "Goals Worksheet & Draft Goals" has a teal sidebar on the left with the title and a circular icon containing a magnifying glass and a checkmark. The main content area, set against a background of a beach and ocean, contains the following bullet points:

- Worksheets will be used to form **Draft Goals**
- Worksheets will be sent to the CAT by email within one week (by Thurs. Sept. 23<sup>rd</sup>)
- Please respond with any comments on the Draft Goals by **Thurs. Sept. 30th**
- **Draft Goals** will be revisited after receiving public input

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## CDC's Social Vulnerability Index

- **Social vulnerability** refers to the potential negative effects on communities caused by external stresses on human health.
- Such stresses include natural or human-caused disasters, or disease outbreaks.
- Reducing social vulnerability can decrease both human suffering and economic loss.
- The **CDC/ATSDR Social Vulnerability Index (CDC/ATSDR SVI)** uses 15 U.S. census variables to help local officials identify communities that may need support before, during, or after disasters.

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## CDC's Social Vulnerability Index

- The factors assessed in the CDC social vulnerability index include: socioeconomic status (income, political power, prestige), gender, race and ethnicity, age, employment loss, residential property, renters, occupation, family structure, education, medical services and access, social dependence, and special-needs populations.
- These inputs result in maps of four categories of social vulnerability, including socioeconomic status, household composition, race/ethnicity/language, and housing/transportation.

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## CDC's Social Vulnerability Index

The RCCP Handbook instructs us "To assess the vulnerability of populations and social systems, build upon the CDC's Social Vulnerability Index (SVI) outlined in your local or hazard mitigation plan. Ground-truth existing data in this index and add community knowledge to supplement and expand upon this vulnerability index."

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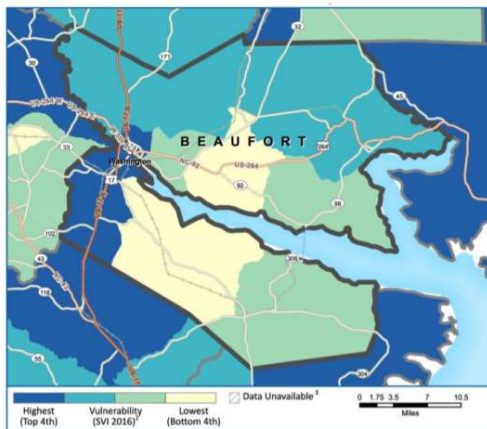
## CDC's Social Vulnerability Index – Pamlico Sound Regional Hazard Mitigation Plan

### Social Vulnerability

Figure 3.5 below displays social vulnerability information for Beaufort County by census tract according to 2016 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 County and municipal jurisdictions to prioritize pre-disaster aid, allocate emergency preparedness and response resources, and plan for the provision of recovery support.

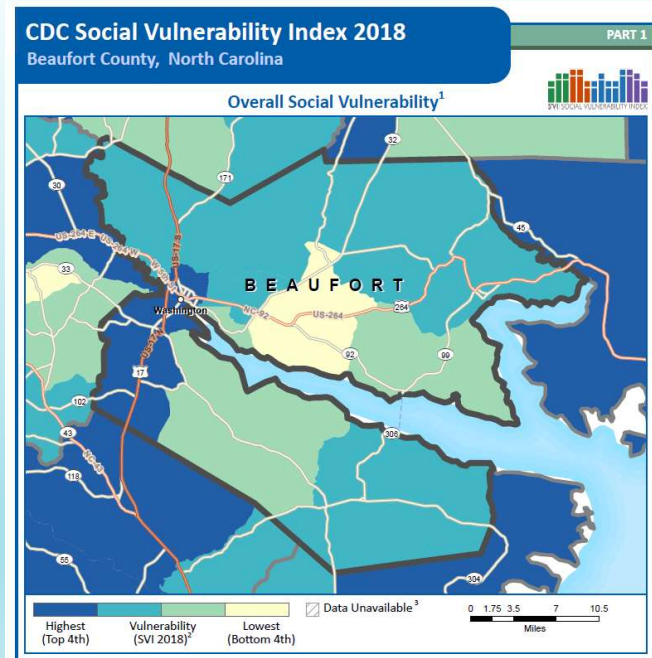
Overall, Beaufort County has a fairly low SVI index. Central portions of the County have the lowest SVI, while portions of the County within and adjacent to the City of Washington have a much higher SVI than the County overall. The areas around the City of Washington have a much higher development density, higher dollar value per acre and access to services than other portions of Beaufort County.

Figure 3.5 – Beaufort County Social Vulnerability Index



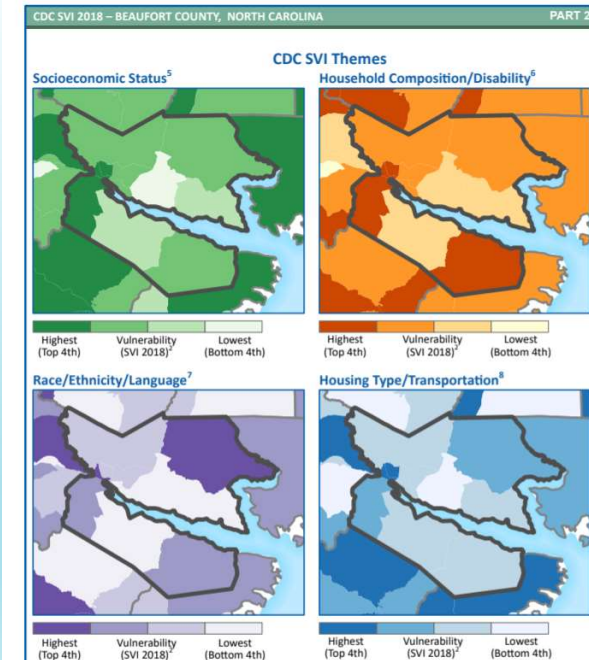
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# CDC's Social Vulnerability Index



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# CDC's Social Vulnerability Index



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## Community Outreach Strategy

**The goal of the Community Engagement Strategy is to implement all available outreach resources to engage as many Aurora citizens as possible to participate fully in the Resilient Coastal Communities Program.**

- Public survey between meetings 2 and 3 (released in October 2021)
- Public open house between meetings 5 and 6 (January 2022)

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## Community Outreach Strategy

### Outreach Tools

- Social Media
- Cable Television Public Announcement Channels
- Television and Print News Media
- Bulk Mail
- Partnership Newsletters / Websites (i.e., Sound Rivers, Municipalities, County)
- Faith Based Community (i.e., Bulletin)
- Minority Owned Businesses
- Blind Center
- Senior Centers
- Libraries
- Community Events

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## Community Outreach Strategy

### Examples of Identified Vulnerable Populations

**Persons with disabilities including non-readers:**

Ensure active outreach to collect feedback from persons with disabilities. Involve organizations of persons with disabilities in consultation and decision making. Partner with television media to reach non-readers.

**Elderly:**

Diversify communication tools, format and simplify messages. Engage the elderly to address their specific feedback.

**Immigrants including non-English and English as a second language:**

Advocate for inclusion and non-discriminatory access to information by refugees and migrants. Understand unique needs, preferred communication channels and preferred languages. Ensure translation of key messages and materials to the languages people understand.

**Low income and minority communities:**

Ensure active outreach to collect feedback from underserved low income and minority communities. Partner with local community organizations, faith organizations, and businesses on outreach.

**Known flood risk communities:**

Populations living in known high flood risk communities.

## Public Survey Questions

1. Do you live or work in Aurora?
2. If yes, how long have you lived or worked in Aurora?
3. Please identify your zip code (home, work, or both as applicable).
4. Which of the following statements about coastal storms do you most agree with?
  - I am very worried about coastal storms in the future
  - I am slightly worried about coastal storms in the future
  - I am not worried about coastal storms in the future



## Public Survey Questions

**5. On a scale of 1-5, how significant of a risk do you think flooding currently poses to your community?**

1 – not a concern, 2 – minor challenge, 3 – moderate challenge, 4 – serious challenge, 5 – extreme challenge

**6. On a scale of 1-5, how significant of a risk do you think flooding will pose to your community in the next 20-40 years, given climate change and rising sea levels?**

1 – not a concern, 2 – minor challenge, 3 – moderate challenge, 4 – serious challenge, 5 – extreme challenge

**7. Throughout your time living or working in Aurora, has your experience with flooding changed?**

- Yes, I have witnessed increasing flooding issues.
- Yes, I have witnessed decreasing flooding issues
- No, I have not witnessed a difference in flooding conditions
- Not sure

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## Public Survey Questions

**8. What type of coastal hazards have you witnessed in your community?**

Select all that apply.

- Tidal flooding – flooding caused by daily or extreme high tides
- Coastal erosion – loss or displacement of land or sediment along the coastline
- Storm surge flooding – flooding caused by coastal storms including nor'easters and hurricanes
- Groundwater impacts – changes in the boundary between freshwater and saltwater
- Riverine flooding – flooding caused by overflowing of rivers and streams
- Stormwater flooding – flooding caused by lack of drainage or overflowing drainage systems due to intense rainfall
- Erosion of land under structure
- Direct damage to structure from wave action
- Direct damage to structure from high winds
- Damage from airborne debris
- Contamination from overflowing septic systems or wastewater treatment facilities
- Secondary damage from floating debris
- Secondary damage from natural gas or propane leak
- Other (please specify)
- None

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## Public Survey Questions

**9. Which of those same hazards have directly impacted your home or your business? Select all that apply.**

- Tidal flooding – flooding caused by daily or extreme high tides
- Coastal erosion – loss or displacement of land or sediment along the coastline
- Storm surge flooding – flooding caused by coastal storms including nor'easters and hurricanes
- Groundwater impacts – changes in the boundary between freshwater and saltwater
- Riverine flooding – flooding caused by overflowing of rivers and streams
- Stormwater flooding – flooding caused by lack of drainage or overflowing drainage systems due to intense rainfall
- Erosion of land under structure
- Direct damage to structure from wave action
- Direct damage to structure from high winds
- Damage from airborne debris
- Contamination from overflowing septic systems or wastewater treatment facilities
- Secondary damage from floating debris
- Secondary damage from natural gas or propane leak
- Other (please specify)
- None

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## Public Survey Questions

**10. Do you have measures in place to prevent or reduce flooding or flood related damage and losses to your property? If yes, what type of actions have you taken? Check all that apply.**

- Elevation of property and utilities
- Use of flood-resistant materials (e.g. using tile in place of carpet)
- Floodproofing of property, including basements
- Installation of flood vents
- Installation of a sump pump
- Use of flood-resistant insulation
- Installation of a sewer-backflow valve
- Use of reinforced caulking of windows and doors
- Other (please specify)
- My property does not have measures in place to prevent or reduce flooding and/or future damage

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## Public Survey Questions

### 11. Have you ever considered moving to another location (can be inside or outside of Aurora) to avoid future flood losses, impacts, or damage?

- Yes – I am looking at buying/renting at a new location in the near future because of flooding.
- Yes – I am considering buying/renting at a new location in the future if flood events become more frequent.
- Yes – I considered buying/renting at a new location but there are conditions that prevent me from doing so (cost, job, family nearby, etc.)
- No – I considered leaving but I have nowhere to go.
- No – I do not want to leave my current location.
- No – My property never floods so it is not a factor in my decision to stay or leave.

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## Public Survey Questions

### 12. Aside from any impacts to your home or business, have you experienced any other negative impacts as a result of flooding events? Check all that apply.

- Damage to transportation networks (e.g., flooded roadways, closure of public transportation systems, transportation delays)
- Loss of electricity
- Lack of access to clean drinking water
- Injury, illness, and/or concerns for personal safety
- Limited access to services (e.g., closure of hospitals, schools, government offices)
- Damage to personal possessions (including vehicles)
- Sewer overflow
- Inability to perform work duties
- Other (please specify)
- I have not experienced any negative impacts as a result of flooding or a coastal hazard event.

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## Public Survey Questions

**13. Please rank the following activities, intended to restore daily life after a coastal storm, from most important to you (1) to least important to you (10).**

- Re-opening roads
- Making my home livable
- Repairing damaged buildings
- Restoring water service
- Restoring wastewater collection and disposal (sewer or septic system)
- Restoring communication (telephones, cell phones, internet)
- Restoring electricity
- Tourists returning
- Businesses opening
- Restoring beaches, wetlands, and other coastal landforms

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## Public Survey Questions

**14. Do you think any of the following project types would provide benefits to your community? Check all that apply.**

- Beach restoration
- Habitat creation and restoration
- Property buy-outs and land preservation
- Nature-based shoreline stabilization
- Local resilience planning (including climate change plans, sea-level change restrictions, etc.)
- Resilience policy and development standards
- Public education and outreach
- Structural shoreline protection (including floodwalls, levees, tide gates, etc.)
- Critical infrastructure upgrades (including hospitals, police and fire stations, nursing homes, etc.)
- Stormwater drainage improvements
- Road/bridge elevation
- Other (please specify)
- None of the above

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## Public Survey Questions

**15. Are there any specific areas of your community vulnerable to coastal hazards?** If so, please list them by location. Please use street intersections or landmarks to describe locations.

**16. Do you have any additional ideas for projects that may help reduce flooding in your community?**

**17. On a scale of 1-5, to what extent do you see the Resilient Coastal Communities Program providing benefits to your community?**

1- not at all, 2 – not very beneficial, 3 – neutral, 4 – somewhat beneficial, 5 – very beneficial

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## Public Survey Questions

**18. How do you hope coastal resilience projects might benefit your community?**

**19. Do you have any concerns about these kinds of projects in your community?**

**20. How would you like the Town of Aurora to communicate with you or your community regarding this project or on similar projects in the future?**

Email, newsletter, social media, webinar/videos, mail, in person or virtual meetings, other (please specify), not interested in further communication

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## Public Survey Questions

21. Are there any local or community groups or organizations you feel we should coordinate with to promote this project or similar projects in the future? If yes, please provide their name, website, and a contact person/email if possible.

22. Is there anything else you would like to share with us regarding flooding and coastal resilience planning?

### 23. Optional demographic questions

- Age brackets
- Gender
- Race
- Annual income

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## Next Steps

- This presentation will be emailed to the CAT this week
  - Print copy can be mailed if preferred
- Draft vision statement and draft goals will be emailed by Thurs. Sept. 23<sup>rd</sup>
  - Available via mail if preferred
- Comment on **Draft Vision Statement and Draft Goals** by email (or mail) by **Thurs. Sept. 30th**
- Next meeting is **Thurs. Oct. 21<sup>st</sup>** from 10:00 am – noon
  - Topic: Existing Conditions

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## Contractor Contact Information

### Mid-East Commission

- Jamie Heath, Planner  
jheath@mideastcom.org  
(252)296-1656
- Lisa Williams, Disaster Recovery Coordinator  
lwilliams@mideastcom.org  
(252)974-1843

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## Contractor Contact Information

### RK&K

- Paige Cureton, Project Manager  
pcureton@rkk.com  
(984)238-7207
- Tris Ford, Senior Planner  
tford@rkk.com  
(919)653-7335

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# TOWN OF AURORA

## Community Action Team - Meeting #1

### MEETING SUMMARY

**THURSDAY, SEPTEMBER 16, 2021, 10:00 AM - 12:00 PM, AURORA TOWN HALL + VIRTUAL**

#### Meeting Purpose:

- To discuss the RCCP program, vision and goals, existing plans, and community engagement.
- Refer to attached meeting agenda.

#### Attendees:

- Refer to attached meeting sign-in sheet.

#### Materials:

- Refer to attached materials:
  - RCCP Overview
  - RCCP CAT Meeting Framework
  - CAT Meeting #1 Agenda
  - CAT Meeting #1 Presentation
  - Vision Statement Worksheet
  - Goals Worksheet
  - Social Vulnerability Index Maps

#### Meeting Discussion:

##### RCCP Overview

- Flooding is the primary concern to be addressed in the RCCP.
- The anticipated budget for Phase 3 – Engineering and Design is estimated to be approximately \$40,000 for one prioritized project per community.
- NCDEQ has not identified the anticipated budget for Phase 4 – Implementation.
- Projects identified during Phases 1 and 2 may be submitted by communities for other funding opportunities, such as the federal BRIC program.
- The Contractors will collaborate with the CAT to identify potential funding opportunities.
- After Hurricane Florence, the state developed resources for communities. Governor Cooper issued Executive Order 80. The RCCP is a continuation of these efforts.
- Federal funding is available for resiliency projects. In the past, North Carolina has not been well positioned to access federal funding due to a lack of shovel ready projects. The RCCP will help communities develop projects to submit for federal funding consideration.

##### Existing Plans, Resiliency Reports & Studies

- Hurricane Irene greatly impacted the Town of Aurora.
- The Town is looking to protect our wastewater treatment plant.
- The Town is evaluating the federal Community Development Block Group (CDBG) Infrastructure Grant opportunities to improve water and wastewater facilities.

- The north half of the Town is vulnerable when flooding occurs. This part of Town has to be evacuated during serious storm events. Flooding levels reach the roof lines of housing.
- Flooding causes power outages.
- There are frequent outages from trees falling on power lines. This includes normal rain events, not just severe storms. Trees are growing too close to existing power lines.
- Electricity goes out frequently during rainstorms. There are problems communicating with Duke Energy.
- The Town would like the power company to underground the powerlines, but it is expensive. We should check with Duke Energy to see if they have plans to underground the overhead power lines.
- The Aurora Industrial Park has improvement plans.
- Duke Energy may have emergency response plans.
- Nutrien is the largest Duke Energy private power customer in the state.
- The Town has serious issues with ditches and drainage that results in flooding.
- The larger canals used to drain water quickly but they are filling with silt and now cannot empty quickly. Creeks are filling up as well.
- Martyn Johnson will share the Aurora Industrial Park Plan.
- Judi will share the Waterfront Redevelopment Plan for the Town completed in 2011.

### Vision Statement

- The Genessee County example appears most closely aligned with Auroras goals. We may consider starting with this Vision Statement and building upon it.
- Add “proactive response and recovery capabilities.”
- Consider adding:
  - Recognize diversity of needs
  - Healthy economic growth
  - Sustainable businesses
  - Future development of tourist economies
- Consider the link between the community plans and county plans and specific coordination goals between the Town and Beaufort County.
- The Vision Statement should be inclusive of all citizens south of the river.
- Consider changing the plan to the Aurora-Richland Township. Richland Township depends on the Town of Aurora. The Town coordinates with the Township at many levels. The plan should extend beyond the Town limits. Richland Township extends to the Blount’s Creek Area. This area does not receive revenue from the township. They need additional resources to respond to this area.
- Richland Township depends on the Town of Aurora to provide emergency services. There are currently limited resources.
- Consider how we get emergency and non-emergency services to the Richland Township.
- The Fire and Rescue Department in Aurora is outstanding. There is a lot of money spent in that area.

### Community Goals

- Consider the following topics when developing goals:
  - Serving vulnerable and disadvantaged populations
  - Strategic investments
  - Protecting life and property
  - Healthy economic growth
  - Sustainable businesses
  - Effective response and recovery

- Protection of critical infrastructure
- Power outages
- Services
- Broadband/Internet access
- Industrial park
- Historic district preservation
- Tourism development
- Economics, including mining, tourism/ecotourism, agriculture/aquaculture
- Viable waterfront access linked to resiliency in support of waterfront and tourism activities
- Housing
- Community engagement
- Coordinating with Beaufort County
- Power outages due to storms do not get addressed.
- Infrastructure has been a need for years.
- Industry will not relocate to the area without services. The Town has capacity. In general, this area has been neglected for years despite tax revenue.
- The agricultural and fisheries industries need to be considered in the Risk and Vulnerability Assessment.
- The sewer system needs upgrades and expansion. There is an existing project the Town is working on with the Mid-East Commission.
- The sewer system has capacity for growth but there needs to be funding for maintenance.
- The Town needs a way to efficiently remove trees and debris to clear the way for emergency personnel and the power company after a storm.
- Nutrien recognizes the need to tie their future to the Town's future. Their workforce is aging and a number of people will be retiring.
- If Aurora was more attractive for housing and education, people would want to live, work and play here. For example, Nutrien experiences workforce issues and most workers do not live in the area.
- The Town feels overlooked by Beaufort County and the state.
- The Town's population is decreasing. The Town would like to increase the population.
- There is a need for more employees.
- The plan could include direct requests to Beaufort County, Nutrien, or other partners and funding sources.
- The community needs to start being engaged at the county level.
- Some areas still do not have internet access.
- Broadband is important for communication and responding to crises.
- The cost of extending broadband internet capability and the overall need is a primary concern.
- A local community organization had to pay \$36K to have internet extended 6/10 of a mile to their building. They were able to pay, but most citizens would not be able to afford that.
- Beaufort County recently adopted a Broadband Plan, which should be added to plans list.
- The Town wants to revitalize downtown. The fossil museum is an attraction. Need restaurants, etc.
- The Town needs to link housing, education, internet, and downtown revitalization issues with natural hazards.
- There are two boat dry stacks being planned in Washington. We should consider how we connect communities by water.
- The Town desires boat parking so that boaters can get out and visit town and shop. Currently boaters can only be parked long enough to launch or remove their boats and have to move for the next person in line.

- Housing is a huge issue. It is one of the greatest risks to growth. The reason there is a lack of services and businesses is because there is a lack of housing to support it.

### **Social Vulnerability Index**

- Housing type/transportation map should be at highest vulnerability. There is aging housing/lack of affordable housing and the roads are not good.
- Socioeconomic status should be highest vulnerability.
- When they evacuate Aurora, there are bedridden people who do not have access to information to evacuate.
- Emergency services are available from Chocowinity EMS and residents' insurance will usually pay for it. However, residents are not aware of this program. Education is needed.
- There are a lot of elderly people who do not drive. Evacuating this population is a challenge.
- Shelter availability is also an issue.
- NCDEQ has an environmental justice and screening mapping tool available (EJ Screen)  
<https://ncdenr.maps.arcgis.com/apps/webappviewer/index.html?id=1eb0fbe2bcfb4ccb3cc212af8a0b8c8>

### **Community Outreach Strategy**

- There is a community event (Name of Event) on October 21st where we could get the survey out.

### *Public Survey*

- Add Aurora OR Richland Township to questions.
- Add All of the Above option to number 8 and 9.
- Add mold to the list of damages that have occurred.

### **Next Steps**

- Comment on Draft Vision Statement and Draft Goals by email (or mail) by Thurs. Sept. 30.
- Next meeting: CAT Meeting #2: Existing Conditions, Thurs., Oct. 21, 10:00 am – 12:00 pm



# MEETING SIGN-IN SHEET

**Title** Town of Aurora Community Action Team – Meeting 1

**Date** Sept. 16, 2021

**Time** 10:00 AM – 12:00 PM

**Location** Aurora Town Hall

✓	Name	Organization	Title/Role	Email	Signature
	Judi Lannon	Town of Aurora	Town Manager	townofaurora@auroranc.org	
	Chuck Bonner	Town of Aurora	Public Works Director	aurorapwd@auroranc.org	<i>Chuck Bonner</i>
	Curt Hendrix	Town of Aurora	Recreation Coordinator	aurorarec@embarqmail.com	
	Kurt Ryan	Town of Aurora	Volunteer	Ryankj88@gmail.com	<i>Ky</i>
	Carlton Gideon	Mid-East Commission	Planner	cgideon@mideastcom.org	online
	Tina Taylor	Town of Aurora	Commissioner	gmatbtaylor@gmail.com	
	Charles Cannon	COST Community Group	Community	Charlescannon112@gmail.com	
	Joe Calhoun	COST Community Group	Community	Jcalh29726@aol.com	
	Martyn Johnson	Beaufort County	Economic Development Director	Martyn.johnson@beaufortedc.com	online
	Jamie Heath	Mid-East Commission	Contractor	jheath@mideastcom.org	<i>Jamie Heath</i>
	Lisa Williams	Mid-East Commission	Contractor	lwilliams@mideastcom.org	
	Paige Cureton	RK&K	Contractor	pcureton@rkk.com	
	Tris Ford	RK&K	Contractor	tford@rkk.com	<i>Tris Ford</i>









**Community Action Team**  
Meeting #2 Materials



# Town of Aurora

## Community Action Team - Meeting #2

### AGENDA

Thursday, Oct. 21, 2021, 10:00 AM - 12:00 PM

Location: Aurora Town Hall, 295 Main Street, Aurora, NC 27806

**10:00 – 10:05 AM**

#### **Welcome**

- Introduction of contractors and team members

**10:05 – 10:10 AM**

#### **Public Survey**

- Flyer
- Facebook ad
- Hard copies

**10:10 – 10:15 AM**

#### **Review inventory of relevant resources**

- Available risk assessments
- Data sources

**10:15 – 10:45 AM**

#### **Review and discuss critical assets**

- Review critical asset list and map
- Fill in gaps
- Select critical assets to include in the RCCP Risk and Vulnerability Assessment

**10:45 – 11:00 AM**

#### **Review and discuss natural infrastructure**

- Review natural infrastructure list and map
- Fill in any gaps
- Select natural infrastructure to include in the RCCP Risk and Vulnerability Assessment

**11:00 – 11:15 AM**

#### **Review and discuss hazards**

- Discuss which hazards to include in the RCCP Risk and Vulnerability Assessment

**11:15 – 11:30 AM**

#### **Travel to tour site (optional)**

- Wastewater treatment lagoon
- Located south of Hwy-33 near South Creek, off South 5<sup>th</sup> Street.



# Town of Aurora

Community Action Team - Meeting #2

**11:30 AM – NOON**

**TOUR (optional)**

- Wastewater treatment lagoon

**NOON**

**Adjournment**

# AURORA & RICHLAND TOWNSHIP PUBLIC SURVEY



# shape our future.

HELP US IDENTIFY ISSUES & NEEDS RELATED  
TO FLOODING & OTHER NATURAL EVENTS



TAKE THE ONLINE SURVEY:

[www.aurorafloodsurvey.org](http://www.aurorafloodsurvey.org)

PLEASE COMPLETE THE SURVEY BY NOV. 12, 2021

North Carolina  
**RESILIENT  
COASTAL  
COMMUNITIES  
PROGRAM**



**Request a paper survey  
by contacting:**



**JAMIE HEATH, MID-EAST COMMISSION  
(252) 296-1656**

# PUBLIC SURVEY

# shape our future.

HELP US IDENTIFY ISSUES & NEEDS RELATED TO FLOODING & OTHER NATURAL EVENTS

VISIT THE LINK TO TAKE THE SURVEY BY NOV 12



North Carolina

**RESILIENT  
COASTAL  
COMMUNITIES  
PROGRAM**







# TOWN OF AURORA & RICHLAND TOWNSHIP

## Public Input Survey

Severe weather events result in flooding and other storm-related effects and can cause widespread damage, displace residents, and restrict access and mobility, impacting the well-being of communities across eastern North Carolina. Climate change continues to amplify these risks, further threatening coastal development. Barriers, such as economic and capacity constraints, often hinder the actions needed to enhance resilience and reduce vulnerability.

Building resilience to natural hazards is vital for communities to help maintain quality of life, sustain healthy economies, and ensure the conservation of resources for present and future generations. The North Carolina Resilient Coastal Communities Program provides financial grants and technical assistance to support a proactive, locally driven, and equitable approach to coastal resilience planning and project implementation.

Please take a few minutes to complete this survey for the Town of Aurora and Richland Township's Resilient Coastal Communities Program. Your input will help us better understand existing issues and needs in the Aurora-Richland community. Thanks for your time!

This survey can also be completed online at: [www.aurorafloodsurvey.org](http://www.aurorafloodsurvey.org)

### **Please tell us about yourself.**

1. Do you live and/or work in the Town of Aurora or the Richland Township?
2. If yes, how long have you lived and/or worked in the Town of Aurora or the Richland Township?
3. Do you own and/or rent your property (home, business, or both as applicable)?
4. Please identify your zip code (home, work, or both as applicable).

**Coastal Storms & Flooding**

5. Which of the following statements about coastal storms do you most agree with?
  - I am very worried about coastal storms in the future
  - I am slightly worried about coastal storms in the future
  - I am not worried about coastal storms in the future
  
6. On a scale of 1-5, how significant of a risk do you think flooding currently poses to your community?
  - 1 – not a concern
  - 2 – minor challenge
  - 3 – moderate challenge
  - 4 – serious challenge
  - 5 – extreme challenge
  
7. On a scale of 1-5, how significant of a risk do you think flooding will pose to your community in the next 20-40 years, given climate change and rising sea levels?
  - 1 – not a concern
  - 2 – minor challenge
  - 3 – moderate challenge
  - 4 – serious challenge
  - 5 – extreme challenge
  
8. Throughout your time living and/or working in the Town of Aurora or the Richland Township, has your experience with flooding changed?
  - Yes, I have witnessed increasing flooding issues.
  - Yes, I have witnessed decreasing flooding issues.
  - No, I have not witnessed a difference in flooding conditions.
  - Not sure.

Comments:

**Coastal Hazards & Impacts**

9. What type of coastal hazards have you witnessed in your community? Select all that apply.
  - Tidal flooding – flooding caused by daily or extreme high tides
  - Coastal erosion – loss or displacement of land or sediment along the coastline
  - Storm surge flooding – flooding caused by coastal storms including nor’easters and hurricanes
  - Freshwater/saltwater impacts – changes in the boundary between freshwater and saltwater
  - Riverine flooding – flooding caused by overflowing of rivers and streams
  - Stormwater flooding – flooding caused by lack of drainage or overflowing drainage systems due to intense rainfall
  - Erosion of land under structure



- Direct damage to structure from wave action
- Direct damage to structure from high winds
- Direct damage to structure from fallen trees or branches
- Damage from airborne debris
- Contamination from overflowing septic systems or wastewater treatment facilities
- Secondary damage from floating debris
- Secondary damage from natural gas or propane leak
- Mold
- All of the above
- Other (please specify) \_\_\_\_\_
- None

Comments:

10. Which of those same hazards have directly impacted your home or your business? Select all that apply.

- Tidal flooding – flooding caused by daily or extreme high tides
- Coastal erosion – loss or displacement of land or sediment along the coastline
- Storm surge flooding – flooding caused by coastal storms including nor'easters and hurricanes
- Groundwater impacts – changes in the boundary between freshwater and saltwater
- Riverine flooding – flooding caused by overflowing of rivers and streams
- Stormwater flooding – flooding caused by lack of drainage or overflowing drainage systems due to intense rainfall
- Erosion of land under structure
- Direct damage to structure from wave action
- Direct damage to structure from high winds
- Direct damage to structure from fallen trees or branches
- Damage from airborne debris
- Contamination from overflowing septic systems or wastewater treatment facilities
- Secondary damage from floating debris
- Secondary damage from natural gas or propane leak
- Mold
- All of the above
- Other (please specify) \_\_\_\_\_
- None

Comments:

11. Do you have measures in place to prevent and/or reduce flooding or flood-related damages and losses to your property? If yes, what type of actions have you taken? Check all that apply.

- Elevation of property and/or utilities
- Use of flood-resistant materials (e.g., using tile in place of carpet)
- Floodproofing of property, including basements
- Installation of flood vents
- Installation of a sump pump
- Use of flood-resistant insulation
- Installation of a sewer-backflow valve
- Use of reinforced caulking of windows and doors
- Other (please specify) \_\_\_\_\_
- My property does not have measures in place to prevent and/or reduce flooding and/or future damage.
- Not applicable. My property never floods and/or I do not anticipate future flooding.

12. Have you ever considered moving to another location (can be inside or outside of the Aurora-Richland area) to avoid future flood losses, impacts, or damages?

- Yes – I am considering buying/renting at a new location in the near future because of past and/or potential future flooding.
- Yes – I considered buying/renting at a new location but there are conditions that prevent me from doing so (e.g., cost, job, family nearby, etc.)
- No – I considered leaving but I have nowhere to go.
- No – I do not want to leave my current location.
- No – My property never floods so it is not a factor in my decision to stay or leave.

13. Aside from any impacts to your home or business, have you experienced any other negative impacts as a result of flooding events? Check all that apply.

- Damage to transportation networks (e.g., flooded roadways, closure of public transportation systems, transportation delays)
- Loss of electricity
- Lack of access to clean drinking water
- Injury, illness, and/or concerns for personal safety
- Limited access to services (e.g., closure of hospitals, schools, government offices)
- Damage to personal possessions (including vehicles)
- Sewer overflow
- Inability to perform work duties
- Other (please specify) \_\_\_\_\_
- I have not experienced any negative impacts as a result of flooding or a coastal hazard event.

Comments:

14. Are there any specific areas of your community vulnerable to coastal hazards? If so, please list them by location. Please use street intersections or landmarks to describe locations.

15. Please rank the following activities, intended to restore daily life after a coastal storm.

	1 – Not at all important	2	3	4	5 – Very important	No opinion
Re-opening roads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Making my home livable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Repairing damaged buildings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restoring water service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restoring wastewater collection and disposal (sewer or septic system)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restoring communication (telephones, cell phones, internet)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restoring electricity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tourists returning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Businesses reopening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restoring beaches, wetlands, and other coastal landforms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. Is there anything else you would like to share with us regarding flooding and coastal resilience in the Aurora-Richland community?

**Stakeholder Engagement**

17. How would you like the Town of Aurora to communicate with you and/or your community regarding this program or on similar programs in the future?

- E-mail
- Newsletter
- Social media
- Webinar/videos
- Mail
- In person or virtual meetings
- Other (please specify) \_\_\_\_\_
- Not interested in further communication

18. Are there any local or community groups or organizations you feel we should coordinate with to create awareness of this program or similar programs in the future? If yes, please provide their name, website, and contact information if possible.

19. Are there any upcoming events where we could share information about this program?

**Demographic Information (Optional)**

**Tell us your age.**

- Under 18
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65-74
- 75+

**What race/ethnicity best describes you? Select all that apply.**

- White/Caucasian
- Black or African American
- Asian
- American Indian or Alaskan Native
- Native Hawaiian/Pacific Islander
- Hispanic/Latino
- Multiple races or ethnicities
- Other (please specify): \_\_\_\_\_

**Which type of housing best describes your home?**

- Single-family, detached from other homes
- Townhome, attached to other homes
- Apartment or condominium
- Other (please specify): \_\_\_\_\_

**How do you travel in the Aurora-Richland area? Select all that apply.**

- Walk
- Bicycle
- Beaufort Area Transit System (BATS)
- Driving a personal vehicle
- Taxi or rideshare
- Carpool / Vanpool
- Motorcycle
- Other (please specify): \_\_\_\_\_

## **Town of Aurora/Richland Township Critical Assets and Natural Infrastructure**

### **Critical Assets**

#### Emergency Management

None in town.

Served by:

Beaufort County Emergency Management  
1420 Highland Dr.  
Washington, NC 27889

#### Law Enforcement/Security

None in town.

Served by:

Beaufort County Sheriff's Office  
210 N Market St.  
Washington, NC 27889

#### Fire and EMS Stations

(NC Office of State Fire Marshall data.)

- Aurora Volunteer Fire and Rescue Station 1  
99 Hwy 33 East  
Aurora, NC 27806
- Aurora Volunteer Fire and Rescue Station 2  
49 Labor Camp Rd.  
Edward, NC 27821
- Blounts Creek Volunteer Fire Dept.  
13965 NC Hwy 33 E  
Blounts Creek, NC 27814
- Nutrien Fire and EMS  
1530 NC 306 Hwy S  
Aurora, NC 27806

#### 911 Dispatch

None in town.

Served by:

Beaufort County 911 Communications Center  
210 N Market St.  
Washington, NC 27889

#### Government Services

- Aurora Town Hall  
295 Main St.  
Aurora, NC 27806
- Aurora Public Works  
450 Fourth St.  
Aurora, NC 27806

- Former Aurora Police Dept. building  
458 Fourth St.  
Aurora, NC 27806
- Aurora/Richland Chamber of Commerce  
474 Main St.  
Aurora, NC 27806
- US Post Office  
186 N Fifth St.  
Aurora, NC 27806

### Food

No grocery stores, area is a food desert.

- Dollar General (Aurora)  
24811 NC-33 East  
Aurora, NC 27806
- Dollar General (Blounts Creek)  
13812 NC Hwy 33 East  
Blounts Creek, NC 27814
- Family Dollar  
150 S 5<sup>th</sup> St.  
Aurora, NC 27806

### Food Pantries:

- Eagle's Wings (located in Washington)  
932 W 3<sup>rd</sup> St.  
Washington, NC 27889
- St. John's Missionary Baptist Church (distribution point for Food Bank of the Albemarle)  
953 Main St. Ext.  
Aurora, NC 27806
- Citizens on Southside Together (COST) Food Pantry  
17501 NC Hwy 33 East  
Blounts Creek, NC 27814

### Water/Wastewater

- Public Water Supply Water Sources (NC DEQ Div. of Water Resources data)
  - Well #1, located adjacent to water treatment plant
  - Well #2, located south of NC-33 across from 3<sup>rd</sup> St.
- NPDES Wastewater Discharge Permits (NC DEQ Div. of Water Resources data)
  - Aurora system
    - Aurora Wastewater Treatment Plant
      - Wastewater Treatment Plant Rd.

### Electric Power Grid

- Duke transmission easements (Duke Energy data)



### Fuel Stations

- Aurora Mini Mart  
391 NC Hwy 33 E  
Aurora, NC 27806
- Terry's Convenient Mart  
351 NC Hwy 33 E  
Aurora, NC 27806
- Travel Store  
13883 NC Hwy 33 E  
Blounts Creek, NC 27814
- Veri Kwik  
19320 NC Hwy 33 E  
Edward, NC 27821

### Propane Suppliers

- Hick's Propane Inc.  
24978 NC Hwy 33  
Aurora, NC 27806
- Aurora Gas Company  
945 NC Hwy 33  
Aurora, NC 27806
- Potter Oil  
24250 NC Hwy 33  
Aurora, NC 27806

### Transportation

- Road network (Beaufort County data)
- Bridges (NCDOT data)
- Rail (NCDOT data)
- Aurora Ferry Terminal  
Hickory Point Rd. and NC-306  
Aurora, NC 27806
- Public Dock  
1 Main St.  
Aurora, NC 27806
- Bay City Rd. Agricultural Airfield  
Bay City Rd.  
Aurora, NC 27806
- Nutrien Airfield  
1530 NC Hwy 306  
Aurora, NC 27806

### Medical

- Vidant Family Medical Center  
151 Third St.  
Aurora, NC 27806

### Schools

- SW Snowden Elementary School  
693 7<sup>th</sup> St.  
Aurora, NC 27806

### Libraries

- Aurora BHM Regional Library  
524 Main St.  
Aurora, NC 27806

### Churches

- Aurora First Baptist  
380 S Fifth St.  
Aurora, NC 27806
- Aurora United Methodist  
327 E Main St.  
Aurora, NC 27806
- Campbells Creek United Methodist  
1872 Vinegar Hill Rd.  
Aurora, NC 27806
- Dublin Grove Original FWB  
614 Bay City Rd  
Aurora, NC 27806
- Edward Christian Church  
23 Academy St.  
Edward, NC 27821
- Fresh Anointing Worship Center  
709 NC Hwy 33  
Aurora, NC 27806
- Friendship Pentecostal Holiness  
462 Tunstall Swamp Rd.  
Aurora, NC 27806
- Jones Chapel Baptist Church  
418 Middle Rd.  
Aurora, NC 27806
- Mary's Chapel Christian Church  
3779 Marys Chapel Rd.  
Aurora, NC 27806
- Mt. Shiloh Missionary Baptist Church  
3386 Idalia Rd.  
Aurora, NC 27806
- New Growth Unlimited Ministries  
1020 Peedtown Rd.  
Aurora, NC 27806
- South Creek Church

1074 South Creek Rd.

Aurora, NC 27806

- St. John's Missionary Baptist Church  
953 Main St. Ext.  
Aurora, NC 27806
- White Hill FWB  
9204 Old Sandhill Rd  
Aurora, NC 27806

#### Community Buildings and Facilities

- Aurora Community Center  
442 3<sup>rd</sup> St.  
Aurora, NC 27806
- Citizens on Southside Together (COST) Community Center  
17501 NC Hwy 33 East  
Blounts Creek, NC 27814
- Aurora Fossil Museum  
400 Main St.  
Aurora, NC 27806
- Aurora History Museum  
Fifth St. and Middle St.  
Aurora, NC 27806

#### **Hazardous**

- Leaking underground storage tanks (NC DEQ data)
  - 10 identified in Aurora town limits
  - 10 identified in Richland Township
- Toxic release inventory (EPA data)
  - None identified in Aurora town limits
  - 1 identified in Richland Township
- Hazardous waste sites (NC DEQ data)
  - None identified in Aurora town limits
  - 1 identified in Richland Township

#### **Natural Infrastructure**

##### Wetlands

- Wetlands (US Fish and Wildlife Service data)

##### Forests

- Working forest lands (NC Natural Heritage Program data)
- Rural forest landscape (NC Natural Heritage Program data)
- Urban forest landscape (NC Natural Heritage Program data)

##### Floodplains

- 100-year floodplain (FEMA data)
- 500-year floodplain (FEMA data)

### Surface Water Hydrology

- Rivers and streams (NC DEQ data)
- High Quality Waters (NC DEQ data)
- 303(d) listed waters (EPA data)
- Fishery Nursery Areas (NC DEQ data)
  - Primary and secondary

### Parks/Public Land

No public parks.

Government open space land:

- Beaufort County owned land behind Vidant
- Beaufort County owned land behind bank
- Vacant land by Aurora Industrial Park (future expansion area)
- Beaufort Community College owned land

Private owned land used for public purposes:

- Aurora Fossil Museum Park
- Paul Proctor field (Fossil Festival location)
- Bailey's Creek option Nutrien land

### Public Boat Ramps

- Boating Access Areas (NC Wildlife Resources Commission data)
  - Aurora Boat Ramp and Fishing Pier  
1 Main St.  
Aurora, NC 27806
  - Smith's Creek Boat Ramp  
34783 NC Hwy 33 East  
Aurora, NC 27806

### Natural Areas

- Managed Areas (NC Natural Heritage Program data)
  - Includes nature preserves, registered heritage areas, conservation easements, other protected areas, and lands under federal ownership, state ownership, or local government ownership
- Natural Areas (NC Natural Heritage Program data)
  - Sites that are of special biodiversity significance. A natural area's significance may be due to the presence of rare species, exemplary natural communities, or important animal assemblages, referred to collectively as "elements" of biodiversity.



# TOWN OF AURORA

## Community Action Team - Meeting #2

### MEETING SUMMARY

THURSDAY, OCTOBER 21, 2021, 10:00 AM - 12:00 PM, AURORA TOWN HALL + VIRTUAL

#### Meeting Purpose:

- To discuss the public survey, inventory of relevant resources, critical assets, and natural infrastructure.
- Refer to attached meeting agenda.

#### Attendees:

- Refer to attached meeting sign-in sheet.

#### Materials:

- Refer to attached materials:
  - Critical assets inventory list
  - Natural infrastructure inventory list
  - Critical assets map
  - Natural infrastructure map series

#### Meeting Discussion:

##### Public survey

- Details on the public survey were discussed.
- The project based questions were removed and will be covered at the public open house.
- The survey is now ready to be released in hard copy format and online, and will be available through November 12<sup>th</sup>.
- Jamie will follow-up with town/partner organizations on advertising survey.

##### Critical Assets

- There was discussion on how the lack of high-speed internet and fiber effects emergency management, law enforcement, communications, education, government, the industrial park, and most other critical infrastructure. Need to see if future broadband data is available.
- Beaufort County has allocated \$4 mil for future expansion. Fiber is present on NC 33 to public facilities. There was discussion that there is already fiber here for the school system, but policy says it can only be used for public facilities, such as schools. If the policy were changed at the state or federal level, it could be utilized.
- There was also discussion on whether high speed internet could be provided by Duke through microwave technology. It is not as good as fiber, but would be better than nothing in the interim.
- It was stated that the county Sheriff's Office does not provide enough support to Aurora. They do make a high water vehicle available in emergencies.

- During disaster events, Aurora EMS establishes their own command center because of the unreliability of radio communications.
- For Fire and EMS stations, Nutrien has their own fire/EMS and should be added. The Blounts Creek Volunteer Fire Dept. should be added.
- Under government services, the public works building at Pearl and 4<sup>th</sup> Street should be added. The old Police Station should be added, located across from community center. The US Post Office should be added.
- Under food, three places distribute food in town. Eagle's Wings (located in Washington), the Food Bank of the Albemarle distributes from St. John's Baptist Church, and the Edward Food Pantry.
- For the water system, the four lift stations should be added. Get addresses from town. For the wastewater treatment plant, the location listed is off. Should be Wastewater Treatment Plant Rd.
- Under electric power grid, there was discussion on adding generators, but these are already located at listed government facilities. We do not have data from Tideland EMC on transmission lines as it is not available publicly but do have that data for the Duke system. It was noted that it is important to get the Tideland data. Will request it. It should be noted where there are issues with trees on power lines. Duke has not been cutting or trimming trees off the lines and only respond once there is an outage. Also, there is a Duke power substation on Hwy 33 that should be added.
- Propane suppliers should be added, including the Propane Station and Potter Oil.
- Under transportation, gas stations should be added. The two in town, the Veri Kwik in Edward, and the Travel Store in Blounts Creek. The importance of Highway 33 as an evacuation route should be noted. In terms of critical facilities, the bridge over the intercoastal waterway into Lowland should be added. The public dock should be added. The airfield at Nutrien on the river should be added. The agricultural airfield on Bay City Rd. should be added.
- There was a discussion on how Aurora is underserved for medical and dental. Vidant Family Medical Center is the only doctor's office in the town and the township, and there are no pharmacies or dental providers.
- Under churches, the town has partnered with St. Peter's in the past. There are only about 12 in the township, so all churches should be included. Go to [www.auroralife.us](http://www.auroralife.us), and all should be listed.
- Under community buildings and facilities, the Fossil Museum should be added. The Aurora History Museum on 5<sup>th</sup> and Middle should be added. The Aurora Workforce Development Center in the Aurora Industrial Park should be added.
- Under hazardous, the rail line ships sulfuric acid, etc. Hazardous materials are also transported down Highway 33. Should be considered. Was the one hazardous waste site listed Nutrien? Will follow-up.
- A Strategic Plan is being developed for the town and they are establishing committees. Requested that we overlay a population density map to help plan for services.
- There is a future Beaufort County Community College affiliated Aurora workforce development center coming. This is contingent upon GA funding. Research recently passed state budget.
- Wastewater lagoon visit
  - Needs dredging
  - Clay lining in lagoon
  - Wetland system
  - Potential nature based/hybrid solution

### Natural Infrastructure

- The new floodplain maps by FEMA are not representative of what the town has seen in the past. Local knowledge, the whole town floods. The whole town was flooded in Hurricane Irene, for a recent example.

- Under Parks/Public Land, the park at the Fossil Museum should be added, because it is open to the public. The Paul Proctor field where the Fossil Festival is held should be added. The county owned land behind Vidant and behind the bank should be added. The vacant land by the Aurora Industrial Park should be added (future expansion area). The Bailey's Creek option with Nutrien land should be added. The Community College owned land should be added.
- There was also discussion on the need for maintenance of drainage ditches.
- Open land/lots for conservation are needed for flood mitigation.
- Need to include storm surge data to reflect flooding.

#### Next Steps

- Results of public survey will be reviewed at next meeting.
- Draft hazards mapping and draft risk/vulnerability assessment will be reviewed at next meeting.

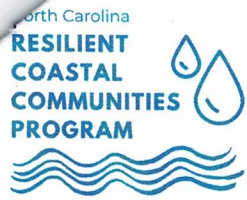




# MEETING SIGN-IN SHEET

**Title** Town of Aurora Community Action Team – Meeting 2  
**Date** Oct. 21, 2021 **Time** 10:00 AM – 12:00 PM **Location** Aurora Town Hall

✓	Name	Organization	Title/Role	Email	Signature
	Judi Lannon	Town of Aurora	Town Manager	townofaurora@auroranc.org	In attendance
	Chuck Bonner	Town of Aurora	Public Works Director	aurorapwd@auroranc.org	<i>Chuck Bonner</i>
	Curt Hendrix	Town of Aurora	Recreation Coordinator	aurorarec@embarqmail.com	
	Kurt Ryan	Town of Aurora	Volunteer	Ryankj88@gmail.com	<i>Ky</i>
	Carlton Gideon	Mid-East Commission	Planner	cgideon@mideastcom.org	online
	Tina Taylor	Town of Aurora	Commissioner	gmatbtaylor@gmail.com	In attendance
	Charles Cannon	COST Community Group	Community	Charlescannon112@gmail.com	In attendance
	Joe Calhoun	COST Community Group	Community	Jcalh29726@aol.com	In attendance
	Martyn Johnson	Beaufort County	Economic Development Director	Martyn.johnson@beaufortcdc.com	online
	Jamie Heath	Mid-East Commission	Contractor	jheath@mideastcom.org	<i>Jamie Heath</i>
	Lisa Williams	Mid-East Commission	Contractor	lwilliams@mideastcom.org	
	Paige Cureton	RK&K	Contractor	pcureton@rkk.com	
	Tris Ford	RK&K	Contractor	tford@rkk.com	<i>Tris Ford</i>



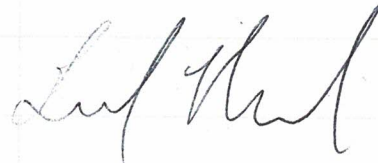
# MEETING SIGN-IN SHEET

**Title** Town of Aurora Community Action Team – Meeting 1

**Date** Oct. 21, 2021

**Time** 10:00 AM – 12:00 PM

**Location** Aurora Town Hall

✓	Name	Organization	Title/Role	Email	Signature
	Jim Eisenhardt	RK&K	Contractor	jeisenhardt@rkk.com	
	Gordon Marsh	RK&K	Contractor	gmarsh@rkk.com	
	Tancred Miller	NC DEQ	State/Grant Agency	Tancred.miller@ncdenr.gov	
	Mackenzie Todd	NC DEQ	State/Grant Agency	Mackenzie.todd@ncdenr.gov	online
	Sarah Spiegler	NC Sea Grant	Coastal Resilience Specialist	sespiegler@ncsu.edu	online



**Community Action Team**  
Meeting #3 Materials



# TOWN OF AURORA & RICHLAND TOWNSHIP

Community Action Team - Meeting #3

## AGENDA

Thursday, Dec. 02, 2021, 10:00 AM - 12:00 PM

Location: Aurora Town Hall, 295 Main Street, Aurora, NC 27806

**10:00 – 10:05 AM**

**Welcome**

**10:05 – 10:25 AM**

**Public survey**

- Review results

**10:25 – 10:45 AM**

**Review draft hazards mapping**

- Floodplains overlaid with critical assets (FEMA)
- Sea level rise scenarios overlaid with critical assets (NOAA)
- Potential storm surge with depths (NOAA)
- Potential storm surge overlaid with critical assets (NOAA)
- Sea level rise scenarios overlaid with natural infrastructure (NOAA)

**10:45 – 11:30 AM**

**Review draft risk and vulnerability assessment**

- Provide overview of risk and vulnerability assessments
- Discuss risk and vulnerability thresholds
- Review draft vulnerability assessment data sheets
- Review draft risk assessment data sheets
- Exercise: Work with CAT to fill in some items on data sheets

**11:30 AM - NOON**

**Project discussion**

- What site(s) are the community's highest priority?
- Begin discussion on potential resiliency projects for project portfolio, informed by draft risk and vulnerability assessment

**NOON**

**Adjournment**

# Town of Aurora and Richland Township, NC: Resilient Coastal Communities Program

38 responses

Please tell us about yourself.

**Do you live and/or work in the Town of Aurora or the Richland Township?**

- Yes (20 responses)
- No (3 responses)
- Richland Township (5 responses)
- Live (2 responses)
- 4 years (1 response)
- Yes. live and work in Aurora (1 response)
- I work in Aurora and live in Richland Township. (1 response)
- I live in Aurora on Bateman Road. (1 response)
- Live in Aurora. (1 response)
- Live – Richland (1 response)
- Yes – both (1 response)
- not any longer (1 response)

**If yes, how long have you lived and/or worked in the Town of Aurora or Richland Township?**

- Less than 1 year (0 responses)
- 1-2 years (2 responses)
- 3-5 years (3 responses)
- 6-10 years (4 responses)
- 11-15 years (4 responses)
- 16-20 years (1 response)
- 21-30 years (5 responses)
- 31-40 years (1 response)
- 41-50 years (3 responses)
- 51+ years (10 responses)
- all my life
- Life-long resident

**Do you own and/or rent your property (home, business, or both as applicable)?**

- Own (21 responses)
- Own home (4 responses)
- Rent my home (1 response)
- Yes (7 responses)
- No (2 responses)
- Own a home and own a business (1 responses)
- Own home and business both (1 response)
- Own and rent (1 response)



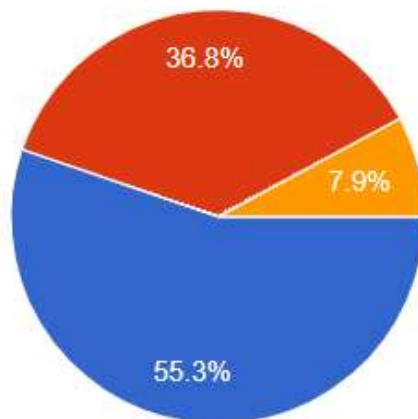
Please identify your zip code (home, work, or both as applicable).

- 27806 (31 responses)
- 27814 (3 responses)
- 27821 (2 responses)
- 27806 for both (1 response)
- It was 27806 (1 response)

## Coastal Storms and Flooding

Which of the following statements about coastal storms do you most agree with?

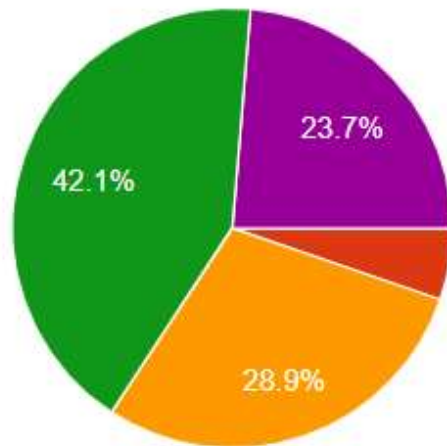
38 responses



- I am very worried about coastal storms in the future.
- I am slightly worried about coastal storms in the future.
- I am not worried about coastal storms in the future.

On a scale of 1-5, how significant of a risk do you think flooding currently poses to your community?

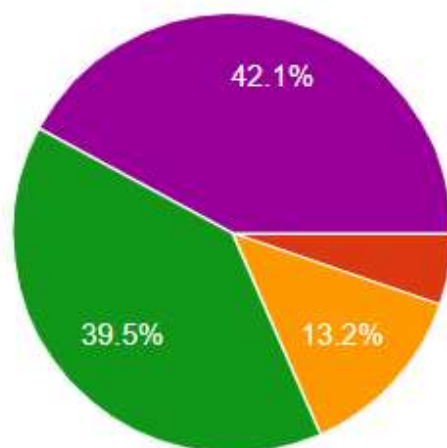
38 responses



- 1 - not a concern
- 2 - minor challenge
- 3 - moderate challenge
- 4 - serious challenge
- 5 - extreme challenge

On a scale of 1-5, how significant of a risk do you think flooding will pose to your community in the next 20-40 years, given climate change and rising sea levels?

38 responses

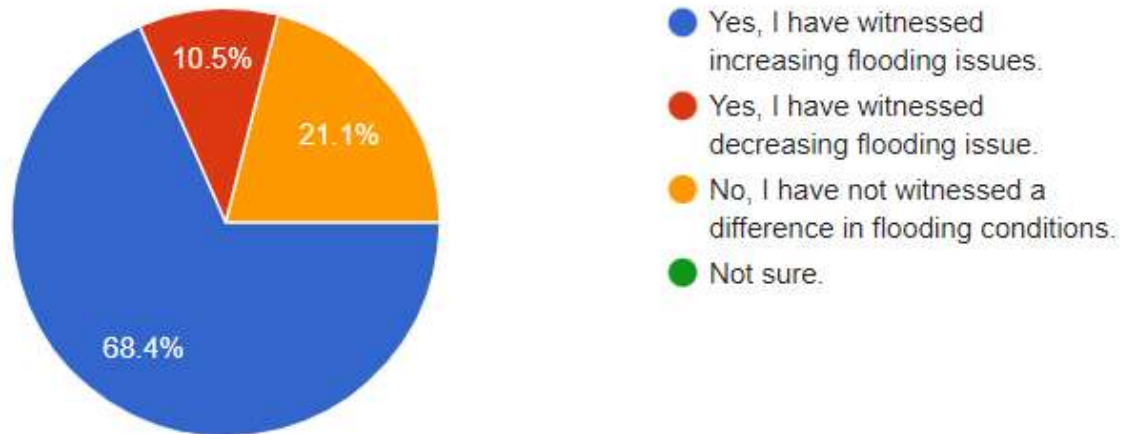


- 1 - not a concern
- 2 - minor challenge
- 3 - moderate challenge
- 4 - serious challenge
- 5 - extreme challenge



## Throughout your time living and/or working in the Town of Aurora or the Richland Township, has your experience with flooding changed?

38 responses



### Comments on previous question (optional).

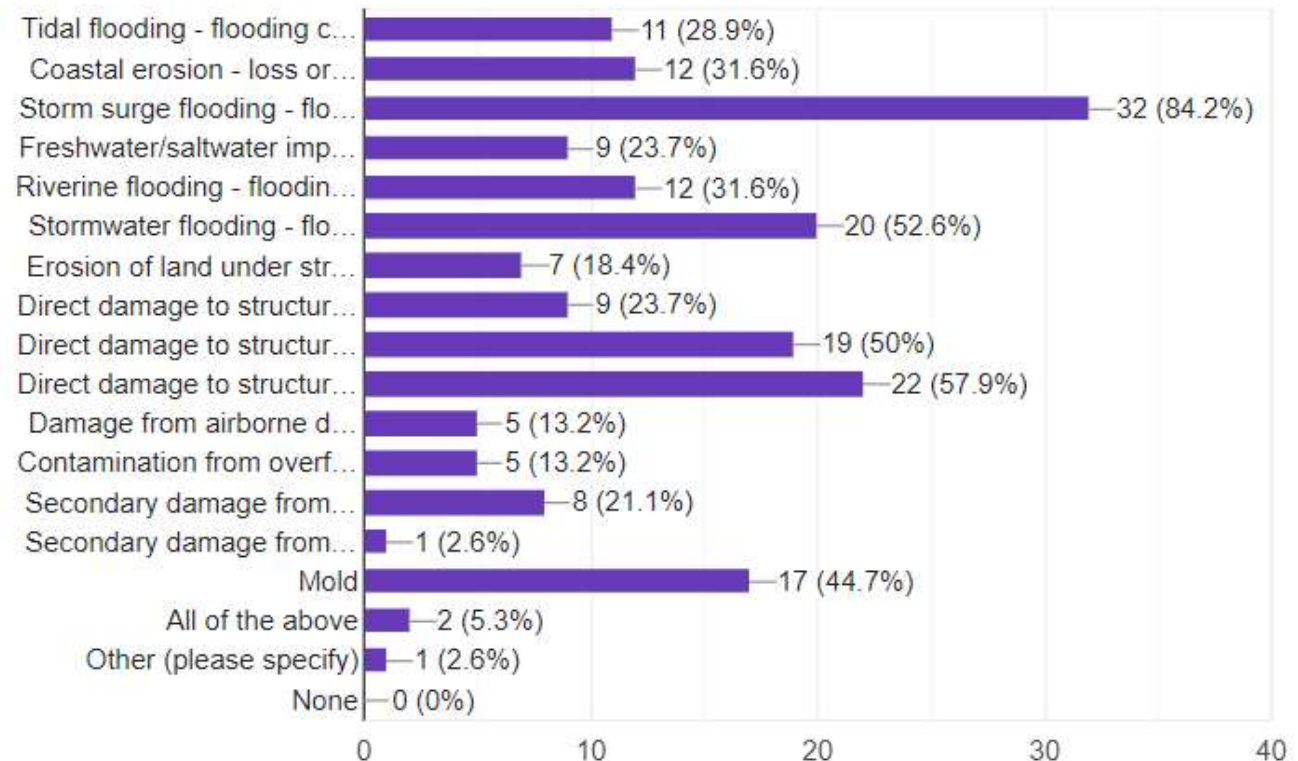
- As I was growing up in Richland Township, it was a common occurrence to have some high water during coastal storms, but since I have been living here as an adult the high water/flooding issues have increased. I believe this is due in part to drainage issues on our waterways. Smaller water ways and ditches in the area are clogged with storm debris from past storms and no one seems to know whose responsibility it is to take care of such issues, property owners, South Creek Drainage District, State DOT??? Maybe this survey can help shed some light on this issue.
- Yes, I have witnessed an increasing flooding issues. I pay a drainage district fee yearly and although it is not much it is very discouraging to know that no one has any answers to what the funds are used for. All my life the most I have seen anyone do around the creek banks is mow the grass. I have a large ditch that runs from state road 1002 down my property line to the creek that crosses Bateman road. I live on the corner property. I have been told this is for drainage of the farm land around me yet I have never seen the ditch cleaned out for drainage. I believe if the ditches and canals were cleaned out we would have better drainage and less flooding.
- In the past 10-12 years I have seen it 4-5ft higher than I never seen as a kid growing up. It also takes longer for flood waters to recede. You would be able to see noticeable progress within a few hours now I have seen it take 2-3 days before areas drain.
- 2011 Hurricane Irene was the worst.
- Irene
- Much of my family & friends have lost everything during storms like Irene & Florence.
- Never flooded in the house but a lower house in the back was flooded.
- Flooded in Royal, first time ever to the extent that Irene did for which we got no help to salvage our losses. Can't afford that anymore.

## Coastal Hazards and Impacts

What type of coastal hazards have you witnessed in your community?

Select all that apply.

38 responses

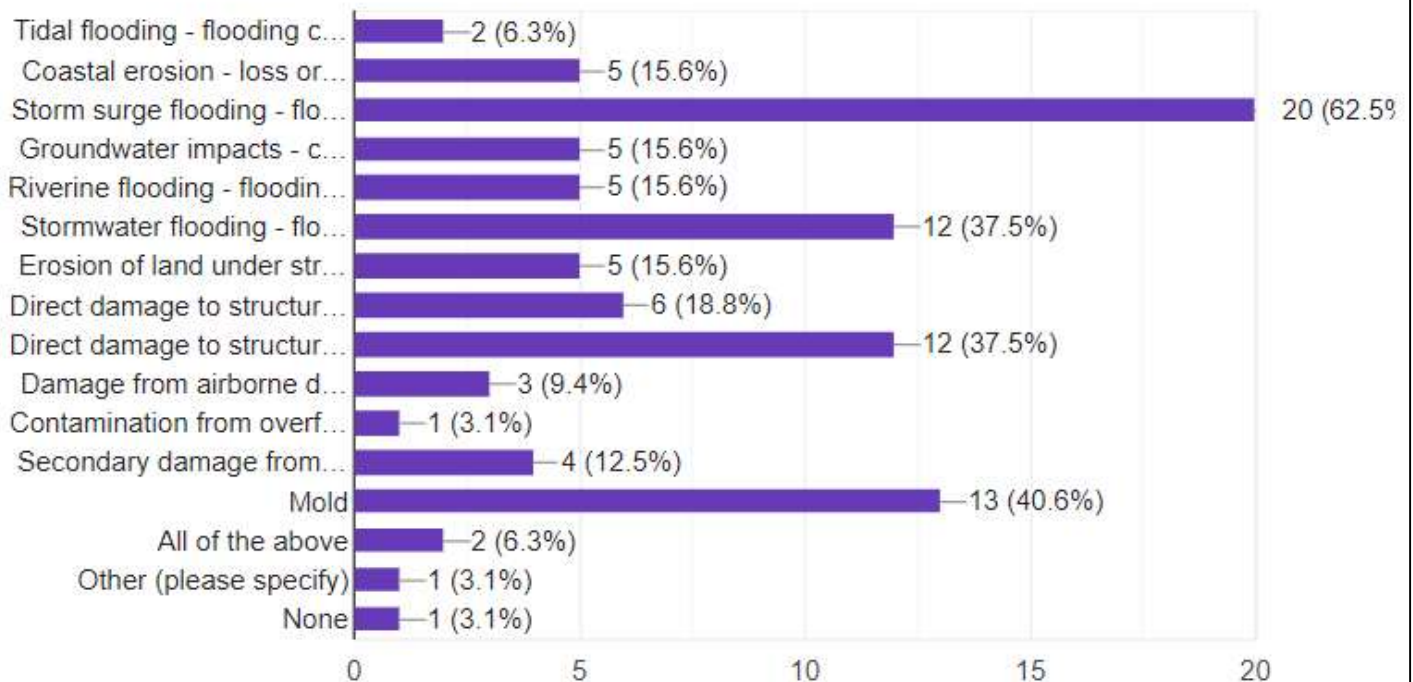


### Comments on previous question (optional).

- Debris left from receding waters is hazardous, damage to docks
- Nutrien has altered the makeup of South Creek
- During storms we of course have higher water levels but Areas are so over grown heavy rain fall can cause flooding and lack of drainage keep the ground so moist septic system drainage are effected. Due to the extra flooding from lack of drainage the edges of ditches and creeks start to break down and wash away causing erosion. By these areas not being cleaned dead and weak trees are left to be ripped away by high winds causing road blocks and adding to the build up and cloning drainage more. Before areas were Simi maintained in an effort to control mosquitoes but over the years even that has seemed to become less important. As citizens if you call and complain or report issues no one seems to know who's job it is, all they know is that isn't there department.
- At this time we are not experiencing tidal flooding
- overgrown drainage, Irene
- Unexpected freezing temperatures have also had devastating financial impact

Which of those same hazards have directly impacted your home or your business? Select all that apply.

32 responses

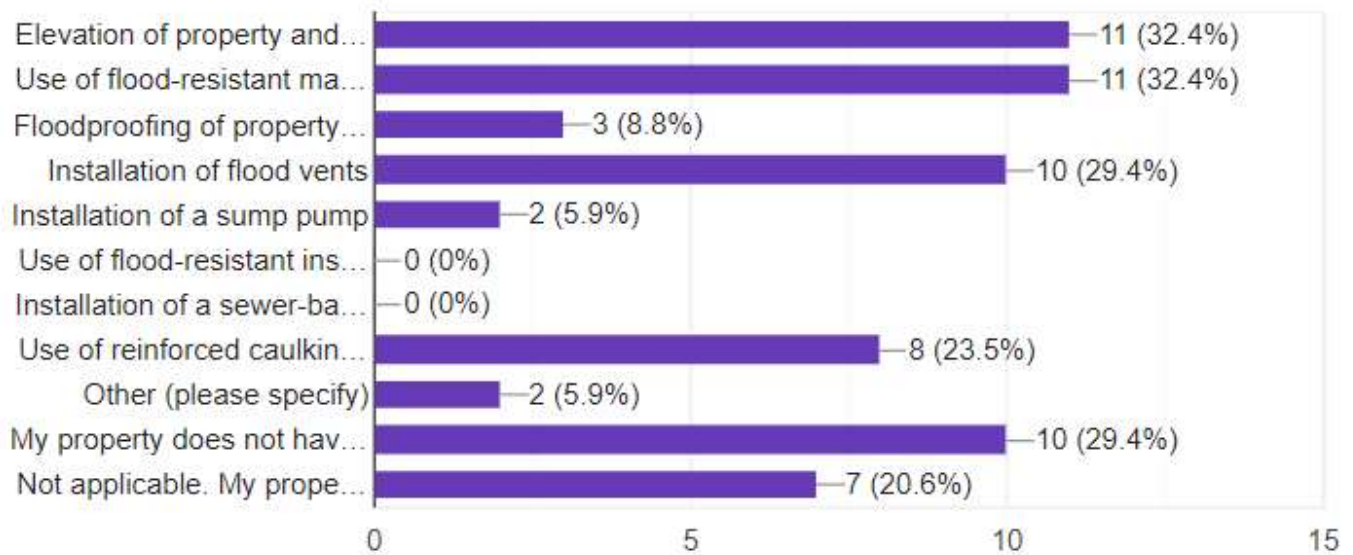


Comments on previous question (optional).

- Direct damage to structure from high winds
- Wind from storms has significantly impacted damage and outages to the township, mostly from downed trees and impacts to structures and electric power, causing long outages, sometimes in the 3-4 day length until power companies can respond and restore power. We are the end of the line.
- debris left from receding waters, damage to docks
- Nutrien again
- The water that has come up onto my property has made the land too acidic to grow a garden not to mention the damage it done under my house that the insurance did not acknowledge at the time and now main beams are falling apart.
- We had a bad hurricane were we were without lights or water for days. Water came up under our house wetting the underside of the floors. Fema helped some but said it wasn't that bad since water didn't actually come in. Over the past few years we have had mold issues and had to replace multiple flooring as the wood rotten from exposure to the river water. Several neighbors have had similar issues and those closer to the creek had to completely rebuild. We also had to change internet providers because everytime it rains the box floods and service would go out.
- Direct damage to structure from high winds.
- We worry about local mining operations at PCS/Texasgulf/Nutrien affecting water quality & groundwater level changes as they come by our homes to mine more.
- We were lucky that a huge old pecan tree fell during a Hurricane but it fell away from our house.

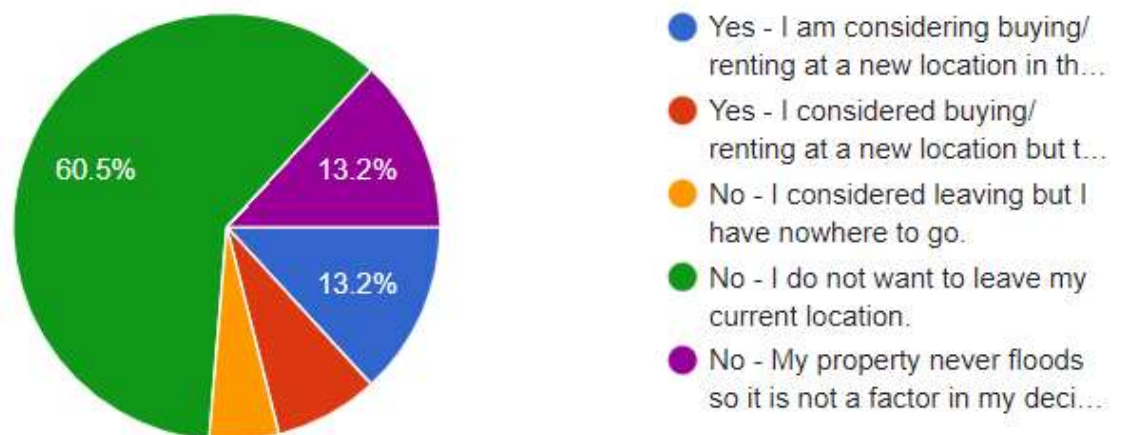
Do you have measures in place to prevent and/or reduce flooding or flood-related damages and losses to your property? If yes, what type of actions have you taken? Check all that apply.

34 responses



Have you ever considered moving to another location (can be inside or outside of the Aurora-Richland area) to avoid future flood losses, impacts, or damages?

38 responses

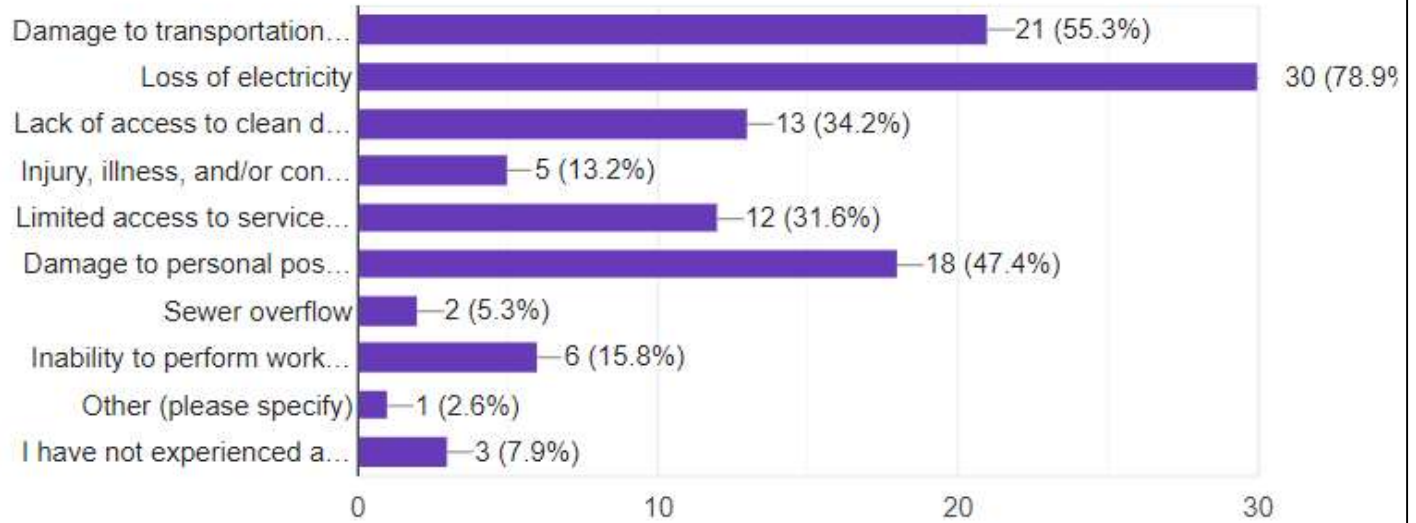




Aside from any impacts to your home or business, have you experienced any other negative impacts as a result of flooding events? Check all that apply.



38 responses



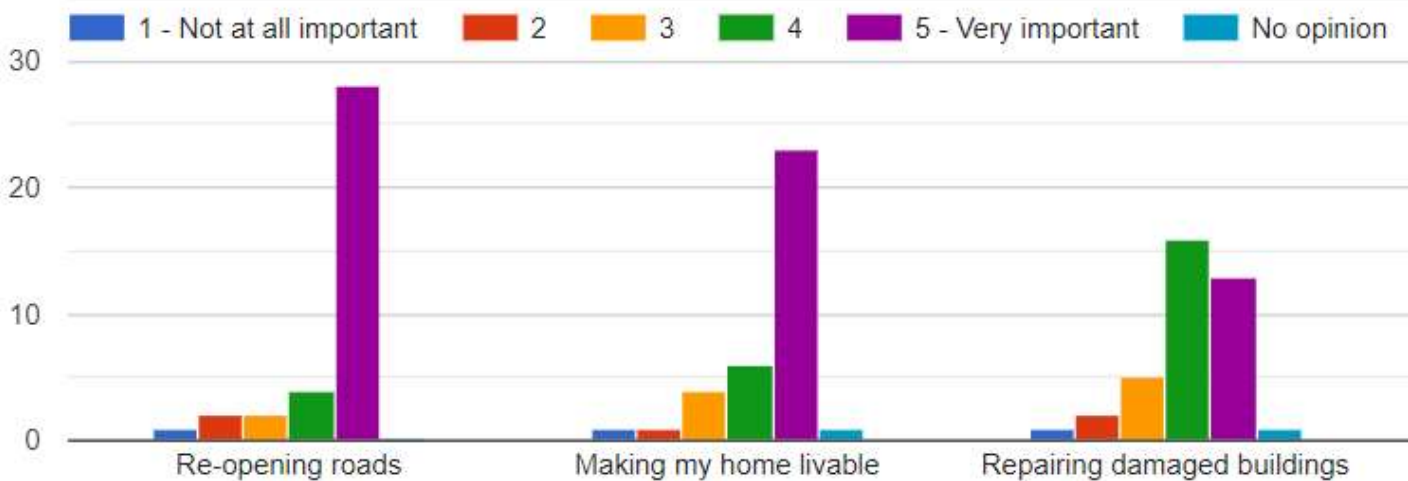
#### Comments on previous question (optional)

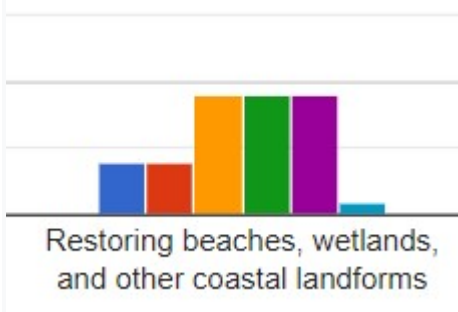
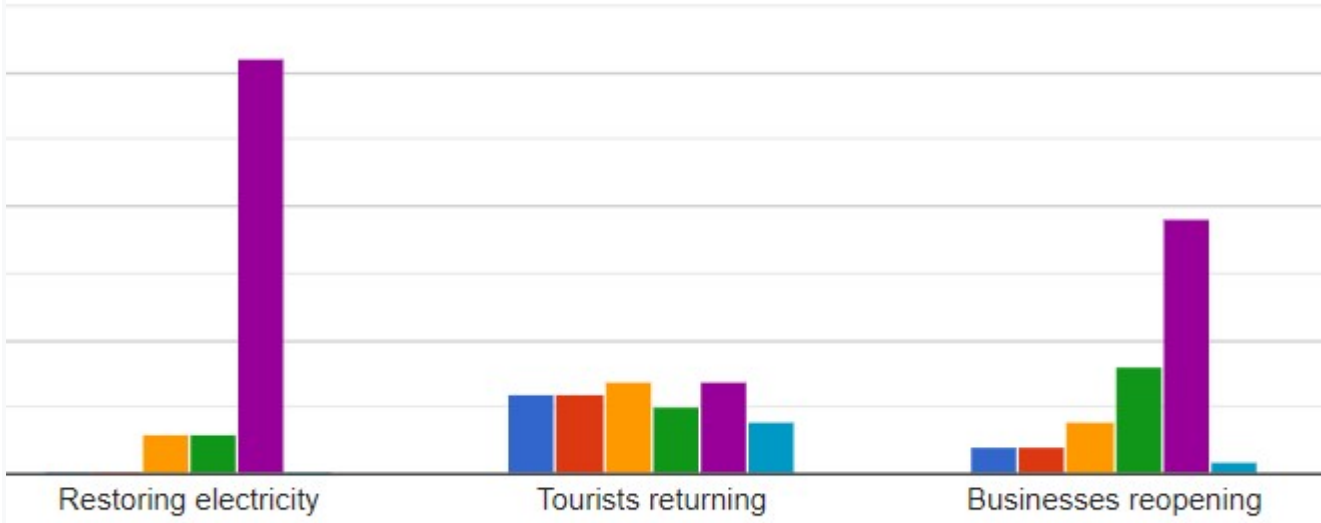
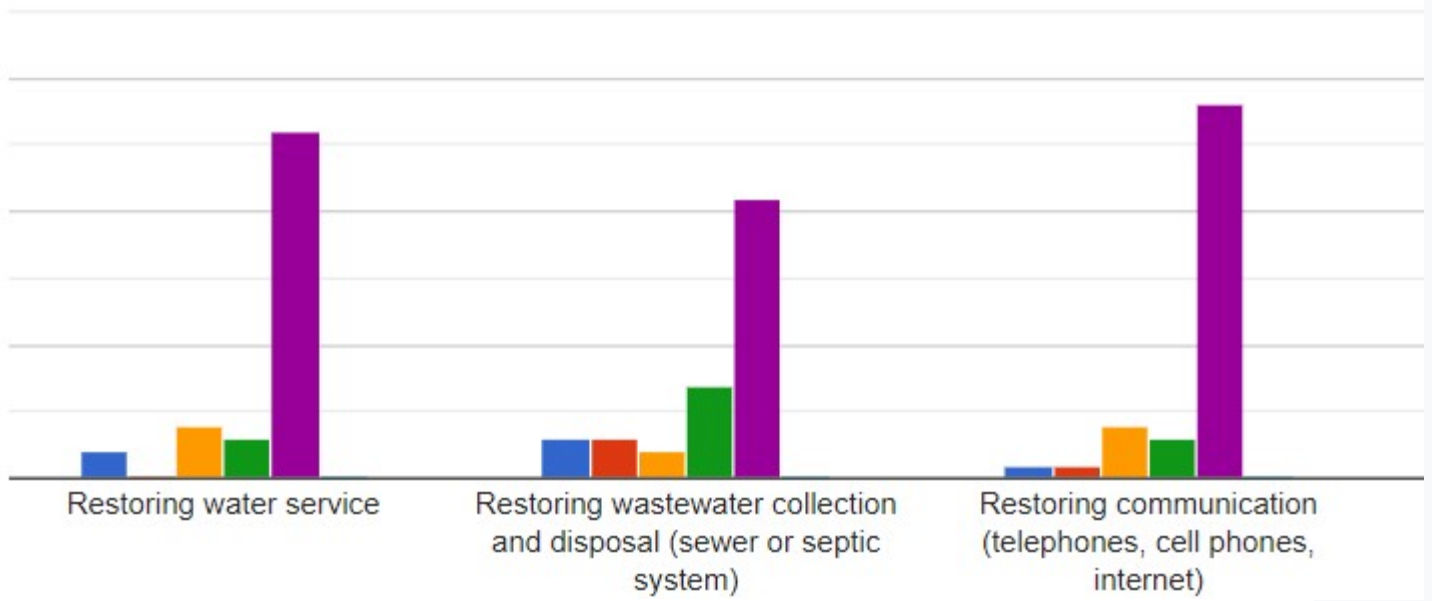
- Century Link phone boxes all over the town are in low lying places of water rising. I left Century Link and went with Spectrum just so I could have better phone and internet service. Before Spectrum only heavy rainy days the phone would be staticy and internet would be extremely slow to the place you could not do anything.
- We have been flooded in (no road access) until water levels dropped, be have lost out door pets when we had to let them out to prevent them from drowning, my husband was unable to get home to us from work for several days due to flooding. We have lost several vehicles due to flooding.
- 2011 Hurricane Irene shut down everything.
- Displacement

**Are there any specific areas of your community vulnerable to coastal hazards? If so, please list them by location. Please use street intersections or landmarks to describe locations.**

- Lack of high speed internet for our citizens to monitor and communicate w/emergency officials during periods of severe storm. This is one of our key infrastructure shortfalls and needs addressed by the government for funding.
- Hickory Point Road east of the Aurora/Bayview ferry terminal. Low road, bridge wash out.
- Most of Bateman Road, between Bay City Road and Idalia Road. Bay City Road between the County Line and Hwy 33.
- Baycity road from SR 1924 all the way down to Hwy. 33 to include bateman road, west road, royal hwy., and SR 1917. All of south creek area, Hickory point, and the back part of town on the other side of main street away from the caution light.
- Anything close to the creek from bateman on bay city to spring creek area to 33 towards hobucken. Downtown by the boat ramp and everything from main st towards the creek. I'm sure there are many more but those are areas that I know can flood some even with just heavy rain
- Within the city limits, the ditches overflow and have no drainage during heavy rains or storms.
- Protecting the Town water (406 Pearl St.) & sewer (3 WWTP Road) utility.
- Especially low-income areas in Aurora & its surrounding areas that have no recourse to prevent flooding or deal with it once it happens.
- 6th and Main Street
- River banks overflowing into Aurora even during an excessive amount of rain.

Please rank the following activities, intended to restore daily life after a coastal storm.







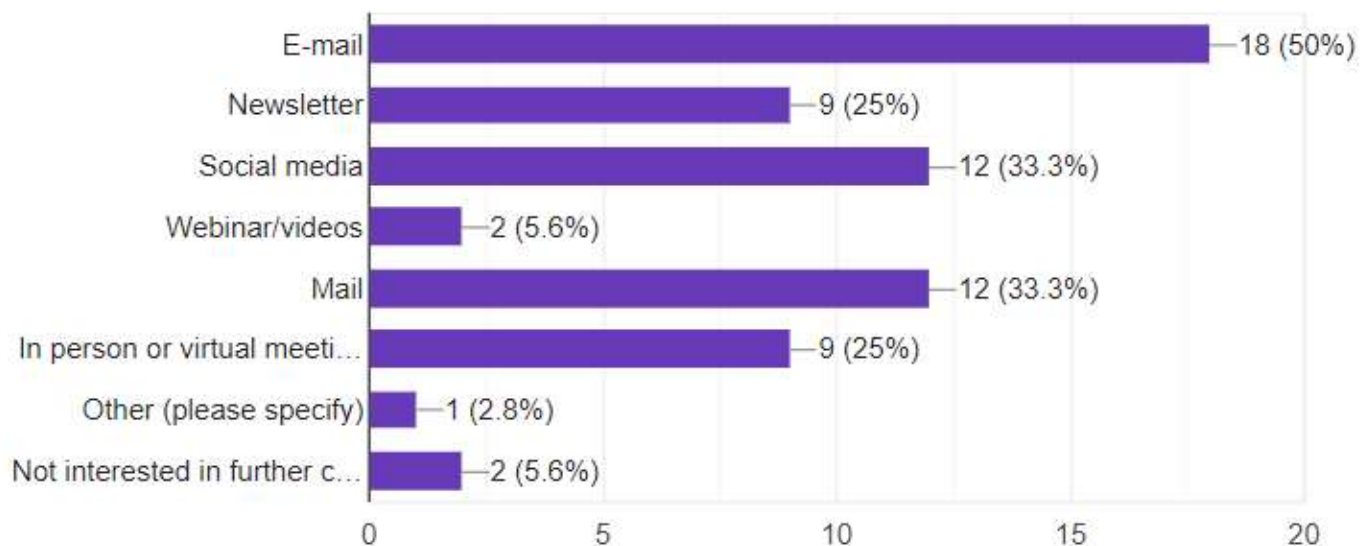
## Is there anything else you would like to share with us regarding flooding and coastal resilience in the Aurora-Richland community?

- Thanks for taking an interest in the citizen's concerns on the south side of the Pamlico. They have long been neglected and have many needs as a rural under-served community.
- As I stated earlier, I feel part of the issues with high storm water and flooding here in the Aurora Richland Township area is unrestricted drainage in our ditches, creeks and waterways. At one time this was handled in the name of mosquito control, but I am not sure who or what persons or governmental entity is possibly responsible for the remediation of these issues
- Land value seems to go down, taxes go up and anytime you try to do anything no matter who you call it's not their department (road fixed, drainage issue, grass cut on side of hwy, etc) I hope this survey really helps and isn't just a waste of time
- I'd like to dike my waterfront. (Waterfront is 150 ft. (marsh) from lawn.
- My family moved to an elevated home, many in this community cannot afford to move.
- The social fabric of our community is irreparably impacted by the increasingly strong storms. They are getting more severe.
- I have already moved from waterfront, partially due to storms
- Groceries store

## Stakeholder Engagement

How would you like the Town of Aurora to communicate with you and/or your community regarding this program or on similar programs in the future?

36 responses



**Comment field. Complete if "Other (please specify)" was checked in previous question.**

Newspaper

Basic/understandable storm insurance should be a priority.

Are there any local or community groups or organizations you feel we should coordinate with to create awareness of this program or similar programs in the future? If yes, please provide their name, website, and contact information if possible.

- COST
- Aurora Community Watch, Aurora Seniors Club, Aurora/Richland Township Chamber of Commerce
- Fire Department, community watch
- South Creek Drainage District, Town of Aurora, Aurora/Richland Township Chamber of Commerce.
- South Creek Drainage District, Richland Township, Aurora Women's Club
- I have received text about covid vaccines and hurricane information, that same system could announce other things
- Aurora Volunteer Fire Department. Kevin Bonner.
- Library, Fire/Rescue, Emergency Services
- (I)T
- Auroralife.org
- Citizen on Southside Together Charles Cannon 252-916-3924

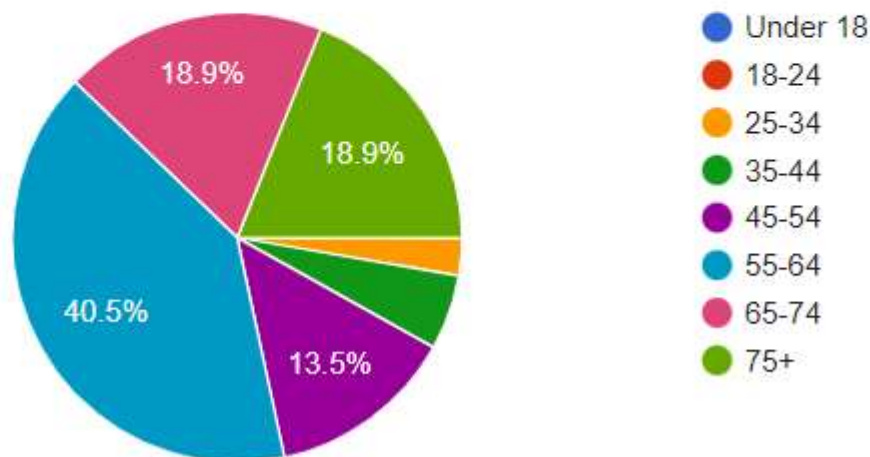
Are there any upcoming events where we could share information about this program?

- upcoming meetings are published at <http://www.auroralife.us>
- Various civic clubs meetings. Fire Department.

## Demographic Information (optional)

Tell us your age.

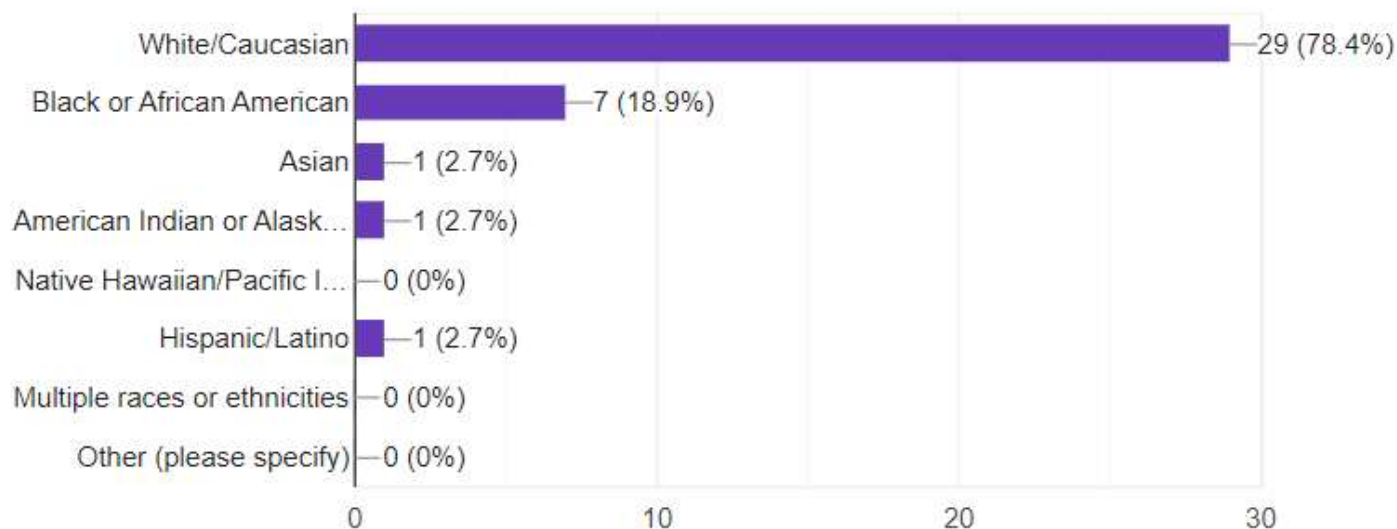
37 responses



### What race/ethnicity best describes you? Check all that apply.

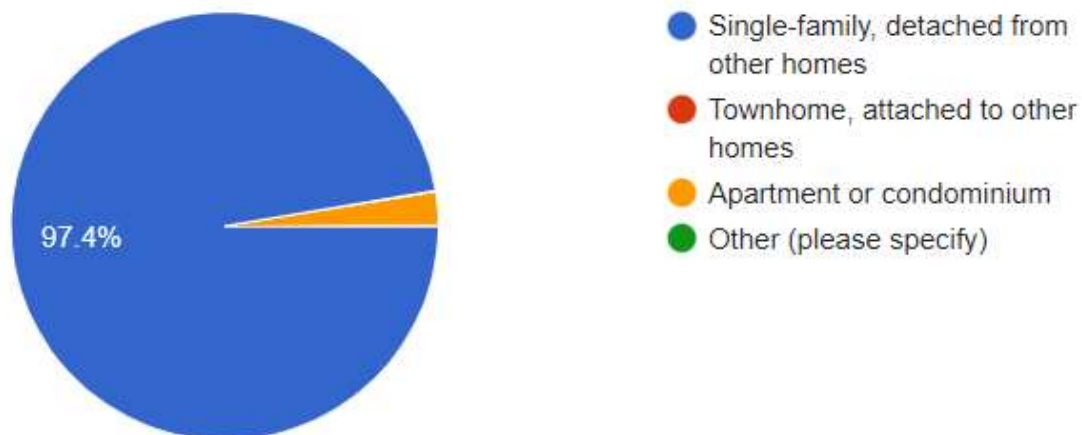


37 responses



### Which type of housing best describes your home?

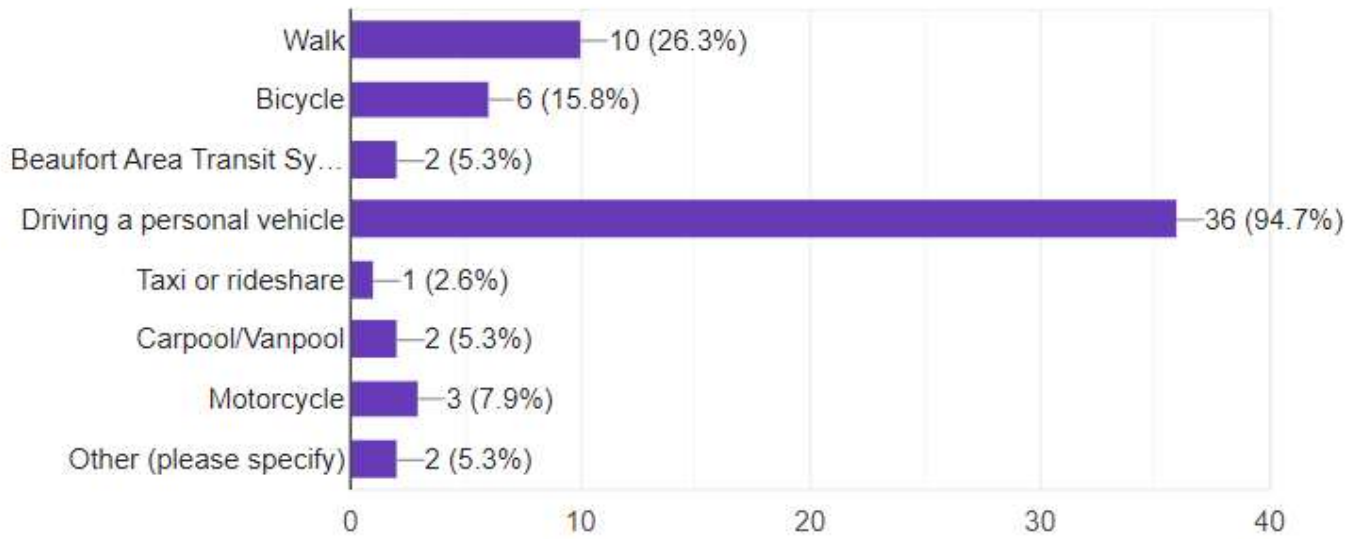
38 responses



# How do you travel in the Aurora-Richland area? Select all that apply.



38 responses





















**Comment field. Complete if "Other (please specify)" was checked in previous question.**

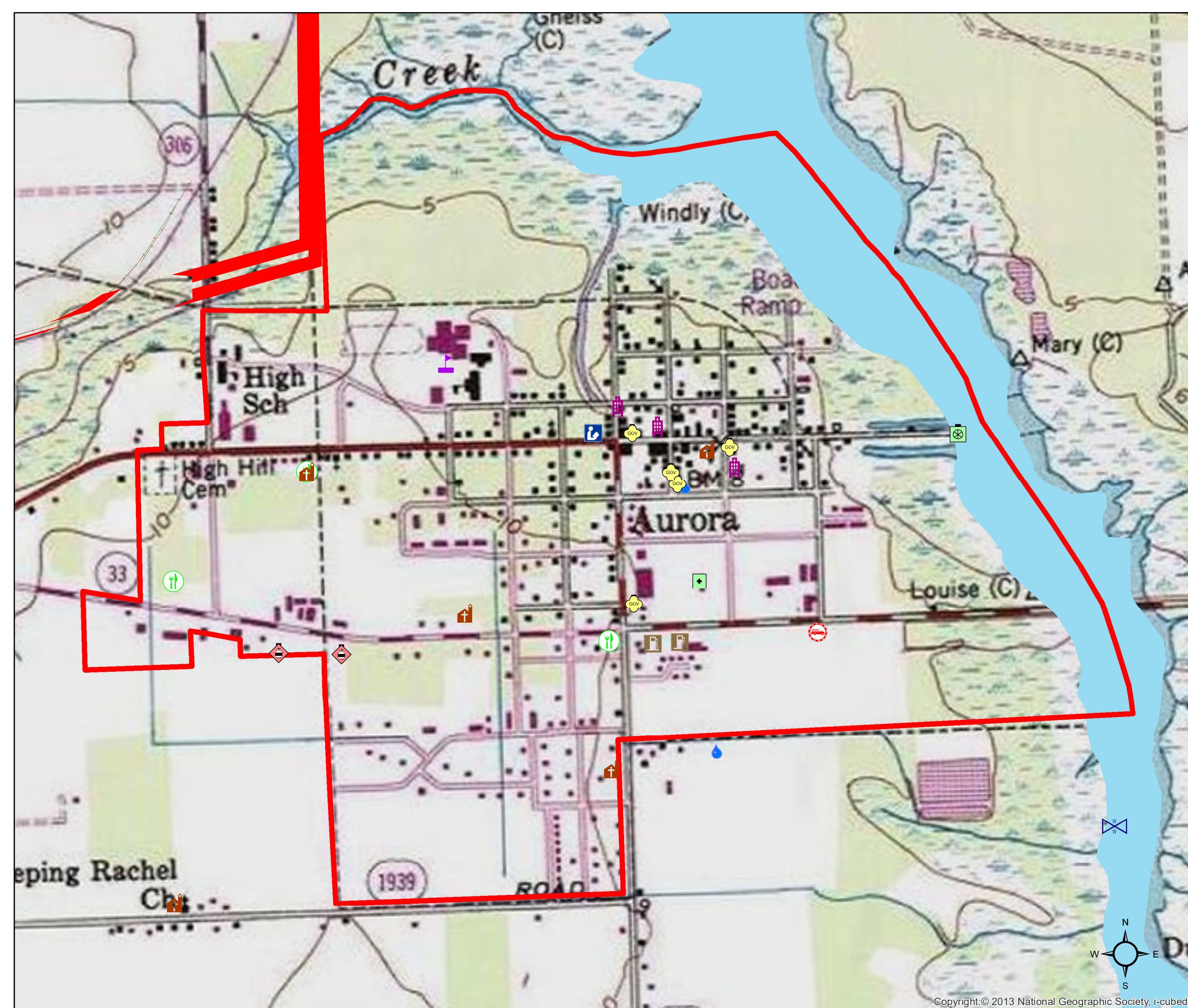
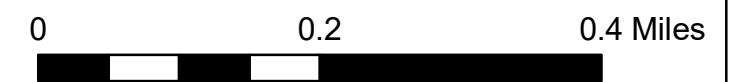
- Driviing school bus for Arapahoe Charter School
- via helicopter



# NC Resilient Coastal Communities Program Town of Aurora Critical Assets & Topography

## Legend






















-  Churches
-  Community Buildings and Facilities
-  Duke Transmission Easements
-  Education
-  Fire and EMS Stations
-  Food
-  Fuel Stations
-  Government Services
-  Libraries
-  Medical
-  Propane Suppliers
-  Public Water Supply Wells
-  Transportation Facilities
-  Wastewater Discharge Permits
-  Rail
-  Bridges
-  Aurora Town Limits
-  Surface Water

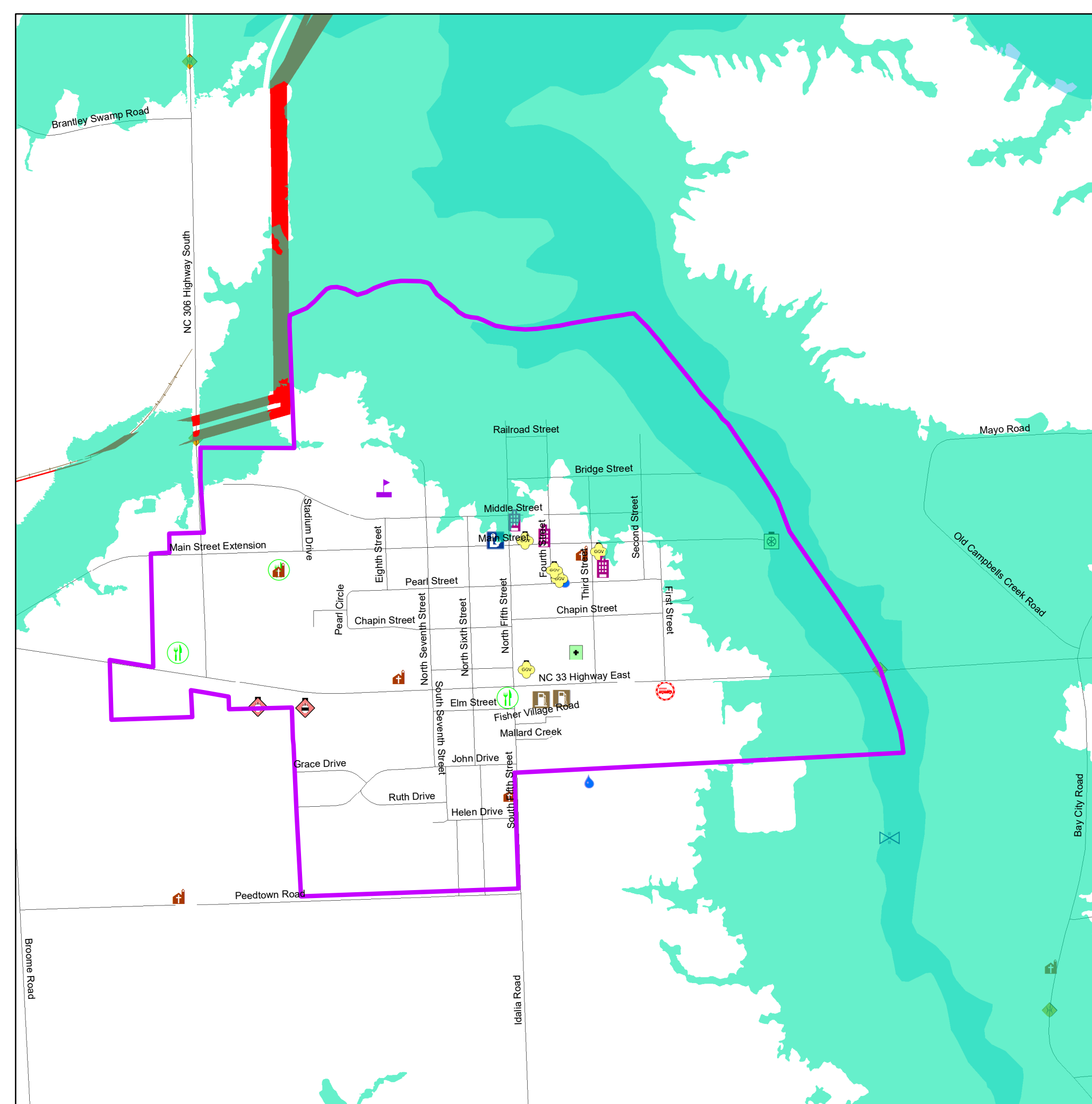
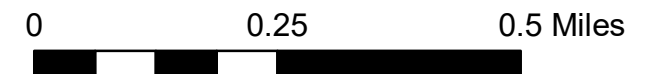
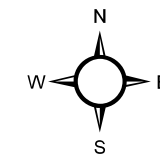




# NC Resilient Coastal Communities Program Town of Aurora Critical Assets & 100-year Floodplain






















## Legend

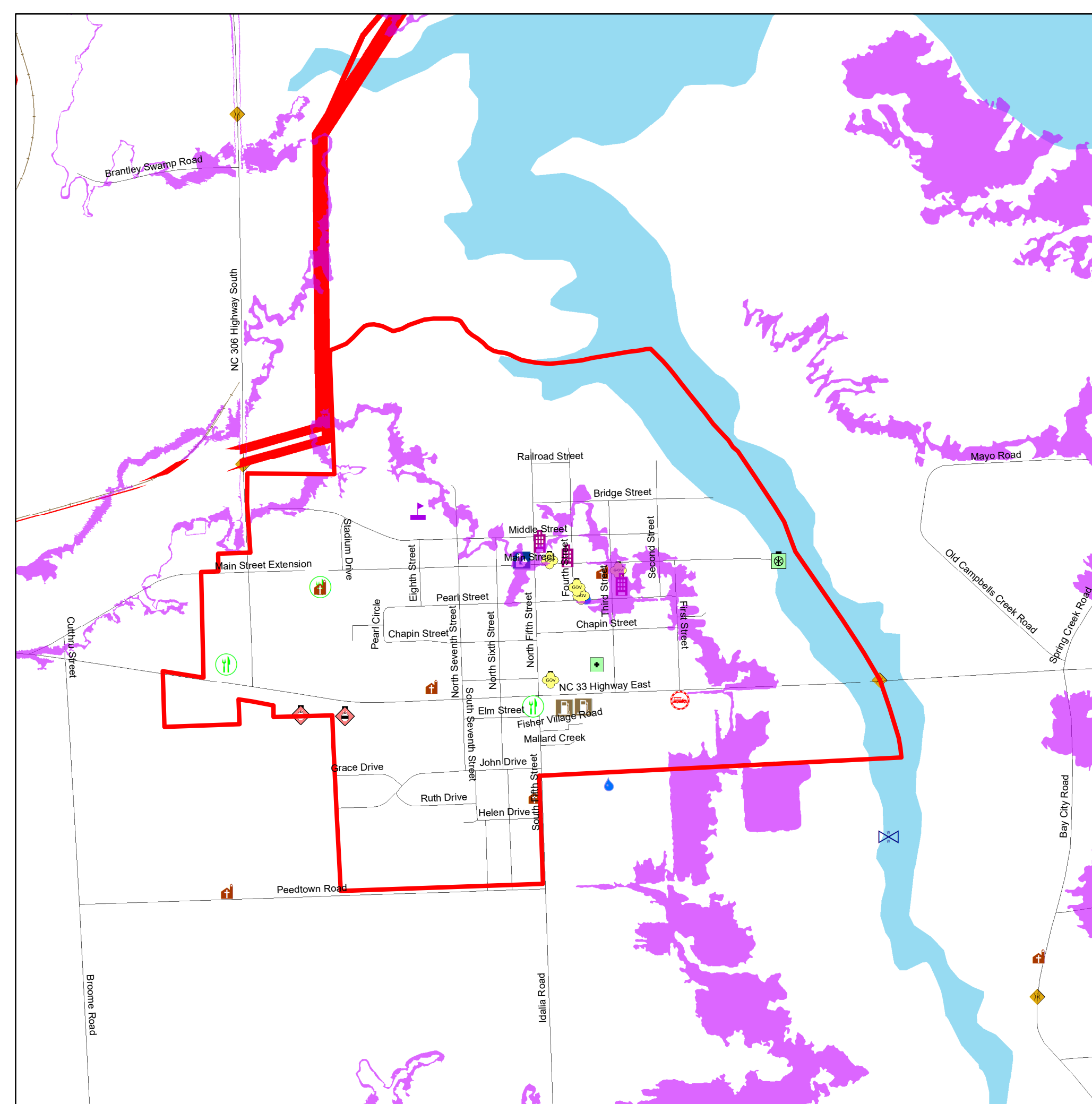
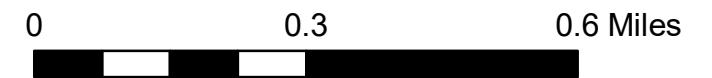
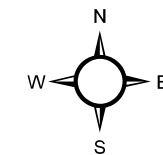
-  100-year Floodplain
-  Churches (7.1% in 100-yr FP)
-  Community Buildings and Facilities (25% in 100-yr FP)
-  Duke Transmission Easements (22.9% in 100-yr FP)
-  Education (None in 100-yr FP)
-  Fire and EMS Stations (None in 100-yr FP)
-  Food (None in 100-yr FP)
-  Fuel Stations (None in 100-yr FP)
-  Government Services (None in 100-yr FP)
-  Libraries (None in 100-yr FP)
-  Medical (None in 100-yr FP)
-  Propane Suppliers (None in 100-yr FP)
-  Public Water Supply Wells (None in 100-yr FP)
-  Transportation Facilities (25% in 100-yr FP)
-  Wastewater Discharge Permits (100% in 100-yr FP)
-  Rail
-  Road Network (43.7% in 100-yr FP)
-  Bridges (100% in 100-yr FP)
-  Aurora Town Limits
-  Beaufort County
-  Surface Water



# NC Resilient Coastal Communities Program Town of Aurora Critical Assets & 500-year Floodplain

## Legend






















-  500-year Floodplain
-  Churches (14.3% in 500-yr FP)
-  Community Buildings and Facilities (25% in 500-yr FP)
-  Duke Transmission Easements (6.9% in 500-yr FP)
-  Education (None in 500-yr FP)
-  Fire and EMS Stations (None in 500-yr FP)
-  Food (None in 500-yr FP)
-  Fuel Stations (None in 500-yr FP)
-  Government Services (20% in 500-yr FP)
-  Libraries (100% in 500-yr FP)
-  Medical (None in 500-yr FP)
-  Propane Suppliers (None in 500-yr FP)
-  Public Water Supply Wells (None in 500-yr FP)
-  Transportation Facilities (25% in 500-yr FP)
-  Wastewater Discharge Permits (None in 500-yr FP)
-  Rail
-  Road Network (25.8% in 500-yr FP)
-  Bridges (None in 500-yr FP)
-  Aurora Town Limits
-  Beaufort County
-  Surface Water

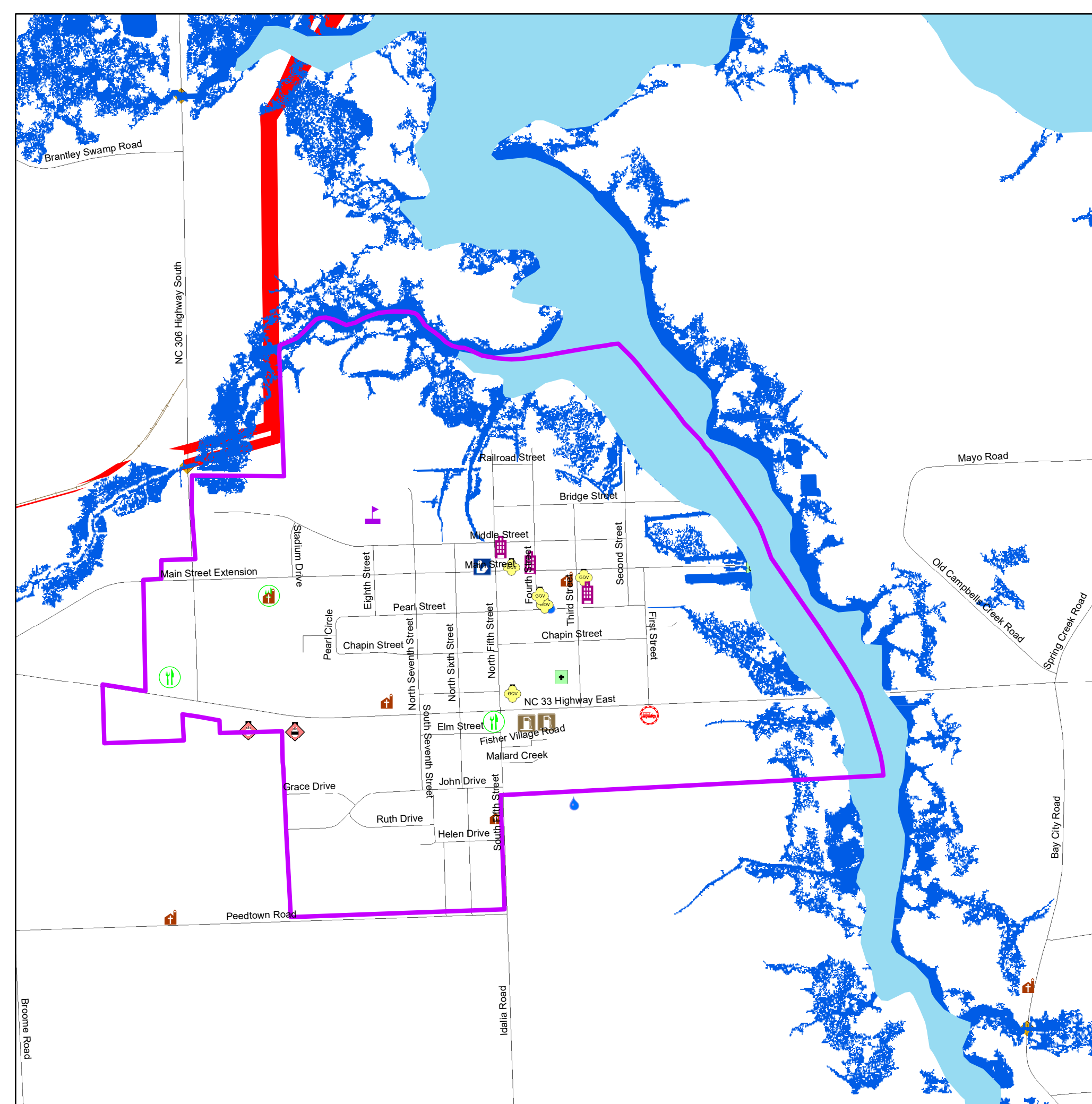
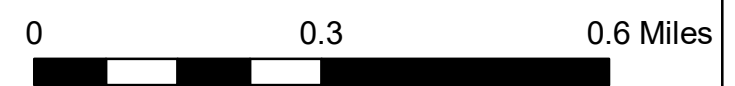
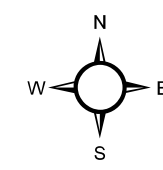




# NC Resilient Coastal Communities Program Town of Aurora Critical Assets & 1 ft. Sea Level Rise Scenario (30-year Projection)






















## Legend

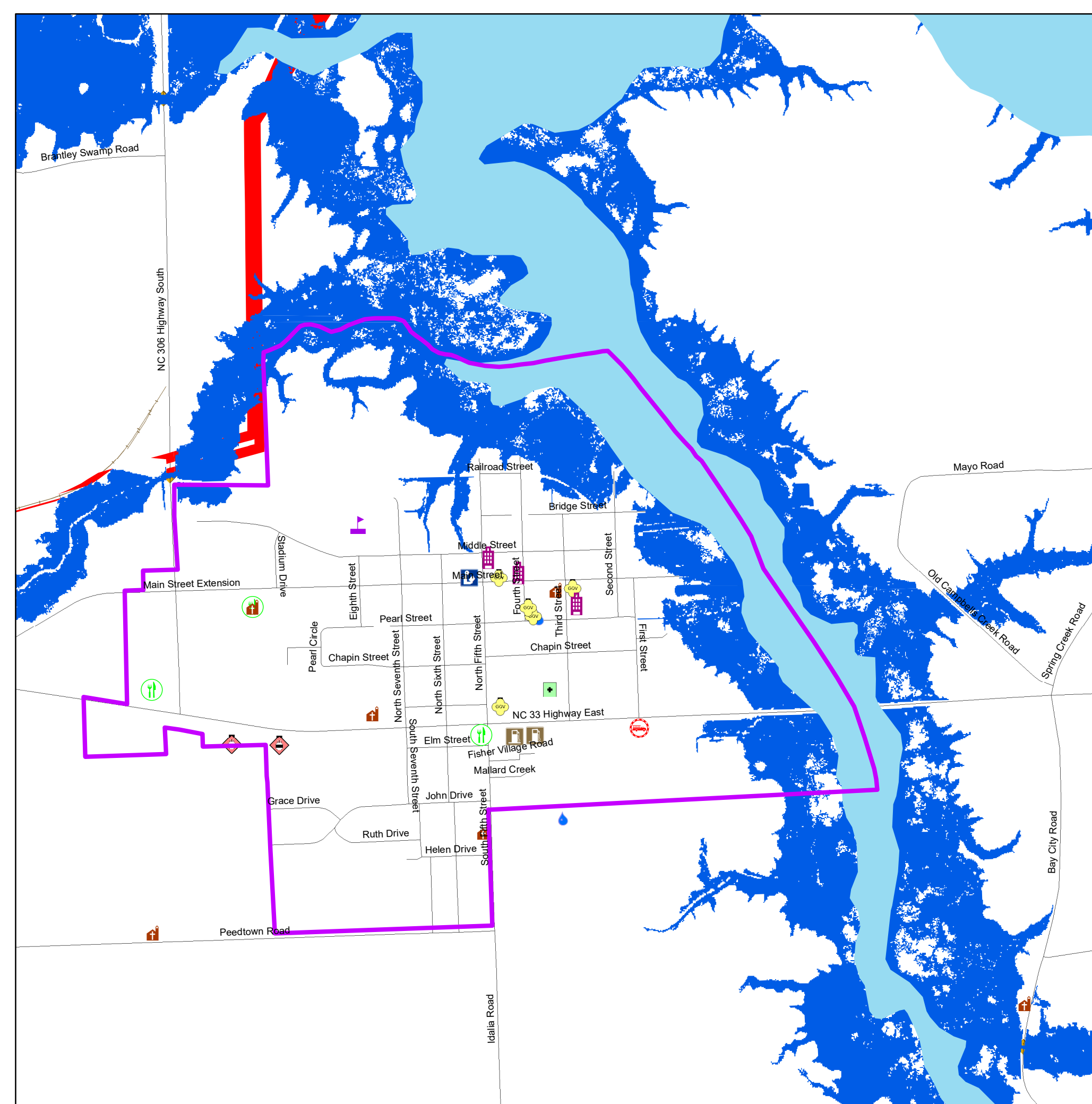
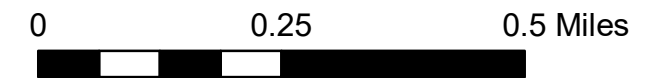
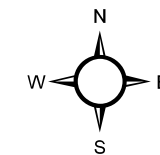
-  1 ft. Sea Level Rise Scenario Area
-  Surface Water
-  Churches (None in potential SLR area)
-  Community Buildings and Facilities (None in potential SLR area)
-  Duke Transmission Easements (18.3% in potential SLR area)
-  Education (None in potential SLR area)
-  Fire and EMS Stations (None in potential SLR area)
-  Food (None in potential SLR area)
-  Fuel Stations (None in potential SLR area)
-  Government Services (None in potential SLR area)
-  Libraries (None in potential SLR area)
-  Medical (None in potential SLR area)
-  Propane Suppliers (None in potential SLR area)
-  Public Water Supply Wells (None in potential SLR area)
-  Transportation Facilities (None in potential SLR area)
-  Wastewater Discharge Permits (100% in potential SLR area)
-  Rail
-  Road Network (4.8% in potential SLR area)
-  Bridges (56% in potential SLR area)
-  Aurora Town Limits
-  Beaufort County



# NC Resilient Coastal Communities Program Town of Aurora Critical Assets & 2 ft. Sea Level Rise Scenario (60-year Projection)







## Legend

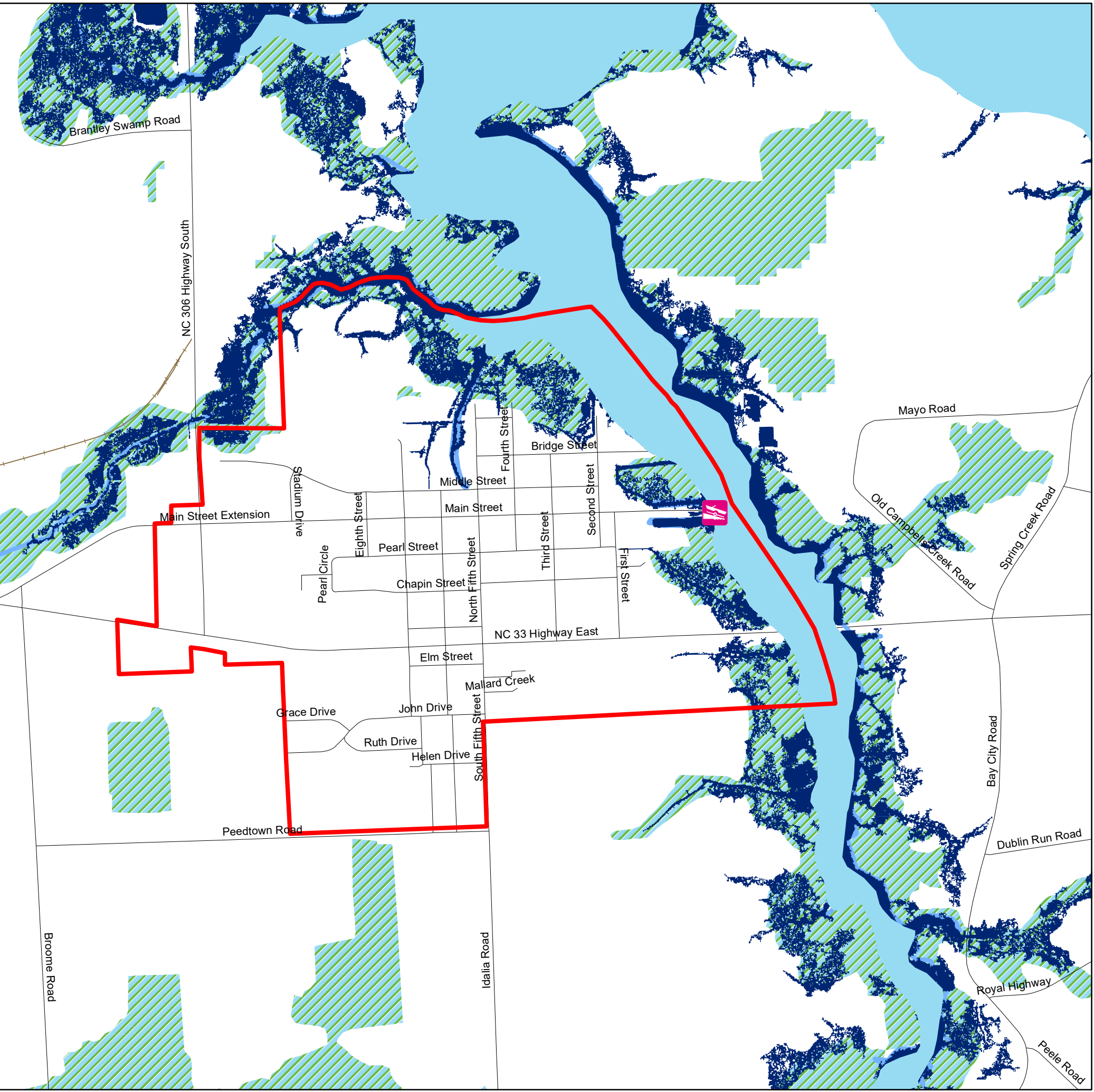
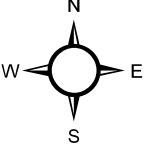
-  2 ft. Sea Level Rise Scenario Area
-  Surface Water
-  Churches (None in potential SLR area)
-  Community Buildings and Facilities (None in potential SLR area)
-  Duke Transmission Easements (19.8% in potential SLR area)
-  Education (None in potential SLR area)
-  Fire and EMS Stations (None in potential SLR area)
-  Food (None in potential SLR area)
-  Fuel Stations (None in potential SLR area)
-  Government Services (None in potential SLR area)
-  Libraries (None in potential SLR area)
-  Medical (None in potential SLR area)
-  Propane Suppliers (None in potential SLR area)
-  Public Water Supply Wells (None in potential SLR area)
-  Transportation Facilities (25% in potential SLR area)
-  Wastewater Discharge Permits (100% in potential SLR area)
-  Rail
-  Road Network (11.8% in potential SLR area)
-  Bridges (60% in potential SLR area)
-  Aurora Town Limits
-  Beaufort County



**NC Resilient Coastal Communities Program:  
Town of Aurora  
Boat Ramps/Streams/Wetlands &  
1 ft. Sea Level Rise Scenario  
(30 year projection)**

**Legend**










-  1 ft. Sea Level Rise Scenario
-  Surface Water
-  Streams (91.1% in potential SLR area)
-  Public Boat Ramps (None in potential SLR area)
-  Wetlands (37.7% in potential SLR area)
-  Rail
-  Roads
-  Aurora Town Limits
-  Beaufort County

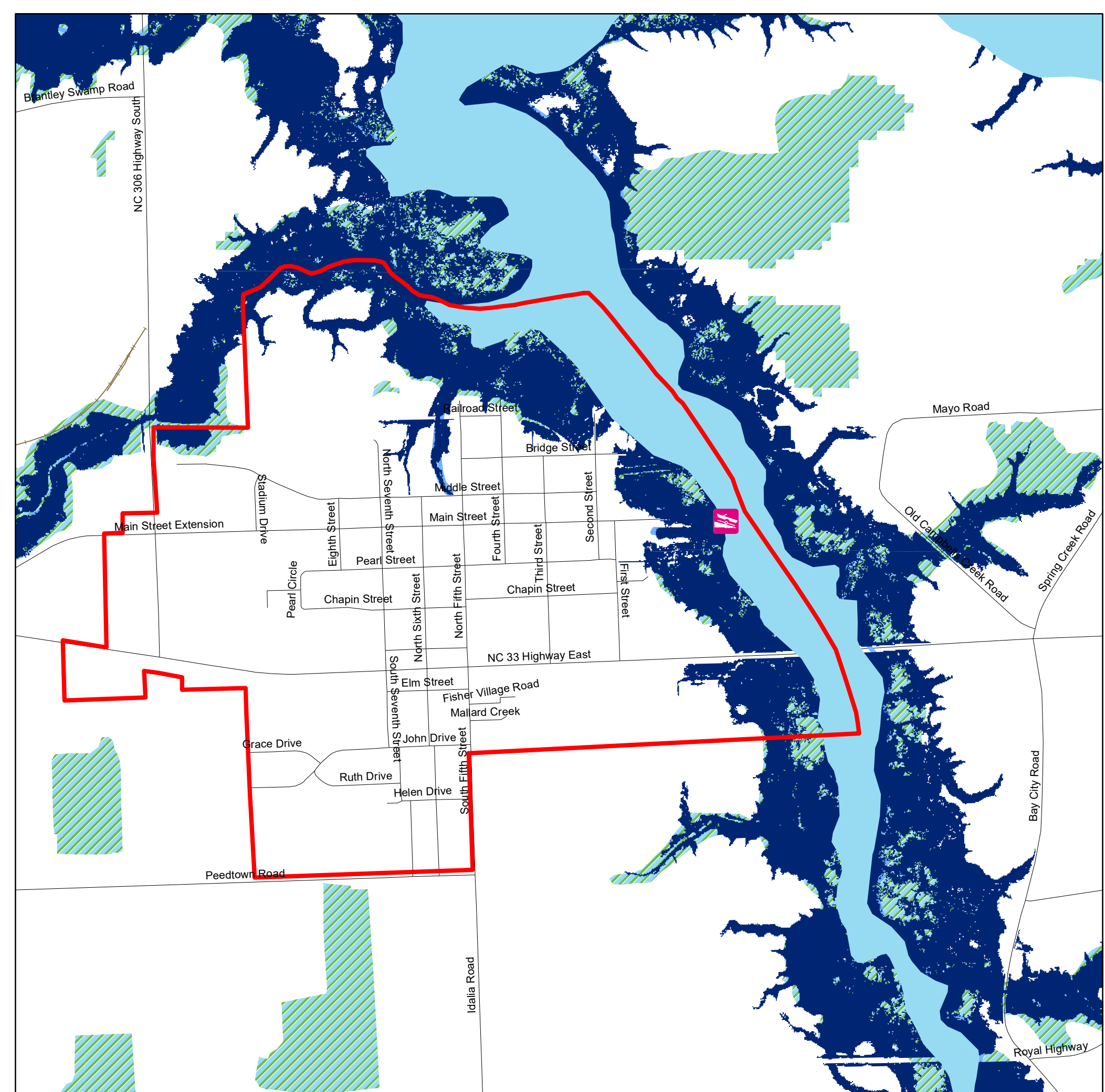
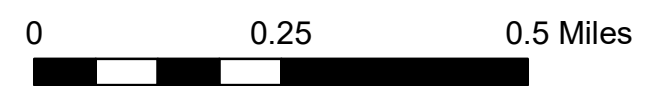
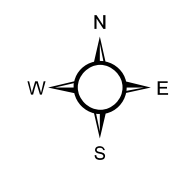




# NC Resilient Coastal Communities Program: Town of Aurora Boat Ramps/Streams/Wetlands & 2 ft. Sea Level Rise Scenario (60 year projection)

## Legend

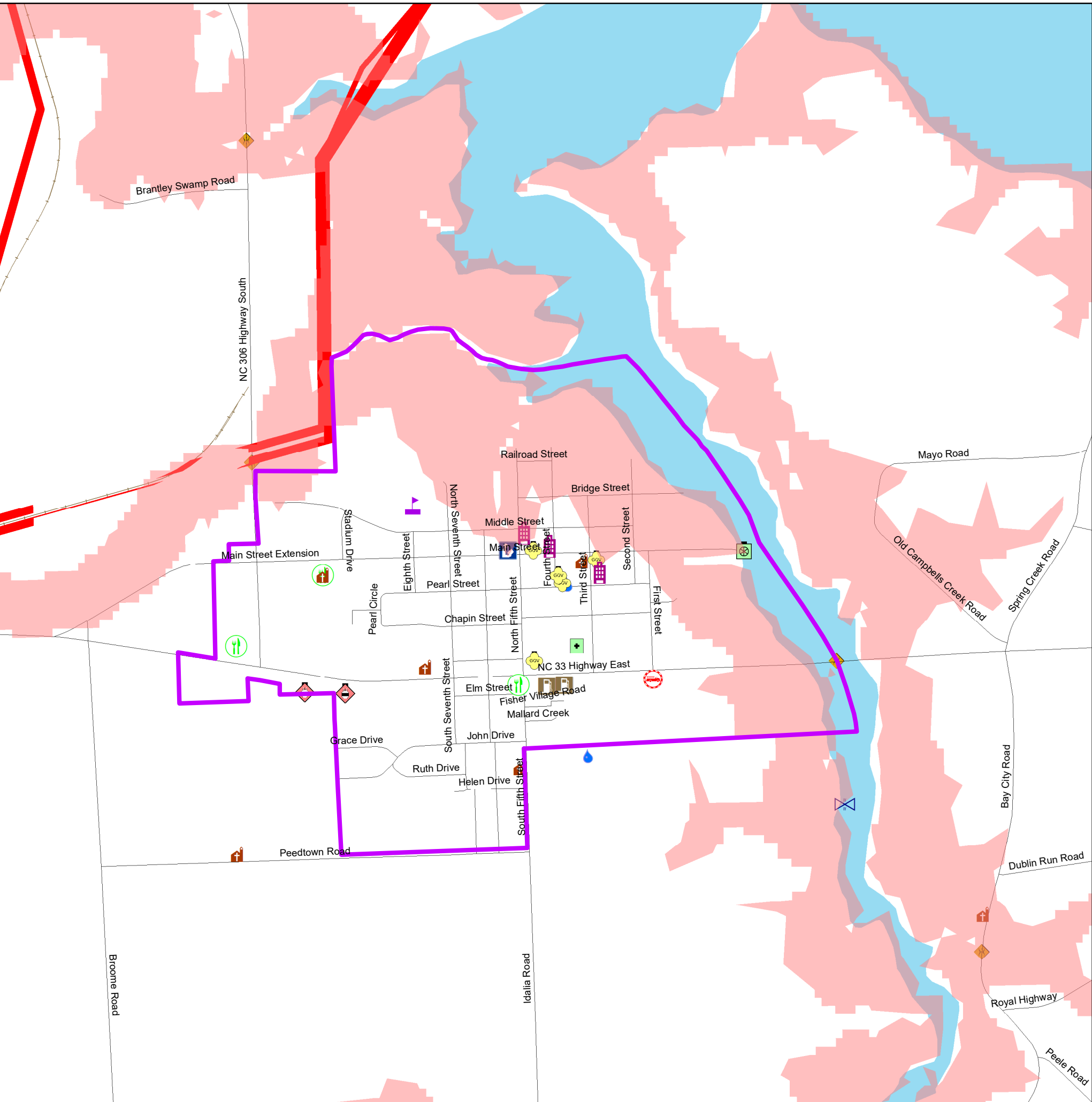
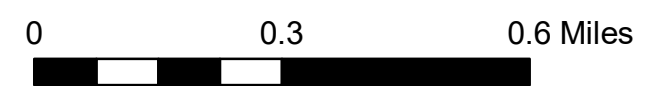
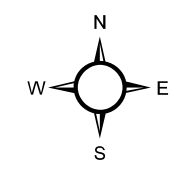
-  2 ft. Sea Level Rise Scenario
-  Surface Water
-  Streams (93.1% in potential SLR area)
-  Public Boat Ramps (50% in potential SLR area)
-  Wetlands (42.2% in potential SLR area)
-  Rail
-  Roads
-  Aurora Town Limits
-  Beaufort County



# NC Resilient Coastal Communities Program Town of Aurora Critical Assets & Potential Storm Surge for Category 1 Event

## Legend

- Cat. 1 Event Potential Storm Surge Area
- Churches (21.4% in potential SS area)
- Community Buildings and Facilities (25% in potential SS area)
- Duke Transmission Easements (19.8% in potential SS area)
- Education (None in potential SS area)
- Fire and EMS Stations (None in potential SS area)
- Food (None in potential SS area)
- Fuel Stations (None in potential SS area)
- Government Services (None in potential SS area)
- Libraries (100% in potential SS area)
- Medical (None in potential SS area)
- Propane Suppliers (None in potential SS area)
- Public Water Supply Wells (None in potential SS area)
- Transportation Facilities (50% in potential SS area)
- Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (42.9% in potential SS area)
- Bridges (48% in potential SS area)
- Surface Water
- Aurora Town Limits
- Beaufort County



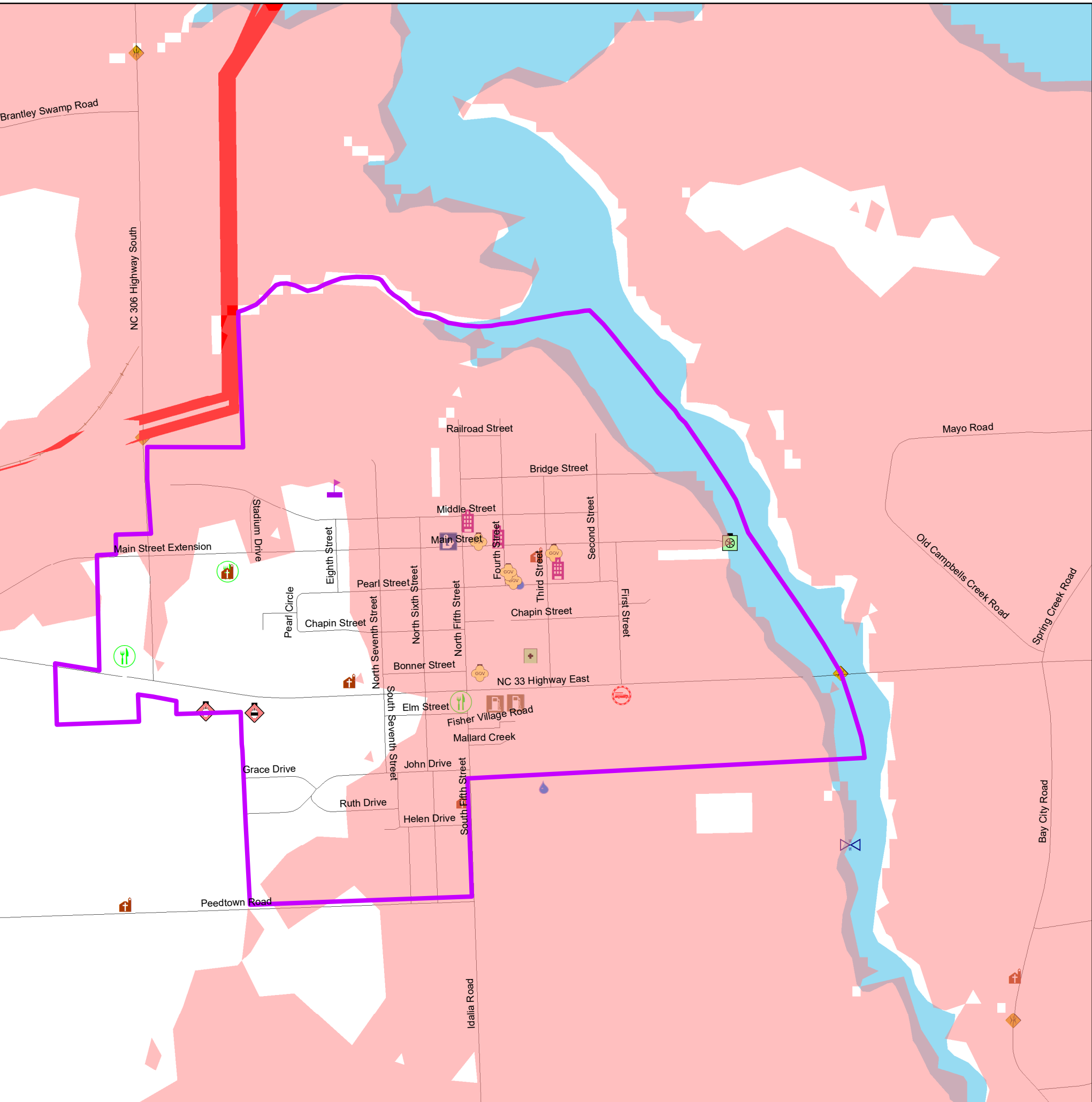
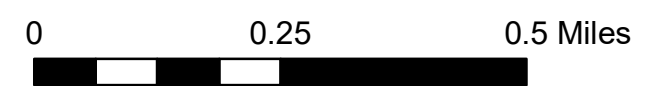
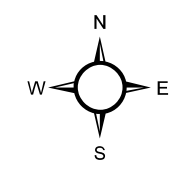
# NC Resilient Coastal Communities Program

## Town of Aurora

### Critical Assets & Potential Storm Surge for Category 2 Event

#### Legend

- Cat. 2 Event Potential Storm Surge Area
- Churches (42.9% in potential SS area)
- Community Buildings and Facilities (75% in potential SS area)
- Duke Transmission Easements (22.1% in potential SS area)
- Education (None in potential SS area)
- Fire and EMS Stations (25% in potential SS area)
- Food (20% in potential SS area)
- Fuel Stations (50% in potential SS area)
- Government Services (100% in potential SS area)
- Libraries (100% in potential SS area)
- Medical (100% in potential SS area)
- Propane Suppliers (None in potential SS area)
- Public Water Supply Wells (100% in potential SS area)
- Transportation Facilities (75% in potential SS area)
- Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (66.8% in potential SS area)
- Bridges (60% in potential SS area)
- Aurora Town Limits
- Beaufort County
- Surface Water





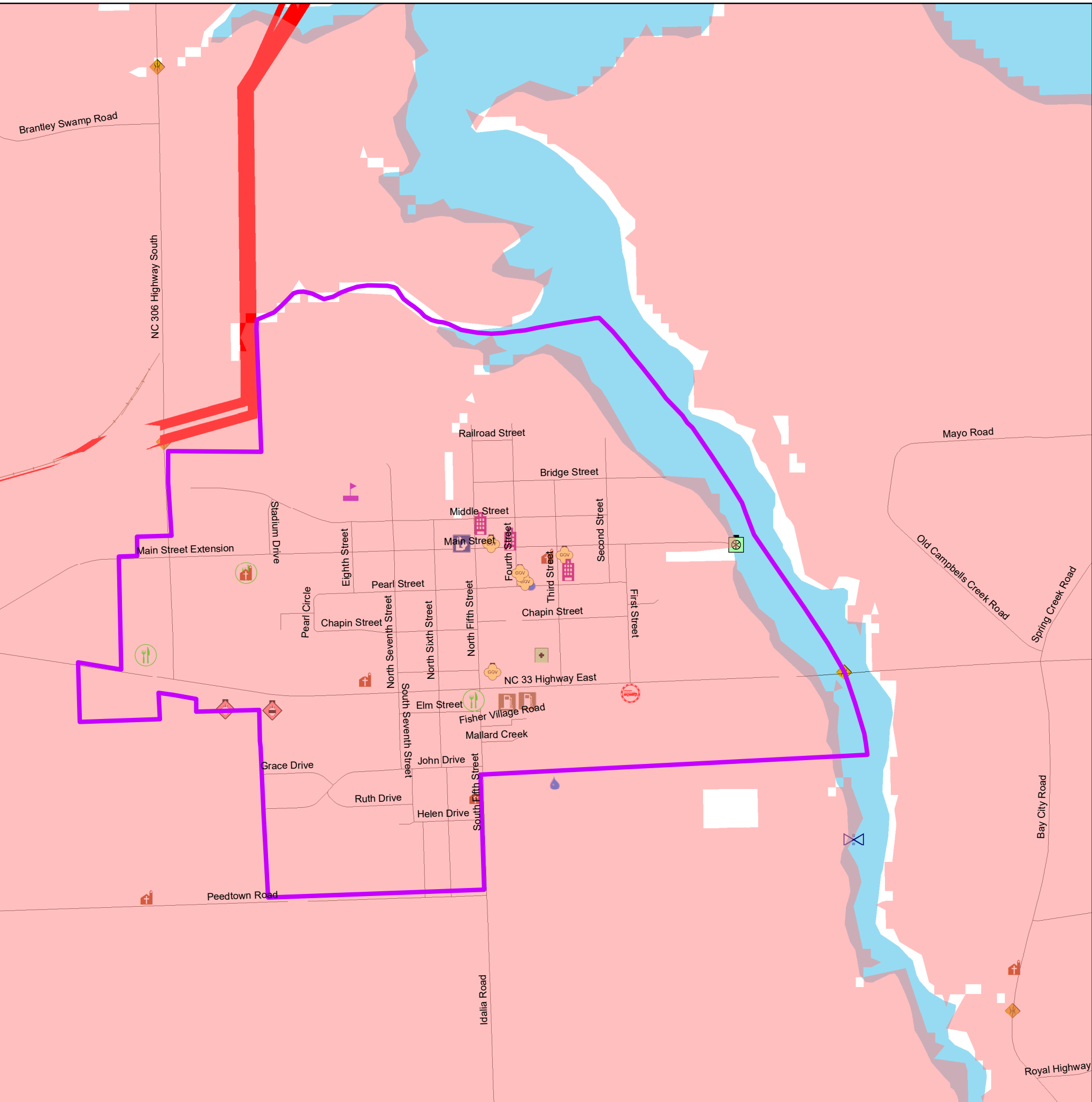
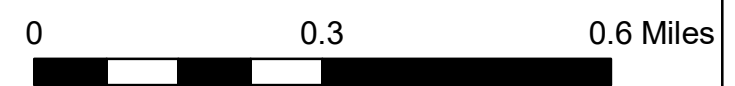
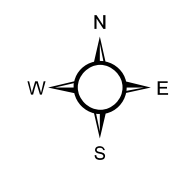
# NC Resilient Coastal Communities Program

## Town of Aurora

### Critical Assets & Potential Storm Surge for Category 3 Event

#### Legend





















- Cat. 3 Event Potential Storm Surge Area
- Churches (71.4% in potential SS area)
- Community Buildings and Facilities (75% in potential SS area)
- Duke Transmission Easements (74% in potential SS area)
- Education (100% in potential SS area)
- Fire and EMS Stations (50% in potential SS area)
- Food (60% in potential SS area)
- Fuel Stations (50% in potential SS area)
- Government Services (100% in potential SS area)
- Libraries (100% in potential SS area)
- Medical (100% in potential SS area)
- Propane Suppliers (100% in potential SS area)
- Public Water Supply Wells (100% in potential SS area)
- Transportation Facilities (75% in potential SS area)
- Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (72.4% in potential SS area)
- Bridges (76% in potential SS area)
- Aurora Town Limits
- Beaufort County
- Surface Water

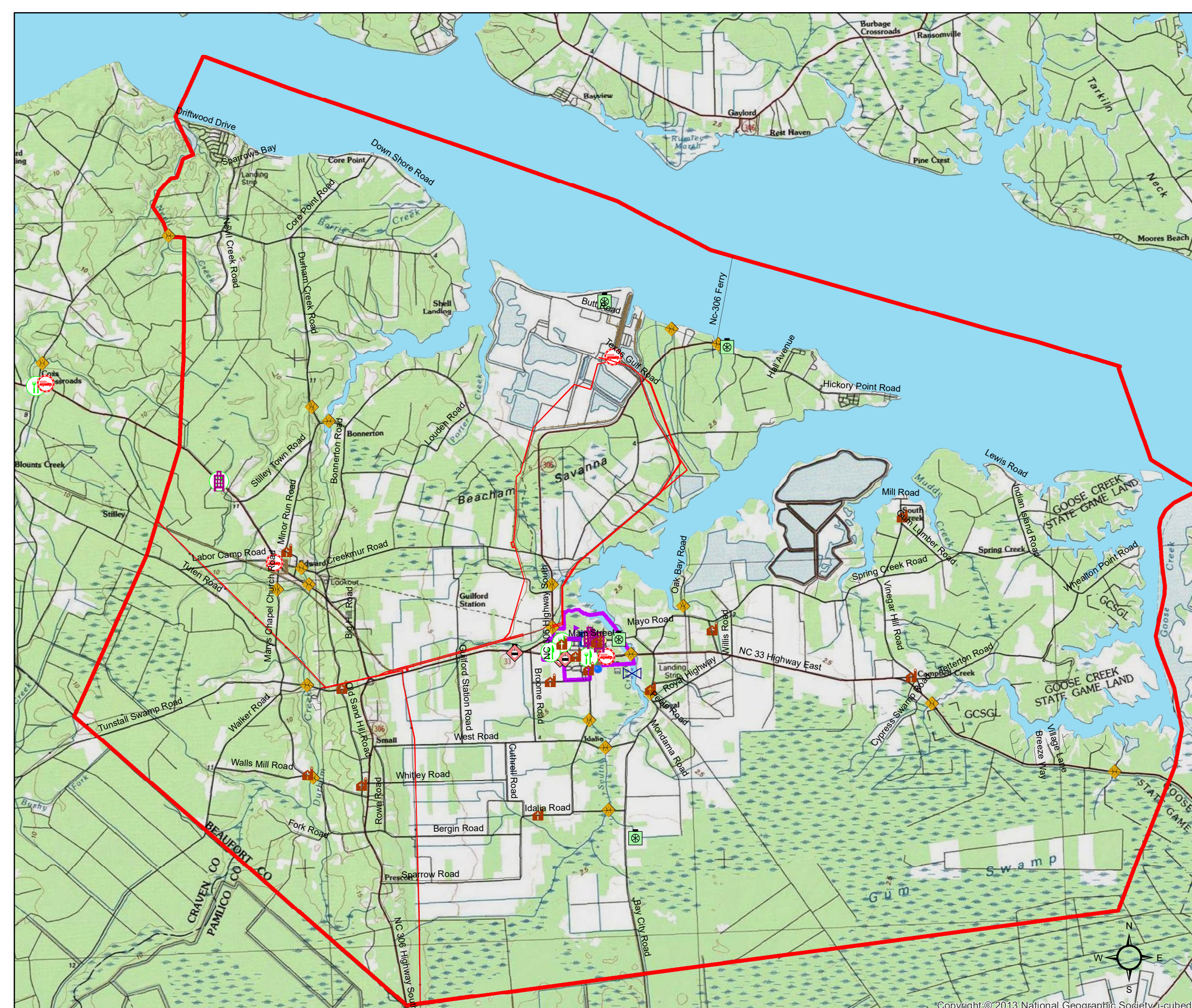




# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & Topography

## Legend























-  Churches
-  Community Buildings and Facilities
-  Duke Transmission Easements
-  Education
-  Fire and EMS Stations
-  Food
-  Fuel Stations
-  Government Services
-  Libraries
-  Medical
-  Propane Suppliers
-  Public Water Supply Wells
-  Transportation Facilities
-  Wastewater Discharge Permits
-  Rail
-  Road Network
-  Bridges
-  Aurora Town Limits
-  Richland Township
-  Surface Water

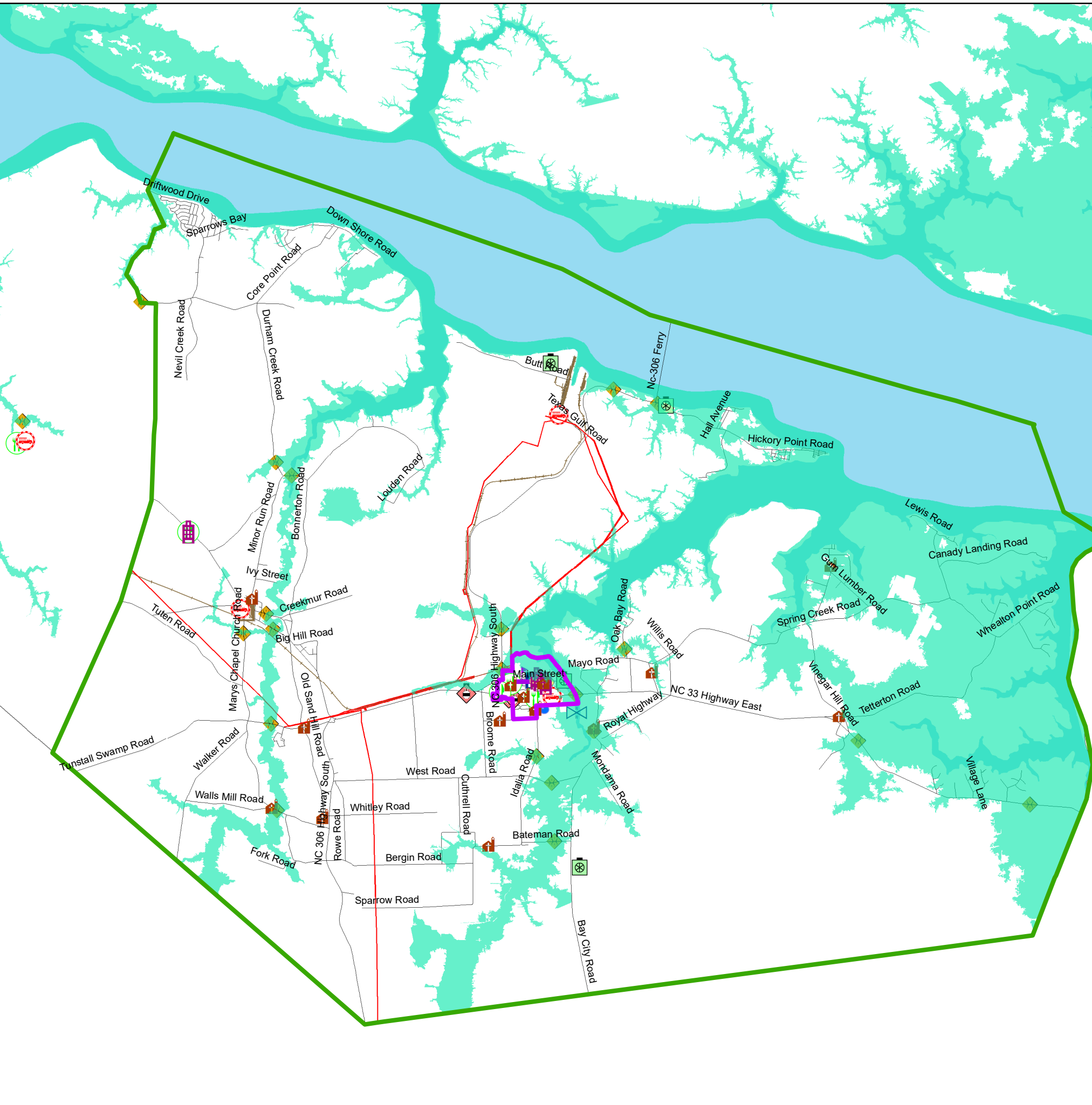
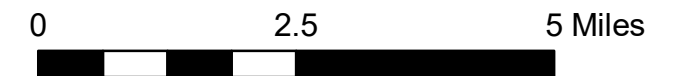
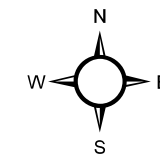




# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & 100-year Floodplain

















## Legend

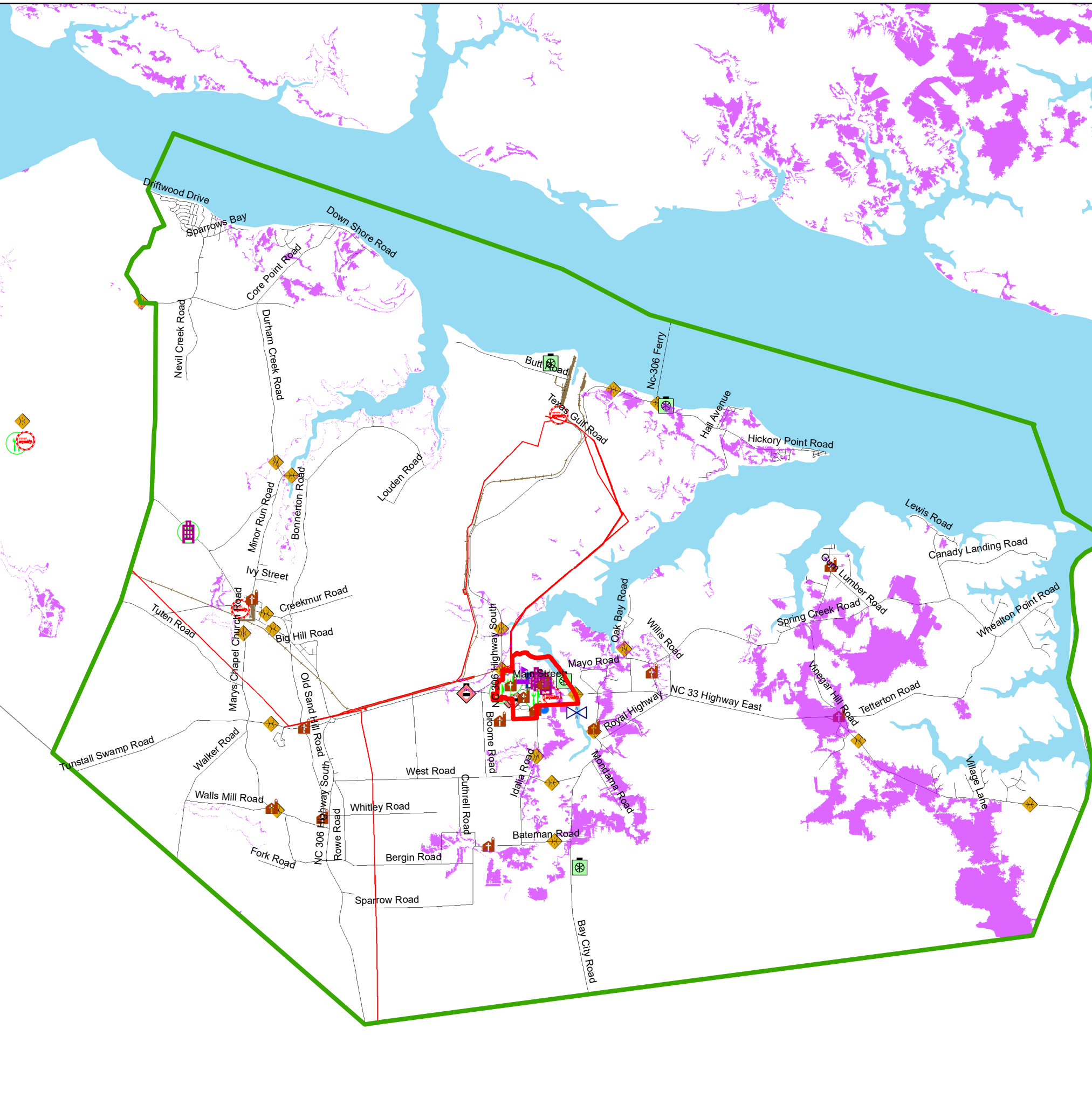
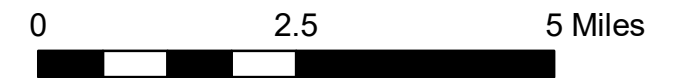
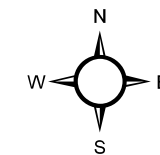
-  100-year Floodplain
-  Churches (7.1% in 100-yr FP)
-  Community Buildings and Facilities (25% in 100-yr FP)
-  Duke Transmission Easements (22.9% in 100-yr FP)
-  Education (None in 100-yr FP)
-  Fire and EMS Stations (None in 100-yr FP)
-  Food (None in 100-yr FP)
-  Fuel Stations (None in 100-yr FP)
-  Government Services (None in 100-yr FP)
-  Libraries (None in 100-yr FP)
-  Medical (None in 100-yr FP)
-  Propane Suppliers (None in 100-yr FP)
-  Public Water Supply Wells (None in 100-yr FP)
-  Transportation Facilities (25% in 100-yr FP)
-  Wastewater Discharge Permits (100% in 100-yr FP)
-  Rail
-  Road Network (43.7% in 100-yr FP)
-  Bridges (100% in 100-yr FP)
-  Aurora Town Limits
-  Richland Township
-  Beaufort County
-  Surface Water



# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & 500-year Floodplain

## Legend












-  500-year Floodplain
-  Churches (14.3% in 500-yr FP)
-  Community Buildings and Facilities (25% in 500-yr FP)
-  Duke Transmission Easements (6.9% in 500-yr FP)
-  Education (None in 500-yr FP)
-  Fire and EMS Stations (None in 500-yr FP)
-  Food (None in 500-yr FP)
-  Fuel Stations (None in 500-yr FP)
-  Government Services (20% in 500-yr FP)
-  Libraries (100% in 500-yr FP)
-  Medical (None in 500-yr FP)
-  Propane Suppliers (None in 500-yr FP)
-  Public Water Supply Wells (None in 500-yr FP)
-  Transportation Facilities (25% in 500-yr FP)
-  Wastewater Discharge Permits (None in 500-yr FP)
-  Rail
-  Road Network (25.8% in 500-yr FP)
-  Bridges (None in 500-yr FP)
-  Aurora Town Limits
-  Richland Township
-  Beaufort County
-  Surface Water

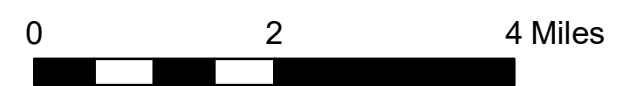
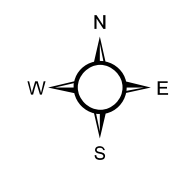
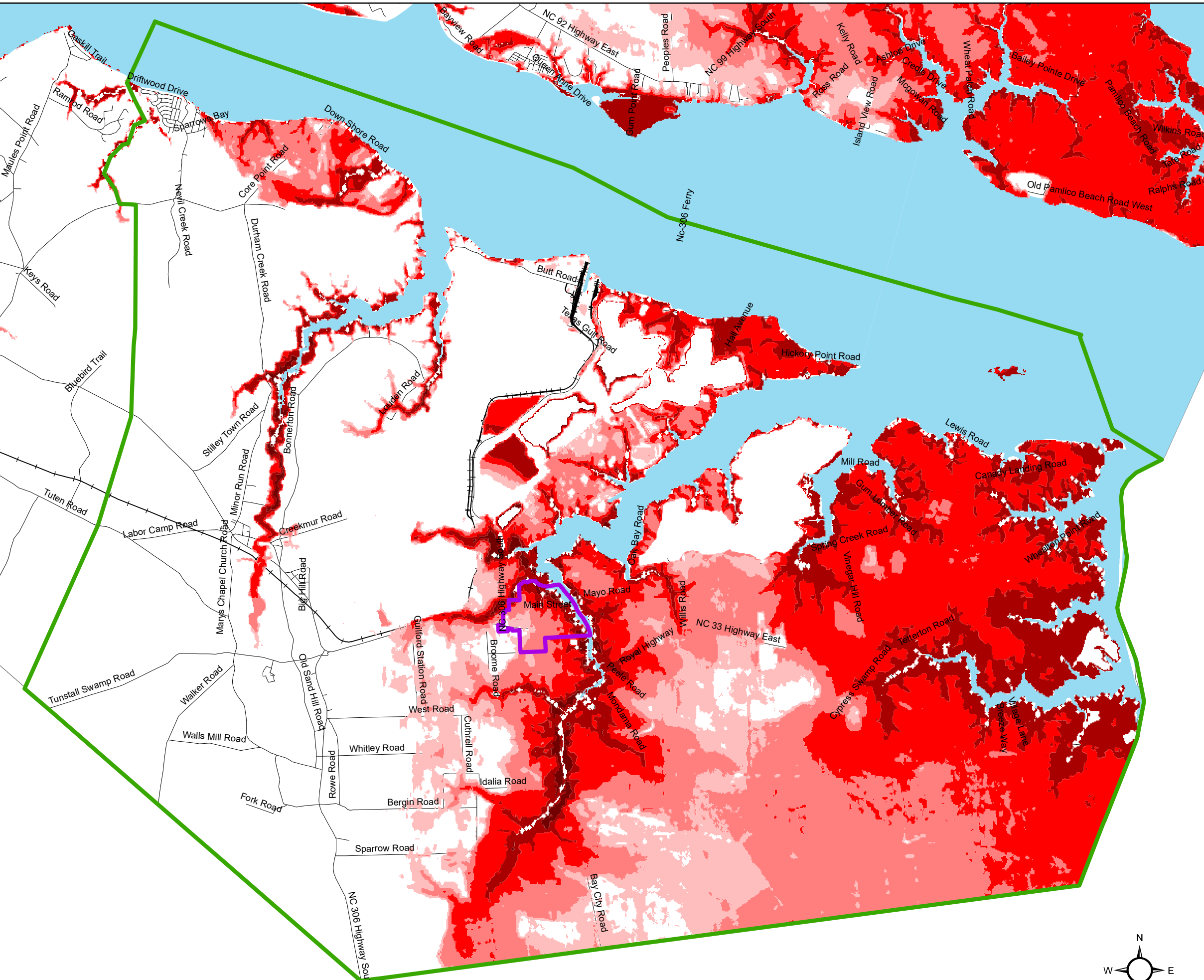


# NC Resilient Coastal Communities Program: Beaufort County Hurricane Florence Storm Surge, 2018

## Legend

### Hurricane Florence Storm Surge























-  Less than 1 ft. above ground
-  Greater than 1 ft. above ground
-  Greater than 3 ft. above ground
-  Greater than 6 ft. above ground
-  Greater than 9 ft. above ground
-  Surface Water
-  Rail
-  Road Network
-  Aurora Town Limits
-  Richland Township
-  Beaufort County

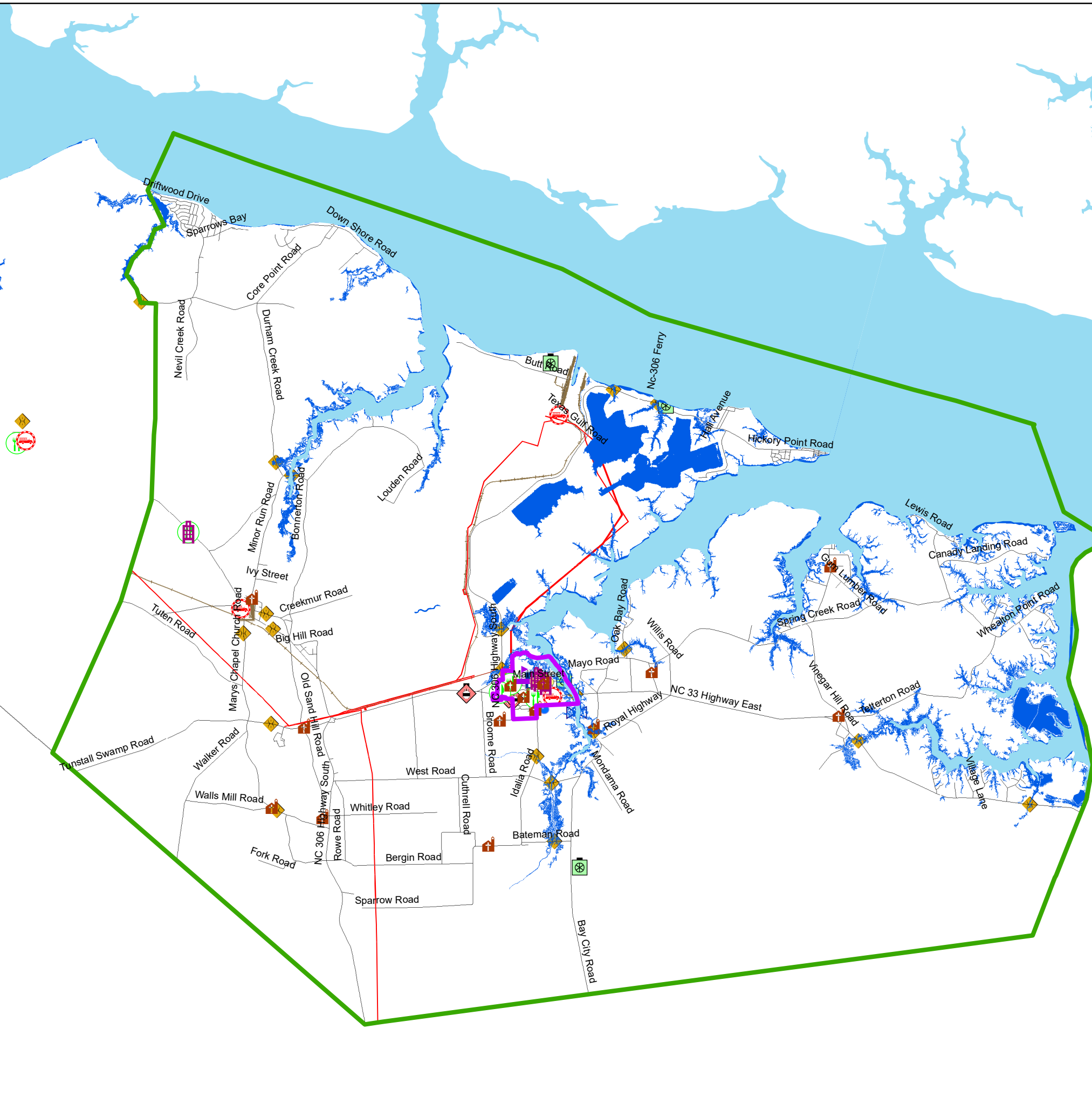
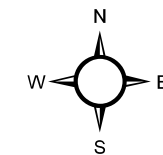




# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & 1 ft. Sea Level Rise Scenario (30-year Projection)

## Legend

-  1 ft. Sea Level Rise Scenario Area
-  Surface Water
-  Churches (None in potential SLR area)
-  Community Buildings and Facilities (None in potential SLR area)
-  Duke Transmission Easements (18.3% in potential SLR area)
-  Education (None in potential SLR area)
-  Fire and EMS Stations (None in potential SLR area)
-  Food (None in potential SLR area)
-  Fuel Stations (None in potential SLR area)
-  Government Services (None in potential SLR area)
-  Libraries (None in potential SLR area)
-  Medical (None in potential SLR area)
-  Propane Suppliers (None in potential SLR area)
-  Public Water Supply Wells (None in potential SLR area)
-  Transportation Facilities (None in potential SLR area)
-  Wastewater Discharge Permits (100% in potential SLR area)
-  Rail
-  Road Network (4.8% in potential SLR area)
-  Bridges (56% in potential SLR area)
-  Aurora Town Limits
-  Richland Township
-  Beaufort County

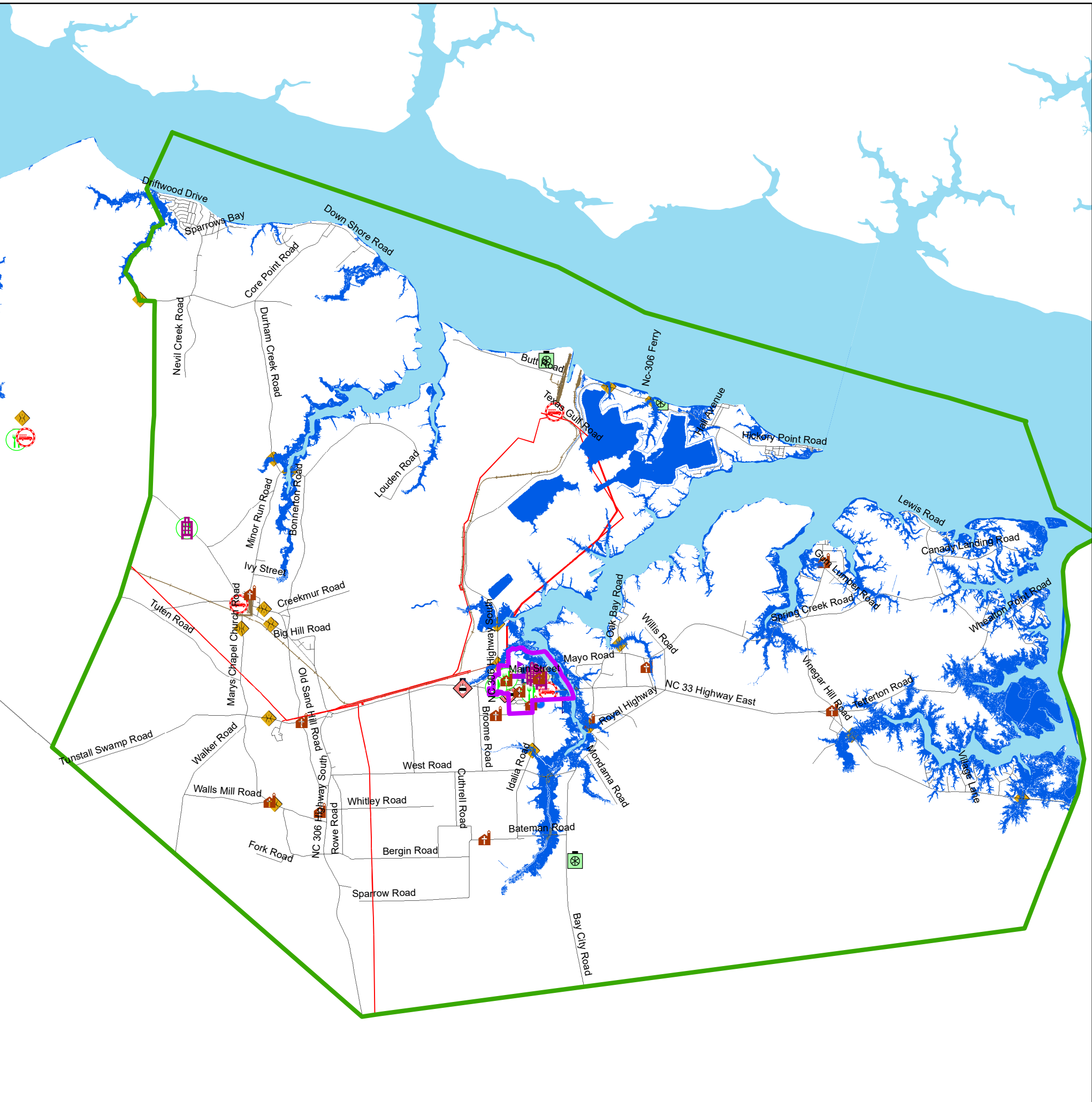
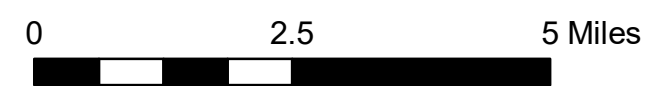
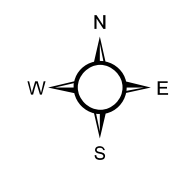




# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & 2 ft. Sea Level Rise Scenario (60-year Projection)

## Legend

- 2 ft. Sea Level Rise Scenario Area
- Surface Water
- Churches (None in potential SLR area)
- Community Buildings and Facilities (None in potential SLR area)
- Duke Transmission Easements (19.8% in potential SLR area)
- Education (None in potential SLR area)
- Fire and EMS Stations (None in potential SLR area)
- Food (None in potential SLR area)
- Fuel Stations (None in potential SLR area)
- Government Services (None in potential SLR area)
- Libraries (None in potential SLR area)
- Medical (None in potential SLR area)
- Propane Suppliers (None in potential SLR area)
- Public Water Supply Wells (None in potential SLR area)
- Transportation Facilities (25% in potential SLR area)
- Wastewater Discharge Permits (100% in potential SLR area)
- Rail
- Road Network (11.8% in potential SLR area)
- Bridges (60% in potential SLR area)
- Aurora Town Limits
- Richland Township
- Beaufort County





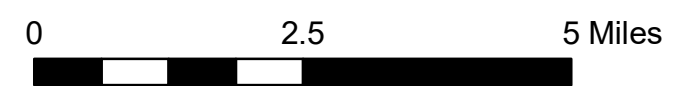
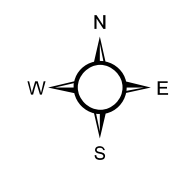
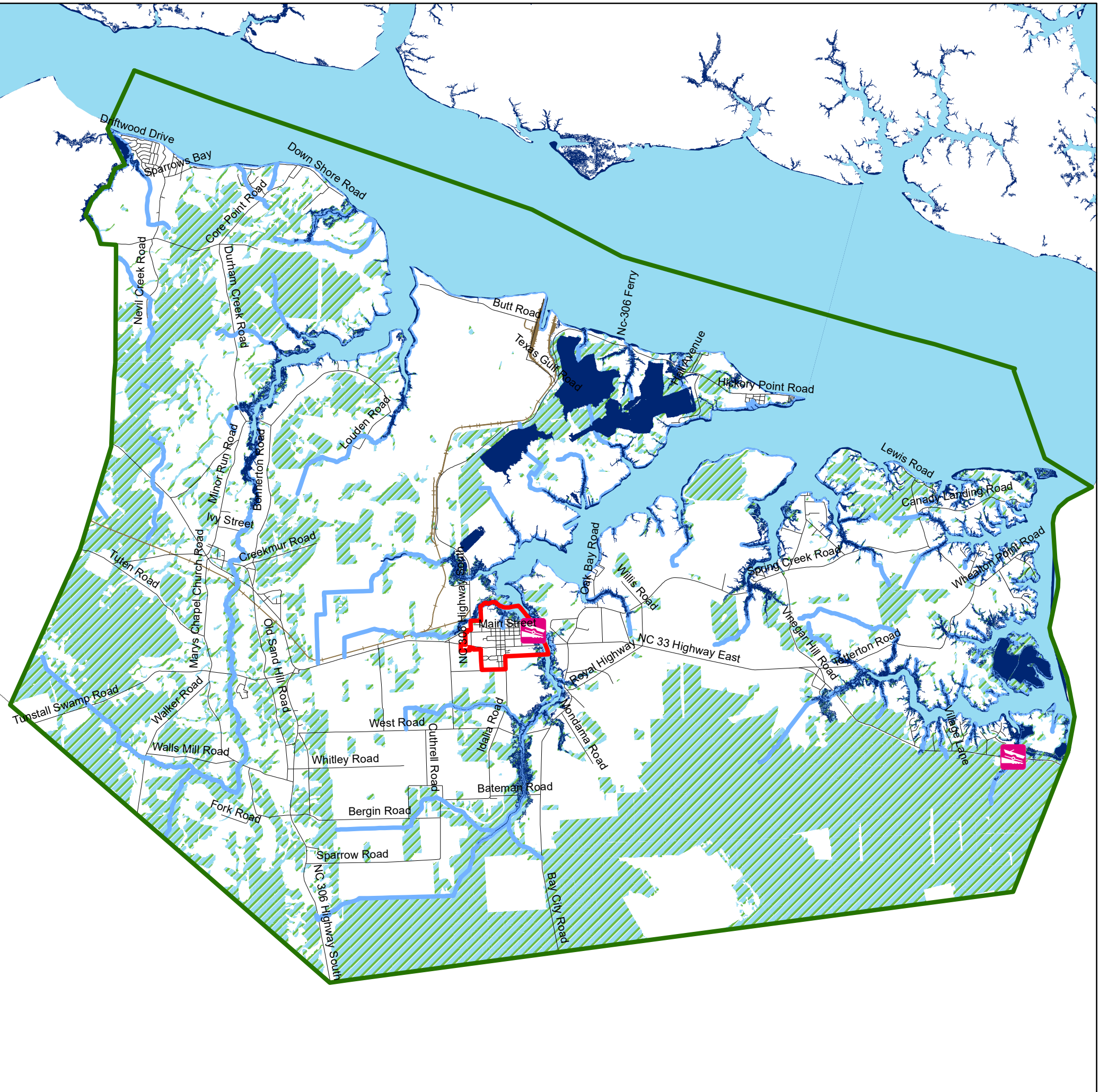




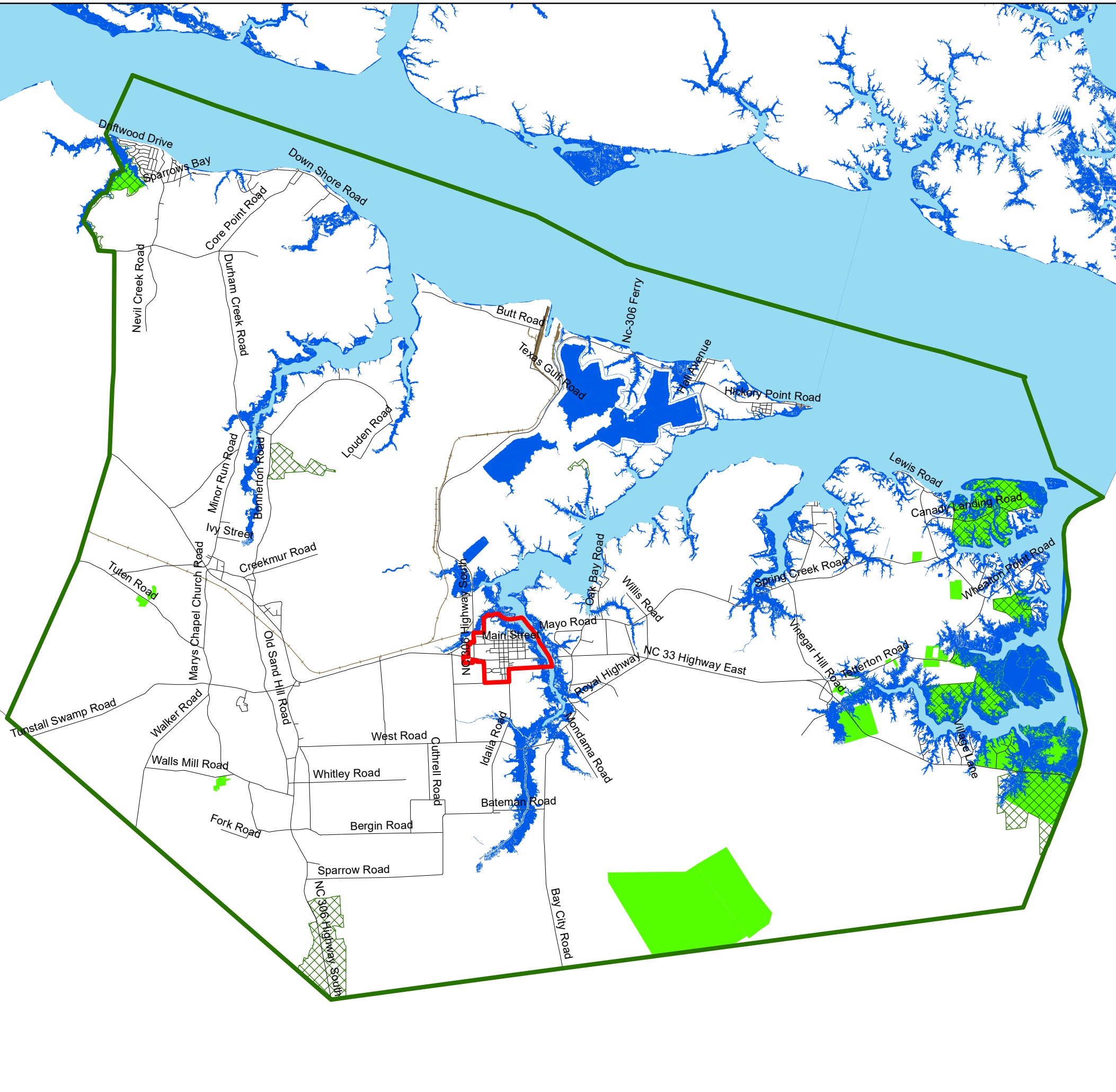
# NC Resilient Coastal Communities Program: Town of Aurora & Richland Township Boat Ramps/Streams/Wetlands & 1 ft. Sea Level Rise Scenario (30 year projection)

## Legend

-  1 ft. Sea Level Rise Scenario
-  Surface Water
-  Streams (91.1% in potential SLR area)
-  Public Boat Ramps (None in potential SLR area)
-  Wetlands (37.7% in potential SLR area)
-  Rail
-  Roads
-  Aurora Town Limits
-  Richland Township
-  Beaufort County

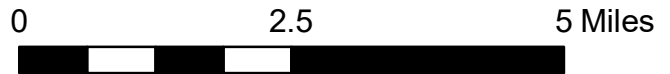
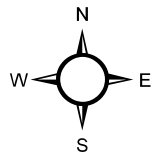


# NC Resilient Coastal Communities Program: Town of Aurora & Richland Township Managed Areas/Natural Areas & 2 ft. Sea Level Rise Scenario (60 year projection)



## Legend

- 2 ft. Sea Level Rise Scenario
- Surface Water
- Natural Areas (71.4% in potential SLR area)
- Managed Areas (52.6% in potential SLR area)
- Rail
- Road Network
- Aurora Town Limits
- Richland Township
- Beaufort County

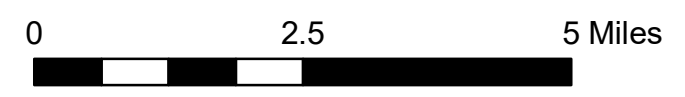
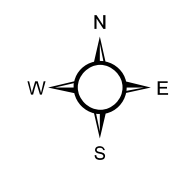
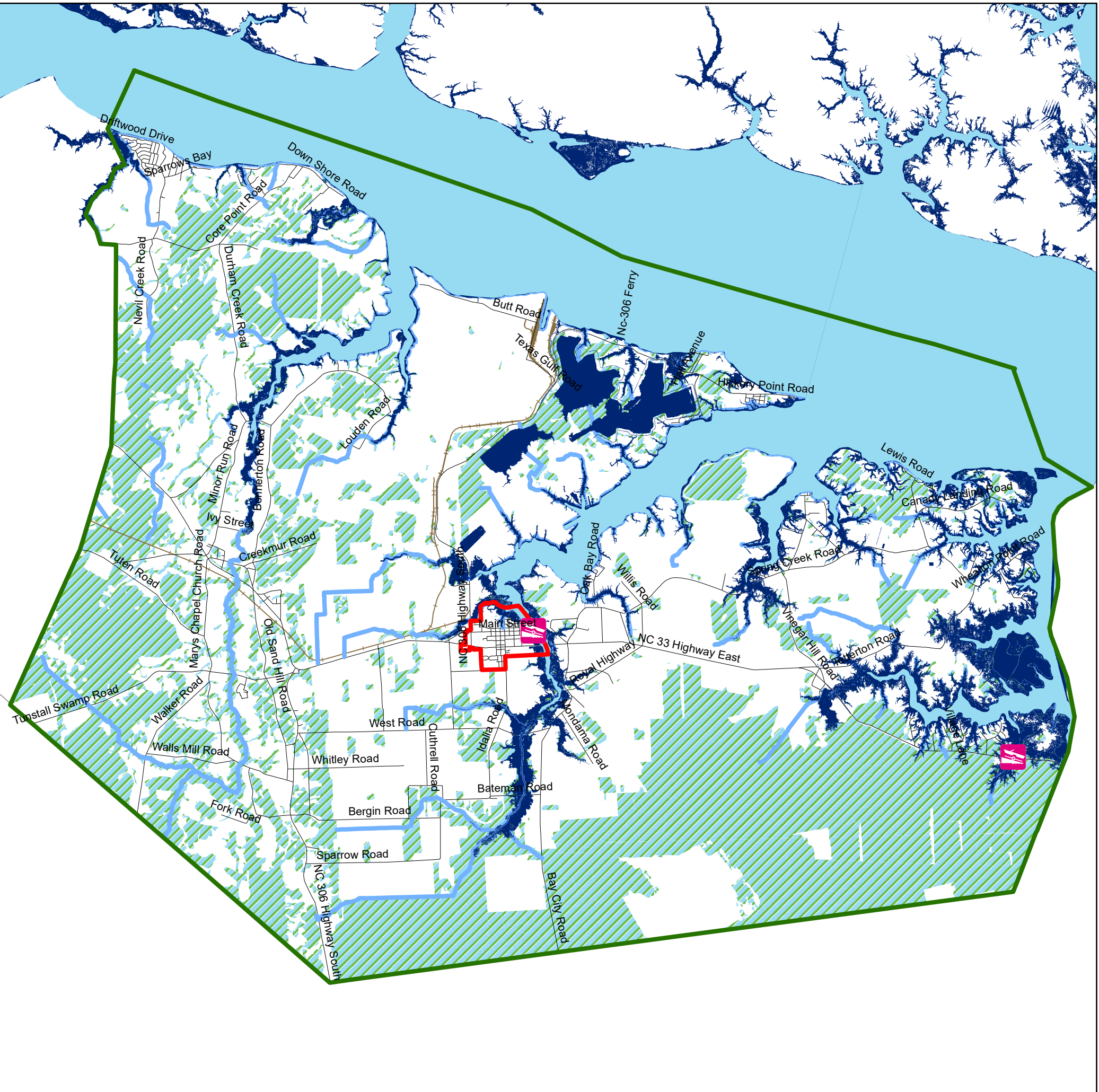




# NC Resilient Coastal Communities Program: Town of Aurora & Richland Township Boat Ramps/Streams/Wetlands & 2 ft. Sea Level Rise Scenario (60 year projection)

## Legend

-  2 ft. Sea Level Rise Scenario
-  Surface Water
-  Streams (93.1% in potential SLR area)
-  Public Boat Ramps (50% in potential SLR area)
-  Wetlands (42.2% in potential SLR area)
-  Rail
-  Roads
-  Aurora Town Limits
-  Richland Township
-  Beaufort County

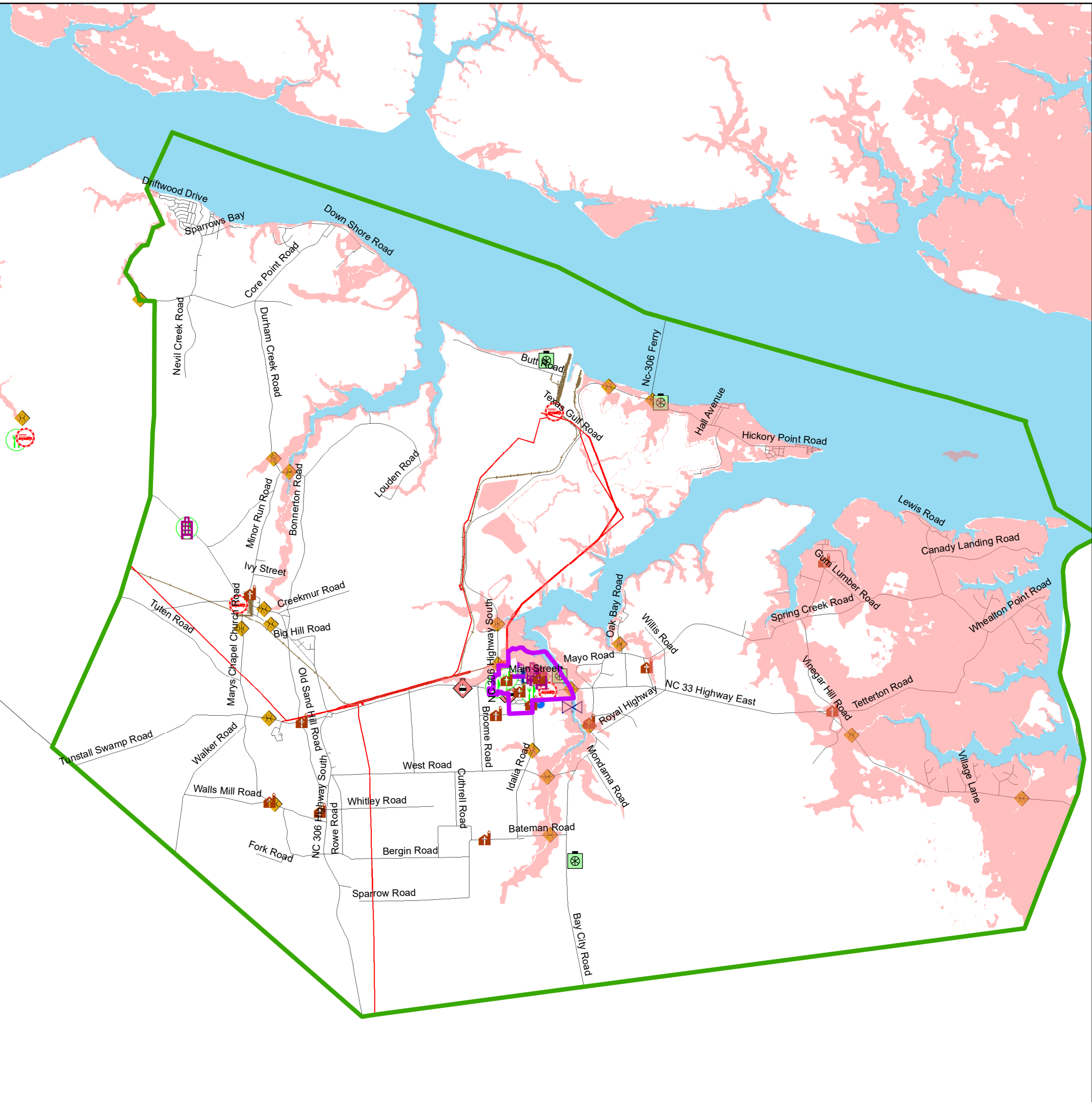
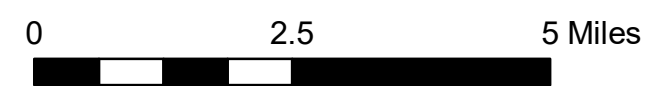
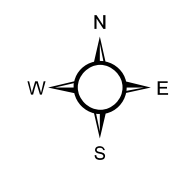




# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & Potential Storm Surge for Category 1 Event























## Legend

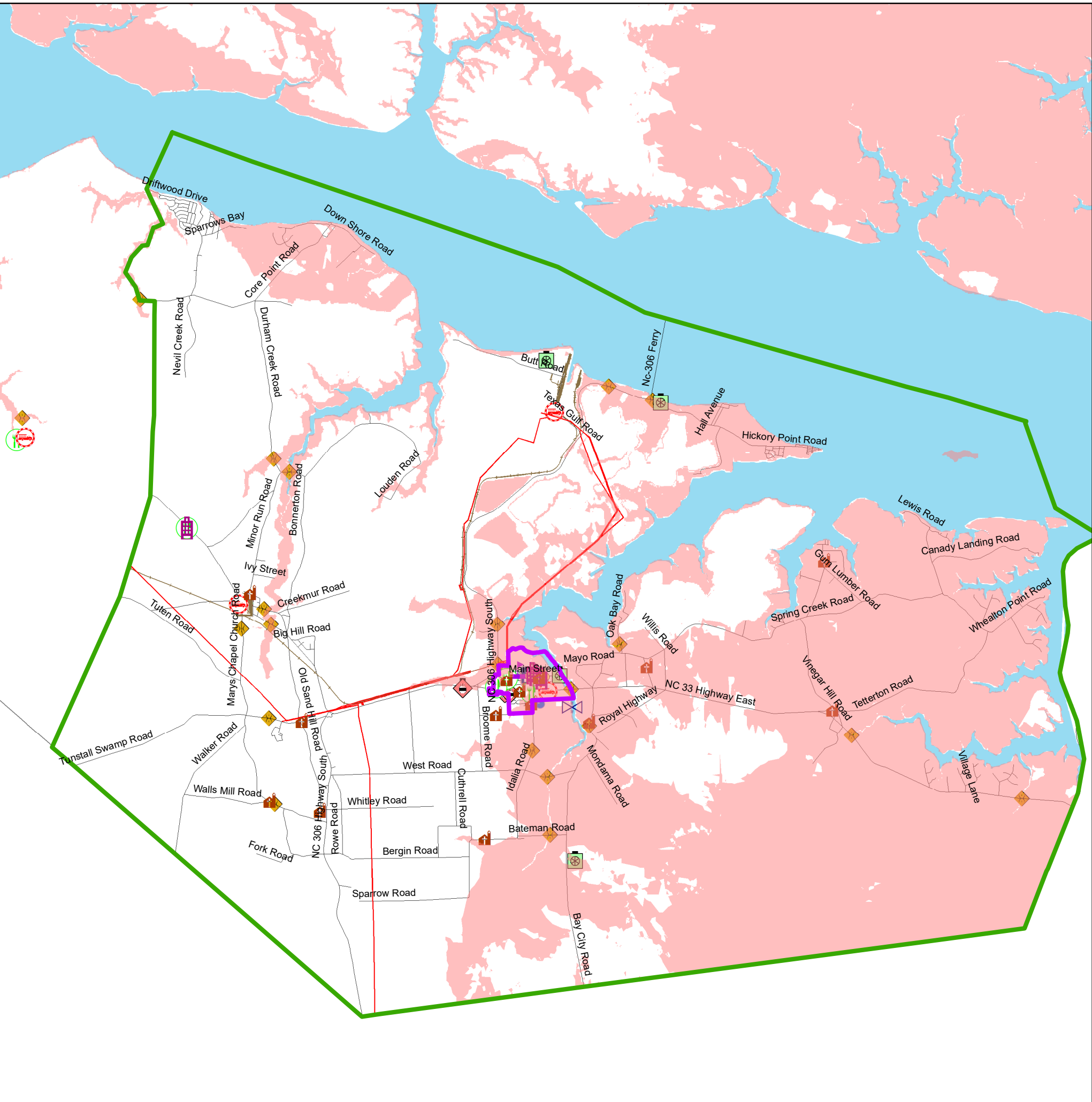
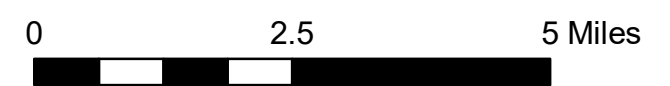
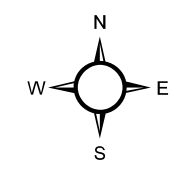
- Cat. 1 Event Potential Storm Surge Area
- Churches (21.4% in potential SS area)
- Community Buildings and Facilities (25% in potential SS area)
- Duke Transmission Easements (19.8% in potential SS area)
- Education (None in potential SS area)
- Fire and EMS Stations (None in potential SS area)
- Food (None in potential SS area)
- Fuel Stations (None in potential SS area)
- Government Services (None in potential SS area)
- Libraries (100% in potential SS area)
- Medical (None in potential SS area)
- Propane Suppliers (None in potential SS area)
- Public Water Supply Wells (None in potential SS area)
- Transportation Facilities (50% in potential SS area)
- Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (42.9% in potential SS area)
- Bridges (48% in potential SS area)
- Surface Water
- Aurora Town Limits
- Richland Township
- Beaufort County



# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & Potential Storm Surge for Category 2 Event

## Legend

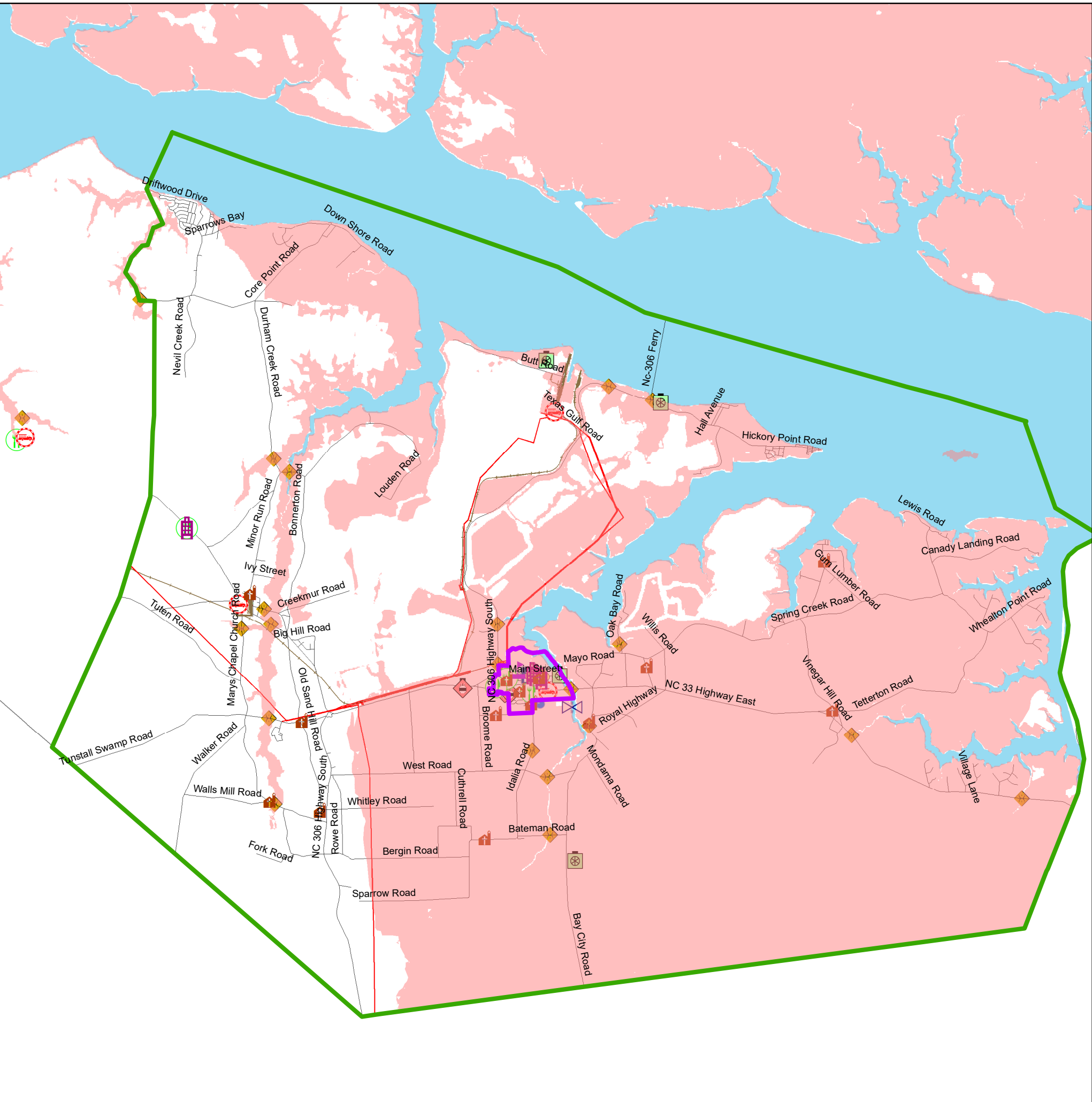
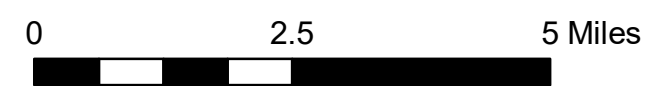
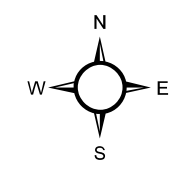
-  Cat. 2 Event Potential Storm Surge Area
-  Churches (42.9% in potential SS area)
-  Community Buildings and Facilities (75% in potential SS area)
-  Duke Transmission Easements (22.1% in potential SS area)
-  Education (None in potential SS area)
-  Fire and EMS Stations (25% in potential SS area)
-  Food (20% in potential SS area)
-  Fuel Stations (50% in potential SS area)
-  Government Services (100% in potential SS area)
-  Libraries (100% in potential SS area)
-  Medical (100% in potential SS area)
-  Propane Suppliers (None in potential SS area)
-  Public Water Supply Wells (100% in potential SS area)
-  Transportation Facilities (75% in potential SS area)
-  Wastewater Discharge Permits (None in potential SS area)
-  Rail
-  Road Network (66.8% in potential SS area)
-  Bridges (60% in potential SS area)
-  Aurora Town Limits
-  Richland Township
-  Beaufort County
-  Surface Water



# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & Potential Storm Surge for Category 3 Event

## Legend

- Cat. 3 Event Potential Storm Surge Area
- Churches (71.4% in potential SS area)
- Community Buildings and Facilities (75% in potential SS area)
- Duke Transmission Easements (74% in potential SS area)
- Education (100% in potential SS area)
- Fire and EMS Stations (50% in potential SS area)
- Food (60% in potential SS area)
- Fuel Stations (50% in potential SS area)
- Government Services (100% in potential SS area)
- Libraries (100% in potential SS area)
- Medical (100% in potential SS area)
- Propane Suppliers (100% in potential SS area)
- Public Water Supply Wells (100% in potential SS area)
- Transportation Facilities (75% in potential SS area)
- Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (72.4% in potential SS area)
- Bridges (76% in potential SS area)
- Aurora Town Limits
- Richland Township
- Beaufort County
- Surface Water

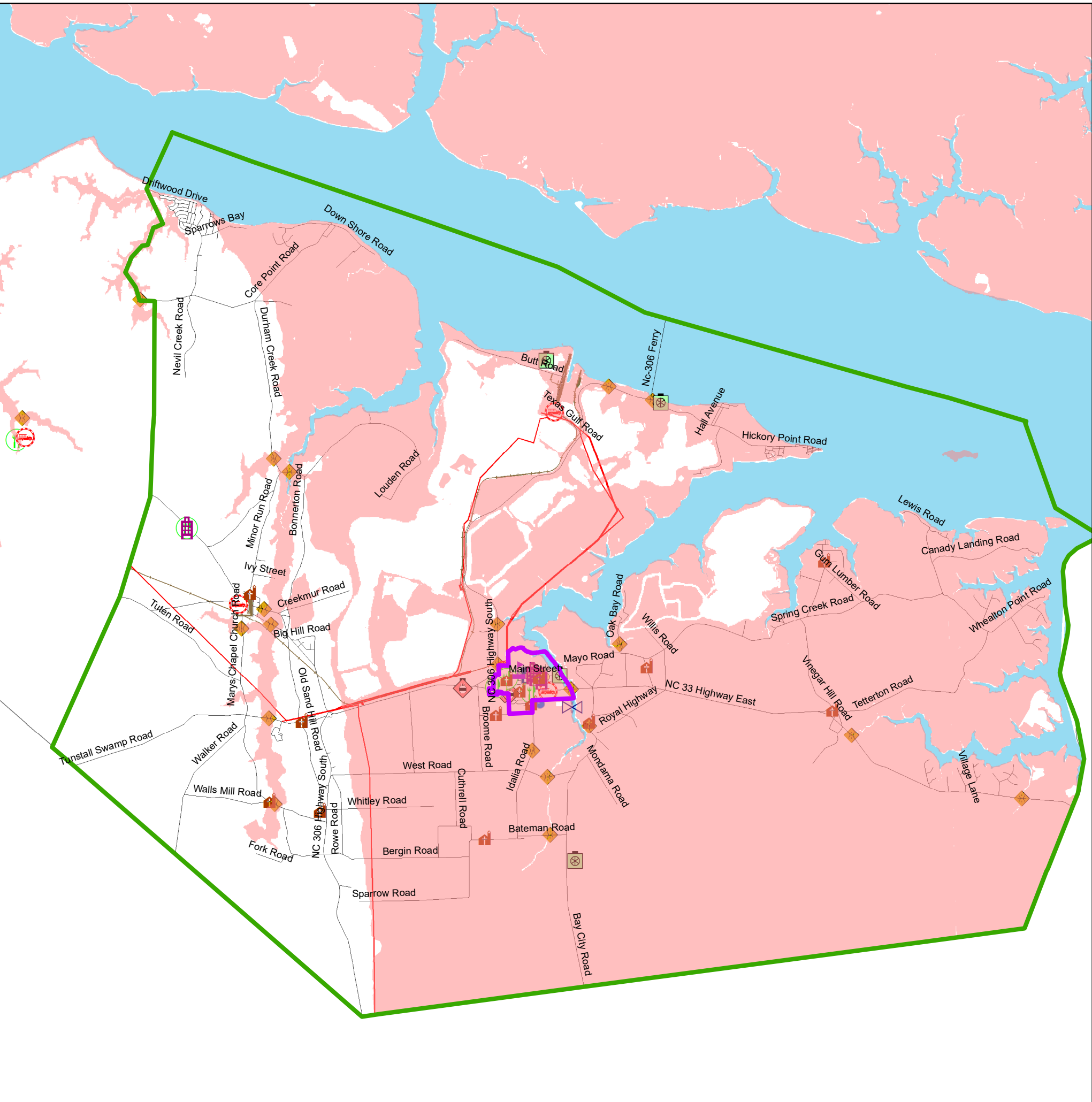
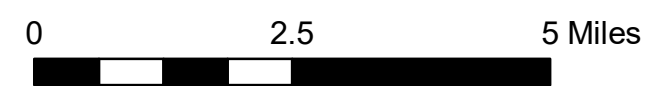
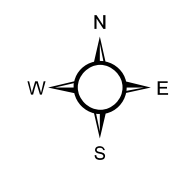




# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & Potential Storm Surge for Category 4 Event

## Legend

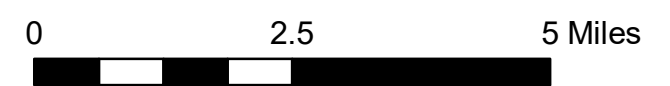
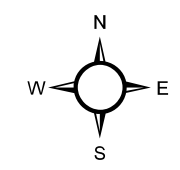
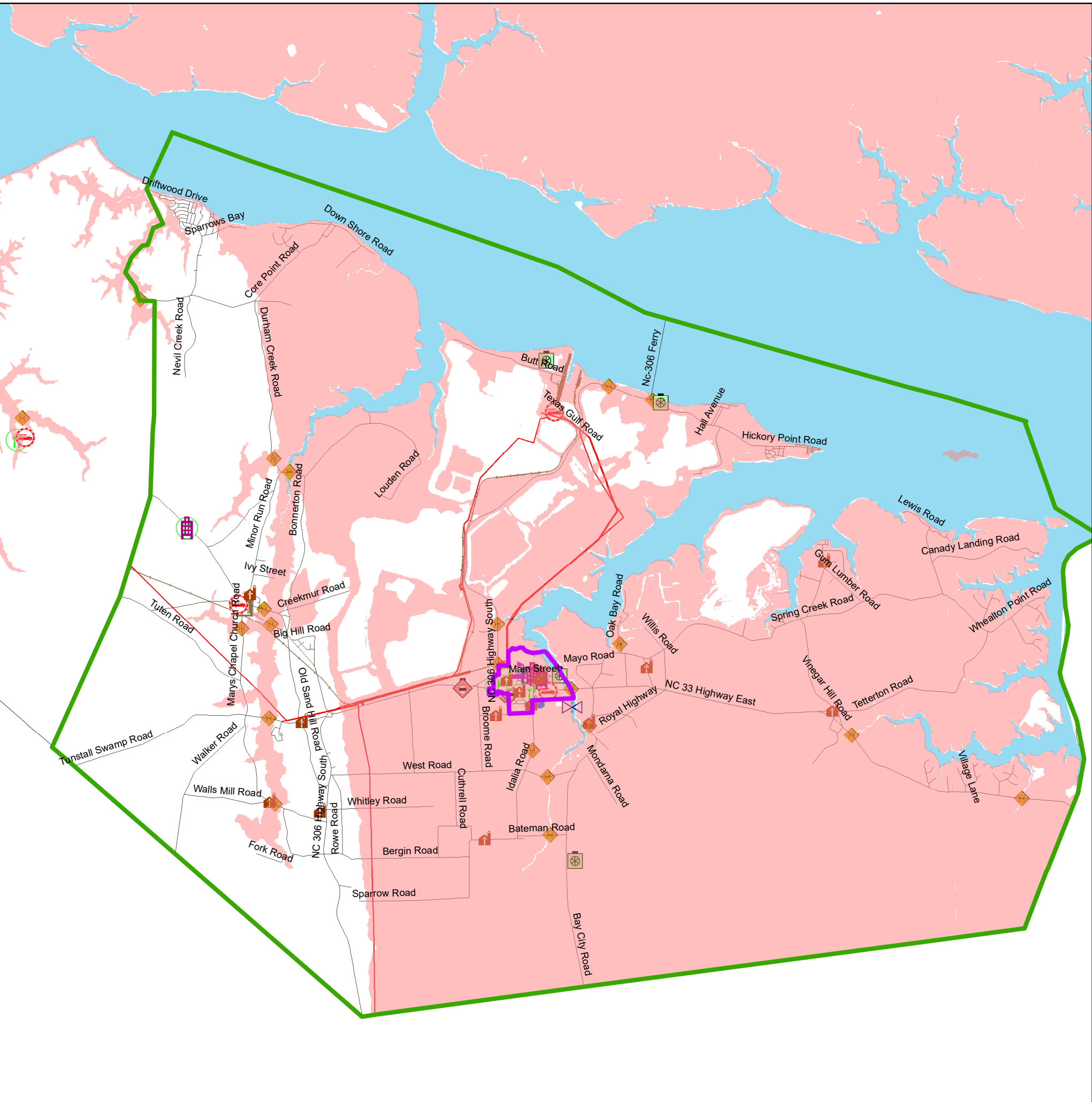
- Cat. 4 Event Potential Storm Surge Area
- Churches (71.4% in potential SS area)
- Community Buildings and Facilities (75% in potential SS area)
- Duke Transmission Easements (79.4% in potential SS area)
- Education (100% in potential SS area)
- Fire and EMS Stations (50% in potential SS area)
- Food (80% in potential SS area)
- Fuel Stations (50% in potential SS area)
- Government Services (100% in potential SS area)
- Libraries (100% in potential SS area)
- Medical (100% in potential SS area)
- Propane Suppliers (100% in potential SS area)
- Public Water Supply Wells (100% in potential SS area)
- Transportation Facilities (75% in potential SS area)
- Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (75% in potential SS area)
- Bridges (80% in potential SS area)
- Aurora Town Limits
- Richland Township
- Beaufort County
- Surface Water



# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & Potential Storm Surge for Category 5 Event

## Legend

- Cat. 5 Event Potential Storm Surge Area
- Churches (71.4% in potential SS area)
- Community Buildings and Facilities (75% in potential SS area)
- Duke Transmission Easements (80.2% in potential SS area)
- Education (100% in potential SS area)
- Fire and EMS Stations (50% in potential SS area)
- Food (80% in potential SS area)
- Fuel Stations (75% in potential SS area)
- Government Services (100% in potential SS area)
- Libraries (100% in potential SS area)
- Medical (100% in potential SS area)
- Propane Suppliers (100% in potential SS area)
- Public Water Supply Wells (100% in potential SS area)
- Transportation Facilities (75% in potential SS area)
- Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (78.5% in potential SS area)
- Bridges (80% in potential SS area)
- Aurora Town Limits
- Beaufort County
- Richland Township
- Surface Water



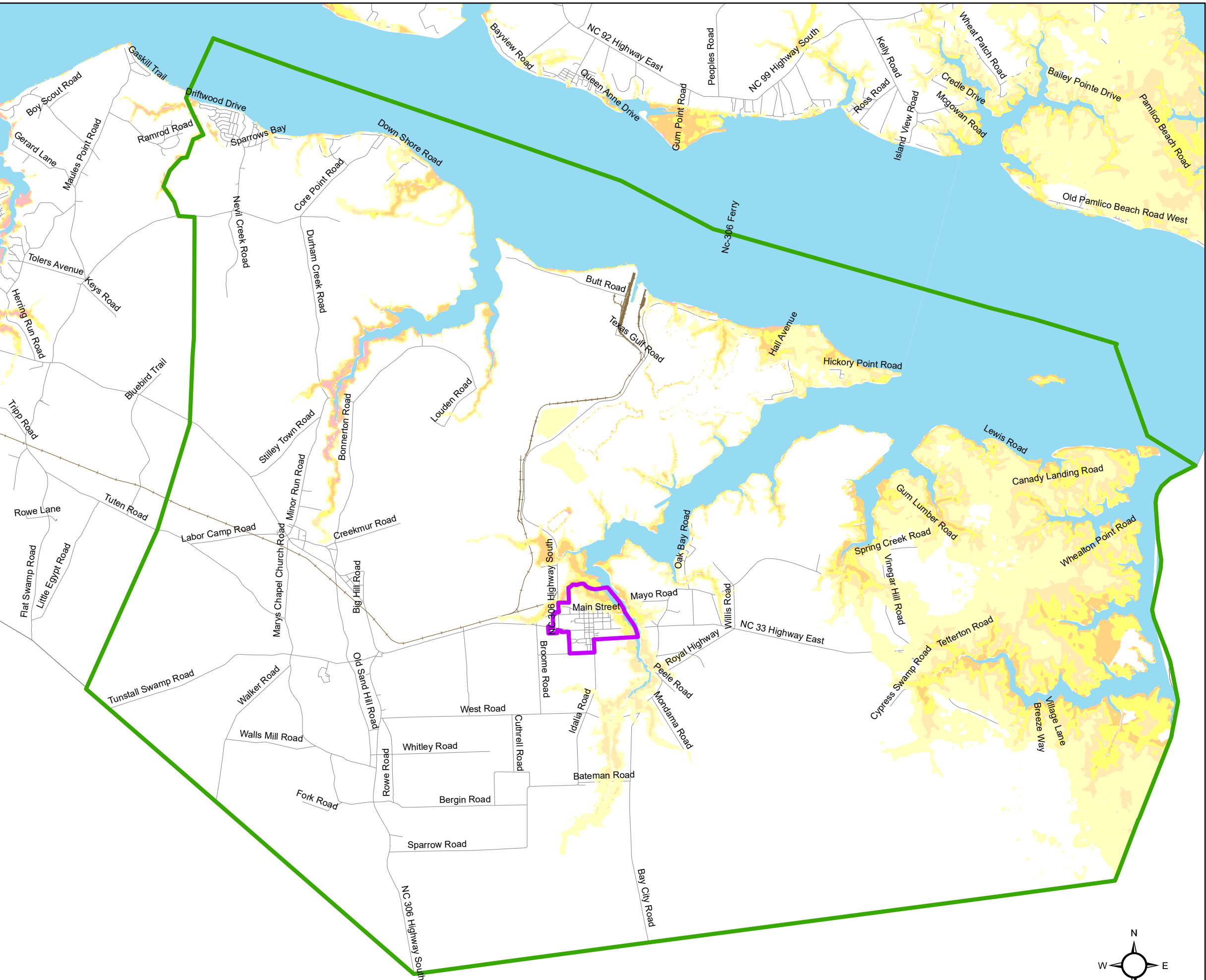
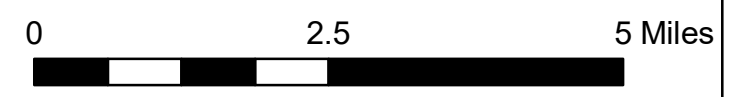
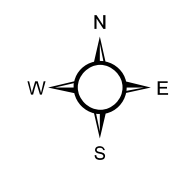


# NC Resilient Coastal Communities Program: Town of Aurora & Richland Township Potential Storm Surge for Cat. 1 Event

## Legend

### Cat. 1 Event Storm Surge Potential

- 00 to 01 feet above ground
- 01 to 02 feet above ground
- 02 to 03 feet above ground
- 03 to 04 feet above ground
- 04 to 05 feet above ground
- 05 to 06 feet above ground
- 06 to 07 feet above ground
- Aurora Town Limits
- Richland Township
- Surface Water
- Rail
- Road Network
- Beaufort County

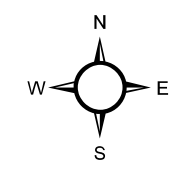
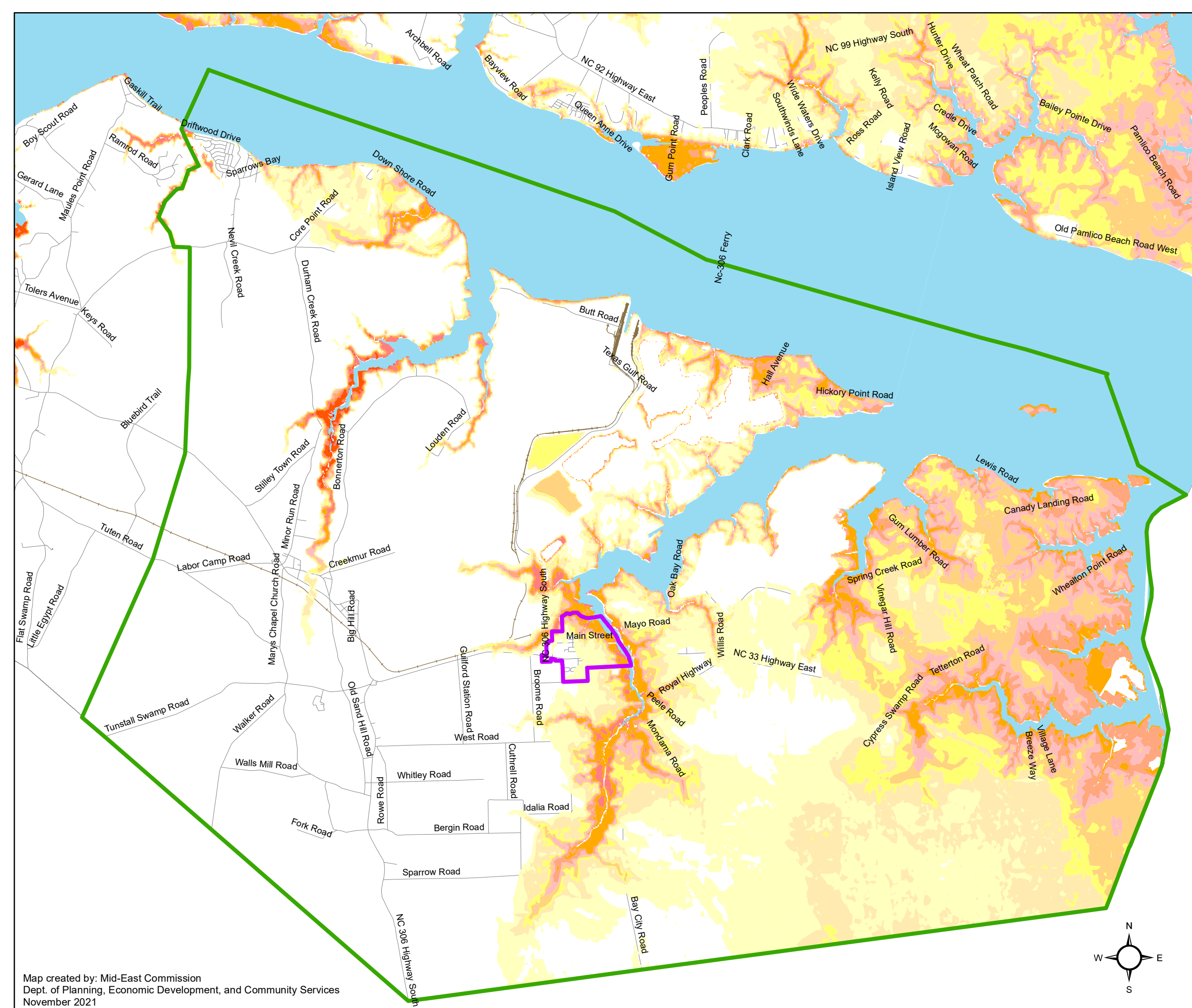


# NC Resilient Coastal Communities Program: Town of Aurora & Richland Township Potential Storm Surge for Cat. 2 Event

## Legend

### Cat. 2 Event Storm Surge Potential

- 00 to 01 foot above ground
- 01 to 02 feet above ground
- 02 to 03 feet above ground
- 03 to 04 feet above ground
- 04 to 05 feet above ground
- 05 to 06 feet above ground
- 06 to 07 feet above ground
- 07 to 08 feet above ground
- 08 to 09 feet above ground
- 09 to 10 feet above ground
- 10 to 11 feet above ground
- Surface Water
- Rail
- Road Network
- Aurora Town Limits
- Richland Township
- Beaufort County



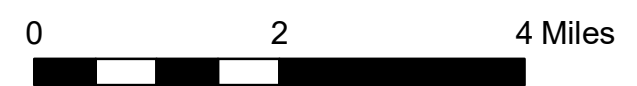
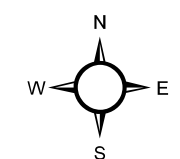
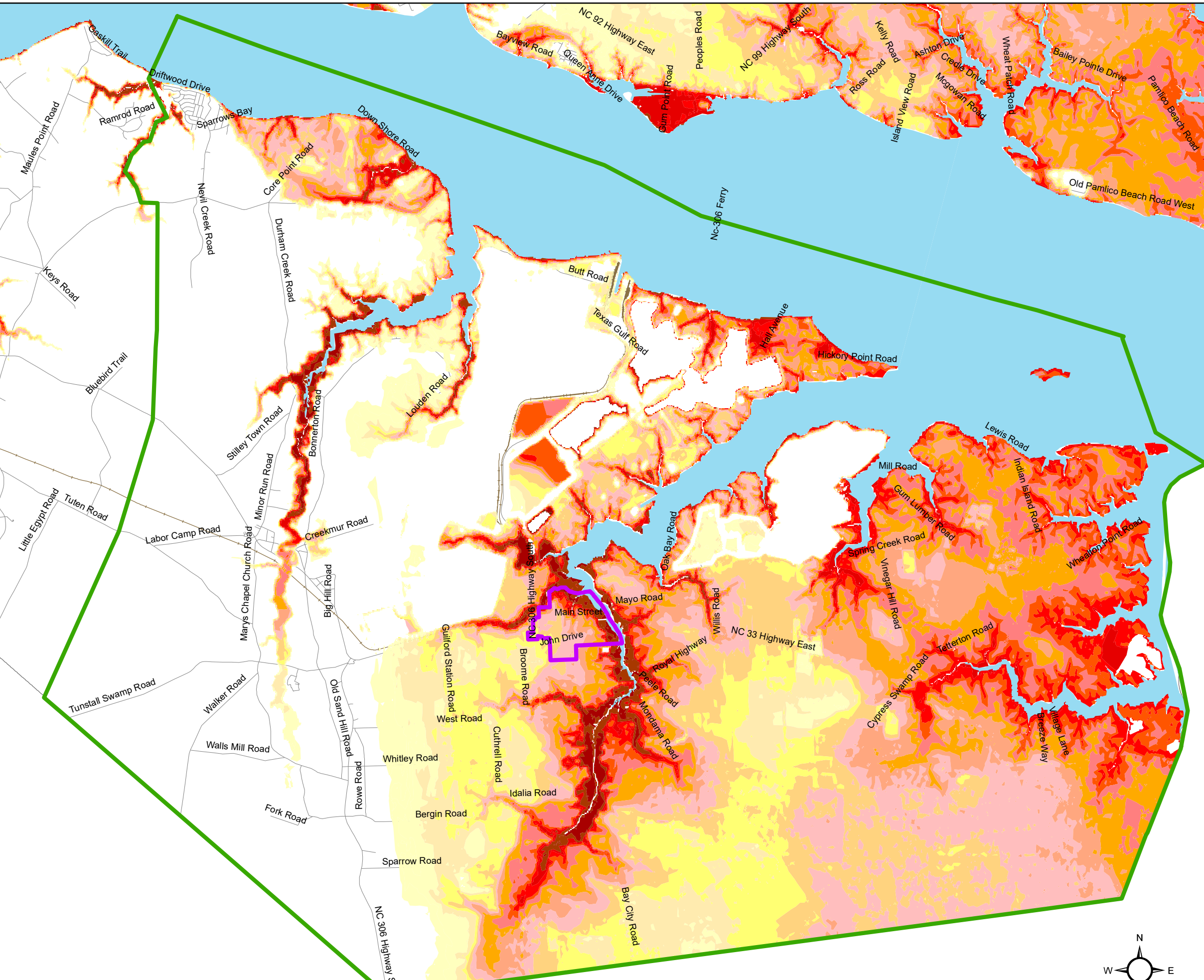


# NC Resilient Coastal Communities Program: Town of Aurora & Richland Township Potential Storm Surge for Cat. 3 Event

## Legend

### Cat. 3 Event Storm Surge Potential

- 00 to 01 feet above ground
- 01 to 02 feet above ground
- 02 to 03 feet above ground
- 03 to 04 feet above ground
- 04 to 05 feet above ground
- 05 to 06 feet above ground
- 06 to 07 feet above ground
- 07 to 08 feet above ground
- 08 to 09 feet above ground
- 09 to 10 feet above ground
- 10 to 11 feet above ground
- 11 to 12 feet above ground
- 12 to 13 feet above ground
- 13 to 14 feet above ground
- 14 to 15 feet above ground
- Surface Water
- Rail
- Road Network
- Aurora Town Limits
- Richland Township
- Beaufort County



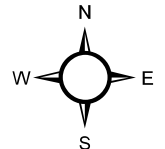
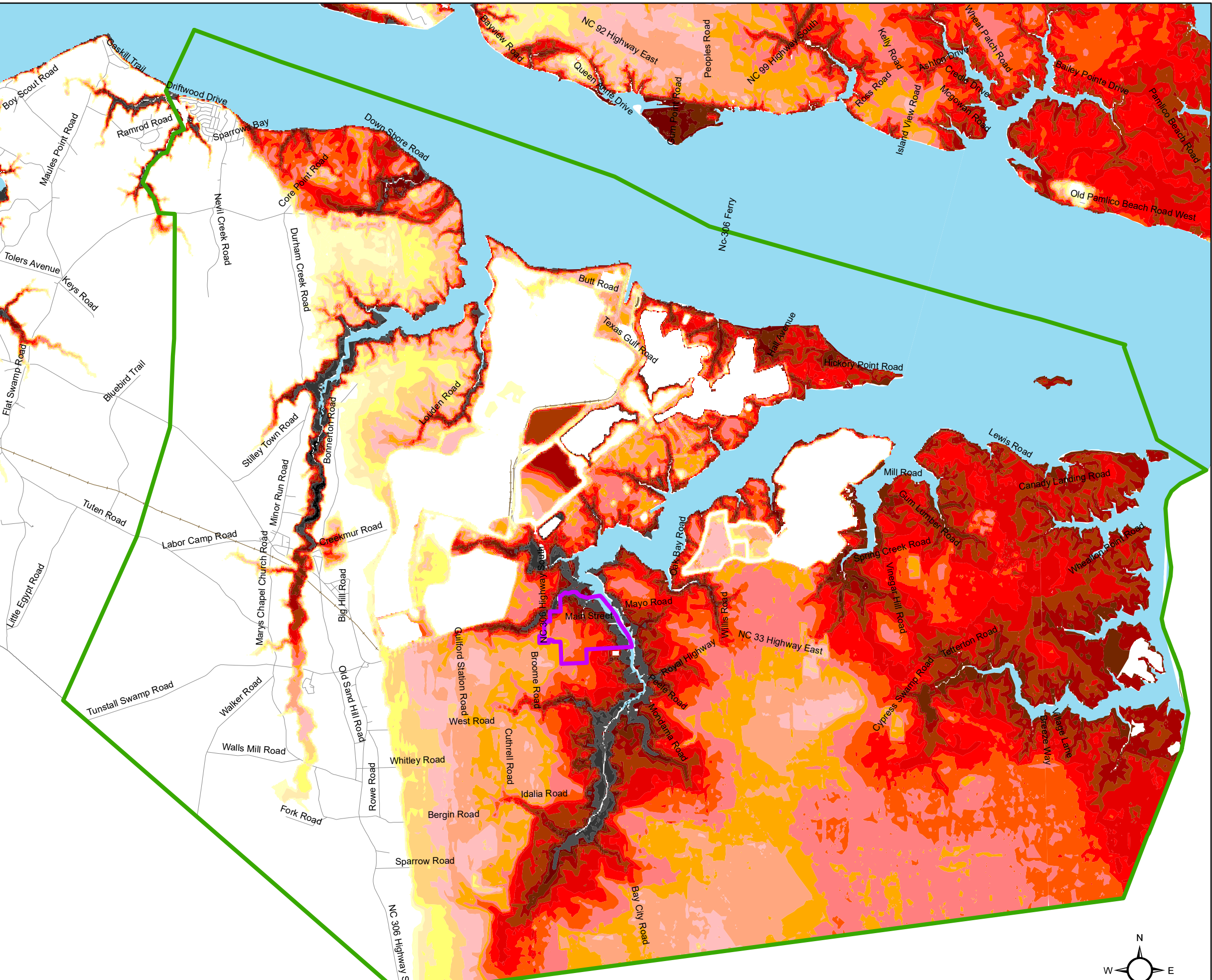


# NC Resilient Coastal Communities Program: Town of Aurora & Richland Township Potential Storm Surge for Cat. 4 Event

## Legend

### Cat. 4 Event Storm Surge Potential

- 00 to 01 feet above ground
- 01 to 02 feet above ground
- 02 to 03 feet above ground
- 03 to 04 feet above ground
- 04 to 05 feet above ground
- 05 to 06 feet above ground
- 06 to 07 feet above ground
- 07 to 08 feet above ground
- 08 to 09 feet above ground
- 09 to 10 feet above ground
- 10 to 11 feet above ground
- 11 to 12 feet above ground
- 12 to 13 feet above ground
- 13 to 14 feet above ground
- 14 to 15 feet above ground
- 15 to 16 feet above ground
- 16 to 17 feet above ground
- 17 to 18 feet above ground
- 18 to 19 feet above ground
- 19 to 20 feet above ground
- Surface Water
- Rail
- Road Network
- Town of Aurora
- Richland Township
- Beaufort County



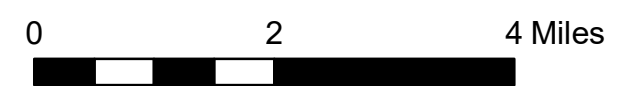
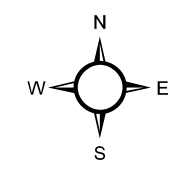
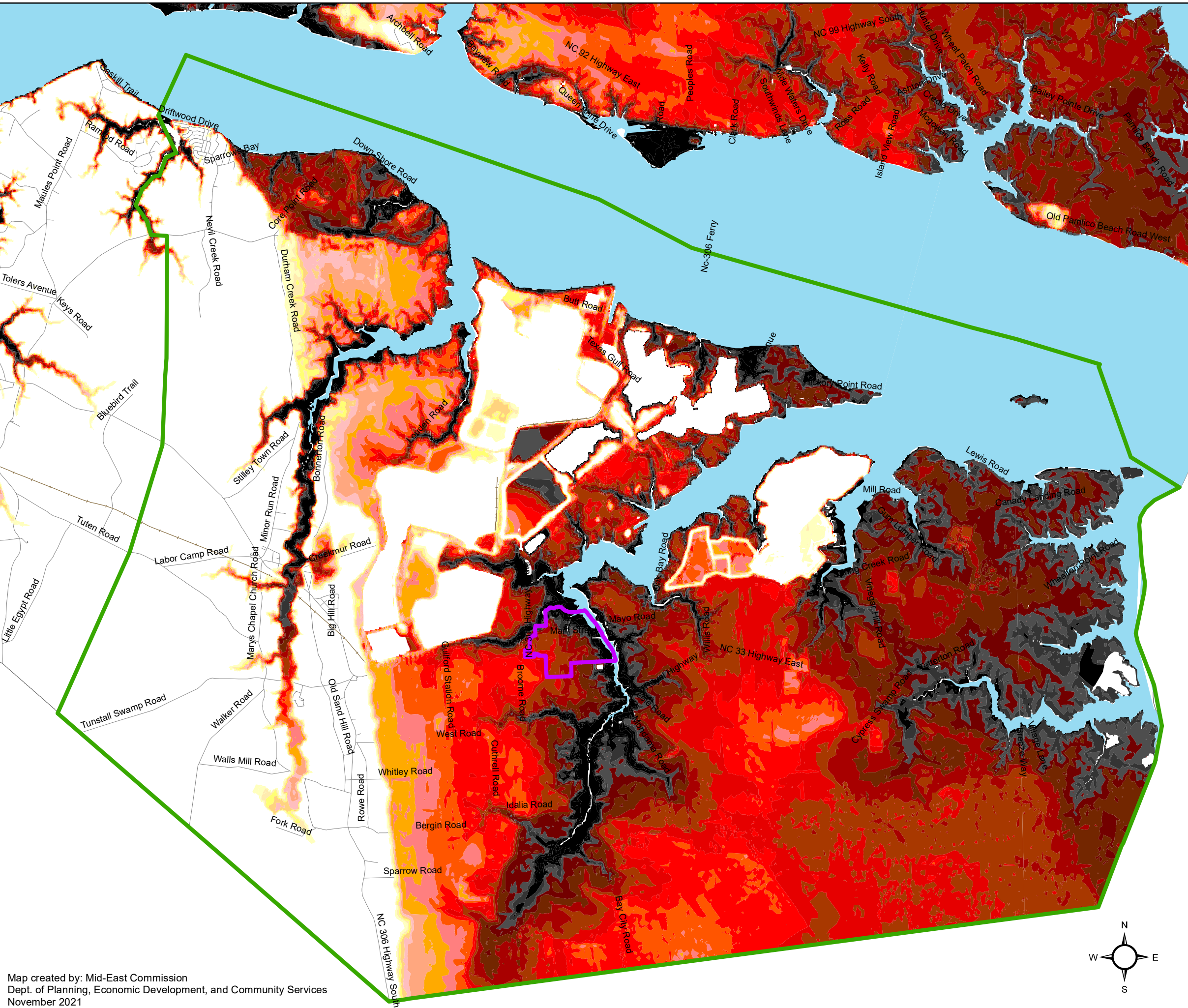


**NC Resilient Coastal Communities Program:  
Town of Aurora &  
Richland Township  
Potential Storm Surge  
for Cat. 5 Event**

**Legend**

**Cat. 5 Event Storm Surge Potential**

- 00 to 01 feet above ground
- 01 to 02 feet above ground
- 02 to 03 feet above ground
- 03 to 04 feet above ground
- 04 to 05 feet above ground
- 05 to 06 feet above ground
- 06 to 07 feet above ground
- 07 to 08 feet above ground
- 08 to 09 feet above ground
- 09 to 10 feet above ground
- 10 to 11 feet above ground
- 11 to 12 feet above ground
- 12 to 13 feet above ground
- 13 to 14 feet above ground
- 14 to 15 feet above ground
- 15 to 16 feet above ground
- 16 to 17 feet above ground
- 17 to 18 feet above ground
- 18 to 19 feet above ground
- 19 to 20 feet above ground
- Greater than 20 feet above ground
- Surface Water
- Rail
- Road Network
- Town of Aurora
- Richland Township
- Beaufort County







# TOWN OF AURORA

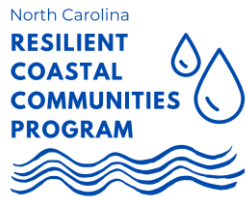
## RISK ESTIMATE

Sector	Number of Critical Assets at Risk	Asset Value
<i>E.g., government facilities, utilities, natural infrastructure</i>	<i>#</i>	<i>\$X,000,000</i>
Emergency Management	0	-
Law Enforcement	0	-
Fire and EMS Stations	4	\$894,068
911 Dispatch	0	-
Government Services	5	\$1,273,480
Food (no grocery stores)	3	\$1,915,744
Food Pantries	2	\$276,132
Water/Wastewater	3	\$424,378
Electric Power Grid	1	\$55,623,937
Fuel Stations	4	\$516,756
Propane Suppliers	3	\$379,686
Roads	227 (569.86 miles)	\$2,899,917,245
Bridges	29	\$22,720,920
Ferry Systems	1	\$12,826,370
Medical	1	\$268,492
Schools	1	\$6,215,859
Libraries	1	\$105,296
Churches	14	\$2,106,318
Community Buildings and Facilities	4	\$698,568
Hazards	22	\$56,773,544
Wetlands	439 (49717.5 ac.)	\$3,353,050,618.05
Streams	79 (233.8 Stream Miles)	\$745,455,775.68
Parks/Public Land	7	\$333,936
Public Boat Ramps	2	\$784,399
Natural Areas	7	\$8,572,021
Managed Areas	19	\$9,692,735

### Estimate Risk

Determine what levels of risk call for actions to reduce that risk and increase resilience.

Hazard Mitigation Plans contain risk assessments that used NCEM's iRISK data for building footprints, building values, and other data on critical facilities. These data can be extracted, expanded to include additional critical assets and natural infrastructure, and updated with current economic data. It will be useful to have a good understanding of the locations of vulnerable populations that may need targeted assistance including where there may be clusters that allow for neighborhood-scale strategies.



# TOWN OF AURORA

## CRITICAL ASSET & NATURAL INFRASTRUCTURE VULNERABILITY

Asset	Exposure Score 0-3	Sensitivity Score 0-3	Adaptive Capacity 0-3	Vulnerability Score 0-6
<i>Asset name</i>	<i>0 = no exposure 1 = low 2 = medium 3 = high</i>	<i>0 = no sensitivity 1 = low 2 = medium 3 = high</i>	<i>0 = no adaptive capacity 1 = low 2 = medium 3 = high</i>	<i>0-2 = low 3-4 = medium 5-6 = high</i>
<b>Emergency</b>				
Fire and EMS Stations	2	3	1	Med
<b>Government Services</b>				
Aurora Town Hall	3	2	1	Med
Aurora/Richland Chamber of Commerce	2	2	1	Med
Former Town of Aurora Police Dept. Building	2	2	1	Med
Town of Aurora Public Works Dept.	2	3	1	Med
US Post Office	2	3	1	Med
<b>Community</b>				
Aurora Community Center	1	2	1	Low
Aurora Fossil Museum	2	2	1	Med
Aurora History Museum	3	2	1	Med
<b>Churches</b>				
Aurora First Baptist Church	1	1	2	Low
Aurora United Methodist Church	1	1	2	Low
Campbell's Creek United Methodist Church	1	1	2	Low
Dublin Grove Original Free Will Baptist Church	3	1	2	Low
Fresh Anointing Worship Center	1	1	2	Low
Jone's Chapel Baptist Church	1	1	2	Low
Mary's Chapel Christian Church	3	1	2	Low
South Creek Church	2	1	2	Low
<b>Food</b>				
Family Dollar (Aurora)	2	3	1	Med

<b>Asset</b>	<b>Exposure Score 0-3</b>	<b>Sensitivity Score 0-3</b>	<b>Adaptive Capacity 0-3</b>	<b>Vulnerability Score 0-6</b>
St. John's Missionary Baptist Church Food Pantry	2	3	1	Med
<b>Fuel</b>				
Aurora Mini Mart	2	3	2	Med
Potter Oil	3	3	1	High
<b>Education</b>				
SW Snowden Elementary School	2	3	1	Med
<b>Medical</b>				
Vidant Family Medical Center	2	3	1	Med
<b>Water/Wastewater</b>				
Town of Aurora system well (Well #1)	3	3	0	High
Town of Aurora system well (Well #2)	2	3	0	High
Town of Aurora Wastewater Treatment Plant	3	3	1	High
<b>Library</b>				
Aurora BHM Regional Library	2	3	1	Med
<b>Public Land and Parks</b>				
Aurora Boat Ramp and Fishing Pier	3	2	1	Med
Smith's Creek Boat Ramp	3	2	1	Med
Public Dock	3	2	1	Med
<b>Transportation</b>				
Roads (Exposure: 2.66; Sensitivity: 71%)	3	3	1	High
Bridges (Exposure: 2.02; Sensitivity: 48%)	3	2	1	Med
Aurora Ferry Terminal	3	3	0	High
Bay City Rd. Agricultural Airfield	2	1	0	Med
<b>Natural Resources</b>				
Wetlands (Exposure: 2.67; Sensitivity: 71%)	3	3	1	High
Streams (Exposure: 2.98; Sensitivity: 97%)	3	3	1	High
Natural Areas (Exposure: 2; Sensitivity: 71%)	2	3	1	Med
Managed Areas (Exposure: 1.7; Sensitivity: 58%)	2	3	1	Med
<b>Hazards</b>				
Underground Storage Tanks (Exposure: 2; Sensitivity: 55%)	2	3	1	Med

## Assess Vulnerability

This assessment explores the vulnerability of critical assets, natural infrastructure, and social systems. Use your team's judgement and any available data to estimate each asset's vulnerability to combined hazards.

### Critical Asset & Natural Infrastructure Vulnerability

Vulnerability of critical assets and natural infrastructure to a hazard is a function of the exposure, sensitivity, and adaptive capacity:

**Exposure** refers to the probability of physical contact between an asset and a hazard.

**Sensitivity** is the degree to which an asset is impacted by a hazard.

**Adaptive Capacity** is the ability of an asset to change its characteristics or behavior in response to a hazard.

$$\text{Vulnerability} = \text{Exposure} + \text{Sensitivity} - \text{Adaptive Capacity}$$



# RISK AND VULNERABILITY INDEX THRESHOLDS

Community Action Team - Meeting #3

**Hazards:** Flooding, Storm Surge (From Cat 3 Hurricane), and Sea Level Rise

## Data Sources:

- FEMA Coast Storm Model
- Belhaven – 10Yr, 25Yr, and 50Yr Storm Flood Data
- 100Yr, 500Yr Flood Data
- Category 3 Hurricane Storm Surge Data (<3ft, 3-9ft, 9+Ft)
- Sea Level Rise Data (1ft, 2ft, 3ft)
- Hurricane Matthew Road and Bridge Flooding Information
- Pamlico Sound Regional Hazard Mitigation Plan

## Building Infrastructure

**Exposure** (Data: Floodplains (10/25/50/100/500yr /flood water surface elevation) / Storm Surge / Sea Level Rise (SRL) / Historic flood events)

- High: Coastal Flood Risk (FEMA Model) (10Y Floodplain- Belhaven)/9+ft Surge / 1ft SLR
- Medium: 100YR floodplain (25Y-Belhaven) / 3-9 ft Surge/2ft SLR/
- Low: 500 floodplains (50Yr floodplain for Belhaven) />3ft Surge /3ft SLR

### Sensitivity

- High: >66%+ Facilities affected / Needed by the community (critical infrastructure)
- Medium: 33%-66% / Other facilities can be used (Alternatives)
- Low: <33% / Facility not needed to operate

### Adaptive Capacity

- Subjective – need community input
- Social vulnerability index (need for public education,
- Ability to relocate building infrastructure (Ex. From 25yr to 50yr floodplain)
- The ability to raise structure
- Accessibility to residents once moved (SVI)
- Land availability
- Ability to retrofit for flooding (Rise generator/sensitive components)
- Another facility can be used in its place
- Facility is not needed to operate



## Natural Resources (Streams, Wetlands, Managed Areas, Natural Areas)

**Exposure** (Data: Floodplains (10/25/50/100/500yr /flood water surface elevation) / Storm Surge / Sea Level Rise (SRL) / Historic flood events)

- High: Coastal Flood Risk (FEMA Model) (10Y Floodplain- Belhaven)/9+ft Surge / 1ft SLR
- Medium: 100YR floodplain (25Y-Belhaven) / 3-9 ft Surge/2ft SLR/
- Low: 500 floodplains (50Yr floodplain for Belhaven) />3ft Surge /3ft SLR

**Sensitivity** (Inundation from SLR with no ability to migrate or evolve)

- High: 1 Ft / 25ft from structure / 50% effected
- Med: 2 Ft / 50 ft from structure / 25%-50%
- Low: 3+ ft / 100 ft from structure / >25%

### Adaptive Capacity

- Restorative capacity
- Ability to increase flood capacity
- Alternative use capacity (Ex. Park and floodplain)

## Transportation Infrastructure

**Exposure** (Data: Floodplains (25/50/100/500yr flood water surface elevation) / Storm Surge / SRL / Historic flood events)

- High: Coastal Flood Risk (FEMA Model) (10Y Floodplain- Belhaven)/9+ft Surge / 1ft SLR
- Medium: 100YR floodplain (25Y-Belhaven) / 3-9 ft Surge/2ft SLR/
- Low: 500 floodplains (50Yr floodplain for Belhaven) />3ft Surge /3ft SLR

### Sensitivity

- High: >50% of structures effected by natural hazards
- Medium: 25% - 50% effected by natural hazards
- Low: <25% effected by natural hazards

### Adaptive Capacity

- Subjective– need community input
- Social vulnerability index
- Ability to relocate transportation infrastructure (Ex. From 25yr to 50yr floodplain)
- The ability to raise structure (Bridge)
- Ability to retrofit the infrastructure to be more resilient to flooding

## Sewer Infrastructure Utility System Infrastructure (Sewer/Water/Electric/Communications)

**Exposure** (Data: Floodplains (25/50/100/500yr flood water surface elevation) / Storm Surge / SRL / Historic flood events)

- High: Coastal Flood Risk (FEMA Model) (10Y Floodplain- Belhaven) / 9+ft Surge / 1ft SLR
- Medium: 100YR floodplain (25Y floodplain for Belhaven) / 3-9 ft Surge / 2ft SLR/
- Low: 500Y floodplains (50Yr floodplain for Belhaven) / >3ft Surge / 3ft SLR

### **Sensitivity**

- High: >50% of structures effected by natural hazards
- Medium: 25% - 50% effected by natural hazards
- Low: <25% effected by natural hazards

### **Adaptive Capacity**

- Subjective– need community input
- Social vulnerability index
- Ability to relocate utility system infrastructure (Ex. From 25yr to 50yr floodplain)
- The ability to increase capacity
- Ability to retrofit the infrastructure to be more resilient to flooding



# Resilient Coastal Communities Program

## Beaufort County Community Action Team Meeting #3 Risk & Vulnerability Assessments

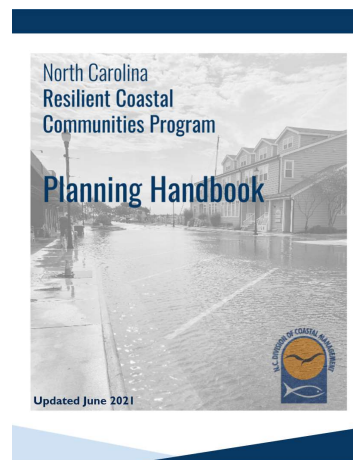
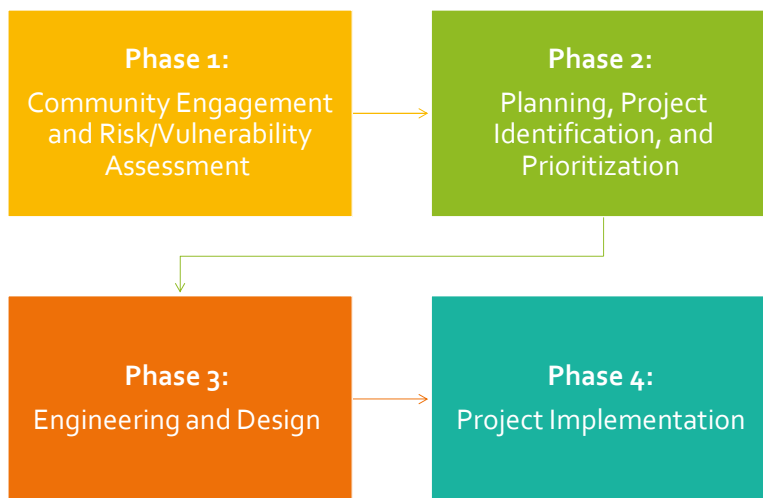


December 1, 2021



1

## RCCP Phases



2

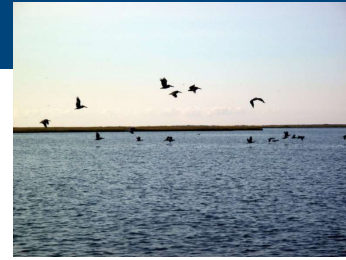
## RCCP Phase 1 and 2 Steps

- **Phase 1: Community Engagement and Risk/Vulnerability Assessment**

- ✓ *Step 1 – Develop a Community Action Team*
- ✓ *Step 2 – Set Vision and Goals*
- ✓ *Step 3 – Review Existing Plans and Efforts*
- ✓ *Step 4 – Develop a Community Engagement Strategy*
- ✓ *Step 5 – Map Critical Assets and Natural Infrastructure*
- ★ **Step 6 – Conduct Risk and Vulnerability Assessment**

- **Phase 2: Planning, Project Identification, and Prioritization**

- Step 1 – Identify a Suite of Potential Solutions
- Step 2 – Consolidate and Prioritize Projects
- Step 3 – Develop the Resilience Strategy Document



3

## **PHASE 1 – STEP 6** **RISK & VULNERABILITY ASSESSMENT**

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## 6. Risk & Vulnerability Assessment

- A. Identify and Map the Hazards
- B. Assess Vulnerability
- C. Estimate Risk

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### 6A. Identify and Map the Hazards

- Review Hazard Mitigation plans
- Document disaster declaration history
- Interview stakeholders about local hazards
- Identify hazards to include in the risk and vulnerability assessment
  - Flooding (rainfall, tidal, riverine)
  - Storm surge
  - Sea level rise (minimum 30-year projection)
- Map geographic extent of hazards

#### Tools to identify and map hazards

- NOAA's Storm Events Database
- FEMA's Floodplain Layers
- NOAA's Sea Level Rise Layers
- National Hurricane Center Historic Flood Data
- FEMA Disaster Declarations Database
- NC Emergency Management Digital Elevation Models (DEMs)
- 2020 North Carolina Climate Science Report
- FEMA's Checklist for Vulnerability of Flood-Prone Sites and Buildings
- NC Flood Inundation Mapping and Alert Network (NC Floodplain Mapping Program)
- NC Flood Risk Information System (FRIS)
- Mapping tools: ArcMap (desktop GIS software), ArcGIS online

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## 6B. Assess Vulnerability

- **Vulnerability** describes a system's susceptibility to harm or change. Vulnerability is the combined result of exposure, sensitivity, and adaptive or response capacity and, as such, a function of the character, magnitude, and rate of the climate change hazard to which a system is exposed, as well as of non-climatic (social and environmental) characteristics of the system, which determine its sensitivity and adaptive capacity.

$$\text{Vulnerability} = \text{Exposure} + \text{Sensitivity} - \text{Adaptive Capacity}$$

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## 6B. Assess Vulnerability

- **Exposure** refers to the probability of physical contact between an asset and a hazard.
- **Sensitivity** is the degree to which an asset is impacted by a hazard.
- **Adaptation** is the ability of an asset to change its characteristics or behavior in response to a hazard.

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## 6B. Assess Vulnerability

- Estimate each asset's vulnerability to combined hazards
- Develop a **Vulnerability Index** with **vulnerability thresholds**
- **Exposure** – Determine overlap between asset locations and hazard impact areas.
- **Sensitivity** – Evaluate degree which an asset is impacted cumulatively by hazards.
- **Adaptive Capacity** – Assess an asset's ability to cumulatively adapt to all hazards.

$$\text{Vulnerability} = \text{Exposure} + \text{Sensitivity} - \text{Adaptive Capacity}$$

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## 6B. Assess Vulnerability

### Vulnerability Thresholds

#### Assessment Threshold Groups

(Defines thresholds for each asset that falls within the category)

#### Groups

- Building Infrastructure
- Transportation Infrastructure
- Sewer Infrastructure & Utility System Infrastructure  
(Sewer/Water/Electric/Communications)
- Natural Resources (Streams, Wetlands, Managed Areas, Natural Areas)

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## 6B. Assess Vulnerability

## Vulnerability Thresholds

### Building Infrastructure

- Exposure
  - High: Coastal Flood Risk (FEMA Model) (10yr Floodplain- Belhaven) / 9+ft Surge / 1ft SLR
  - Medium: 100yr floodplain (25yr-Belhaven) / 3-9 ft Surge / 2ft SLR
  - Low: 500yr floodplains (50yr floodplain for Belhaven) / >3ft Surge / 3ft SLR
- Sensitivity (Infrastructure group)
  - High: >66%+ Facilities affected / Needed by the community
  - Medium: 33%-66% / Other facilities can be used (Alternatives)
  - Low: <33% / Facility not needed to operate
- Adaptive Capacity
  - Subjective – need community input
  - Social vulnerability index
  - Ability to relocate building infrastructure (Ex. From 25yr to 50yr floodplain)
  - The ability to raise structure
  - Accessibility to residents once moved (SVI)
  - Land availability
  - Ability to retrofit for flooding (raise generator/sensitive components)
  - Another facility can be used in its place
  - Facility is not needed to operate

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## 6B. Assess Vulnerability

## Vulnerability Thresholds

### Transportation Infrastructure

- Exposure
  - High: Coastal Flood Risk (FEMA Model) (10yr Floodplain- Belhaven) / 9+ft Surge /1ft SLR
  - Medium: 100yr floodplain (25yr floodplain for Belhaven) / 3-9 ft Surge / 2ft SLR
  - Low: 500yr floodplains (50yr floodplain for Belhaven) / >3ft Surge / 3ft SLR
- Sensitivity
  - High: >50% of structures affected by natural hazards
  - Medium: 25% - 50% affected by natural hazards
  - Low: <25% affected by natural hazards
- Adaptive Capacity
  - Subjective – need community input
  - Replacement cost
  - Detour length
  - Disruption duration
  - FHWA roadway functional classification (roadways with higher functional classification may cause greater system disruptions if damaged)
  - Evacuation routes
  - Emergency services/freight route
  - Access to food and services (supermarkets, bottled water, prescriptions, batteries, critical goods)
  - Historical repair cost
  - Access to critical areas (roads that provide the only access to critical areas are more significant to the adaptive capacity of larger response systems)

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## 6B. Assess Vulnerability

## Vulnerability Thresholds

### Sewer Infrastructure & Utility System Infrastructure (Sewer/Water/Electric/Communications)

- Exposure
  - High: Coastal Flood Risk (FEMA Model) (10yr Floodplain- Belhaven) / 9+ft Surge / 1ft SLR
  - Medium: 100yr floodplain (25yr floodplain for Belhaven) / 3-9 ft Surge / 2ft SLR
  - Low: 500yr floodplain (50yr floodplain for Belhaven) / >3ft Surge / 3ft SLR
- Sensitivity
  - High: >50% of structures affected by natural hazards
  - Medium: 25% - 50% affected by natural hazards
  - Low: <25% affected by natural hazards
- Adaptive capacity
  - Subjective– need community input
  - Social vulnerability index
  - Ability to relocate utility infrastructure (Ex. From 25yr to 50yr floodplain)
  - The ability to increase capacity
  - Ability to retrofit infrastructure to be more resilient to flooding

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## 6B. Assess Vulnerability

## Vulnerability Thresholds

### Natural Resources (Streams, Wetlands, Managed Areas, Natural Areas)

- Exposure
  - High: Coastal Flood Risk (FEMA Model) (10yr Floodplain- Belhaven) / 9+ft Surge / 1ft SLR
  - Medium: 100yr floodplain (25yr floodplain-Belhaven) / 3-9ft Surge / 2ft SLR
  - Low: 500yr floodplains (50yr floodplain for Belhaven) / >3ft Surge / 3ft SLR
- Sensitivity (Inundation from SLR with no ability to migrate or evolve)
  - High: 1 ft / 25ft from structure / 50% affected
  - Med: 2 ft / 50ft from structure / 25%-50%
  - Low: 3+ ft / 100ft from structure / >25%
- Adaptive Capacity
  - Restorative capacity
  - Ability to increase flood capacity
  - Alternative use capacity (Ex. park and floodplain)

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## 6B. Assess Vulnerability



Town of Aurora & Richland Township

### CRITICAL ASSET & NATURAL INFRASTRUCTURE VULNERABILITY

Asset	Exposure Score 0-3	Sensitivity Score 0-3	Adaptive Capacity 0-3	Vulnerability Score 0-6
<i>Asset name</i>	0 = no exposure 1 = low 2 = medium 3 = high	0 = no sensitivity 1 = low 2 = medium 3 = high	0 = no adaptive capacity 1 = low 2 = medium 3 = high	0-2 = low 3-4 = medium 5-6 = high

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## 6C. Estimate Risk

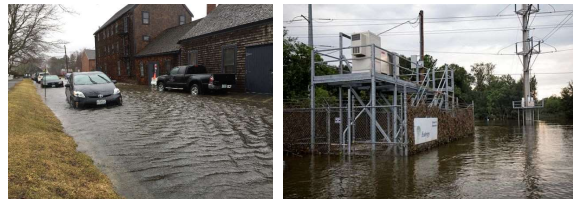
- Determine what levels of risk call for actions
- Quantitatively estimate risk
- Use Hazard Mitigation Plan risk assessments for building footprints, values, and other data on critical facilities



Town of Aurora & Richland Township

### RISK ESTIMATE

Sector	Number of Critical Assets at Risk	Asset Value
<i>E.g., government facilities, utilities, natural infrastructure</i>	#	\$X,000,000



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## 6C. Estimate Risk

Data sources used for asset values:

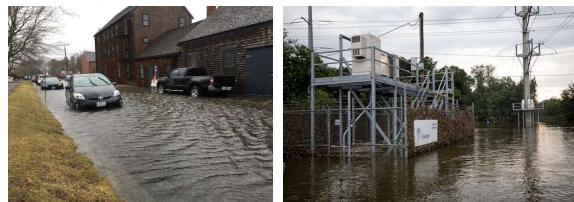
- Beaufort County tax values (buildings)
- Division of Mitigation Services (wetland value per acre, stream value per linear foot)



Beaufort County

RISK ESTIMATE

Sector	Number of Critical Assets at Risk	Asset Value
<i>E.g., government facilities, utilities, natural infrastructure</i>	#	\$X,000,000



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## Next Steps

### PHASE 2 PLANNING, PROJECT IDENTIFICATION & PRIORITIZATION

- **Step 1:** Identify a Suite of Potential Solutions
- **Step 2:** Consolidate and Prioritize Projects



November & December



January & February

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# 1. Identify a Suite of Potential Solutions

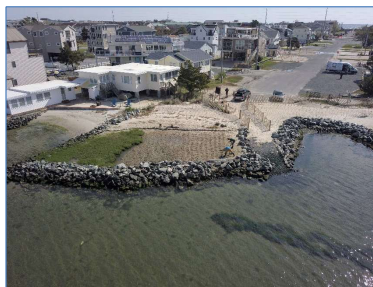
- Brainstorm strategies + consider funding
  - Hard infrastructure
  - Soft nature-based
  - Hybrid options
  - Policy solutions
  - RK&K RCCP Communities – Actions or projects must include at least one natural/nature-based or hybrid option (more desired)



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# Resiliency Project Trends - Softening

- Living shorelines and floodplain reconnection
- Intentional inundation
- Removing infrastructure from floodplains



Read Avenue Living Shoreline, Dewey Beach, DE



Intentional inundation at Atlanta's Fourth Ward Park

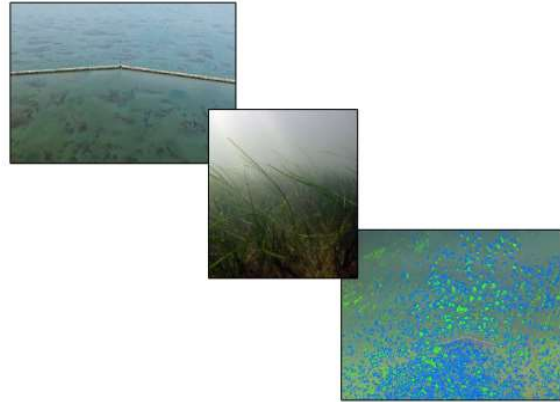


Four Mile Run Wetlands, Alexandria, VA

20

## Resiliency Project Trends – Seagrass and Culture

- Seagrass transplants and monitoring
- Wave attenuation walls to protect Seagrass
- Protecting Seagrass protects fish population and the fishing culture in eastern North Carolina

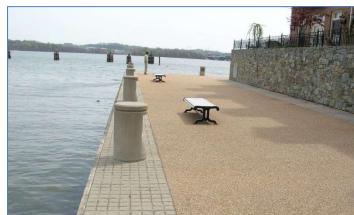


Bonner Bridge Wave-break, Oregon Inlet, NC

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## Resiliency Project Trends – Response and Hardening

- Emergency repairs, disaster relief, and expedited permitting
- Elevating critical infrastructure and power supply backup
- Shoreline hardening/floodwalls
- Tidal controls (backflow preventers) and pump stations
- Pipe upsizing



Windmill Hill Bulkhead, Alexandria, VA



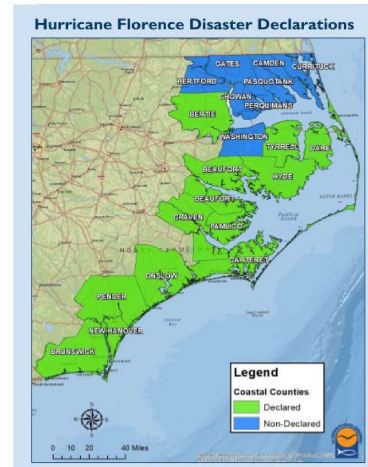
Emergency stream bank repair, DC

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## Brainstorm Potential Solutions




- Consider vision, goals, and objectives + survey results + Risk & Vulnerability Assessment
- Begin brainstorming strategies
  - Hard infrastructure
  - Soft nature-based
  - Hybrid options
  - Policy solutions
  - RK&K RCCP Communities –  
Actions or projects must include at least one natural/nature-based or hybrid option (more desired)



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## 2. Consolidate & Prioritize Projects

- Evaluate strategies and their feasibility
  - Including cost-benefit estimation
- Consolidate and prioritize strategies (draft)
- Host a public Open House  February
- Finalize strategies

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## 2. Consolidate & Prioritize Projects

- Narrow down actions
- Identify at least five (5) priority projects for each community
- Organize project information using this template



Organize information for each project in the portfolio using the following template:

<b>Project Name</b>	<i>Come up with a brief title for the project</i>
<b>Project Description</b>	<i>Describe project, including information gathered during project development</i>
<b>Hazard(s) addressed by project</b>	<i>List hazards specific to this program which impact the project location</i>
<b>Type of Solution</b>	<i>Infrastructure, Plans and policies, Ordinances, Non-regulatory programs, Other (describe)</i>
<b>Project Estimated Cost</b>	<i>Estimate total cost of project</i>
<b>Potential Implementation Funding Sources</b>	<i>Identify potential sources for project/action implementation</i>
<b>Projected Estimated Timeline</b>	<i>Estimate length of time project will take to complete and any expected delays in the timeline</i>
<b>Priority Rating</b>	<i>High, Medium, Low</i>
<b>Project Map</b>	<i>Provide a map of the project site</i>

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## 3. Develop a Resiliency Strategy Document

- Vision & Goals
- Community Action Team
- Stakeholder Engagement Strategy
- Review of Existing Local & Regional Efforts
- Risk and Vulnerability Assessment Report
- Project Portfolio
- Additional Files (e.g., mapping, Excel spreadsheets)

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## Phase 3: Engineering & Design

- Top Nature-Based/Hybrid Project (1 project per community)
- Phase 3 Application  Anticipated: January-February Opening, Mid-March Deadline
- Approximately \$40k funding per community
  - Consider project scale with available funding

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**Thank you for participating in CAT Meeting #3.**



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# TOWN OF AURORA

## Community Action Team - Meeting #3

### MEETING SUMMARY

THURSDAY, DECEMBER 02, 2021, 10:00 AM - 12:00 PM, AURORA TOWN HALL + VIRTUAL

#### Meeting Purpose:

- To discuss the public survey results, draft hazards mapping, vulnerability thresholds, draft risk and vulnerability assessment, and begin discussion on projects.
- Refer to attached meeting agenda.

#### Attendees:

- Refer to attached meeting sign-in sheet.

#### Materials:

- Refer to attached materials:
  - Public survey results summary document
  - Draft hazards maps
    - Floodplains overlaid with critical assets (FEMA)
    - Sea level rise 1 ft. scenario overlaid with critical assets (NOAA)
    - Potential storm surge with depths (NOAA)
    - Potential storm surge overlaid with critical assets (NOAA)
    - Sea level rise 1 ft. scenario overlaid with natural infrastructure (NOAA)
    - Hurricane Florence storm surge, 2018 (NHC)
  - Draft risk worksheet
  - Vulnerability thresholds document
  - Draft vulnerability worksheet

#### Meeting Discussion:

##### Public survey results

- Results of the public survey were reviewed. Aurora had 38 responses.
- There was a comment that there was some misinformation in the survey comments which shows that public education is needed.

##### Hazards maps

- Draft hazard maps were reviewed.
- Comment that the official FEMA floodplain maps seem inaccurate. Flooding occurs in places that are not shown in the floodplain.
- Comment that Hurricane Florence storm surge map seems inaccurate. This looks like the flooding that the town experienced in Hurricane Irene in 2011, which was much worse. It was not as bad as it looks on the map with Florence in 2018. Hurricane Irene data would be nice to show if we can find it.

## Vulnerability Thresholds

- The vulnerability thresholds were explained.
- Formula: Exposure + Sensitivity – Adaptive Capacity = Vulnerability
- Exposure is more concrete, while there is some subjectivity in determining sensitivity and adaptive capacity which requires input from the community action team.

## Draft Vulnerability Worksheet

- The draft vulnerability worksheet was reviewed.
- The public works department was given a higher sensitivity score.
- Churches were given a lower sensitivity score and a higher adaptive capacity score. Churches can be grouped together.
- Potter Oil was given a higher sensitivity score and a lower adaptive capacity score.
- Terry's convenient mart was removed from the fuel list since they don't have fuel.
- There was a comment that we need to focus on critical arteries and evacuation routes under transportation, rather than every road.
- There was a comment that there is 56 acres of land in Aurora Industrial Park, but they only ended up with 26 acres that are developable.
- Noted to double check that Dollar General was included in analysis.
  - Follow-up: Yes it was included in analysis, but not pulled into spreadsheet because it was not exposed or had very low exposure.

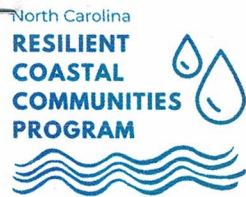
## Draft Risk Assessment Worksheet

- The draft risk assessment worksheet was reviewed.
- NC Division of Mitigation values were used to value wetlands (\$ per acre) and streams (\$ per linear foot). There were comments that the values seemed too high.
- The county tax assessor values were used to value many of the critical asset types. Critical assets were valued individually, then summed as category totals (e.g. total value of Fire/EMS critical assets). There were comments that the values seemed too low. Discussion that insurance values would be better to use. The FEMA replacement cost may be a good number to use.
- There was a discussion that building and equipment values should be listed separately for Fire/EMS since the equipment is necessary to emergency response operations.
- Also need to follow up with the town on the insured value of the water/wastewater systems, so a value can be assigned to those systems.

## Project Discussion

- Project types were reviewed including traditional/hard infrastructure, nature based solutions, hybrid solutions, and policy solutions.
- Aurora is required to have a minimum of one nature based or hybrid solution, and more than one is desired.
- The wastewater treatment lagoon is the town's top priority.
- The east side of town floods during normal rainfall events and is a high priority.
- Broadband is a high priority and is needed for emergency response communications.
- NC-33 is a high priority as an evacuation route.
- Ditches in the town and the township need maintenance.

- The bridge on NC-33 over Campbell Creek near Pamlico County is vulnerable.
- The ballfield area is frequently saturated.
- Northeast wind causes ditches to flow backwards.
- There may be some private water wells that are vulnerable.
- There was a discussion on improving upstream capacity for flood water retention (water farming/intentional inundation) to improve downstream flooding in town. The potential for a partnership with farmers was discussed.
- Wetland and stream restoration project south of Bateman Rd. is a possibility.
- There was a discussion on town owned land for stormwater projects. There was a comment that the flat topography in town makes stormwater projects challenging.
- There was a recommendation to look at the Cherry Point living shoreline example and DARPA examples.



# MEETING SIGN-IN SHEET

**Title** Town of Aurora Community Action Team – Meeting 3

**Date** Dec. 02, 2021

**Time** 10:00 AM – 12:00 PM

**Location** Aurora Town Hall

✓	Name	Organization	Title/Role	Email	Signature
	Judi Lannon	Town of Aurora	Town Manager	townofaurora@auroranc.org	
	Chuck Bonner	Town of Aurora	Public Works Director	aurorapwd@auroranc.org	<i>F. Charles Bonner</i>
	Curt Hendrix	Town of Aurora	Recreation Coordinator	aurorarec@embarqmail.com	<i>Curt Hendrix</i>
	Kurt Ryan	Town of Aurora	Volunteer	Ryankj88@gmail.com	
	Carlton Gideon	Mid-East Commission	Planner	cgideon@mideastcom.org	<i>Carlton Gideon</i>
	Tina Taylor	Town of Aurora	Commissioner	gmatbtaylor@gmail.com	
	Charles Cannon	COST Community Group	Community	Charlescannon112@gmail.com	
	Joe Calhoun	COST Community Group	Community	Jcalh29726@aol.com	
	Martyn Johnson	Beaufort County	Economic Development Director	Martyn.johnson@beaufortedc.com	<i>Martyn Johnson (online)</i>
	Jamie Heath	Mid-East Commission	Contractor	jheath@mideastcom.org	<i>Jamie Heath</i>
	Lisa Williams	Mid-East Commission	Contractor	lwilliams@mideastcom.org	
	Paige Cureton	RK&K	Contractor	pcureton@rkk.com	
	Tris Ford	RK&K	Contractor	tford@rkk.com	







**Community Action Team**  
Meeting #4 Materials



# TOWN OF AURORA / RICHLAND TOWNSHIP

Community Action Team - Meeting #4

## AGENDA

Thursday, Dec. 16, 2021, 10:00 AM - 12:00 PM

Location: Aurora Town Hall, 295 Main St. Aurora, NC 27806 + Virtual via Zoom

**10:00 – 10:05 AM**

### **Welcome/Introductions**

**10:05 – 10:20 AM**

### **Resiliency Strategy Framework**

- Discuss strategy areas
- Review strategy types/core approaches and benefits
- Discuss example strategies

**10:20 – 10:40 AM**

### **Draft Resiliency Strategies**

- Review community assets with high vulnerability indices
- Review community assets identified by CAT/public survey
- Discuss draft master list of resiliency strategies by type
- **Reference:** Pamlico Sound HMP Actions

**10:40 – 11:10 AM**

### **Interactive Exercise**

- Partner to review draft strategies
- Identify your team's top 10 strategies + new/revised strategies
- Report out to group

**11:10 AM - NOON**

### **Master Strategy List**

- Discuss results of interactive exercise
- Revise draft master list of resiliency strategies by type
- Discuss next steps

**NOON**

### **Adjournment**

Draft Strategy		Related Asset	Strategy Area							Strategy Approach				
#	Strategy Description	Related Community Asset	Policy / Regulatory	Staffing, Funding & Resources	Education & Public Information	Emergency Services	Infrastructure	Nature-Based	Hybrid	Avoid	Accommodate	Protect	Retreat	Build Adaptive Capacity
1.	Conduct a study to evaluate alternatives for improving the WWTP.	WWTP		x										x
2.	Restore the wetland WWTP.	WWTP/Wetland						x				x		
3.	Relocate the WWTP.	WWTP					x		x				x	
4.	Elevate sides of WWTP and wetland restoration.	WWTP/Wetland							x			x		x
5.	Develop an education program at the WWTP.	WWTP			x									
6.	Improve the WWTP with trails / amenities as part of an overall project.	WWTP							x					x
7.	Design a maintenance plan to clean out drainage ditches and tributaries.	General						x			x	x		
8.	Develop easements to maintain drainage ditches and tributaries.	General	x								x	x		
9.	Implement a stormwater ordinance.	General	x											x
10.	Implement a bioswale policy.	General	x											x
11.	Implement a pervious surface policy.	General	x											x
12.	Implement a stormwater utility.	General	x											x
13.	Evaluate zoning and subdivision regulations for changes to zoning districts to account for flooding (special districts with restrictive zoning may be needed to begin disinvestment in vulnerable areas).	General	x							x	x			
14.	Create elevated County review procedures for future projects in vulnerable areas, limiting or prohibiting new development or infrastructure in areas that are particularly vulnerable.	General	x							x				
15.	Evaluate permitted uses for zoning districts (make informed decisions about uses that will add infrastructure to vulnerable areas)	General	x											x
16.	Assess setbacks in all zoning districts.	General	x							x				
17.	Set up processes for transfer of development rights, conservation easements, and/or setback requirements.	General	x							x				
18.	Assess requirement for minimum lot sizes/land use to reduce structures in vulnerable areas.	General	x							x				
19.	Participate in the National Flood Insurance Program (NFIP) Community Rating System (CRS).	General	x											x
20.	Evaluate the feasibility of land acquisition by government, communities, businesses, or non-profit organizations of vulnerable parcels for permanent protection and management.	General	x										x	
21.	Evaluate the relocation or buy out potential of structures and infrastructure in vulnerable areas.	General	x										x	
22.	Install backflow valve/tide gates on stormwater drains.	General					x				x	x		
23.	Allow coastal wetlands to migrate landward to provide habitat and natural buffer to coastal storms.	Wetlands	x					x		x			x	
24.	Restore island at confluence of Pamlico River and South Creek to control water flow and increase habitat.	General		x				x			x	x		

Draft Strategy		Related Asset	Strategy Area							Strategy Approach				
#	Strategy Description	Related Community Asset	Policy / Regulatory	Staffing, Funding & Resources	Education & Public Information	Emergency Services	Infrastructure	Nature-Based	Hybrid	Avoid	Accommodate	Protect	Retreat	Build Adaptive Capacity
25.	Restore wetlands in the Holland and Deephole Point areas for flood attenuation.	Wetlands						x			x	x		
26.	Restore and connect wetlands along Aurora shoreline.	Wetlands						x			x	x		
27.	Improve tributaries within Township to slow down water.	Streams		x				x	x			x		
28.	Span NC 33 bridge to decrease bottleneck flow of water.	Streams					x				x			
29.	Implement a water flow solution near NC 33 bridge.	Streams									x	x		
30.	Improve building codes (higher electrical outlets).	General – Facilities	x							x				
31.	Implement upstream flood controls on South Creek.	Streams	x				x		x			x		
32.	Conduct wetland and stream restoration south of Bateman Road.	Streams / Wetlands						x			x			
33.	Raise Campbell Creek bridge on Hwy 33.	Streams / Bridges /Roads					x				x			x
34.	Install tide gates looking at confluence of South Creek and Pamlico..	Streams					x					x		
35.	Design and construct walking trails/nature walk behind S W Snowden Elementary a. Tie in with future greenway b. Tie in near Creedmur Road (near Phosphate plant)	General		x			x							x
36.	Conduct education on historical fossil culture (Fossil Trail).	General			x									x
37.	Use phosphate waste (fill) to raise land for future development.	General		x					x			x		
38.	Long term: Shift development to southwest side of town to higher elevations.	General	x										x	
39.	Conduct future planning for development hubs (zoning).	General	x											x
40.	Develop a Master Plan with focus on Climate Change and Growth a. Equitable Opportunity b. Zoning c. Economic Development d. Resiliency, Healthy, and Livable Community	General	x											x
41.	Restore Farmland	Farmland						x			x			
42.	Develop a comprehensive outreach strategy to educate stakeholders about SLR and coastal vulnerabilities and provide continuing education to affected communities and citizens.	General			x									x
43.	Educate workforce on the importance of building resiliency to maintain a healthy local economy.	General			x									x
44.	Identify data gaps and collect necessary data to plan for infrastructure investments that are part of implementation plan for adaptation.	General			x									x
#	Pamlico Hazard Mitigation Plan Strategies	Status Update – In Progress/Complete												
B1	Continue to coordinate all development/planning decisions with review of appropriate CAMA LUP's including stated redevelopment policies and actions.													
B2	Maintain reciprocal mutual aid agreements with surrounding communities for fire protection and emergency response.													



Draft Strategy		Related Asset	Strategy Area							Strategy Approach				
#	Strategy Description	Related Community Asset	Policy / Regulatory	Staffing, Funding & Resources	Education & Public Information	Emergency Services	Infrastructure	Nature-Based	Hybrid	Avoid	Accommodate	Protect	Retreat	Build Adaptive Capacity
B3	Annually evaluate adequacy of existing local early warning and emergency response communications equipment and prepare annual capital improvements plans to improve early warning and communication effectiveness before, during, and following disaster events.													
B4	Develop standard protocols for training/ certification of volunteer staff for shelter management, traffic control, first aid, etc., to improve volunteer response capability during and following disaster events, including coordination with American Red Cross personnel on an annual basis													
B5	Complete an annual evaluation of each designated emergency shelter, including structural inspection, resource inventory, staffing plan, and vulnerability assessment, including coordination with American Red Cross personnel.													
B6	Provide citizens and visitors with maps of evacuation routes which will facilitate the evacuation of the county in case of a hazardous event. This effort will involve the production of hard copy maps for distribution.													
B7	Continue to monitor and establish programs to maintain continuity of government operations through annual review and update of the Continuity of Operations Plan (COOP).													
B8	Continue to support and participate in the directives of the County Emergency Operations Plan (EOP). The EOP includes evacuation procedures and response to hazards not addressed in this plan such as hazardous materials, petroleum products, hazardous waste, nuclear threat/attack, and civil disorder. The County will review and update the EOP annually to ensure that it coordinates with the most recent NCEM and NCOEMS directives.													
B9	Continue to apply for grant funds, allocate local funding, and work with local electric service providers to procure and maintain back-up generators/transfer switches for all critical public facilities, with an emphasis on emergency services facilities, critical water/sewer facilities, and shelter facilities. Evaluate the equipment on a regular basis to assure it continues to meet the needs of the operations occurring at each facility. Backup generators are still needed at the following facilities: Southside High School, S.W. Snowden Elementary School, and John Cotten Tayloe Elementary School.													
B10	Hold an annual public hazard mitigation meeting, attended by the HMPC and participating jurisdictions, to educate the public and elected officials and receive comments about the location of high-risk facilities/development, the jurisdictions' overall vulnerability to natural and man-made hazards, and the jurisdictions' hazards mitigation efforts.													
B11	Maintain the Hazard Mitigation Planning Committee (HMPC) and hold annual HMPC meetings to continue relationship-building and communicate about mitigation measures taking place throughout the community.													
B12	Maintain continual 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) Identification of critical electrical facilities needing retrofit or upgrade and map with elevation reference marks; 3) Identification of problem areas and potential solutions; and 4) Communication with county officials during and immediately after a natural hazard event that results in loss of electrical power													

Draft Strategy		Related Asset	Strategy Area							Strategy Approach				
#	Strategy Description	Related Community Asset	Policy / Regulatory	Staffing, Funding & Resources	Education & Public Information	Emergency Services	Infrastructure	Nature-Based	Hybrid	Avoid	Accommodate	Protect	Retreat	Build Adaptive Capacity
B13	Monitor trees and vegetation on publicly owned property to assure that no property or utility damage will occur as a result of diseased or dying trees or other vegetation. This strategy only applies to the municipal jurisdictions.													
B14	Continue to maintain all property acquired with public mitigation funds within the Special Flood Hazard Area (SFHA) as undisturbed open space in perpetuity. Continue to pro-actively establish open space within the floodplain and floodway as grant funds become available to carry out this initiative.													
B15	Integrate new greenway and public park improvements into comprehensive planning and capital improvement efforts (including coordination with all local certified CAMA Land Use Plans).													
B16	Annually review local floodplain ordinances to provide improved flood protection standards and require freeboard for retrofitting and new construction as required by NC State Building Code. The County will consider establishing a freeboard requirement.													
B17	Maintain current listings of Severe Repetitive Loss properties and conduct annual outreach activities to encourage homeowners to participate in FEMA sponsored residential acquisition and elevation programs; continue to apply for HMGP/HMA funding for residential acquisition and elevation.													
B18	Encourage County Commissioners and elected officials of non-CRS communities to participate in the Community Rating System													
B19	Continue to work with local real estate agencies and manufactured home vendors to ensure that agents are informing clients when property for sale is located within an SFHA. The county will provide these agencies with brochures documenting the concerns relating to development located within the flood prone areas and ways that homeowners may make their home more disaster resistant to strong winds, lightning, and heavy rains.													
B20	Make information regarding hazards and development regulations within floodplains available through the following: 1) Ensure that local libraries maintain information relating to flooding and flood protection, 2) Provide a link on the municipal website to FEMA resources addressing flooding and flood protection, evacuation procedures, disaster preparedness, and post-disaster recovery, and 3) Provide website links to relevant hazard mitigation measures.													
B21	Promote national "awareness" weeks (i.e., hurricane preparedness, severe weather preparedness, etc.) through local media. ("Awareness" weeks are listed on the National Weather Service website at <a href="http://www.nws.noaa.gov/os/severeweather/severewx.cal.shtml">http://www.nws.noaa.gov/os/severeweather/severewx.cal.shtml</a> )													
B22	Educate the general public to the importance of weather alert radios and systems that can operate on alternative power and can provide up-to-the-moment information regarding locations of severe storms and possible tornadoes													
B23	Maintain a Hazardous Material Action Plan that addresses the proper containment of spills, etc. This effort will be coordinated with the county LEPC.													
B24	Monitor natural and man-made drainage structures to ensure they are clear and functioning properly; prioritize needed drainage projects and review funding alternatives annually.													

Draft Strategy		Related Asset	Strategy Area							Strategy Approach				
#	Strategy Description	Related Community Asset	Policy / Regulatory	Staffing, Funding & Resources	Education & Public Information	Emergency Services	Infrastructure	Nature-Based	Hybrid	Avoid	Accommodate	Protect	Retreat	Build Adaptive Capacity
B25	Continue to coordinate annually with the NC Forestry Division to address the threat of wildfire throughout the County. These efforts will involve posting of the daily fire risk present within the County on the County website daily. Additionally, the County will distribute and make information available regarding County methods for mitigating fire hazards.													
B26	Maintain Debris Removal and Monitoring Services Contracts for post-disaster response. These services should focus on preparing documentation necessary to ensure full reimbursement of cost associated with community cleanup and immediate infrastructure restoration.													
B27	Work to implement all strategies outlined within the Hurricane Matthew Resilient Redevelopment Plan.													
#	Community Ideas and Strategies													

**Aurora High Risk Assets**

- Potter Oil
- Town of Aurora System Wells (Well #1/Well #2)
- Town of Aurora Wastewater Treatment Plant
- Roads
- Aurora Ferry Terminal
- Wetlands
- Streams

## 6. ADAPTATION STRATEGIES

Generally, adaptation means adjusting to new conditions and taking steps to mitigate, manage, and avoid the worst possible consequences of the effects of SLR and coastal hazards. Adaptation strategies can be actions to prepare for SLR and coastal hazards in a specific location, such as raising structures out of flood-prone areas or building dikes to keep water out of low-lying areas. Adaptation strategies can also include planning efforts to avoid placement of new infrastructure in vulnerable areas. Additionally, building the capacity to adapt can also serve as a strategy. This can include increasing the availability of data, technical expertise, funding, regulations, coordination, public support, etc. that will allow for selection and implementation of adaptation strategies.

Proactive SLR/coastal hazard planning and incorporation of SLR scenarios into plans for new development, redevelopment, and capital projects not only allows the County to build resiliency in the short-term, but also minimizes the need for more costly upgrades in the future. It can also increase the expected lifespan of infrastructure and support sustainability of natural resources and agriculture.

Strategies presented herein are intended to provide guidance and recommendations to QACO staff for implementation at the County level. Some strategies are more prescriptive than others with the intention that any recommendations will ultimately be developed by the County for implementation. Adaptation planning and implementation plans should be adjusted and improved as more information becomes available.

Adaptation strategies are often grouped into the following categories:

1. **Avoid** – Avoidance strategies seek to limit new development or infrastructure in vulnerable areas.
2. **Accommodate** – Accommodate strategies acknowledge the long-term effects of SLR and coastal hazards, while implementing short-term measures to maintain the existing use of a resource. These strategies decrease the risks of SLR without using potentially more costly protection strategies.
3. **Protect** – Protection adaptation strategies focus on protecting land from inundation or storm-induced flooding through construction of larger, longer-lasting projects such as building levees or raising elevations of roadways and other utilities.
4. **Retreat** – Retreat adaptation strategies allow for natural shore migration through land conservation and planned relocation of structures and other infrastructure.
5. **Build Adaptive Capacity** – The strategy of building adaptive capacity is not a solution in itself but is critically important to provide the data and knowledge to inform the aforementioned adaptation strategies. Communities with more capacity to adapt to SLR and coastal flooding are able to react quickly and make informed decisions.
6. **No Action** – The no-action strategy is the default strategy for communities that do not proactively plan for SLR and coastal flooding. This un-planned retreat results in loss of habitat and infrastructure that are imminent or have already occurred, leaving few viable options for adaptation. This adaptation strategy is not discussed further in this document and is not recommended herein for any identified vulnerable resources.

The following are adaptation strategies that can be used Countywide:

## Avoid

- Create elevated County review procedures for future projects in vulnerable areas, limiting or prohibiting new development or infrastructure in areas that are particularly vulnerable.
- Allow coastal wetlands to migrate landward to provide habitat and natural buffer to coastal storms.
- Set up processes for transfer of development rights, conservation easements, and/or setback requirements.

## Accommodate

- Provide regulatory incentives that encourage SLR and coastal flooding adaptation and allow for innovative projects.
- Encourage elevation of habitable structures above the base flood elevation plus SLR and/or encourage flood-proofing of vulnerable structures.
- Incorporate development standards and regulations that are more stringent than current regulations and that allow for SLR, such as additional freeboard requirements for new construction and/or redevelopment.
- Foster pilot projects that demonstrate the effectiveness of adaptation actions of agricultural lands affected by SLR and coastal flooding through conversion to tidal marsh systems.
- Create redundancy for at risk infrastructure and emergency services

## Protect

- Designate critical shoreline zones for adaptation action and evaluate projects such as living shorelines, thin layer dredge disposal on tidal marshes, and beach nourishment that help to preserve a static shoreline in critical areas.
- Require all infrastructure project planning to incorporate SLR.
- Consider the use of levees, dikes, floodwalls, flood gates, tide gates, and other structural means to protect vulnerable areas.
- Identify and preserve areas for potential wetland migration.
- Flood-proof infrastructure

## Retreat

- Allow for natural shoreline migration through land conservation and removal of structures that prevent shoreline movement.
- Evaluate the relocation or buy out potential of structures and infrastructure in vulnerable areas.
- Evaluate the feasibility of land acquisition by government, communities, businesses, or non-profit organizations of vulnerable parcels for permanent protection and management.

## Build Adaptive Capacity

- Engage broad public participation in adaptation decisions.
- Improve coordination of permit decisions for adaptation projects among federal, state and local officials.



- Create new partnerships to increase resources for research and development of adaptation options, such as with adjacent Counties, non-government organizations (NGOs), local universities, and state/federal agencies.
- Conduct a comprehensive inventory of funding mechanisms, regulations and policies to remove barriers that prohibit opportunities for SLR and coastal hazard adaptation.
- Consider cost-sharing projects with state and federal agencies, such as SHA, that are mutually beneficial in increasing resiliency for resources with common interests.
- Develop a framework for decision making regarding land protection and restoration strategies based on wetland and habitat vulnerability that would include restoration, protection, and retreat strategies.
- Evaluate the benefits and risks of permitting privately-owned coastal impoundments and evaluate procedures for inspection and maintenance of such impoundments.
- Develop a comprehensive outreach strategy to educate stakeholders about SLR and coastal vulnerability and provide continuing education to affected communities and citizens.
- Install tide gauges and salinity observation stations to monitor changes over time.
- Encourage FEMA to incorporate SLR into their flood models and mapping.
- Develop additional datasets to assess vulnerability of SLR and coastal flooding.
- Identify data gaps and collect necessary data to plan for infrastructure investments that are part of implementation plan for adaptation.
- Improve understanding of impacts to adjacent properties from adaptation actions.
- Provide technical assistance to NGOs, local governments, business owners, and residents.
- Perform an assessment and analysis of funding options for adaptation measures.
- Develop a plan for prioritization of adaptation actions.
- Plan early for SLR and increased coastal flooding.
- Develop a training budget for County employees to receive continued training and understand the best available science and technology for decision making.
- Employ FEMA Community Rating System (CRS) activities

## 7. RECOMMENDED ADAPTATION STRATEGIES

The impacts discussed in the Vulnerability Assessment from SLR and coastal hazards will not be experienced all at once in the years 2050 or 2100. Adaptation and increasing resiliency needs to be an ongoing effort to combat impacts that are being seen and felt incrementally. Many of the data gaps identified and recommended additional evaluation highlight the need for planning, building adaptive capacity, and incorporating adaptation strategies. This Vulnerability Assessment has compiled a large amount of data but additional site-specific or resource-specific data may be needed before adaptation measures can be implemented in a particular location or for a particular resource.

Avoid, accommodate, retreat, protect, and build adaptive capacity strategies can be undertaken simultaneously to meet the goals of reducing vulnerability to SLR and coastal flooding and increasing resiliency of County resources. It is important to assess and monitor adaptation strategies over time and update longer-term plans to incorporate lessons learned, new data, changing public perceptions, and reflect changing conditions.

Short-term action strategies address the immediate needs of the County to build resiliency and protect against SLR and coastal flooding. These are typically strategies to either provide temporary protection of resources or planning activities for more permanent protection. Short-term action strategies should include evaluation of regulatory changes for development, flood proofing of existing resources, incorporation of SLR in planning for future capital projects, and continued efforts to build adaptive capacity.

Medium-term action strategies begin to implement short-term planning studies and increase the level of protection in the County. Long-term strategies aim to create more permanent solutions and resiliency to achieve lasting protection throughout the County. Monitoring and assessment of previously implemented strategies should be continued for medium- and long-term strategies and adjustments made as new data becomes available. Lessons learned should continually be evaluated and incorporated into planning and implementation of revised strategies. Building adaptive capacity should continue long-term.

Table 46, Table 47, and Table 48 provide recommended short-term, medium-term, and long-term adaptation strategies for public safety and infrastructure resources respectively and Table 49, Table 50, and Table 51 provide recommended short-term, medium-term, and long-term adaptation strategies for natural resources and land use respectively.

**TABLE 46: PUBLIC SAFETY AND INFRASTRUCTURE SHORT -TERM ADAPTATION STRATEGIES**

<b>AVOID</b>	<b>ACCOMODATE</b>	<b>PROTECT</b>	<b>RETREAT</b>	<b>BUILD ADAPTIVE CAPACITY</b>
<ul style="list-style-type: none"> <li>• Increase building set-back distances</li> <li>• Identify opportunities for voluntary conservation easements</li> <li>• Create elevated County review procedures for projects in vulnerable areas</li> <li>• Evaluate process for transfer of development rights</li> <li>• Coordinate with private utility companies to incorporate SLR</li> <li>• Encourage FEMA to update Flood Insurance Rate Maps (FIRMs) to include SLR and re-map riverine flooding with SLR effects</li> <li>• Encourage FEMA to update FIRMs to include impacts to storm surge modeling based on SLR</li> </ul>	<ul style="list-style-type: none"> <li>• Improve emergency evacuation plans based on SLR projections</li> <li>• Evaluate boat transportation emergency routes to areas isolated by inundation</li> <li>• Flood-proof at-risk structures</li> <li>• Evaluate regulatory incentives that encourage SLR and coastal flooding adaptation</li> <li>• Evaluate mobile capabilities and mutual aid backup of emergency services</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate feasibility of levees and other structural measures to protect vulnerable areas</li> <li>• Identify targeted areas to be protected</li> <li>• Evaluate and determine regulatory elevations for vulnerable areas</li> <li>• Coordinate SLR adaptation with SHA</li> <li>• Evaluate elevation of critical component elevations of wastewater and water treatment/ transmission facilities</li> <li>• Coordinate development and Capital Improvement plans to address as many affected resources as possible</li> </ul>	<ul style="list-style-type: none"> <li>• Identify areas of high vulnerability</li> <li>• Evaluate relocation potential of structures and infrastructure in vulnerable areas</li> <li>• Evaluate feasibility of land acquisition of vulnerable parcels</li> <li>• Purchase frequently flooded areas and remove structures</li> </ul>	<ul style="list-style-type: none"> <li>• Improve coordination with Federal, State, and Local officials</li> <li>• Create new partnerships to increase resources for research and development of adaptation options</li> <li>• Conduct comprehensive inventory of funding mechanisms, regulations, and policies to remove barriers to SLR adaptation</li> <li>• Provide technical assistance to local governments, business owners, and residents</li> <li>• Develop a prioritization plan of adaptation actions</li> <li>• Evaluate socio-economic impact of SLR</li> <li>• Participate in FEMA’s Community Rating System and employ CRS activities</li> </ul>

**TABLE 47: PUBLIC SAFETY AND INFRASTRUCTURE MEDIUM -TERM ADAPTATION STRATEGIES**

AVOID	ACCOMODATE	PROTECT	RETREAT	BUILD ADAPTIVE CAPACITY
<ul style="list-style-type: none"> <li>• Implement conservation easements</li> <li>• Monitor set-back requirements</li> <li>• Limit or prohibit new infrastructure in vulnerable areas</li> <li>• Implement transfer of development rights</li> <li>• Require private utilities to build new infrastructure outside of vulnerable areas</li> <li>• Incorporate new studies from FEMA and updated FIRMs</li> </ul>	<ul style="list-style-type: none"> <li>• Develop plans for mobilization of emergency management services</li> <li>• Require additional freeboard of new homes above the base flood elevation</li> <li>• Incorporate regulatory incentives for innovative projects that adapt to SLR and coastal flooding</li> <li>• Improve boat access for emergency evacuation services</li> </ul>	<ul style="list-style-type: none"> <li>• Require roads to be elevated to provide access to new development and targeted protection areas</li> <li>• Require new development to protect against regulatory elevations in vulnerable areas</li> <li>• Evaluate impacts to adjacent properties from adaptation actions</li> <li>• Coordinate elevation of evacuation routes/ bridges with SHA</li> <li>• Retrofit wastewater and water treatment/ transmission facilities as needed</li> <li>• Elevate wastewater manholes above anticipated SLR and flood elevations to prevent inundation</li> </ul>	<ul style="list-style-type: none"> <li>• Create a special funding mechanism for purchase of frequently flooded structures</li> <li>• Purchase frequently flooded areas and remove structures</li> <li>• Implement rolling easements</li> </ul>	<ul style="list-style-type: none"> <li>• Engage public participation in adaptation decisions</li> <li>• Implement cost-sharing projects with State and Federal agencies</li> <li>• Update Multi-Jurisdictional Hazard Mitigation Plan, Floodplain Management Plan, Zoning Ordinance, Comprehensive Plan, and Capital Improvement Plan to address SLR</li> <li>• Continue FEMA’s CRS program and employ CRS activities</li> <li>• Identify grant opportunities to incorporate SLR adaptation projects</li> </ul>

**TABLE 48: PUBLIC SAFETY AND INFRASTRUCTURE LONG -TERM ADAPTATION STRATEGIES**

AVOID	ACCOMODATE	PROTECT	RETREAT	BUILD ADAPTIVE CAPACITY
<ul style="list-style-type: none"> <li>• Continue monitoring set-back compliance</li> <li>• Monitor conservation easements</li> <li>• Continue limiting or prohibiting new resources in vulnerable areas</li> <li>• Monitor transfer of development rights procedures and adjust as needed</li> </ul>	<ul style="list-style-type: none"> <li>• Construct new infrastructure projects above the vulnerable elevation</li> <li>• Monitor SLR and coastal flooding effects on infrastructure and adjust regulatory requirements</li> <li>• Continue monitoring regulatory incentives for projects incorporating SLR</li> </ul>	<ul style="list-style-type: none"> <li>• Elevate roadways in targeted protection areas</li> <li>• Retrofit wastewater and water treatment facilities as needed for protection against inundation</li> <li>• Adjust adaptation actions to protect adjacent properties</li> <li>• Coordinate elevation of evacuation routes/ bridges with SHA</li> </ul>	<ul style="list-style-type: none"> <li>• Purchase frequently flooded areas and remove structures</li> <li>• Monitor rolling easement compliance</li> <li>• Remove structures that prevent shoreline movement</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate adaptive capacity and adapt as necessary</li> <li>• Employ FEMA CRS activities</li> </ul>



**TABLE 49: NATURAL RESOURCES AND LAND USE SHORT -TERM ADAPTATION STRATEGIES**

<b>AVOID</b>	<b>ACCOMODATE</b>	<b>PROTECT</b>	<b>RETREAT</b>	<b>BUILD ADAPTIVE CAPACITY</b>
<ul style="list-style-type: none"> <li>• Identify opportunities for voluntary conservation easements</li> <li>• Evaluate changes to zoning</li> </ul>	<ul style="list-style-type: none"> <li>• Install salinity observation stations to monitor changes to freshwater resources over time</li> <li>• Evaluate potential crop changes for agricultural areas such as aquaculture</li> </ul>	<ul style="list-style-type: none"> <li>• Identify beaches with high erosion rates</li> <li>• Evaluate living shoreline protection</li> <li>• Identify potential wetland migration areas</li> </ul>	<ul style="list-style-type: none"> <li>• Identify areas of high vulnerability</li> <li>• Identify land conservation areas and protect with easements</li> </ul>	<ul style="list-style-type: none"> <li>• Improve coordination with Federal, State, and Local officials and identify conflicting regulatory requirements</li> <li>• Create new partnerships to increase resources for research and development of adaptation options</li> <li>• Develop framework for decision making regarding land protection and restoration strategies</li> <li>• Evaluate socio-economic impact of SLR</li> </ul>

**TABLE 50: NATURAL RESOURCES AND LAND USE MEDIUM -TERM ADAPTATION STRATEGIES**

<b>AVOID</b>	<b>ACCOMODATE</b>	<b>PROTECT</b>	<b>RETREAT</b>	<b>BUILD ADAPTIVE CAPACITY</b>
<ul style="list-style-type: none"> <li>• Implement conservation easements</li> <li>• Allow coastal wetlands to migrate landward</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor conversion of freshwater wetlands and agricultural land to salt water wetland</li> </ul>	<ul style="list-style-type: none"> <li>• Replenish beaches</li> <li>• Preserve wetland migration areas</li> <li>• Coordinate sand supply from State or Federal dredging projects for reuse</li> </ul>	<ul style="list-style-type: none"> <li>• Create new land conservation areas</li> </ul>	<ul style="list-style-type: none"> <li>• Implement cost-sharing projects with State and Federal agencies</li> <li>• Encourage DNR to continually evaluate and update Critical Area</li> <li>• Identify grant opportunities to incorporate SLR adaptation projects</li> </ul>

**TABLE 51: NATURAL RESOURCES AND LAND USE LONG -TERM ADAPTATION STRATEGIES**

<b>AVOID</b>	<b>ACCOMODATE</b>	<b>PROTECT</b>	<b>RETREAT</b>	<b>BUILD ADAPTIVE CAPACITY</b>
<ul style="list-style-type: none"> <li>• Monitor coastal wetlands and enhance as needed</li> <li>• Monitor conservation easements</li> </ul>	<ul style="list-style-type: none"> <li>• Enhance conversion of freshwater wetlands and agricultural lands to saltwater wetlands</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor wetland migration and identify/ preserve additional wetland migration areas</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor land conservation areas and reassess as needed</li> </ul>	<ul style="list-style-type: none"> <li>• Reassess County’s adaptive capacity and adjust as needed</li> </ul>

## 8. IMPLEMENTATION PLAN

Implementation of the recommended adaptation strategies can best be achieved at the County level through more stringent regulatory requirements and revision of planning documents to incorporate the impacts of SLR and coastal flooding scenarios. The recommended adaptation strategies in Section 6 are intended to be somewhat broad in nature so that they were not unnecessarily prescriptive. However, since specific actions are not proposed herein the County will need to decide which strategies may work best in the County based on funding, political support, socio-economics, regulatory environment, and County agency organization and objectives. For example, the recommendation to “identify targeted protection areas” is an important recommendation since protection of all County resources is not economically feasible, but will require the County to determine how to best allocate funding to protect those areas most critical to the livelihood of the County residents.

The following identifies implementation opportunities through incorporation of SLR and coastal flooding scenarios into county planning and regulatory documents.

### Data Collection to Fill Data Gaps

This report has identified the following data gaps that will help the County plan and update strategies and implementation of projects to build resiliency and protection against SLR and coastal storms:

- First floor building elevations
- Bridge locations and deck elevations
- Road centerline elevations
- Storm drain invert elevations (including outfalls)
- Critical component elevations of wastewater and water treatment facilities
- Locations of private wells
- Locations of septic fields and systems
- Upland forests
- Beaches and dunes
- Saltwater vs. freshwater wetlands
- Piers and boat ramps

These data will be important when prioritizing adaptation strategies, assessing potential projects, allocating funds, and designing and implementing future projects.

### Multi-Jurisdictional Hazard Mitigation Plan

The QACO Multi-Jurisdictional Hazard Mitigation Plan (2012-2017) currently does not address the effects of SLR. Understanding the effects of SLR on hazard mitigation will be important in order for the County to coordinate hazard response; update mitigation goals, objectives, and related actions; and implement hazard mitigation policies, programs, and projects. Incorporating SLR scenarios into mitigation planning will help to protect public safety and property, incorporate cost-savings activities and projects, permit access to federal funding for SLR related projects, and promote effective recovery post-disaster.

SLR should be incorporated into the next revision to properly define the Hazard Identification and Risk Assessment (HIRA), identify mitigation goals, and update execution and maintenance plans for flooding

and hurricanes as well as address the effects of SLR on emergency services and emergency evacuation routes. Adaptive management implementation projects to reduce vulnerability to SPR that are included in the report should be listed in the plan to project the potential for FEMA support/funding for these projects.

## Floodplain Management Ordinance

The QACO floodplain management ordinance incorporates regulations to protect the public health, safety, and general welfare of the community. The statement of purpose includes “meeting” the community participation requirements of the National Flood Insurance Program (NFIP) as set forth in the Code of Federal Regulations (CFR). The floodplain regulations apply to all special flood hazard areas (SFHA) within the jurisdiction of QACO. While the SFHA as shown on the FEMA maps generally encompass the SLR scenarios presented herein, the SFHAs themselves do not incorporate SLR. As sea levels continue to rise, the SFHAs will become incrementally outdated.

The floodplain management ordinance can be modified to incorporate SLR specifically, or through requirements that exceed FEMA’s minimum standards that will ultimately protect against SLR. For example, QACO has identified the flood protection elevation as the base flood elevation plus two (2) feet of freeboard, which is more stringent than FEMA’s minimum requirement of one (1) foot of freeboard. With SLR projections of two (2) to four (4) feet between 2050 and 2100, the flood protection elevation may need to be reevaluated from time to time as actual SLR is monitored.

Additional requirements and/or more-stringent standards should be evaluated with regards to floodplain setbacks, substantial improvements of structures in SFHAs (including repair of substantial damage), and/or building location requirements as it relates to tidal elevations and/or anticipated SLR elevations. These and other more-stringent regulations will help the County accumulate points towards the Community Rating System (CRS) with FEMA. Protecting against future SLR will also build resiliency in today’s storm events.

## Zoning and Subdivision Regulations

QACO Zoning and Subdivision Regulations should be evaluated for comprehensive changes to zoning districts to account for SLR and coastal hazards. Long-range land use plans are the logical place to start adaptation planning and zoning codes can be the strongest potential SLR adaptation regulatory tools. In areas vulnerable to SLR the creation of special districts with restrictive zoning may be needed to begin the orderly disinvestment of those zones over time.

Evaluation of permitted uses by district is recommended, particularly the Countryside District that generally lies within the Critical Area. This may result in permitted uses being revised to conditional uses, or conditional uses being revised to non-permitted uses, to allow the County authority to make informed decisions whether or not to permit uses that will add infrastructure to vulnerable areas.

Increasing setback distances from tidal wetlands will also be an effective tool to build resiliency in mixed-use, commercial, light industrial, and residential uses. Setback distances should be assessed for all districts to evaluate SLR and vulnerable coastal buffers.

Zoning within the areas vulnerable to SLR and coastal flooding, including within FEMA’s effective floodplain could have a requirement for minimum lot sizes or land use to reduce the number of vulnerable structures. This will also contribute to scoring criteria under the CRS.



## Comprehensive Plan

A Comprehensive Plan is an advisory document and should be reviewed and revised as change occurs to cover new challenges. The Queen Anne's County Comprehensive Plan (2010) contains the blueprint for the future development and preservation of the County and the plan is the policy foundation upon which the County is built. Comprehensive plans are not law, however the statutes that require their preparation mandate that all zoning or land use laws must be updated in accordance with the plan to prevent the enactment of arbitrary regulation and ensure the public welfare is being served through legislation implementing the goals of the community.

The Comprehensive Plan expresses long-range goals and objectives of the County and can recommend land uses. This is typically a precursor to changes in Zoning. Without accommodations for SLR and related coastal hazards, many of the coastal areas will not be able to sustain build-out scenarios without putting people and property at risk.

Changes to the Comprehensive Plan may include revisions to ultimate land uses to account for areas vulnerable to SLR and coastal hazards. SLR and coastal hazards have the potential to affect many of the elements of the plan including, but not limited to; land use, sensitive areas, water resources, priority preservation areas, historic and cultural preservation, County/Town planning framework, economic development and tourism, and community facilities and transportation.

## Capital Improvement Plan

County departments typically recommend an annual capital budget while the County Commissioners approve the budget while considering the priorities established by a long-term plan, typically 5, 10, or 20 years. Planning for SLR should be incorporated into all applicable capital improvement design projects leading to design, as well as long-term plans and budgets. Many of these projects are large-scale projects with long design life expectancies. Incorporating SLR will not only build resiliency into future projects, but will provide a cost savings compared to retrofitting a project prior to the end of its useful life expectancy.

This assessment report identifies roads, bridges, wastewater facilities, water facilities, and other potential capital projects that could be affected by SLR and changing coastal hazards. As these impacted resources are scheduled for upgrades, retrofits, and/or replacement, consideration of SLR should be evaluated.

Capital improvement plans also typically identify options for financing the plan. QACO should continue to assess means to finance projects through grants, cost-sharing, and other alternative funding options. Climate change and disaster-related resiliency grants are becoming more available as climate change and SLR are more understood. The U.S. Department of Urban Development (HUD), FEMA, NOAA, NRCS, and other agencies are providing funding for resilient housing, infrastructure, agricultural, and natural resource projects, especially to communities impacted by major disasters.

Cost-sharing can provide mutual benefits from a wide array of partners. Coordination and agreements with SHA may allow roadway projects to incorporate SLR that otherwise may not have addressed vulnerable areas. Sediments dredged from navigation channels in the Chesapeake Bay are many times deposited in upland confined disposal sites. Partnerships can be developed to use dredged spoils to replenish beaches to protect against erosion and/or to elevate tidal marshes to accommodate SLR without inundation of the resource. This can also save money by reducing transportation costs of dredged material. The County may want to evaluate the benefits of a Regional Sediment Management Plan and

Beneficial Use of Dredged Materials in cooperation with the USACE and State of Maryland to plan for, identify, and coordinate potential opportunities.

## Prioritization of Adaptive Management Strategies

Due to the magnitude of the recommendations, the diversity in vulnerabilities, the diversity of resources that are vulnerable, and the realization of funding limitations and capacity – a prioritization strategy should be developed for implementation opportunities. There are a number of means to prioritize adaptive management strategies. Strategies can vary by resource, threat, level of risk, cost of implementation, community, funding, multi-purpose/functions, number of benefactors, or other approaches. The process of setting priorities should be part of the evaluation of how recommendations are incorporated into the various county regulations and plans. Initial prioritized strategies should include staff resources to update plans with recommendations and complete the non-capital opportunities first such as updated mapping, outreach, communication, and avoidance strategies to reduce new vulnerabilities.

## Funding

As noted in the Capital Plan Section, there are traditional funding mechanisms available for implementation projects. These funds are limited and there is extensive competition for the funds. Strategies to pursue these funds and position for high potential for reward should be part of an implementation plan. The need to generate additional funding resources is evident and a strategy to develop those alternative programs is vital to an implementation plan. Many communities are looking into creative fee structures, taxes, public/private partnerships, incentive programs, and the like for needed funding.

## Public Engagement

Many of the recommended adaptation strategies and implementation plan recommendations include actions pertaining to private land and/or use of public funds through private citizen taxes, each with their own opinions of SLR and each with their own interests in mind. Additionally, much of the County's population resides in upland areas that are relatively unimpeded by SLR and coastal hazards. It is important that adaptation strategies are as equitable as possible across the County. It is also important to gain public buy-in to adaptation strategies. This can be accomplished through dissemination of information, hearing and addressing concerns, and implementing unbiased solutions. Town meetings, charrettes, questionnaires, surveys, flyers, and/or other methods of communication can be used to solicit feedback, identify concerns, and implement solutions. Any engagement efforts need to consider use of language and images that the lay public can understand and relate to personally to be effective. Engaging resources to assist in this communication may be beneficial as part of an implementation plan.

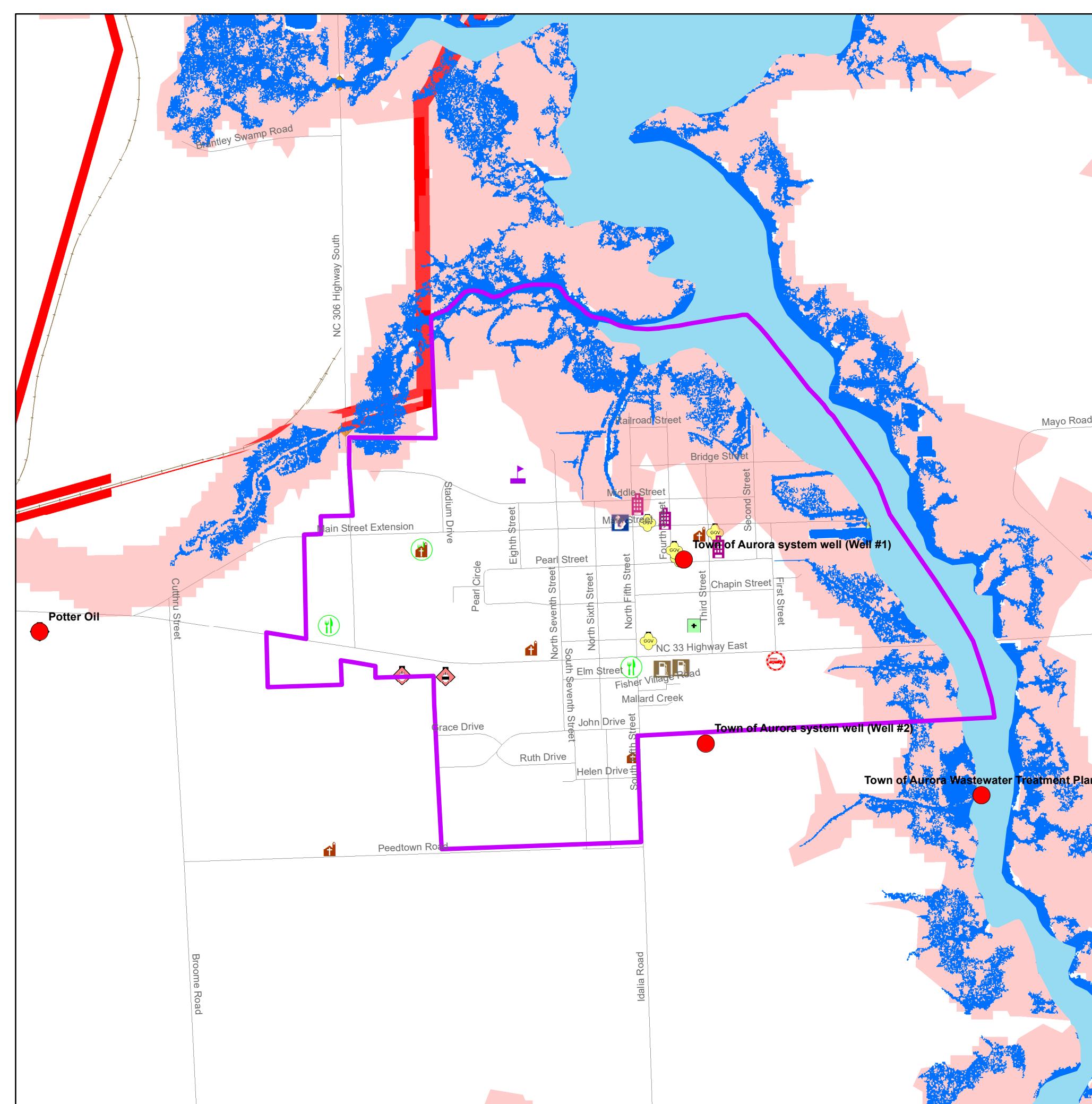
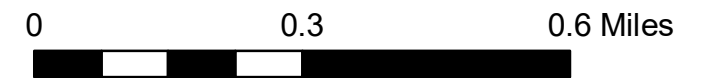
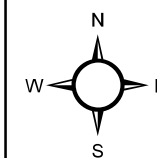
## Timeline

The timeline to implement adaptation strategies to build resiliency is largely dependent on available funding and capacity of QACO staff. Short-term recommendations identified herein should be implemented to the extent practicable now and as planning, permitting, design, and construction progresses within the County. As County planning documents are updated, SLR and coastal hazard adaptation strategies should be incorporated. Medium-term and long-term recommendations should be incorporated as feasible and identified in the prioritization of adaptive management strategies plan.

# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets with Potential Storm Surge for Category 1 Event & 1 ft. Sea Level Rise Scenario

## Legend

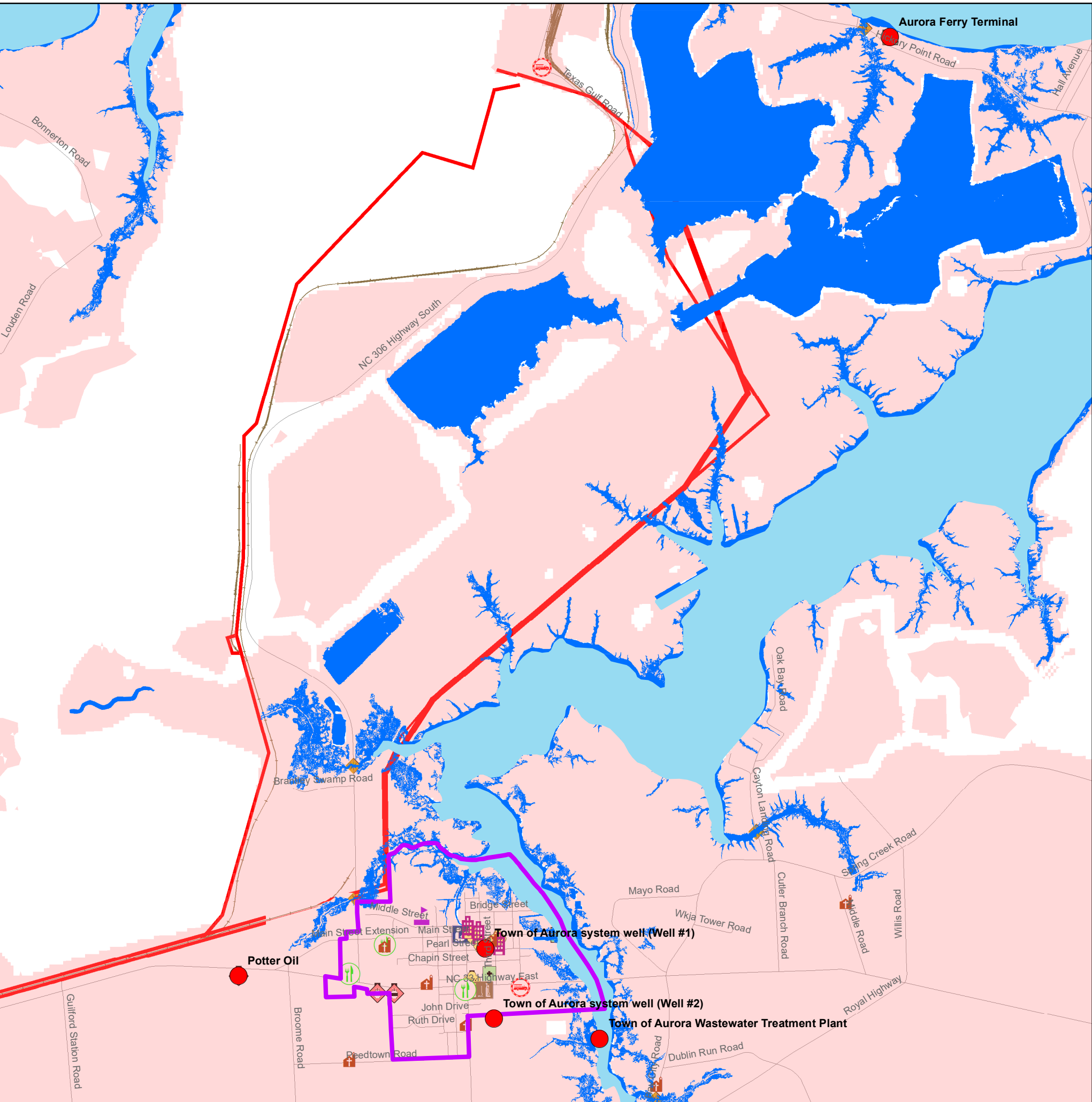
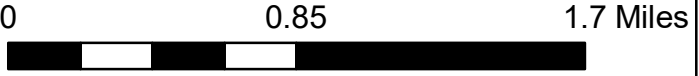
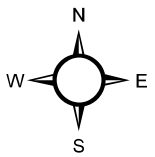
- High Risk Critical Assets
- Aurora Town Limits
- Surface Water
- 1 ft. Sea Level Rise Scenario Area
- CAT1\_Storm\_Surge\_Potential
- 🏠 Churches (71.4% in potential SS area)
- 🏢 Community Buildings and Facilities (75% in potential SS area)
- Duke Transmission Easements (74% in potential SS area)
- 🎓 Education (100% in potential SS area)
- 🚒 Fire and EMS Stations (50% in potential SS area)
- 🍴 Food (60% in potential SS area)
- ⛽ Fuel Stations (50% in potential SS area)
- 🏛️ Government Services (100% in potential SS area)
- 📖 Libraries (100% in potential SS area)
- 🏥 Medical (100% in potential SS area)
- 🛠️ Propane Suppliers (100% in potential SS area)
- 💧 Public Water Supply Wells (100% in potential SS area)
- 🚗 Transportation Facilities (75% in potential SS area)
- 🚰 Wastewater Discharge Permits (None in potential SS area)
- 🚂 Rail
- Road Network (72.4% in potential SS area)
- 🌉 Bridges (76% in potential SS area)
- Beaufort County



# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets with Potential Storm Surge for Category 3 Event & 1 ft. Sea Level Rise Scenario

## Legend

- High Risk Critical Assets
- Surface Water
- 1 ft. Sea Level Rise Scenario Area
- Cat. 3 Event Potential Storm Surge Area
- 🏠 Churches (71.4% in potential SS area)
- 🏢 Community Buildings and Facilities (75% in potential SS area)
- Duke Transmission Easements (74% in potential SS area)
- 🎓 Education (100% in potential SS area)
- 🚒 Fire and EMS Stations (50% in potential SS area)
- 🍴 Food (60% in potential SS area)
- 🛢️ Fuel Stations (50% in potential SS area)
- 🏛️ Government Services (100% in potential SS area)
- 📖 Libraries (100% in potential SS area)
- 🏥 Medical (100% in potential SS area)
- ⛽ Propane Suppliers (100% in potential SS area)
- 💧 Public Water Supply Wells (100% in potential SS area)
- 🚗 Transportation Facilities (75% in potential SS area)
- 🚰 Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (72.4% in potential SS area)
- ⚡ Bridges (76% in potential SS area)
- Aurora Town Limits
- Beaufort County







# Resilient Coastal Communities Program

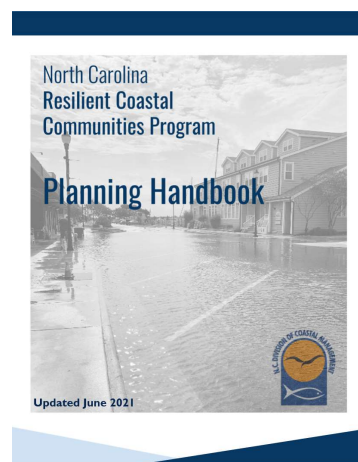
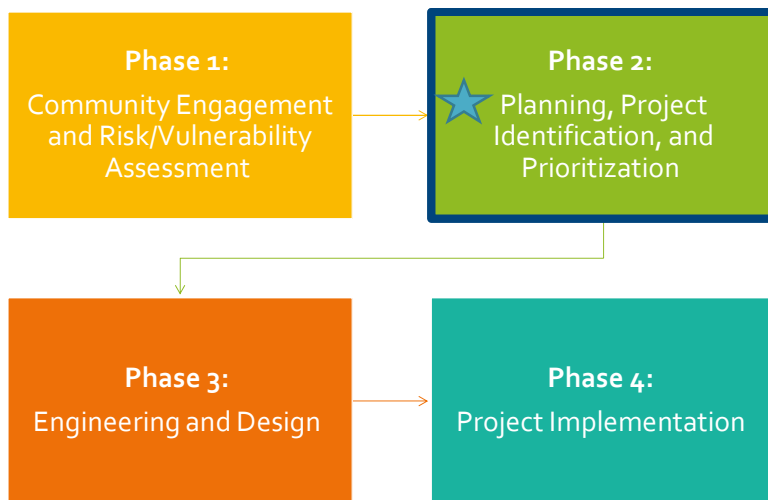
## Community Action Team Meeting #4 Identify a Suite of Potential Solutions

December 15-16, 2021



1

## RCCP Phases

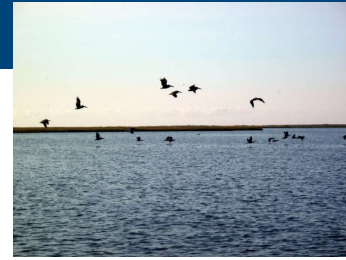


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## RCCP Phase 1 and 2 Steps

- **Phase 1: Community Engagement and Risk/Vulnerability Assessment**
  - ✓ *Step 1 – Develop a Community Action Team*
  - ✓ *Step 2 – Set Vision and Goals*
  - ✓ *Step 3 – Review Existing Plans and Efforts*
  - ✓ *Step 4 – Develop a Community Engagement Strategy*
  - ✓ *Step 5 – Map Critical Assets and Natural Infrastructure*
  - ✓ *Step 6 – Conduct Risk and Vulnerability Assessment*
  
- **Phase 2: Planning, Project Identification, and Prioritization**
  - ★ **Step 1 – Identify a Suite of Potential Solutions**
    - Step 2 – Consolidate and Prioritize Projects
    - Step 3 – Develop the Resilience Strategy Document



3

## CAT Meeting #4 Agenda

- **Welcome/Introductions**
- **Resiliency Strategy Framework**
  - *Strategy areas, approaches, and examples*
- **Draft Resiliency Strategies**
  - *Community assets, draft master list of strategies, Pamlico HMP Actions*
- **Interactive Exercise**
  - *Review strategies, identify top 10 strategies, report out*
- **Master Strategy List**
  - *Discuss results, revise draft master list of strategies, discuss next steps*
- **Adjournment**



4

## **PHASE 2**

### **PLANNING, PROJECT IDENTIFICATION & PRIORITIZATION**

5

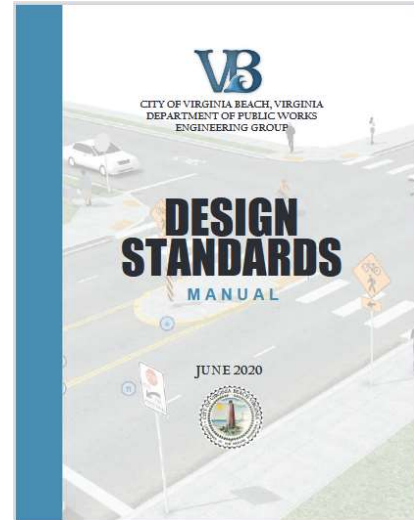
## **Strategy Area – Policy / Regulatory**

- Zoning\* and Subdivision Regulations – evaluate zoning regulations for comprehensive changes to zoning districts to account for SLR and coastal hazards (*\*municipalities*)
  - Create special districts with restrictive zoning
  - Evaluate permitted uses by district
  - Increase setback distances from tidally inundated areas
  - Include impervious surface limitations
  - Consider minimum lot size requirement in floodplains
  - Examine existing regs to ensure they are not limiting innovative techniques
- Floodplain Management Ordinance – consider additional requirements and/or more-stringent standards for floodplain setbacks, substantial improvement in special flood hazard areas, building location requirements

6

## Strategy Area – Policy / Regulatory

- Changes to Design Standards and Building Codes
  - Maryland Climate Ready Action Boundary (CRAB)
  - VA Beach evaluating increased design rainfall intensity
  - FDOT – SLR must be considered in design
- Buy back programs for floodplain restoration
  - City of Charlotte Floodplain Buyout Program
  - NJ Blue Acres Floodplain Acquisitions
- Implement a stormwater utility
  - Washington, NC
  - Greenville, NC



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## Strategy Area – Staffing, Funding & Resources

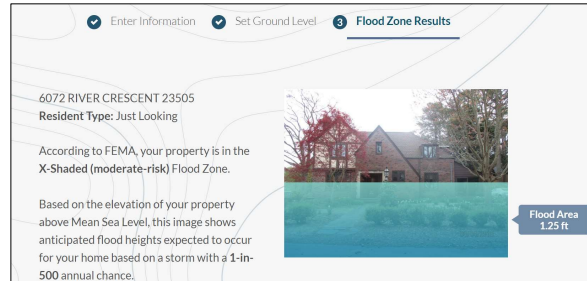
- Increase maintenance staff
- Identify secured funding
- Setup partnerships with local, state, and federal agencies and non-government organizations



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## Strategy Area – Education & Public Information

- Public outreach and education
- Public art projects reflecting historical floods
- Story project that solicits local knowledge to create stories around historical flooding events
- Low Impact Development (LID) centerpiece project in downtown
- Install education placards along boardwalk or established walkways



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## Strategy Area – Education & Public Information

- Publish Quarterly Bulletin with Water Bill
- Partner with community events (fairs and festivals, farmers market)
- Engage local media to highlight resiliency projects or ideas
- Develop a permanent Community Action Team to build on resiliency gains within the communities



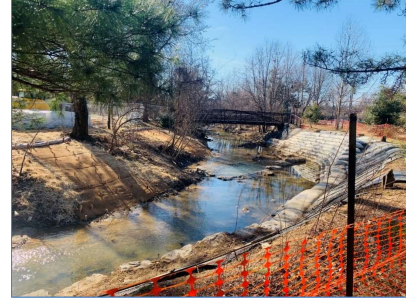
10

## Strategy Area – Infrastructure

- Elevate critical infrastructure and power supply backup
- Shoreline hardening/floodwalls
- Tidal controls (backflow preventers) and pump stations
- Pipe upsizing



Windmill Hill Bulkhead, Alexandria, VA



Emergency stream bank repair, DC

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## Resiliency Project Trends – Response and Hardening

- Emergency repairs, disaster relief, and expedited permitting
- Elevating critical infrastructure and power supply backup
- Shoreline hardening/floodwalls
- Tidal controls (backflow preventers) and pump stations
- Pipe upsizing



Windmill Hill Bulkhead, Alexandria, VA



Emergency stream bank repair, DC

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## Strategy Area – Nature-Based Solutions

- Protect and enhance natural protective functions
- NNBS are a suite of strategies that consider or enhance natural landscape's ability
- Natural infrastructure is green infrastructure
- Protect shorelines using living shorelines and oyster beds
- Habitat uplift through plantings or removing invasive species

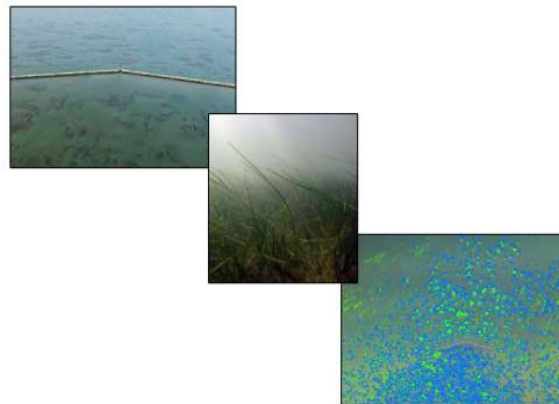


Four Mile Run Wetlands, Alexandria, VA

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## Resiliency Project Trends – Seagrass

- Seagrass transplants and monitoring
- Wave attenuation walls to protect Seagrass
- Protecting Seagrass protects fish population and the fishing culture in eastern North Carolina



Bonner Bridge Wave-break, Oregon Inlet, NC

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## Strategy Area – Hybrid

- Hybrid solutions incorporate grey infrastructure with natural infrastructure
- Repurpose upland property to attenuate peak flow using stormwater devices
- Convert existing ditches to bio-swales
- Dual use recreational and flood attenuation areas

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## Resiliency Project Trends - Softening

- Living shorelines and floodplain reconnection
- Intentional inundation
- Removing infrastructure from floodplains



Read Avenue Living Shoreline, Dewey Beach, DE



Intentional inundation at Atlanta's Fourth Ward Park

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# Draft Strategies – Interactive Exercise

- Partner to review draft strategies
- Identify top ~10 strategies + new/revised strategies
- Report out to group



COMMUNITY  
DRAFT RESILIENCY STRATEGIES

Draft Strategy		Related Assets		Strategy Area					Strategy Approach						
#	Strategy Description	Related Community Asset		Policy / Regulatory	Staffing, Funding & Resources	Education & Public Information	Emergency Services	Infrastructure	Nature-Based	Hybrid	Avoid	Accommodate	Protect	Retreat	Build Adaptive Capacity

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# Draft Strategies – Interactive Exercise Results

- Discuss results
- Revise draft master list of resiliency strategies



COMMUNITY  
DRAFT RESILIENCY STRATEGIES

Draft Strategy		Related Assets		Strategy Area					Strategy Approach						
#	Strategy Description	Related Community Asset		Policy / Regulatory	Staffing, Funding & Resources	Education & Public Information	Emergency Services	Infrastructure	Nature-Based	Hybrid	Avoid	Accommodate	Protect	Retreat	Build Adaptive Capacity

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## Next Steps

### PHASE 2 PLANNING, PROJECT IDENTIFICATION & PRIORITIZATION



- **Step 1:** Identify a Suite of Potential Solutions
- **Step 2:** Consolidate and Prioritize Projects



January & February

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## 2. Consolidate & Prioritize Projects

- Evaluate strategies and their feasibility  January
  - Including cost-benefit estimation
- Consolidate and prioritize strategies (draft)
- Host a public Open House  February
- Finalize strategies

Benefit	
High	Action would have a significant impact on risk reduction
Medium	Action would have an impact on risk reduction
Low	Long-term benefits are difficult to quantify in the short term
Cost	
High	Existing funding is not adequate
Medium	Requires budget reappropriation or amendment
Low	Funding available under the existing budget



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## 2. Consolidate & Prioritize Projects

- Narrow down actions
- Identify at least five (5) priority projects for each community
- Organize project information using this template



Organize information for each project in the portfolio using the following template:

<b>Project Name</b>	<i>Come up with a brief title for the project</i>
<b>Project Description</b>	<i>Describe project, including information gathered during project development</i>
<b>Hazard(s) addressed by project</b>	<i>List hazards specific to this program which impact the project location</i>
<b>Type of Solution</b>	<i>Infrastructure, Plans and policies, Ordinances, Non-regulatory programs, Other (describe)</i>
<b>Project Estimated Cost</b>	<i>Estimate total cost of project</i>
<b>Potential Implementation Funding Sources</b>	<i>Identify potential sources for project/action implementation</i>
<b>Projected Estimated Timeline</b>	<i>Estimate length of time project will take to complete and any expected delays in the timeline</i>
<b>Priority Rating</b>	<i>High, Medium, Low</i>
<b>Project Map</b>	<i>Provide a map of the project site</i>

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## 3. Develop a Resiliency Strategy Document

- Vision & Goals
- Community Action Team
- Stakeholder Engagement Strategy
- Review of Existing Local & Regional Efforts
- Risk and Vulnerability Assessment Report
- Project Portfolio
- Additional Files (e.g., mapping, Excel spreadsheets)

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## APPLICATION: Phase 3: Engineering & Design

- Top Nature-Based/Hybrid Project (1 project per community)
- Phase 3 Application  Anticipated: January-February Opening, Mid-March Deadline
- Approximately \$40k funding per community
  - Consider project scale with available funding

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**Thank you for participating in CAT Meeting #4.**



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# TOWN OF AURORA & RICHLAND TOWNSHIP

## Community Action Team - Meeting #4

### MEETING SUMMARY

THURSDAY, DECEMBER 16, 2021, 10:00 AM - 12:00 PM, AURORA TOWN HALL + VIRTUAL

#### Meeting Purpose:

- To discuss the resiliency strategy framework and draft resiliency strategies, including holding an interactive exercise.
- Refer to attached meeting agenda.

#### Attendees:

- Refer to attached meeting sign-in sheet.

#### Materials:

- Refer to attached materials:
  - Draft hazards maps
    - High risk and other critical assets overlaid with Cat. 1 event potential storm surge and 1 ft. sea level rise.
  - Draft resiliency strategies spreadsheet
  - Queen Anne County Resiliency Plan example strategies

#### Meeting Discussion:

##### Resiliency Strategy Framework

- The resiliency strategy framework was reviewed. Strategy areas included policy/regulatory, staffing, funding & resources, education & public information, emergency services, infrastructure, and hybrid. Strategy approaches included avoid, accommodate, protect, retreat, and build adaptive capacity. Example strategies and projects were reviewed as well.

##### Draft Resiliency Strategies

- The draft resiliency strategies spreadsheet for Aurora-Richland was reviewed. The team held a discussion while reviewing the draft strategies.
- Behind the railroad track there is garbage in the stream. It was an old dump site.
- Housing is important. Can it be worked into a strategy?
- A community parking lot with cameras that doesn't flood could be added as a strategy to help residents protect vehicles during storms.
- Related items should be packaged as projects. All wastewater treatment plant related projects could be combined into one. Ditching strategies could be combined. Permitting, zoning, studies, and acquisition strategies could be combined. Highway 33, bridges, and strategies involving NC DOT coordination could be combined.
- For number 2, ditches also need to be mapped.

- Intentional inundation/water farming upstream could be added as a strategy. The question is where it would be located. Landowner partnership required.
- For wastewater treatment plant, the largest pond needs to be relined and the sludge needs to be cleaned out. This should be part of strategy.
- Pervious surface policies could possibly be worked into zoning or subdivision ordinances.
- Typo in number 14, should say town rather than county.
- The island referenced in number 24 is called Indian Island. Nutrien owns it.
- Could add a strategy to coordinate with Nutrien. They need mitigation credits. Could possibly be coordinated with a park including public education.
- Nutria (the invasive animal) are causing problems at the wetland portion of the wastewater treatment plant.
- A strategy regarding drought and saltwater intrusion into private wells in the township could be added as a strategy. This is not an issue with the town's water supply wells (they are deep).
- A strategy could be added for trees on Duke electric lines. It could possibly be tied in with maintenance strategies such as ditching.
- Bay City Rd. / Bateman Rd. Bridge gets cut off by flooding.
- Could add a strategy about what individual homeowners can do towards resiliency. Individual homeowners can be connected to resources such as roof grants.
- Number 28 is referencing the Campbell Creek Bridge.
- Number 34 should say outfalls rather than confluence.
- Number 38 should read concentrate density to south and west side of town, rather than shift development there. It should be noted as a constraint that Nutrien has purchased a lot of the land as mitigation.
- Number 40 (develop a master plan) is in progress.
- Number 41 (restore farmland) is a low priority.
- Number 42 (SLR education) can leverage already available resources through the Division of Coastal Management.
- Each team member was provided a copy of the draft resiliency strategies spreadsheet, which served as their worksheet for the interactive exercise.
- Each person was asked to select their top 10 strategies, and if applicable, to select any strategies which should be changed or removed from the list. Team members shared their top 10 strategies with the group.

### **Pamlico Sound Hazard Mitigation Plan Strategies**

- The Beaufort County strategies from the 2020 update of the Pamlico Sound Regional Hazard Mitigation Plan were reviewed.
- Strategy B1, CAMA Land Use Plan coordination, should be moved up as a strategy in the Resilient Coastal Communities Program.
- Strategy B12, maintain continual contact/working relationship with electric service providers... should be moved up as a strategy in the Resilient Coastal Communities Program. Issues with trees on Duke lines can be worked into this.
- The team had a brief discussion on the current status of strategies from the Pamlico Sound Hazard Mitigation Plan.
- Some items are handled by Beaufort County Emergency Management.

### High Risk Critical Assets / Hazards Map

- The list of identified high risk critical assets were reviewed.
- The draft hazards map with high risk critical assets labeled was reviewed. The Queen Anne County Resiliency Plan example was provided as a resource. The team was given time to brainstorm additional projects and add them to their worksheet.
- A “town flood control” package is desired. Multiple projects can be combined and this package can be used to go after larger funding sources.

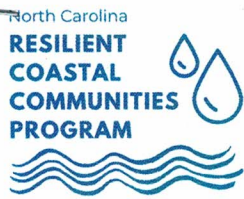
### Other Notes

- The ditch at the Industrial Park has been determined to be “waters of the US” because it is tidal influenced.
- There is a large underserved population and many mobile homes in the flood hazard area of town.
- John Prescott would be a good contact with Nutrien.
- The town is currently on the county’s CAMA land use plan. They will need to created their own LUP, or update their section of the county’s LUP to be more relevant to the town, in order to be compliant with 160d.

### Master Strategy List

- Feedback from the community action team’s discussion, as well as feedback from collected worksheets, will be incorporated into Belhaven’s draft Master Strategy List.

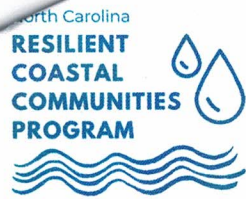




# MEETING SIGN-IN SHEET

**Title** Town of Aurora Community Action Team – Meeting 4  
**Date** Dec. 16, 2021 **Time** 10:00 AM – 12:00 PM **Location** Aurora Town Hall

✓	Name	Organization	Title/Role	Email	Signature
	Judi Lannon	Town of Aurora	Town Manager	townofaurora@auroranc.org	<i>Judi Lannon</i>
	Chuck Bonner	Town of Aurora	Public Works Director	aurorapwd@auroranc.org	<i>Chuck</i>
	Curt Hendrix	Town of Aurora	Recreation Coordinator	aurorarec@embarqmail.com	<i>Curt</i>
	Kurt Ryan	Town of Aurora	Volunteer	Ryankj88@gmail.com	<i>KIR</i>
	Carlton Gideon	Mid-East Commission	Planner	cgideon@mideastcom.org	<i>JCB</i>
	Tina Taylor	Town of Aurora	Commissioner	gmatbtaylor@gmail.com	
	Charles Cannon	COST Community Group	Community	Charlescannon112@gmail.com	
	Joe Calhoun	COST Community Group	Community	Jcalh29726@aol.com	
	Martyn Johnson	Beaufort County	Economic Development Director	Martyn.johnson@beaufortedc.com	<i>Martyn (online)</i>
	Bill Cary	Town of Aurora	Resident	Bcary711@gmail.com	<i>Bill Cary</i>
	Jamie Heath	Mid-East Commission	Contractor	jheath@mideastcom.org	<i>Jamie Heath</i>
	Lisa Williams	Mid-East Commission	Contractor	lwilliams@mideastcom.org	
	Paige Cureton	RK&K	Contractor	pcureton@rkk.com	



# MEETING SIGN-IN SHEET

**Title** Town of Aurora Community Action Team – Meeting 4  
**Date** Dec. 16, 2021      **Time** 10:00 AM – 12:00 PM      **Location** Aurora Town Hall

✓	Name	Organization	Title/Role	Email	Signature
	Trent Cormier	RK&K	Contractor	tcormier@rkk.com	Trent
	Gordon Marsh	RK&K	Contractor	gmarsh@rkk.com	[Handwritten Signature]
	Tancred Miller	NC DEQ	State/Grant Agency	Tancred.miller@ncdenr.gov	
	Mackenzie Todd	NC DEQ	State/Grant Agency	Mackenzie.todd@ncdenr.gov	Mackenzie (online)
	Rachel Love-Adrick	NC DEQ	State/Grant Agency	Rachel.love-adrick@ncdenr.gov	
	Sarah Spiegler	NC Sea Grant	Coastal Resilience Specialist	sespiegl@ncsu.edu	Sarah (online)
	Sue Squires	BCED			See (online)



**Community Action Team**  
Meeting #5 Materials





# Aurora-Richland Township

Community Action Team - Meeting #5

## AGENDA

Thursday, Jan. 13, 2022, 10:00 AM - 12:00 PM

Location: Aurora Town Hall, 295 Main St. Aurora 27806 + Virtual via Zoom

<b>10:00 – 10:05 AM</b>	<b>Welcome/Introductions</b>
<b>10:05 – 10:15 AM</b>	<b>Introduction to STAPLEE</b> <ul style="list-style-type: none"><li>▪ Discuss STAPLEE tool</li></ul>
<b>10:15 – 11:00 AM</b>	<b>Draft STAPLEE Analysis &amp; Priority Projects</b> <ul style="list-style-type: none"><li>▪ Review draft STAPLEE analysis</li><li>▪ Identify draft priority projects</li></ul>
<b>11:00 – 11:20 AM</b>	<b>Project Portfolio</b> <ul style="list-style-type: none"><li>▪ Review Project Portfolio Template</li><li>▪ Benefit Cost Worksheet</li></ul>
<b>11:20 AM – NOON</b>	<b>Stakeholder Involvement</b> <ul style="list-style-type: none"><li>▪ Plan for Public Open House (February 2022)</li></ul>
<b>NOON</b>	<b>Adjournment</b>



# Aurora

## Benefit/Cost Ratings

Strategy	Benefit	Cost
List Strategy Here.	LOW	HIGH
1. Conduct a study to evaluate alternatives for improving the WWTP. <b>Comments:</b>	MEDIUM	
2. Restore wetland function for the WWTP. Clean out sludge and reline ponds. Elevate sides of WWTP for storm surge protection. <b>Comments:</b>		
3. Explore solutions for dealing with nutria (the invasive animal) damaging the wetland at the WWTP. Possibly partner with NC Wildlife Resources. <b>Comments:</b>		
6. Develop an education program at the WWTP. <b>Comments:</b>		
7. Improve the WWTP with trails / amenities as part of an overall project. <b>Comments:</b>		
8. Map and design a maintenance plan to clean out drainage ditches and tributaries. Develop a list of areas that can be turned into bio-swales for treatment of runoff. <b>Comments:</b>		
9. Develop easements to maintain drainage ditches and tributaries. Once easements are obtained identify locations where SCMs can be implemented to provide capacity or treat water. <b>Comments:</b>		
10. Partner with Duke Energy to clear trees and branches from electric easements in town. Clear trees proactively, rather than waiting for damage to electric infrastructure to occur. <b>Comments:</b>		
11. Maintain continual contact/working relationship with electric service providers in the Town of Aurora and the Richland Township to address the following: 1) Disaster preparedness techniques (e.g., tree trimming, vegetation planting requirements, pole replacement); 2) Identification of critical electrical facilities needing retrofit or upgrade and map with elevation reference marks; 3) Identification of problem areas and potential solutions; and 4) Communication with town officials during and immediately after a natural hazard event that results in loss of electrical power. <b>Comments:</b>		



Strategy	Benefit	Cost
12. Implement a stormwater ordinance. <b>Comments:</b>		
13. Implement a bioswale policy. <b>Comments:</b>		
14. Implement a pervious surface policy. Explore the feasibility of incorporating this into the town’s zoning or subdivision ordinance. <b>Comments:</b>		
15. Implement a stormwater utility. <b>Comments:</b>		
16. Evaluate zoning and subdivision regulations for changes to zoning districts to account for flooding (special districts with restrictive zoning may be needed to begin disinvestment in vulnerable areas). <b>Comments:</b>		
17. Create elevated Town review procedures for future projects in vulnerable areas, limiting new development or infrastructure in areas that are particularly vulnerable. <b>Comments:</b>		
18. Evaluate permitted uses for zoning districts (make informed decisions about uses that will add infrastructure to vulnerable areas). <b>Comments:</b>		
19. Assess setbacks in all zoning districts. <b>Comments:</b>		
20. Set up processes for transfer of development rights, conservation easements, and/or setback requirements. <b>Comments:</b>		
21. Assess requirement for minimum lot sizes/land use to reduce structures in vulnerable areas. <b>Comments:</b>		
22. Participate in the National Flood Insurance Program (NFIP) Community Rating System (CRS). <b>Comments:</b>		
23. Long term: Concentrate development density to the south and west side of town to higher elevations. (A constraint is that Nutrien owns a lot of land for mitigation credit purposes.) <b>Comments:</b>		
24. Conduct future planning for development hubs (zoning). <b>Comments:</b>		

Strategy	Benefit	Cost
25. Develop a Master Plan for the Town of Aurora and the Richland Township, with focus on Climate Change and Growth. a. Equitable Opportunity, b. Zoning, c. Economic Development, d. Resiliency, Healthy, and Livable Community <b>Comments:</b>		
26. Develop a Town of Aurora Land Use Plan (preferred) or update the town’s portion of the Beaufort County CAMA Land Use Plan in partnership with the county. <b>Comments:</b>		
27. Identify data gaps and collect necessary data to plan for infrastructure investments that are part of implementation plan for adaptation. <b>Comments:</b>		
28. Continue to coordinate all development/planning decisions with review of appropriate CAMA LUP’s including stated redevelopment policies and actions. <b>Comments:</b>		
29. Evaluate the feasibility of land acquisition by government, communities, businesses, or nonprofit organizations of vulnerable parcels for permanent protection and management. <b>Comments:</b>		
30. Evaluate the equitable relocation or buyout potential of structures and infrastructure in vulnerable areas. <b>Comments:</b>		
31. Install backflow valve/tide gates on stormwater drains. <b>Comments:</b>		
32. Explore the feasibility of using public land to develop stormwater features such as bioswales and retention ponds. <b>Comments:</b>		
33. Allow coastal wetlands to migrate landward to provide habitat and natural buffer to coastal storms. <b>Comments:</b>		
34. Restore Indian Island at the confluence of the Pamlico River and South Creek to control water flow and increase habitat (Nutrien owned). <b>Comments:</b>		
35. Restore wetlands in the Holland and Deephole Point areas for flood attenuation. <b>Comments:</b>		
36. Restore and connect wetlands along Aurora shoreline. <b>Comments:</b>		

Strategy	Benefit	Cost
37. Conduct wetland and stream restoration south of Bateman Road. <b>Comments:</b>		
38. Restore shoreline along Butt Road to protect WWTP and Public Works Facilities. <b>Comments:</b>		
40. Clean up trash from streams, possibly in partnership with a local non-profit organization. (The stream behind the railroad track needs particular attention.) <b>Comments:</b>		
41. Improve tributaries within Township to slow down water. <b>Comments:</b>		
42. Implement upstream flood controls on South Creek. <b>Comments:</b>		
43. Install tide gates at outfalls of South Creek and the Pamlico. <b>Comments:</b>		
44. Use phosphate waste (fill) to raise land for future development. <b>Comments:</b>		
45. Explore the feasibility of intentional inundation/water farming upstream. Landowner partnership(s) would be required. <b>Comments:</b>		
46. Evaluate improvements to the NC Hwy 33 bridge over Campbell's Creek to decrease the flooding along NC Hwy 33 and adjacent land. <b>Comments:</b>		
50. Implement an appropriate water flow solution at the Bay City Rd./Bateman Rd. bridge. <b>Comments:</b>		
52. Develop a community parking lot with cameras which is located outside the flood hazard area, where residents can park vehicles during storms <b>Comments:</b>		
53. Coordinate with the NC Dept. of Transportation and the Mid-East Rural Planning Organization (RPO) for improvements to NC Hwy 33, a major evacuation route. <b>Comments:</b>		
54. Conduct a study to assess flooding on NC Hwy 33 and identify problem areas. <b>Comments:</b>		

Strategy	Benefit	Cost
55. Design and construct walking trails/nature walk behind S.W. Snowden Elementary. a. Tie in with future greenway, b. Tie in near Creedmur Road (near Phosphate Plant). <b>Comments:</b>		
56. Conduct education on historical fossil culture (Fossil Trail). <b>Comments:</b>		
57. Develop a comprehensive outreach strategy to educate stakeholders about SLR and coastal vulnerabilities and provide continuing education to affected communities and citizens. Leverage educational resources available through the NC Division of Coastal Management. <b>Comments:</b>		
58. Educate workforce on the importance of building resiliency to maintain a healthy local economy. <b>Comments:</b>		
59. Explore the feasibility of partnering with Nutrien to develop a public education and recreation area on mitigation credit land. <b>Comments:</b>		
60. Educate the public in the Richland township regarding drought and saltwater intrusion in private drinking water wells. <b>Comments:</b>		
61. Educate the public on what individual homeowners can do towards resiliency. <b>Comments:</b>		
62. Connect homeowners with resources to make their properties more resilient, such as roof grants. <b>Comments:</b>		

## Benefit-Cost Overview

The cost or the economic case for different strategies or actions must be considered when developing resilience strategies. An informal cost-benefit analysis should be used to review proposed adaptation actions. Ratings of high, medium, or low are assigned to the anticipated costs and the benefits associated with each action based on general criteria that are established by the community.

Make sure to explore and identify potential funding mechanisms for project or action item implementation.

Benefit/cost ratings	
	<u>Benefit</u>
HIGH	Action would have significant impact on risk reduction
MEDIUM	Action would have an impact on risk reduction
LOW	Long-term benefits are difficult to quantify in the short term
	<u>Cost</u>
HIGH	Existing funding is not adequate
MEDIUM	Requires budget reappropriation or amendment
LOW	Funding available under the existing budget



RCCP STAPLEE Criteria Worksheet  
Aurora



STAPLEE Criteria >>	Social		Technical			Administrative			Political			Legal			Economic				Environmental					TOTAL
	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT Waste Sites	Consistent w/ Community Environmental Goals	Consistent w/ Federal Laws	
<b>Considerations for Alternative Actions</b>																								
<b>Wastewater Treatment Plant (WWTP) Strategies</b>																								
1. Conduct a study to evaluate alternatives for improving the WWTP. <b>Comments:</b>																								
	1	1	1	1	1	1			1	1	1		1		0	0	0	1	0	0	1	1	1	14
2. Restore wetland function for the WWTP. Clean out sludge and reline ponds. Elevate sides of WWTP for storm surge protection. <b>Comments:</b>																								
	1	1	1	1	1	1			1	1	1		1		1	0	1	1	1	0		1	1	16
3. Explore solutions for dealing with nutria (the invasive animal) damaging the wetland at the WWTP. Possibly partner with NC Wildlife Resources. <b>Comments:</b>																								
	1	1	1	1	0	0			1	1	1		1		0	0	0	0	0	0	0	1	1	10
6. Develop an education program at the WWTP. <b>Comments:</b>																								
	1	1	1	0	0	0			1	1			1		0	0	0	1	0	0	0	0	0	7
7. Improve the WWTP with trails / amenities as part of an overall project. <b>Comments:</b>																								
	1	1	1	0	1	1			1	1			1		1	0	0	1	1	0	0	0	1	12
<b>Ditching and Maintenance Strategies</b>																								
8. Map and design a maintenance plan to clean out drainage ditches and tributaries. Develop a list of areas that can be turned into bioswales for treatment of runoff. <b>Comments:</b>																								
	1	1	1	1	1	0			1	1	1		1		1	1	1	1	0	0	1	1	1	16
9. Develop easements to maintain drainage ditches and tributaries. Once easements are obtained identify locations where SCMs can be implemented to provide capacity or treat water. <b>Comments:</b>																								
	1	1	1	1	1	0				1			1		0	1		1	0	0	0	1	1	11
10. Partner with Duke Energy to clear trees and branches from electric easements in town. Clear trees proactively, rather than waiting for damage to electric infrastructure to occur. <b>Comments:</b>																								
	1	1	1	1	0	0			1	1	1		0		0	0	0	0	0	0	0	0	0	7
11. Maintain continual contact/working relationship with electric service providers in the Town of Aurora and the Richland Township to address the following: 1) Disaster preparedness techniques (e.g., tree trimming, vegetation planting requirements, pole replacement); 2) Identification of critical electrical facilities needing retrofit or upgrade and map with elevation reference marks; 3) Identification of problem areas and potential solutions; and 4) Communication with town officials during and immediately after a natural hazard event that results in loss of electrical power. <b>Comments:</b>																								
	1	1	1	1	0	0			1	1	1		0		0	0	0	0	0	0	0	0	0	7
<b>Planning &amp; Policy Strategies</b>																								
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																			

RCCP STAPLEE Criteria Worksheet  
Aurora



STAPLEE Criteria >>

STAPLEE Criteria >>	Social		Technical			Administrative			Political			Legal			Economic				Environmental					TOTAL	
	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT Waste Sites	Consistent w/ Community Environmental Goals	Consistent w/ Federal Laws		
<b>Considerations for Alternative Actions</b>																									
12. Implement a stormwater ordinance. Comments:	1	1	1	1	0	1				1		1			1	1		1	1	1	1	1	1	1	15
13. Implement a bioswale policy. Comments:	1	1	1	1	0	1				1		1			1	1		1	1	1	1	1	1	1	15
14. Implement a pervious surface policy. Explore the feasibility of incorporating this into the town's zoning or subdivision ordinance. Comments:	0	1	1	1	0	1				1		1			1	1		1	1	1	1	1	1	14	
15. Implement a stormwater utility. Comments:	0	1	1	1	1	1				1		1			1	1		1	0	0	0	0	0	10	
16. Evaluate zoning and subdivision regulations for changes to zoning districts to account for flooding (special districts with restrictive zoning may be needed to begin disinvestment in vulnerable areas). Comments:	0	1	1	1	0	1				1		1			0	0	0	0	0	0	0	0	0	6	
17. Create elevated Town review procedures for future projects in vulnerable areas, limiting new development or infrastructure in areas that are particularly vulnerable. Comments:	0	1	1	1	0	1				1		1			0	0	0	0	0	0	0	0	0	6	
18. Evaluate permitted uses for zoning districts (make informed decisions about uses that will add infrastructure to vulnerable areas). Comments:	1	1	1	1	0	1				1	1	1			0	0	0	0	0	0	0	0	0	8	
19. Assess setbacks in all zoning districts. Comments:	1	1	1	0	1	1				1		1			0	0	0	0	0	0	0	0	0	7	
20. Set up processes for transfer of development rights, conservation easements, and/or setback requirements. Comments:	1	1	1	1	0	1				1		1			1	1		0	0	0	0	0	0	9	
21. Assess requirement for minimum lot sizes/land use to reduce structures in vulnerable areas. Comments:	0	1	1	1	0	1				1		1			0	0	0	0	0	0	0	0	0	6	

RCCP STAPLEE Criteria Worksheet  
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<b>Considerations for Alternative Actions</b>																								
22. Participate in the National Flood Insurance Program (NFIP) Community Rating System (CRS). Comments:	1	1	1	1	1	0			1	1	1		1		1	1		1	0	0	0	1	1	14
23. Long term: Concentrate development density to the south and west side of town to higher elevations. (A constraint is that Nutrien owns a lot of land for mitigation credit purposes.) Comments:	0	1	1	1	0	1							1		1	1		0	1	1	1	1	1	12
24. Conduct future planning for development hubs (zoning). Comments:	1	1	1	1	0	1			1	1			1		1	1			1	0	0	1	1	13
25. Develop a Master Plan for the Town of Aurora and the Richland Township, with focus on Climate Change and Growth. a. Equitable Opportunity, b. Zoning, c. Economic Development, d. Resiliency, Healthy, and Livable Community Comments:	1	1	1	1	1	1			1	1	1		1		1	1	1		1	0	0	1	1	16
26. Develop a Town of Aurora Land Use Plan (preferred) or update the town's portion of the Beaufort County CAMA Land Use Plan in partnership with the county. Comments:	1	1	1	1	0	1			1	1	1		1		1	1			1	1	1	1	1	16
27. Identify data gaps and collect necessary data to plan for infrastructure investments that are part of implementation plan for adaptation. Comments:	1	1	1	1	0	1			1	1	1		1		1	1			0	1	1	1	1	15
28. Continue to coordinate all development/planning decisions with review of appropriate CAMA LUP's including stated redevelopment policies and actions. Comments:	1	1	1	1	1	1			1	1	1		1		0	0	0	0	0	1	1	1	1	14
<b>Acquisition and Relocation Strategies</b>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																			
29. Evaluate the feasibility of land acquisition by government, communities, businesses, or nonprofit organizations of vulnerable parcels for permanent protection and management. Comments:	1	1	1	1	0	0			1	1	1		1		1	1			0	0	0	0	0	10
30. Evaluate the equitable relocation or buyout potential of structures and infrastructure in vulnerable areas. Comments:	1	1	1	1	0	0			1	1	1		1		1	1			0	0	0	0	0	10
<b>Stormwater Strategies</b>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																			
31. Install backflow valve/tide gates on stormwater drains. Comments:	1	1	1	0	0	1			1	1	1		1		1	1	1	1	1	0	0	1	1	15

RCCP STAPLEE Criteria Worksheet  
Aurora



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<b>Considerations for Alternative Actions</b>																											
32. Explore the feasibility of using public land to develop stormwater features such as bioswales and retention ponds.	Comments:	1	1	1	1	1	0				1	1	1		1			1	1	1	1	1	0	1	1	1	17
<b>Natural Infrastructure Strategies</b>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																					
33. Allow coastal wetlands to migrate landward to provide habitat and natural buffer to coastal storms.	Comments:	1	1	1	1	1	1				1	1			0			1	0		1	1	1	0		1	13
34. Restore Indian Island at the confluence of the Pamlico River and South Creek to control water flow and increase habitat (Nutrien owned).	Comments:	1	1	1	1	1	1				1	1			0			1	0		0	1	1	0		0	11
35. Restore wetlands in the Holland and Deephole Point areas for flood attenuation.	Comments:	1	1	1	1	1	1				1	1			0			1	0		0	1	1	0		0	11
36. Restore and connect wetlands along Aurora shoreline.	Comments:	1	1	1	1	1	1				1	1			0			1	1		1	1	1	0		0	13
37. Conduct wetland and stream restoration south of Bateman Road.	Comments:	1	1	1	1	1	1				1	1			0			1	1		1	1	1	0		0	13
38. Restore shoreline along Butt Road to protect WWTP and Public Works Facilities.	Comments:	1	1	1	1	1	1				1	1	1		1			1	1		1	1	1	0		0	15
40. Clean up trash from streams, possibly in partnership with a local non-profit organization. (The stream behind the railroad track needs particular attention.)	Comments:	1	1	1	0	0	0				1	1	1		1			1	1		1	1	0	0	1	1	13
<b>Flood Mitigation Strategies</b>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																					
41. Improve tributaries within Township to slow down water.	Comments:	1	1	1	1	1	1				1	1			0			1	1		0	1	1	0		1	13
42. Implement upstream flood controls on South Creek.	Comments:	1	1	1	1	1	1				1	1			0			1	1		0	1	0	0		1	12

RCCP STAPLEE Criteria Worksheet  
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STAPLEE Criteria >>

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<b>Considerations for Alternative Actions</b>																								
43. Install tide gates at outfalls of South Creek and the Pamlico. Comments:	1	1	1	0	0	1			1	1			0		1	1		0	1	0	0		1	10
44. Use phosphate waste (fill) to raise land for future development. Comments:	1		1	1	0	1			1	1			0		1	1	1	1	1	0			1	12
45. Explore the feasibility of intentional inundation/water farming upstream. Landowner partnership(s) would be required. Comments:	1	1	1	1	0	0			1	1			0		1	1	1	0	1	0	0		1	11
<b>Transportation Strategies</b>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																			
46. Evaluate improvements to the NC Hwy 33 crossing over Campbell's Creek to decrease the flooding to NC Hwy 33 and adjacent land. Comments:	1	1	1	1	0	1			1	1	1		0		1	1		0	0	0	0	1	1	12
50. Implement an appropriate water flow solution at the Bay City Rd./Bateman Rd. bridge. Comments:	1	1	1	1	0	1			1	1	1		0		1	1		0	1	0	0	1	1	13
52. Develop a community parking lot with cameras which is located outside the flood hazard area, where residents can park vehicles during storms Comments:	1	1	1	0	0	1			1	1	1		1		1	1		0	0	0	0	0	0	10
53. Coordinate with the NC Dept. of Transportation and the MidOEast Rural Planning Organization (RPO) for improvements to NC Hwy 33, a major evacuation route. Comments:	1	1	1	1	0	1			1	1	1		0		1	1		0	0	0	0	0	0	10
54. Conduct a study to assess flooding on NC Hwy 33 and identify problem areas. Comments:	1	1	1	1	0	1			1	1	1		0		1	1		0	0	0	0	1	1	12
<b>Public Education Strategies</b>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																			
55. Design and construct walking trails/nature walk behind S W Snowden Elementary. a. Tie in with future greenway, b. Tie in near Creedmur Road (near Phosphate Plant). Comments:	1	1	1	0	1	0			1	1	1		1		1	1		1	1	0	0	1	1	14
56. Conduct education on historical fossil culture (Fossil Trail). Comments:	1	1	1	0	1	0			1	1	1		1		1	1		1	0	0	0	0	0	11



RCCP STAPLEE Criteria Worksheet  
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STAPLEE Criteria >>

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<b>Considerations for Alternative Actions</b>																								
57. Develop a comprehensive outreach strategy to educate stakeholders about SLR and coastal vulnerabilities and provide continuing education to affected communities and citizens. Leverage educational resources available through the NC Division of Coastal Management. <b>Comments:</b>	1	1	1	1	1	0			1	1	1		1		1	1		1	0	0	0	0	0	12
58. Educate workforce on the importance of building resiliency to maintain a healthy local economy. <b>Comments:</b>	1	1	1	0	1	0			1	1	1		1		1	1		1	0	0	0	0	0	11
59. Explore the feasibility of partnering with Nutrien to develop a public education and recreation area on mitigation credit land. <b>Comments:</b>	1	1	1	0	1	0			1	1	1		0		1	1		1	0	0	0	0	0	10
60. Educate the public in the Richland township regarding drought and saltwater intrusion in private drinking water wells. <b>Comments:</b>	1	1	1	0	1	0			1	1	1		1		1	1		1	0	0	0	0	0	11
61. Educate the public on what individual homeowners can do towards resiliency. <b>Comments:</b>	1	1	1	0	1	0			1	1	1		1		1	1		1	0	0	0	0	0	11
62. Connect homeowners with resources to make their properties more resilient, such as roof grants. <b>Comments:</b>	1	1	1	0	1	0			1	1	1		1		1	1		1	0	0	0	1	1	13
<b>Pamlico Sound Hazard Mitigation Strategies</b>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																			
B1. Continue to coordinate all development/planning decisions with review of appropriate CAMA LUP's including stated redevelopment policies and actions.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																			0
B2. Maintain reciprocal mutual aid agreements with surrounding communities for fire protection and emergency response.		1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																			1
B3. Annually evaluate adequacy of existing local early warning and emergency response communications equipment and prepare annual capital improvements plans to improve early warning and communication effectiveness before, during, and following disaster events.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																			0
B4. Develop standard protocols for training/ certification of volunteer staff for shelter management, traffic control, first aid, etc., to improve volunteer response capability during and following disaster events, including coordination with American Red Cross personnel on an annual basis.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																			0

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<b>Considerations for Alternative Actions</b>																										
B5. Complete an annual evaluation of each designated emergency shelter, including structural inspection, resource inventory, staffing plan, and vulnerability assessment, including coordination with American Red Cross personnel.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																					0
B6. Provide citizens and visitors with maps of evacuation routes which will facilitate the evacuation of the county in case of a hazardous event. This effort will involve the production of hard copy maps for distribution.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																					0
B7. Continue to monitor and establish programs to maintain continuity of government operations through annual review and update of the Continuity of Operations Plan (COOP).			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																					0
B8. Continue to support and participate in the directives of the County Emergency Operations Plan (EOP). The EOP includes evacuation procedures and response to hazards not addressed in this plan such as hazardous materials, petroleum products, hazardous waste, nuclear threat/attack, and civil disorder. The County will review and update the EOP annually to ensure that it coordinates with the most recent NCEM and NCOEMS directives.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																					0
B9. Continue to apply for grant funds, allocate local funding, and work with local electric service providers to procure and maintain backup generators/transfer switches for all critical public facilities, with an emphasis on emergency services facilities, critical water/sewer facilities, and shelter facilities. Evaluate the equipment on a regular basis to assure it continues to meet the needs of the operations occurring at each facility. Backup generators are still needed at the following facilities: Southside High School, S.W. Snowden Elementary School, and John Cotten Tayloe Elementary School.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																					0
B10. Hold an annual public hazard mitigation meeting, attended by the HMPC and participating jurisdictions, to educate the public and elected officials and receive comments about the location of high risk facilities/development, the jurisdictions' overall vulnerability to natural and man-made hazards, and the jurisdictions' hazards mitigation efforts.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																					0
B11. Maintain the Hazard Mitigation Planning Committee (HMPC) and hold annual HMPC meetings to continue relationship building and communicate about mitigation measures taking place throughout the community.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																					0
B12. Maintain continual 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) Identification of critical electrical facilities needing retrofit or upgrade and map with elevation reference marks; 3) Identification of problem areas and potential solutions; and 4) Communication with county officials during and immediately after a natural hazard event that results in loss of electrical power			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																					0
B13. Monitor trees and vegetation on publicly owned property to assure that no property or utility damage will occur as a result of diseased or dying trees or other vegetation. This strategy only applies to the municipal jurisdictions.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																					0
B14. Continue to maintain all property acquired with public mitigation funds within the Special Flood Hazard Area (SFHA) as undisturbed open space in perpetuity. Continue to proactively establish open space within the floodplain and floodway as grant funds become available to carry out this initiative.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																					0



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<b>Considerations for Alternative Actions</b>																								
B25. Continue to coordinate annually with the NC Forestry Division to address the threat of wildfire throughout the County. These efforts will involve posting of the daily fire risk present within the County on the County website daily. Additionally, the County will distribute and make information available regarding County methods for mitigating fire hazards.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																			0
B26. Maintain Debris Removal and Monitoring Services Contracts for post-disaster response. These services should focus on preparing documentation necessary to ensure full reimbursement of cost associated with community cleanup and immediate infrastructure restoration.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																			0
B27. Work to implement all strategies outlined within the Hurricane Matthew Resilient Redevelopment Plan.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																			0

1. *Fill in the goal and its corresponding objective. Use a separate worksheet for each objective. The considerations under each criterion are suggested ones to use; you can revise these to reflect your own considerations (see Table 2-1).*

2. *Fill in the alternative actions that address the specific objectives the planning team identified in Worksheet #1.*

3. **Scoring:** *For each consideration, indicate a plus (+) for favorable, and a negative (-) for less favorable.*

*When you complete the scoring, negatives will indicate gaps or shortcomings in the particular action, which can be noted in the Comments section. For considerations that do not apply, fill in N/A for not applicable. Only leave a blank if you do not know an answer. In this case, make a note in the Comments section of the “expert” or source to consult to help you evaluate the criterion.*





# Resilient Coastal Communities Program

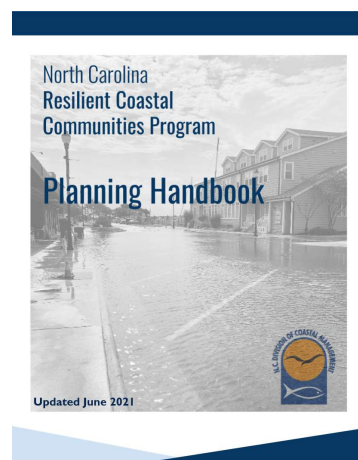
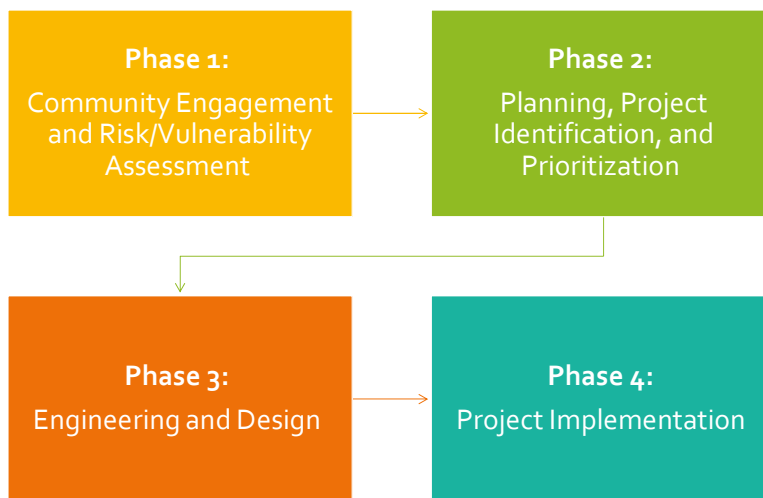
## Community Action Team Meeting #5 Consolidate and Prioritize Projects

January 12-13, 2022



1

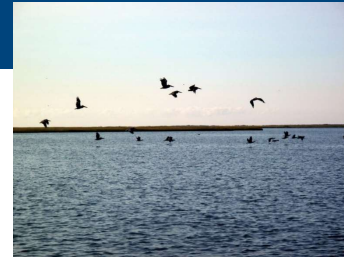
## RCCP Phases Overview



2

## RCCP Phase 1 and 2 Steps

- **Phase 1: Community Engagement and Risk/Vulnerability Assessment**
  - ✓ *Step 1 – Develop a Community Action Team*
  - ✓ *Step 2 – Set Vision and Goals*
  - ✓ *Step 3 – Review Existing Plans and Efforts*
  - ✓ *Step 4 – Develop a Community Engagement Strategy*
  - ✓ *Step 5 – Map Critical Assets and Natural Infrastructure*
  - ✓ *Step 6 – Conduct Risk and Vulnerability Assessment*
  
- **Phase 2: Planning, Project Identification, and Prioritization**
  - ✓ *Step 1 – Identify a Suite of Potential Solutions*
  - ★ **Step 2 – Consolidate and Prioritize Projects**
    - Step 3 – Develop the Resilience Strategy Document



3

## Potential Solutions Overview

- Range of solutions
- Structural (infrastructure)
- Nonstructural (policy)
- Nature-based
- Hybrid
- NFWF-funded counties
- Hurricane Florence-declared counties



4

## Natural/Nature-Based and Hybrid Solutions Overview

- NNBS – enhance natural landscape
- Green infrastructure
- Ecosystems and natural systems
- Hybrid solutions – gray infrastructure with natural or green infrastructure
- Floodplain/stormwater management
- National Flood Insurance Program Community Rating System
- Pre- and Post-Disaster Recovery and Redevelopment



5

## Phase 2, Step 2. Evaluate Projects

- Evaluate strategies
- STAPLEE method
- Evaluate feasibility
- Cost-benefit
- Potential funding



Benefit	
High	Action would have a significant impact on risk reduction
Medium	Action would have an impact on risk reduction
Low	Long-term benefits are difficult to quantify in the short term

Cost	
High	Existing funding is not adequate
Medium	Requires budget reappropriation or amendment
Low	Funding available under the existing budget

6

## Funding Sources/Strategy Areas

Funding Source	Due Date	Minimum Ask	Match	Strategies
NC DEQ Land & Water Fund (LWF) formally Clean Water Mgmt. Trust Fund (CWMTF)	First Monday in February	Varies	None, 60/40, 75/25	Policy / Regulatory Staffing, Funding & Resources Education & Public Info Infrastructure Nature-Based Hybrid
NC DEQ Water Resources Dev. Grant (WRDG) NRCS EQIP	Spring- June 30 Fall- Dec. 31	\$200,000	50/50	Infrastructure Nature-Based Hybrid
FHWA/NCDOT Locally Administered Project Program (LAPP) – Bike/Ped, Roadway, Transit	October 31	Varies	80/20	Policy / Regulatory Staffing, Funding & Resources Education & Public Info Infrastructure

7

## Funding Sources/Strategy Areas

Funding Source	Due Date	Minimum Ask	Match	Strategies
NC State Parks – Parks and Rec. Trust Fund (PARTF)	Early May	\$500,000	50/50	Infrastructure Nature-Based Hybrid
HUD's Community Dev. Block Grants – Mitigation (CDBG-MIT)	Rolling Basis	\$1,000,000		Infrastructure
American Rescue Plan Act (ARPA) of 2021	N/A	Federal Disbursement	N/A	Policy / Regulatory Staffing, Funding & Resources Education & Public Info Emergency Services Infrastructure Nature-Based Hybrid

8

## Funding Sources/Strategy Areas

Funding Source	Due Date	Minimum Ask	Match	Strategies
FEMA Hazard Mitigation Grant Program (HMGP)	After Presidentially Declared Disaster	20% of Declaration	75/25	Policy / Regulatory Staffing, Funding & Resources Education & Public Info Infrastructure Nature-Based Hybrid
FEMA Flood Mitigation Assistance (FMA)	LOI- October 1 App- January 28	\$900,000, Scoping/\$30M flood mitigation project	75/25, 90/10 for small communities	Policy / Regulatory Staffing, Funding & Resources Education & Public Info Infrastructure Nature-Based Hybrid
FEMA Building Resilience Infrastructure in Communities (BRIC) Program – C&CB, Mitigation	LOI- October 1 Sub App- Due January 28	\$600,000 State \$5,000,000 National	75/25, 70/30*	Policy / Regulatory Staffing, Funding & Resources Education & Public Info Emergency Services Infrastructure Nature-Based Hybrid

9

## Phase 2, Step 2. Consolidate & Prioritize Projects

- Advance prior efforts
- Technical soundness
- Potential co-benefits
- Positive benefit-cost ratio
- Social equity
- Long-term impact
- Funding sources
- Capacity to implement
- Project templates

<b>Project Name</b>	<i>Come up with a brief title for the project</i>
<b>Project Description</b>	<i>Describe project, including information gathered during project development</i>
<b>Hazard(s) addressed by project</b>	<i>List hazards specific to this program which impact the project location</i>
<b>Type of Solution</b>	<i>Infrastructure, Plans and policies, Ordinances, Non-regulatory programs, Other (describe)</i>
<b>Project Estimated Cost</b>	<i>Estimate total cost of project</i>
<b>Potential Implementation Funding Sources</b>	<i>Identify potential sources for project/action implementation</i>
<b>Projected Estimated Timeline</b>	<i>Estimate length of time project will take to complete and any expected delays in the timeline</i>
<b>Priority Rating</b>	<i>High, Medium, Low</i>
<b>Project Map</b>	<i>Provide a map of the project site</i>

10



## Phase 2, Step 2. Consolidate & Prioritize Projects

- Narrow down actions
- Identify at least five (5) priority projects for each community
- Organize project information using this template




Organize information for each project in the portfolio using the following template:

<b>Project Name</b>	<i>Come up with a brief title for the project</i>
<b>Project Description</b>	<i>Describe project, including information gathered during project development</i>
<b>Hazard(s) addressed by project</b>	<i>List hazards specific to this program which impact the project location</i>
<b>Type of Solution</b>	<i>Infrastructure, Plans and policies, Ordinances, Non-regulatory programs, Other (describe)</i>
<b>Project Estimated Cost</b>	<i>Estimate total cost of project</i>
<b>Potential Implementation Funding Sources</b>	<i>Identify potential sources for project/action implementation</i>
<b>Projected Estimated Timeline</b>	<i>Estimate length of time project will take to complete and any expected delays in the timeline</i>
<b>Priority Rating</b>	<i>High, Medium, Low</i>
<b>Project Map</b>	<i>Provide a map of the project site</i>

11

## Phase 2, Step 2. Consolidate & Prioritize Projects

- Evaluate strategies and their feasibility
  - Including cost-benefit estimation
- Consolidate and prioritize strategies (draft)
- Host a public Open House  February
- Finalize strategies

12

## Phase 2, Step 3. Develop a Resiliency Strategy Document

- Vision & Goals
- Community Action Team
- Stakeholder Engagement Strategy
- Review of Existing Local & Regional Efforts
- Risk and Vulnerability Assessment Report
- Project Portfolio
- Additional Files (e.g., mapping, Excel spreadsheets)

13

## Next Steps: Phase 3: Engineering & Design

- Top Nature-Based/Hybrid Project (1 project per community)
- Phase 3 Application  Anticipated: January-February Opening, Mid-March Deadline
- Approximately \$40k funding per community
  - Consider project scale with available funding

14



**Thank you for participating in CAT Meeting #5!**





# TOWN OF AURORA & RICHLAND TOWNSHIP

## Community Action Team - Meeting #5

### MEETING SUMMARY

THURSDAY, JANUARY 13, 2022, 10:00 AM - 12:00 PM, AURORA TOWN HALL + VIRTUAL

#### Meeting Purpose:

- To introduce the STAPLEE tool, review the draft STAPLEE analysis and identify draft priority projects, review the project portfolio template, and review the benefit cost analysis.
- Refer to attached meeting agenda.

#### Attendees:

- Refer to attached meeting sign-in sheet.

#### Materials:

- Refer to attached materials:
  - Cost benefit worksheet
  - STAPLEE worksheet

#### Meeting Discussion:

##### Cost Benefit Worksheet

- The Community Action Team worked together to complete the Cost Benefit Worksheet for all 62 strategies in the portfolio. For both "cost" and "benefit" the team had a choice between responses of low, medium, and high.

##### Introduction to STAPLEE Tool

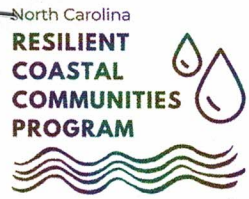
- The STAPLEE tool was developed by FEMA. The analysis considers social, technical, administrative, political, legal, economic, and environmental factors. Strategies are scored by assigning a value of 0 (neutral effect) or 1 (positive effect).

##### STAPLEE Worksheet

- Contractors had many of the columns in the STAPLEE sheet filled in already and asked the CAT to review what had been done so far.
- The Community Action Team assisted with filling out the social, administrative, and political columns for each strategy.

##### Project Portfolio

- The highest scoring projects from these analyses will be considered for the priority project portfolio. Input received at public open houses will help the Community Action Team to narrow down the list.



# MEETING SIGN-IN SHEET

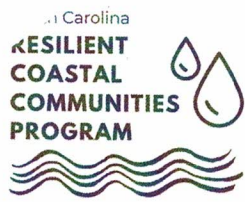
<b>Title</b>	Town of Aurora Community Action Team – Meeting 4		
<b>Date</b>	Jan. 13, 2022	<b>Time</b>	10:00 AM – 12:00 PM
<b>Location</b>	Aurora Town Hall		

✓	Name	Organization	Title/Role	Email	Signature
	Judi Lannon	Town of Aurora	Town Manager	townofaurora@auroranc.org	
	Chuck Bonner	Town of Aurora	Public Works Director	aurorapwd@auroranc.org	<i>Chuck Bonner</i>
	Curt Hendrix	Town of Aurora	Recreation Coordinator	aurorarec@embarqmail.com	
	Kurt Ryan	Town of Aurora	Volunteer	Ryankj88@gmail.com	
	Carlton Gideon	Mid-East Commission	Planner	cgideon@mideastcom.org	
	Tina Taylor	Town of Aurora	Commissioner	gmatbtaylor@gmail.com	
	Charles Cannon	COST Community Group	Community	Charlescannon112@gmail.com	
	Joe Calhoun	COST Community Group	Community	Jcalh29726@aol.com	
	Martyn Johnson	Beaufort County	Economic Development Director	Martyn.johnson@beaufortedc.com	
	Bill Cary	Town of Aurora	Resident	Bcary711@gmail.com	
	Jamie Heath	Mid-East Commission	Contractor	jheath@mideastcom.org	<i>Jamie Heath</i>
	Lisa Williams	Mid-East Commission	Contractor	lwilliams@mideastcom.org	
	Paige Cureton	RK&K	Contractor	pcureton@rkk.com	

*Curt Hendrix*

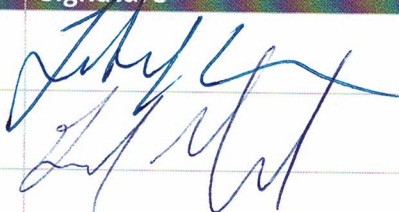

*Curt Hendrix*





# MEETING SIGN-IN SHEET

<b>Title</b>	Town of Aurora Community Action Team – Meeting 4		
<b>Date</b>	Jan. 13, 2022	<b>Time</b>	10:00 AM – 12:00 PM
		<b>Location</b>	Aurora Town Hall

✓	Name	Organization	Title/Role	Email	Signature
	Trent Cormier	RK&K	Contractor	tcormier@rkk.com	
	Gordon Marsh	RK&K	Contractor	gmarsh@rkk.com	
	Tancred Miller	NC DEQ	State/Grant Agency	Tancred.miller@ncdenr.gov	
	Mackenzie Todd	NC DEQ	State/Grant Agency	Mackenzie.todd@ncdenr.gov	
	Rachel Love-Adrick	NC DEQ	State/Grant Agency	Rachel.love-adrick@ncdenr.gov	
	Sarah Spiegler	NC Sea Grant	Coastal Resilience Specialist	sespiegl@ncsu.edu	



**Community Action Team**  
Meeting #6 Materials



# Aurora-Richland Township

Community Action Team - Meeting #6

## AGENDA

Thursday, Feb. 24, 2022, 10:00 AM - 12:00 PM

Location: Aurora Town Hall, 295 Main St. Aurora 27806 + Virtual via Zoom

<b>10:00 – 10:05 AM</b>	<b>Welcome</b>
<b>10:05 – 10:15 AM</b>	<b>Review Public Open House Results</b>
<b>10:15 – 10:30 AM</b>	<b>Review STAPLEE analysis for highest scoring projects</b>
<b>10:30 – NOON</b>	<b>Project Portfolio</b> <ul style="list-style-type: none"><li>▪ Select minimum of 5 projects for priority project portfolio</li><li>▪ Select one nature-based or hybrid project to move into Phases 3 &amp; 4</li></ul>
<b>NOON</b>	<b>Adjournment</b>

RCCP STAPLEE Criteria Worksheet  
Aurora / Richland Township



STAPLEE Criteria >>

STAPLEE Criteria >>	Social		Technical			Administrative			Political			Legal			Economic				Environmental					TOTAL
	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT Waste Sites	Consistent w/ Community Environmental Goals	Consistent w/ Federal Laws	
<b>Considerations for Alternative Actions</b>																								
<b>Wastewater Treatment Plant (WWTP) Strategies</b>																								
<b>ACTION: Wetland Restoration at Wastewater Treatment Plant</b> Restore wetland function for the WWTP. Clean out sludge and reline ponds. Elevate sides of WWTP for storm surge protection.																								
1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	0	0	1	1	19
<b>Ditching and Maintenance Strategies</b>																								
<b>ACTION: Drainage Ditch and Tributary Maintenance Plan</b> Map and design a maintenance plan to clean out drainage ditches and tributaries. Develop a list of areas that can be turned into bioswales for treatment of runoff.																								
1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	19
<b>ACTION: Easements for Ditches and Tributaries</b> Develop easements to maintain drainage ditches and tributaries. Once easements are obtained identify locations where SCMs can be implemented to provide capacity or treat water.																								
1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	19
Partner with Duke Energy to clear trees and branches from electric easements in town. Clear trees proactively, rather than waiting for damage to electric infrastructure to occur.																								
1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	14
Maintain continual contact/working relationship with electric service providers in the Town of Aurora and the Richland Township to address the following: 1) Disaster preparedness techniques (e.g., tree trimming, vegetation planting requirements, pole replacement); 2) Identification of critical electrical facilities needing retrofit or upgrade and map with elevation reference marks; 3) Identification of problem areas and potential solutions; and 4) Communication with town officials during and immediately after a natural hazard event that results in loss of electrical power.																								
1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	14
<b>Planning &amp; Policy Strategies</b>																								
<b>ACTION: Aurora and Richland Township Master Plan</b> Develop a Master Plan for the Town of Aurora and the Richland Township, with focus on Climate Change and Growth. a. Equitable Opportunity, b. Zoning, c. Economic Development, d. Resiliency, Healthy, and Livable Community																								
1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	19

RCCP STAPLEE Criteria Worksheet  
Aurora / Richland Township



STAPLEE Criteria >>

STAPLEE Criteria >>	Social		Technical			Administrative			Political			Legal			Economic				Environmental					TOTAL
	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT Waste Sites	Consistent w/ Community Environmental Goals	Consistent w/ Federal Laws	
<b>Considerations for Alternative Actions</b>																								
<b>Stormwater Strategies</b>																								
<b>ACTION: Stream Clean-up Partnership</b> Clean up trash from streams, possibly in partnership with a local non-profit organization. (The stream behind the railroad track needs particular attention.)	1	1	1	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	17
<b>Flood Mitigation Strategies</b>																								
<b>ACTION: Bailey Creek Tributary Improvements</b> Improve tributaries within Township to slow down water.	1	1	1	1	1	1	0	0	1	1	1	0	0	0	1	1	1	1	1	1	0	1	1	17
<b>ACTION: South Creek Flood Controls</b> Implement upstream flood controls on South Creek.	1	1	1	1	1	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	0	1	1	18
Install tide gates at outfalls of South Creek and the Pamlico.	1	1	1	0	0	1	0	1	1	1	1	0	1	1	1	1	1	0	1	0	0	0	1	15
<b>ACTION: Phosphate Waste as Fill to Support Development</b> Use phosphate waste (fill) to raise land for future development.	1	1	1	1	0	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	0	1	17
Explore the feasibility of intentional inundation/water farming upstream. Landowner partnership(s) would be required.	1	1	1	1	0	0	0	0	1	1	1	0	0	1	1	1	1	0	1	0	0	1	1	14
<b>Transportation Strategies</b>																								
<b>ACTION: Community Retreat Parking Lot</b> Develop a community parking lot with cameras which is located outside the flood hazard area, where residents can park vehicles during storms	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	18
<b>ACTION: Education and Recreation on Mitigation Land</b> Explore the feasibility of partnering with Nutrien to develop a public education and recreation area on mitigation credit land.	1	1	1	0	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1	17
Educate the public in the Richland township regarding drought and saltwater intrusion in private drinking water wells.	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	14



RCCP STAPLEE Criteria Worksheet  
Aurora / Richland Township



STAPLEE Criteria >>

STAPLEE Criteria >>	Social		Technical			Administrative			Political			Legal			Economic				Environmental					TOTAL
	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT Waste Sites	Consistent w/ Community Environmental Goals	Consistent w/ Federal Laws	
Considerations for Alternative Actions																								
Educate the public on what individual homeowners can do towards resiliency.	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	14
Connect homeowners with resources to make their properties more resilient, such as roof grants.	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	14



# DRAFT ACTIONS

## AURORA / RICHLAND TOWNSHIP

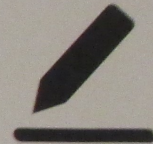


### Education and Recreation on Mitigation Land

Explore the feasibility of partnering with Nutrien to develop a public education and recreation area. Nutrien owns hundreds of acres of mitigation land in and around the Town of Aurora/Richland Township. The area could be used for passive recreation (e.g., walking trails).

*Place a dot on your preferred action.*

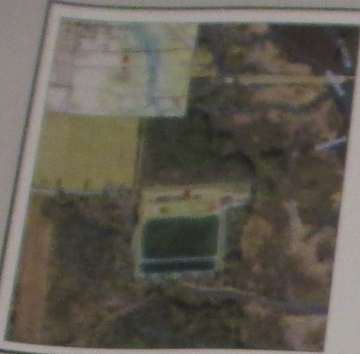
**Do you have ideas for how to improve resiliency to flooding in our community? Please add your ideas here.**





# DRAFT ACTIONS

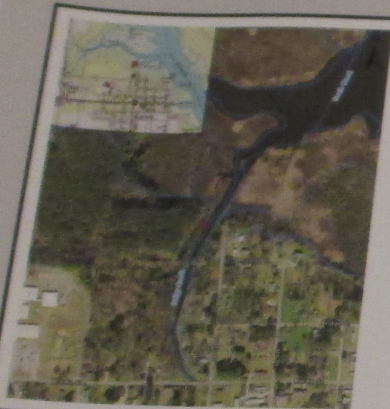
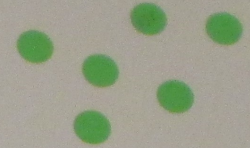
## AURORA / RICHLAND TOWNSHIP



### Wetland Restoration at Wastewater Treatment Plant

This unique WWTP uses the natural function of a wetland in its process to desanitize and purify wastewater. This project will restore wetland function by removing sludge, relining ponds, and elevating sides of the WWTP for storm surge protection. This project will also help ensure that clean water re-enters the river for many years to come.

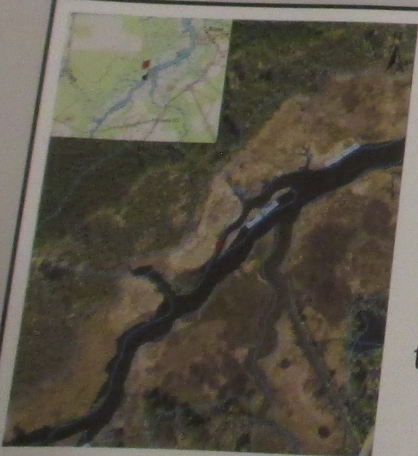
Place a dot on your preferred action.



### Bailey Creek Tributary Improvements

Improve Bailey Creek to slow down water. Use nature-based solutions to improve the stream beds and natural functions of the stream to decrease storm surge and stormwater runoff effects.

Place a dot on your preferred action.



### South Creek Flood Controls

Implement upstream flood controls on South Creek to intentionally inundate unused land and/or farmland. This effort will be a collaborative effort between property owners and the town. The town should consider providing incentives to the property owners being affected by the intentional flooding.

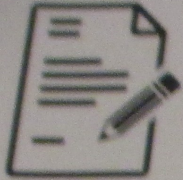
Place a dot on your preferred action.





# DRAFT ACTIONS

## AURORA / RICHLAND TOWNSHIP



### Drainage Ditch and Tributary Maintenance Plan

Develop a maintenance plan for cleaning out drainage ditches and tributaries. Identify areas that could be turned into bioswales for treatment of runoff. This project will help reduce flooding and improve water quality.

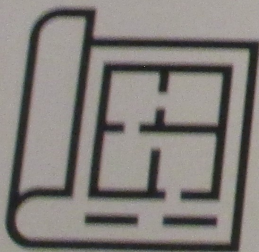
Place a dot on your preferred action.



### Easements for Ditches and Tributaries

Develop easements to maintain drainage ditches and tributaries. Once easements are obtained, identify locations where stormwater control methods could be implemented to provide water capacity and/or treat water.

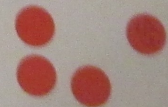
Place a dot on your preferred action.



### Aurora and Richland Township Master Plan

Develop a Master Plan for the Town of Aurora and the Richland Township, with focus on Climate Change and Growth. The master plan will incorporate: a. Equitable Opportunity, b. Zoning, c. Economic Development, d. Resiliency, Healthy, and Livable Community.

Place a dot on your preferred action.

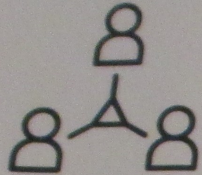




# DRAFT ACTIONS

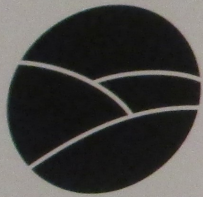
## AURORA / RICHLAND TOWNSHIP

Place a dot on your preferred action.



### Stream Clean-up Partnership

Partner with local non-profit organizations and/or other organizations to cleanup debris in streams. This project will help reduce trash buildup from storm events.



### Phosphate Waste as Fill to Support Development

Partner with Nutrien to use phosphate waste as fill to raise land for future development. This is a sustainable and resilient solution for the use of phosphate waste. Phosphate waste is currently being used for projects including driveways, roads, and freeboard.

Place a dot on your preferred action.



### Community Retreat Parking Lot

Develop a secure community parking lot outside of flood hazard areas where community members could park their vehicles during storms. The retreat location could also serve as a community amenity outside of major storm events.

Place a dot on your preferred action.





# TOWN OF AURORA & RICHLAND TOWNSHIP

## Community Action Team - Meeting #6

### MEETING SUMMARY

**THURSDAY, FEBRUARY 24, 2022, 10:00 AM - 12:00 PM, AURORA TOWN HALL + VIRTUAL**

#### Meeting Purpose:

- To review the public open house results, review the STAPLEE analysis for the highest scoring projects, select a minimum of five projects for the priority project portfolio and one nature-based or hybrid project to move forward into phase 3.
- Refer to meeting agenda.

#### Attendees:

- Refer to attached meeting sign-in sheet.

#### Materials:

- Refer to attached materials:
  - Public open house results
  - STAPLEE worksheet of highest scoring projects

#### Meeting Discussion:

##### Public Open House Results

- The Community Action Team reviewed the results from the in person public open house held on Mon. Feb. 14, 2022 and the virtual public open house held on Mon. Feb. 21, 2022.
- The drainage ditch and tributary maintenance project received the most votes overall.
- The wetland restoration at wastewater treatment plant project received the second highest number of votes overall, and the highest number of votes for a nature-based or hybrid project.

##### STAPLEE Worksheet of Highest Scoring Projects

- The Community Action Team briefly reviewed the STAPLEE worksheet of highest scoring projects.

##### Priority Project Portfolio

- The Community Action Team selected the following projects for the priority project portfolio.
  - Nature based or hybrid project to move forward:
    - Wetland restoration at the wastewater treatment plant
  - Other projects:
    - Drainage ditch and tributary maintenance plan
    - Easement plan for ditches and tributaries
    - Aurora and Richland Township Master Plan
    - Bailey Creek tributary improvements
    - Community retreat parking lot



# MEETING SIGN-IN SHEET

<b>Title</b>	Town of Aurora Community Action Team – Meeting 6				
<b>Date</b>	Feb. 24, 2022	<b>Time</b>	10:00 AM – 12:00 PM	<b>Location</b>	Aurora Town Hall

✓	Name	Organization	Title/Role	Email	Signature
	Judi Lannon	Town of Aurora	Town Manager	townofaurora@auroranc.org	<b>In attendance</b>
	Chuck Bonner	Town of Aurora	Public Works Director	aurorapwd@auroranc.org	<b>In attendance</b>
	Curt Hendrix	Town of Aurora	Recreation Coordinator	aurorarec@embarqmail.com	<b>In attendance</b>
	Kurt Ryan	Town of Aurora	Volunteer	Ryankj88@gmail.com	<b>In attendance</b>
	Carlton Gideon	Mid-East Commission	Planner	cgideon@mideastcom.org	<b>In attendance</b>
	Tina Taylor	Town of Aurora	Commissioner	gmatbtaylor@gmail.com	
	Charles Cannon	COST Community Group	Community	Charlescannon112@gmail.com	
	Joe Calhoun	COST Community Group	Community	Jcalh29726@aol.com	
	Martyn Johnson	Beaufort County	Economic Development Director	Martyn.johnson@beaufortedc.com	
	Bill Cary	Town of Aurora	Resident	Bcary711@gmail.com	
	Jamie Heath	Mid-East Commission	Contractor	jheath@mideastcom.org	<b>In attendance</b>
	Lisa Williams	Mid-East Commission	Contractor	lwilliams@mideastcom.org	
	Paige Cureton	RK&K	Contractor	pcureton@rkk.com	



# MEETING SIGN-IN SHEET

<b>Title</b>	Town of Aurora Community Action Team – Meeting 6		
<b>Date</b>	Feb. 24, 2022	<b>Time</b>	10:00 AM – 12:00 PM
		<b>Location</b>	Aurora Town Hall

✓	Name	Organization	Title/Role	Email	Signature
	Trent Cormier	RK&K	Contractor	tcormier@rkk.com	
	Gordon Marsh	RK&K	Contractor	gmarsh@rkk.com	<b>In attendance</b>
	Tancred Miller	NC DEQ	State/Grant Agency	Tancred.miller@ncdenr.gov	
	Mackenzie Todd	NC DEQ	State/Grant Agency	Mackenzie.todd@ncdenr.gov	<b>In attendance</b>
	Rachel Love-Adrick	NC DEQ	State/Grant Agency	Rachel.love-adrick@ncdenr.gov	
	Sarah Spiegler	NC Sea Grant	Coastal Resilience Specialist	sespiegl@ncsu.edu	<b>In attendance</b>



## **APPENDIX B**

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### Stakeholder Engagement Materials

# AURORA & RICHLAND TOWNSHIP PUBLIC SURVEY



# shape our future.

HELP US IDENTIFY ISSUES & NEEDS RELATED  
TO FLOODING & OTHER NATURAL EVENTS



TAKE THE ONLINE SURVEY:

[www.aurorafloodsurvey.org](http://www.aurorafloodsurvey.org)

PLEASE COMPLETE THE SURVEY BY NOV. 12, 2021

North Carolina  
**RESILIENT  
COASTAL  
COMMUNITIES  
PROGRAM**



**Request a paper survey  
by contacting:**



**JAMIE HEATH, MID-EAST COMMISSION  
(252) 296-1656**



# PUBLIC SURVEY

# shape our future.

HELP US IDENTIFY ISSUES & NEEDS RELATED TO FLOODING & OTHER NATURAL EVENTS

VISIT THE LINK TO TAKE THE SURVEY BY NOV 12



North Carolina

**RESILIENT  
COASTAL  
COMMUNITIES  
PROGRAM**





# TOWN OF AURORA & RICHLAND TOWNSHIP

## Public Input Survey

Severe weather events result in flooding and other storm-related effects and can cause widespread damage, displace residents, and restrict access and mobility, impacting the well-being of communities across eastern North Carolina. Climate change continues to amplify these risks, further threatening coastal development. Barriers, such as economic and capacity constraints, often hinder the actions needed to enhance resilience and reduce vulnerability.

Building resilience to natural hazards is vital for communities to help maintain quality of life, sustain healthy economies, and ensure the conservation of resources for present and future generations. The North Carolina Resilient Coastal Communities Program provides financial grants and technical assistance to support a proactive, locally driven, and equitable approach to coastal resilience planning and project implementation.

Please take a few minutes to complete this survey for the Town of Aurora and Richland Township's Resilient Coastal Communities Program. Your input will help us better understand existing issues and needs in the Aurora-Richland community. Thanks for your time!

This survey can also be completed online at: [www.aurorafloodsurvey.org](http://www.aurorafloodsurvey.org)

### **Please tell us about yourself.**

1. Do you live and/or work in the Town of Aurora or the Richland Township?
2. If yes, how long have you lived and/or worked in the Town of Aurora or the Richland Township?
3. Do you own and/or rent your property (home, business, or both as applicable)?
4. Please identify your zip code (home, work, or both as applicable).

**Coastal Storms & Flooding**

- 5. Which of the following statements about coastal storms do you most agree with?
  - I am very worried about coastal storms in the future
  - I am slightly worried about coastal storms in the future
  - I am not worried about coastal storms in the future
  
- 6. On a scale of 1-5, how significant of a risk do you think flooding currently poses to your community?
  - 1 – not a concern
  - 2 – minor challenge
  - 3 – moderate challenge
  - 4 – serious challenge
  - 5 – extreme challenge
  
- 7. On a scale of 1-5, how significant of a risk do you think flooding will pose to your community in the next 20-40 years, given climate change and rising sea levels?
  - 1 – not a concern
  - 2 – minor challenge
  - 3 – moderate challenge
  - 4 – serious challenge
  - 5 – extreme challenge
  
- 8. Throughout your time living and/or working in the Town of Aurora or the Richland Township, has your experience with flooding changed?
  - Yes, I have witnessed increasing flooding issues.
  - Yes, I have witnessed decreasing flooding issues.
  - No, I have not witnessed a difference in flooding conditions.
  - Not sure.

Comments:

**Coastal Hazards & Impacts**

- 9. What type of coastal hazards have you witnessed in your community? Select all that apply.
  - Tidal flooding – flooding caused by daily or extreme high tides
  - Coastal erosion – loss or displacement of land or sediment along the coastline
  - Storm surge flooding – flooding caused by coastal storms including nor’easters and hurricanes
  - Freshwater/saltwater impacts – changes in the boundary between freshwater and saltwater
  - Riverine flooding – flooding caused by overflowing of rivers and streams
  - Stormwater flooding – flooding caused by lack of drainage or overflowing drainage systems due to intense rainfall
  - Erosion of land under structure

- Direct damage to structure from wave action
- Direct damage to structure from high winds
- Direct damage to structure from fallen trees or branches
- Damage from airborne debris
- Contamination from overflowing septic systems or wastewater treatment facilities
- Secondary damage from floating debris
- Secondary damage from natural gas or propane leak
- Mold
- All of the above
- Other (please specify) \_\_\_\_\_
- None

Comments:

10. Which of those same hazards have directly impacted your home or your business? Select all that apply.

- Tidal flooding – flooding caused by daily or extreme high tides
- Coastal erosion – loss or displacement of land or sediment along the coastline
- Storm surge flooding – flooding caused by coastal storms including nor’easters and hurricanes
- Groundwater impacts – changes in the boundary between freshwater and saltwater
- Riverine flooding – flooding caused by overflowing of rivers and streams
- Stormwater flooding – flooding caused by lack of drainage or overflowing drainage systems due to intense rainfall
- Erosion of land under structure
- Direct damage to structure from wave action
- Direct damage to structure from high winds
- Direct damage to structure from fallen trees or branches
- Damage from airborne debris
- Contamination from overflowing septic systems or wastewater treatment facilities
- Secondary damage from floating debris
- Secondary damage from natural gas or propane leak
- Mold
- All of the above
- Other (please specify) \_\_\_\_\_
- None

Comments:

11. Do you have measures in place to prevent and/or reduce flooding or flood-related damages and losses to your property? If yes, what type of actions have you taken? Check all that apply.
- Elevation of property and/or utilities
  - Use of flood-resistant materials (e.g., using tile in place of carpet)
  - Floodproofing of property, including basements
  - Installation of flood vents
  - Installation of a sump pump
  - Use of flood-resistant insulation
  - Installation of a sewer-backflow valve
  - Use of reinforced caulking of windows and doors
  - Other (please specify) \_\_\_\_\_
  - My property does not have measures in place to prevent and/or reduce flooding and/or future damage.
  - Not applicable. My property never floods and/or I do not anticipate future flooding.
12. Have you ever considered moving to another location (can be inside or outside of the Aurora-Richland area) to avoid future flood losses, impacts, or damages?
- Yes – I am considering buying/renting at a new location in the near future because of past and/or potential future flooding.
  - Yes – I considered buying/renting at a new location but there are conditions that prevent me from doing so (e.g., cost, job, family nearby, etc.)
  - No – I considered leaving but I have nowhere to go.
  - No – I do not want to leave my current location.
  - No – My property never floods so it is not a factor in my decision to stay or leave.
13. Aside from any impacts to your home or business, have you experienced any other negative impacts as a result of flooding events? Check all that apply.
- Damage to transportation networks (e.g., flooded roadways, closure of public transportation systems, transportation delays)
  - Loss of electricity
  - Lack of access to clean drinking water
  - Injury, illness, and/or concerns for personal safety
  - Limited access to services (e.g., closure of hospitals, schools, government offices)
  - Damage to personal possessions (including vehicles)
  - Sewer overflow
  - Inability to perform work duties
  - Other (please specify) \_\_\_\_\_
  - I have not experienced any negative impacts as a result of flooding or a coastal hazard event.

Comments:



14. Are there any specific areas of your community vulnerable to coastal hazards? If so, please list them by location. Please use street intersections or landmarks to describe locations.

15. Please rank the following activities, intended to restore daily life after a coastal storm.

	1 – Not at all important	2	3	4	5 – Very important	No opinion
Re-opening roads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Making my home livable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Repairing damaged buildings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restoring water service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restoring wastewater collection and disposal (sewer or septic system)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restoring communication (telephones, cell phones, internet)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restoring electricity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tourists returning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Businesses reopening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restoring beaches, wetlands, and other coastal landforms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. Is there anything else you would like to share with us regarding flooding and coastal resilience in the Aurora-Richland community?

**Stakeholder Engagement**

17. How would you like the Town of Aurora to communicate with you and/or your community regarding this program or on similar programs in the future?

- E-mail
- Newsletter
- Social media
- Webinar/videos
- Mail
- In person or virtual meetings
- Other (please specify) \_\_\_\_\_
- Not interested in further communication

18. Are there any local or community groups or organizations you feel we should coordinate with to create awareness of this program or similar programs in the future? If yes, please provide their name, website, and contact information if possible.

19. Are there any upcoming events where we could share information about this program?

**Demographic Information (Optional)**

**Tell us your age.**

- Under 18
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65-74
- 75+

**What race/ethnicity best describes you? Select all that apply.**

- White/Caucasian
- Black or African American
- Asian
- American Indian or Alaskan Native
- Native Hawaiian/Pacific Islander
- Hispanic/Latino
- Multiple races or ethnicities
- Other (please specify): \_\_\_\_\_

**Which type of housing best describes your home?**

- Single-family, detached from other homes
- Townhome, attached to other homes
- Apartment or condominium
- Other (please specify): \_\_\_\_\_

**How do you travel in the Aurora-Richland area? Select all that apply.**

- Walk
- Bicycle
- Beaufort Area Transit System (BATS)
- Driving a personal vehicle
- Taxi or rideshare
- Carpool / Vanpool
- Motorcycle
- Other (please specify): \_\_\_\_\_

# Town of Aurora and Richland Township, NC: Resilient Coastal Communities Program

38 responses

Please tell us about yourself.

**Do you live and/or work in the Town of Aurora or the Richland Township?**

- Yes (20 responses)
- No (3 responses)
- Richland Township (5 responses)
- Live (2 responses)
- 4 years (1 response)
- Yes. live and work in Aurora (1 response)
- I work in Aurora and live in Richland Township. (1 response)
- I live in Aurora on Bateman Road. (1 response)
- Live in Aurora. (1 response)
- Live – Richland (1 response)
- Yes – both (1 response)
- not any longer (1 response)

**If yes, how long have you lived and/or worked in the Town of Aurora or Richland Township?**

- Less than 1 year (0 responses)
- 1-2 years (2 responses)
- 3-5 years (3 responses)
- 6-10 years (4 responses)
- 11-15 years (4 responses)
- 16-20 years (1 response)
- 21-30 years (5 responses)
- 31-40 years (1 response)
- 41-50 years (3 responses)
- 51+ years (10 responses)
- all my life
- Life-long resident

**Do you own and/or rent your property (home, business, or both as applicable)?**

- Own (21 responses)
- Own home (4 responses)
- Rent my home (1 response)
- Yes (7 responses)
- No (2 responses)
- Own a home and own a business (1 responses)
- Own home and business both (1 response)
- Own and rent (1 response)

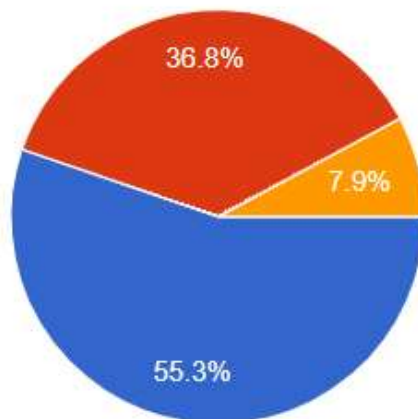
Please identify your zip code (home, work, or both as applicable).

- 27806 (31 responses)
- 27814 (3 responses)
- 27821 (2 responses)
- 27806 for both (1 response)
- It was 27806 (1 response)

## Coastal Storms and Flooding

Which of the following statements about coastal storms do you most agree with?

38 responses

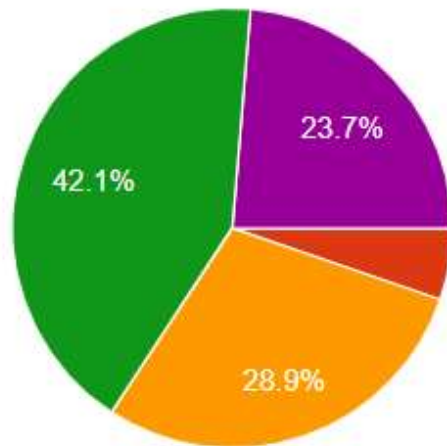


- I am very worried about coastal storms in the future.
- I am slightly worried about coastal storms in the future.
- I am not worried about coastal storms in the future.



On a scale of 1-5, how significant of a risk do you think flooding currently poses to your community?

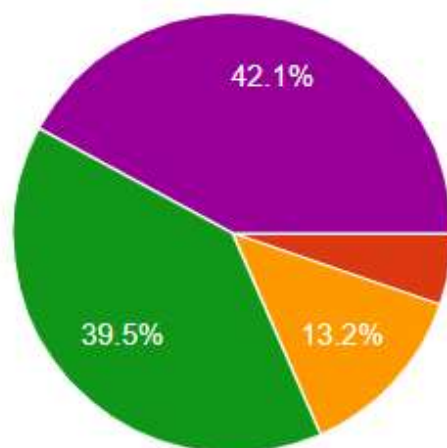
38 responses



- 1 - not a concern
- 2 - minor challenge
- 3 - moderate challenge
- 4 - serious challenge
- 5 - extreme challenge

On a scale of 1-5, how significant of a risk do you think flooding will pose to your community in the next 20-40 years, given climate change and rising sea levels?

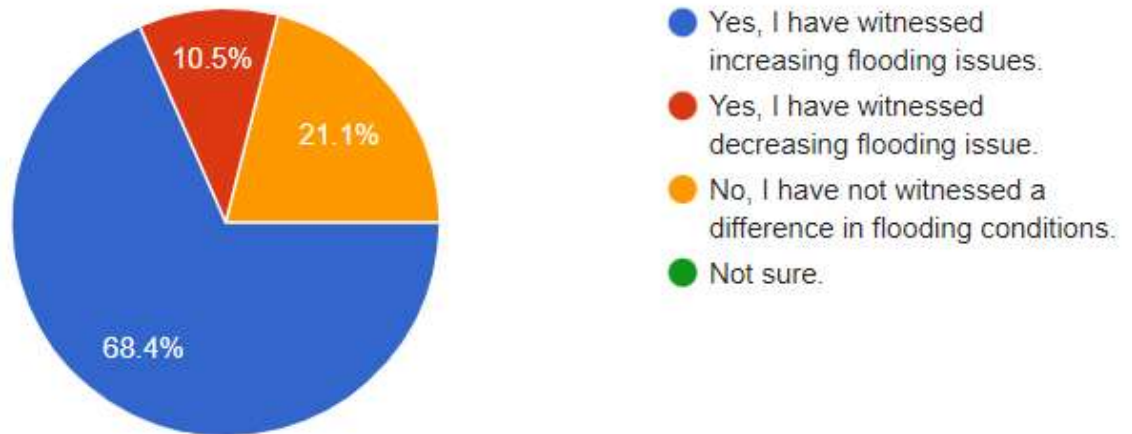
38 responses



- 1 - not a concern
- 2 - minor challenge
- 3 - moderate challenge
- 4 - serious challenge
- 5 - extreme challenge

## Throughout your time living and/or working in the Town of Aurora or the Richland Township, has your experience with flooding changed?

38 responses



### Comments on previous question (optional).

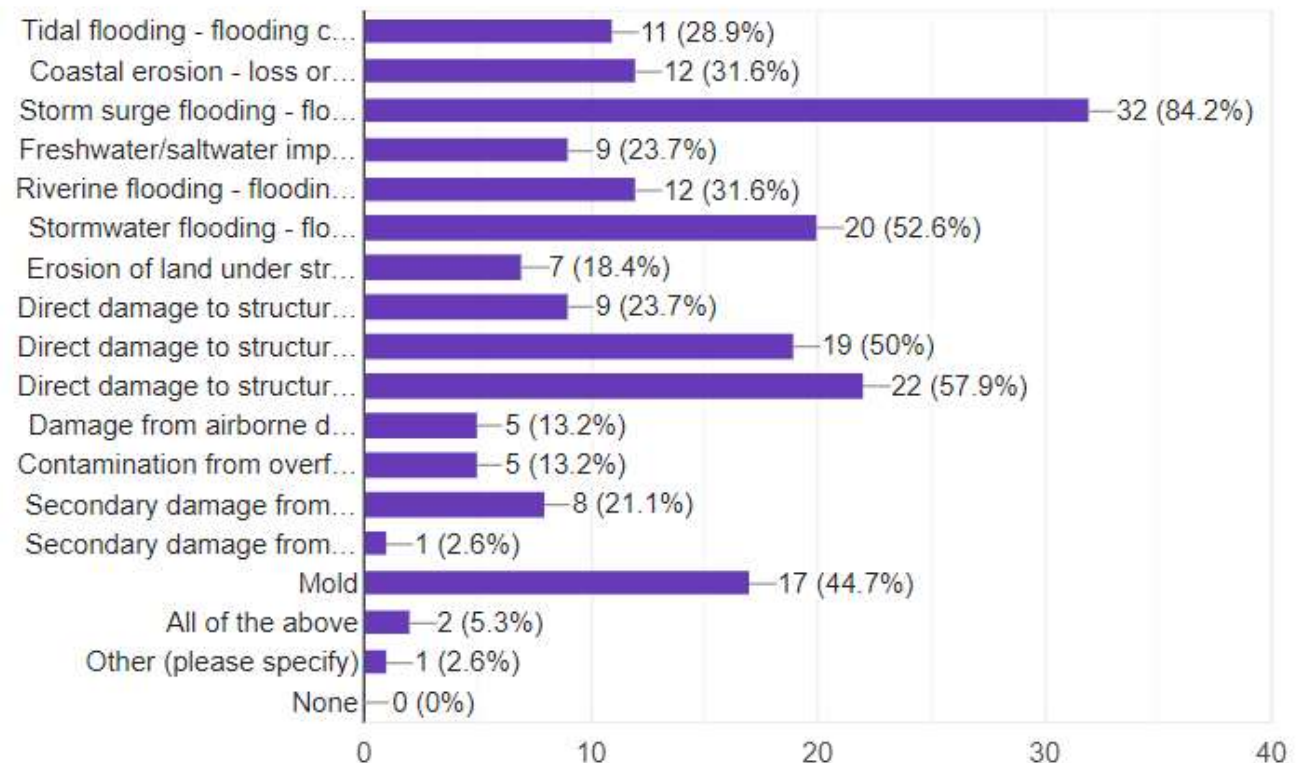
- As I was growing up in Richland Township, it was a common occurrence to have some high water during coastal storms, but since I have living here as an adult the high water/flooding issues have increased. I believe this is due in part to drainage issues on our waterways. Smaller water ways and ditches in the area are clogged with storm debris from past storms and no one seems to know whose responsibility it is to take care of such issues, property owners, South Creek Drainage District, State DOT??? Maybe this survey can help shed some light on this issue.
- Yes, I have witnessed an increasing flooding issues. I pay a drainage district fee yearly and although it is not much it is very discouraging to know that no one has any answers to what the funds are used for. All my life the most I have seen anyone do around the creek banks is mow the grass. I have a large ditch that runs from state road 1002 down my property line to the creek that crosses Bateman road. I live on the corner property. I have been told this is for drainage of the farm land around me yet I have never seen the ditch cleaned out for drainage. I believe if the ditches and canals were cleaned out we would have better drainage and less flooding.
- In the past 10-12 years I have seen it 4-5ft higher than I never seen as a kid growing up. It also takes longer for flood waters to reseed. You would be able to see noticeable progress within a few hours now I have seen it take 2-3 days before areas drain.
- 2011 Hurricane Irene was the worst.
- Irene
- Much of my family & friends have lost everything during storms like Irene & Florence.
- Never flooded in the house but a lower house in the back was flooded.
- Flooded in Royal, first time ever to the extent that Irene did for which we got no help to salvage our losses. Cant afford that anymore.

## Coastal Hazards and Impacts

What type of coastal hazards have you witnessed in your community?

Select all that apply.

38 responses

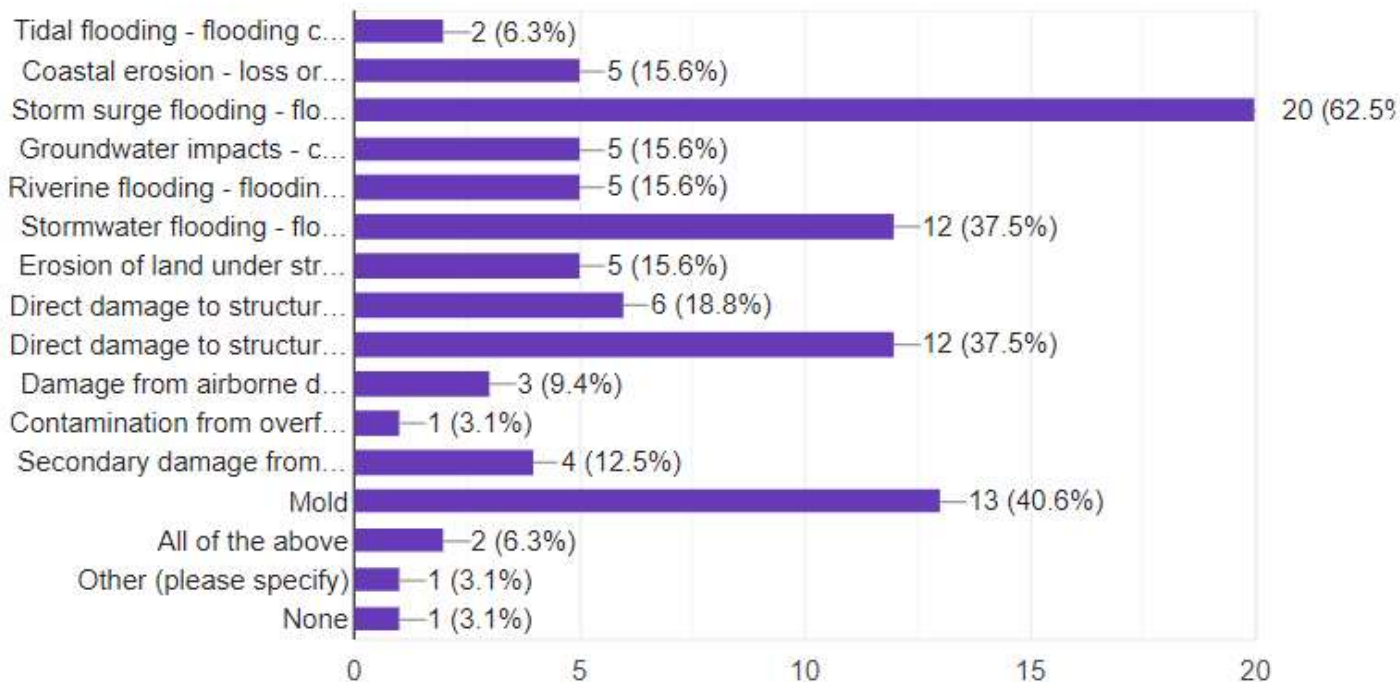


### Comments on previous question (optional).

- Debris left from receding waters is hazardous, damage to docks
- Nutrien has altered the makeup of South Creek
- During storms we of course have higher water levels but Areas are so over grown heavy rain fall can cause flooding and lack of drainage keep the ground so moist septic system drainage are effected. Due to the extra flooding from lack of drainage the edges of ditches and creeks start to break down and wash away causing erosion. By these areas not being cleaned dead and weak trees are left to be ripped away by high winds causing road blocks and adding to the build up and cloning drainage more. Before areas were Simi maintained in an effort to control mosquitoes but over the years even that has seemed to become less important. As citizens if you call and complain or report issues no one seems to know who's job it is, all they know is that isn't there department.
- At this time we are not experiencing tidal flooding
- overgrown drainage, Irene
- Unexpected freezing temperatures have also had devastating financial impact

Which of those same hazards have directly impacted your home or your business? Select all that apply.

32 responses



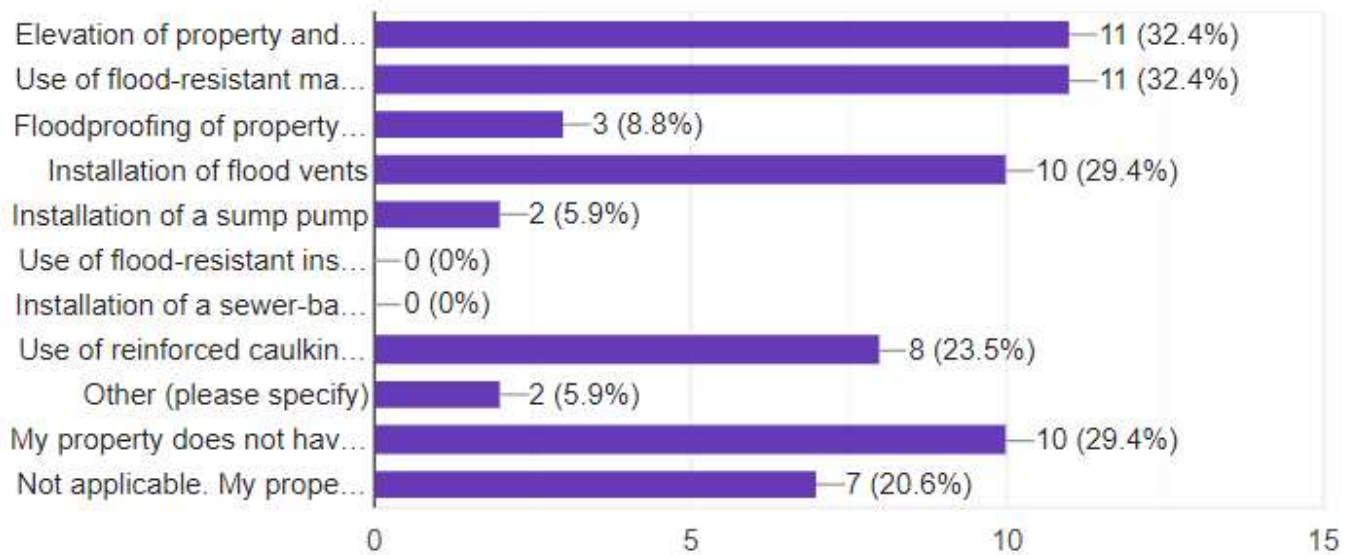
Comments on previous question (optional).

- Direct damage to structure from high winds
- Wind from storms has significantly impacted damage and outages to the township, mostly from downed trees and impacts to structures and electric power, causing long outages, sometimes in the 3-4 day length until power companies can respond and restore power. We are the end of the line.
- debris left from receding waters, damage to docks
- Nutrien again
- The water that has come up onto my property has made the land too acidic to grow a garden not to mention the damage it done under my house that the insurance did not acknowledge at the time and now main beams are falling apart.
- We had a bad hurricane were we were without lights or water for days. Water came up under our house wetting the underside of the floors. Fema helped some but said it wasn't that bad since water didn't actually come in. Over the past few years we have had mold issues and had to replace multiple flooring as the wood rotten from exposure to the river water. Several neighbors have had similar issues and those closer to the creek had to completely rebuild. We also had to change internet providers because everytime it rains the box floods and service would go out.
- Direct damage to structure from high winds.
- We worry about local mining operations at PCS/Texasgulf/Nutrien affecting water quality & groundwater level changes as they come by our homes to mine more.
- We were lucky that a huge old pecan tree fell during a Hurricane but it fell away from our house.



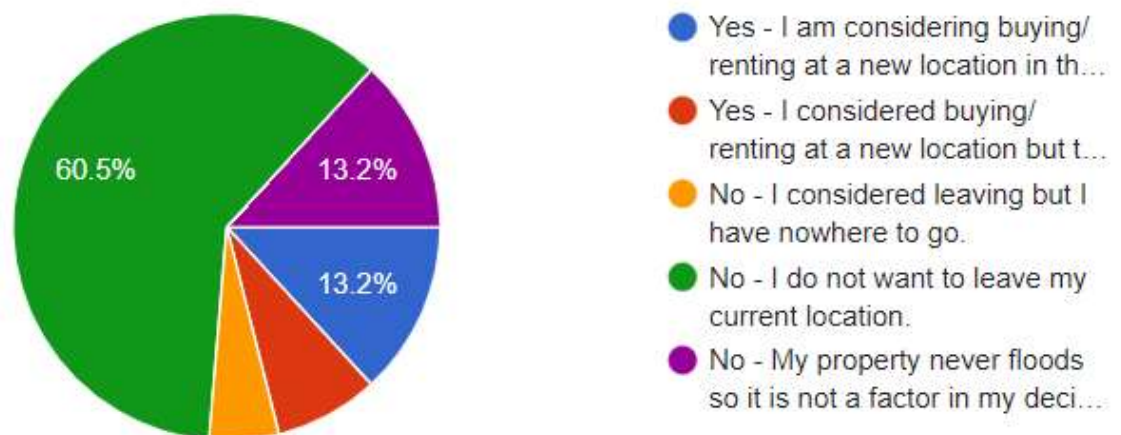
Do you have measures in place to prevent and/or reduce flooding or flood-related damages and losses to your property? If yes, what type of actions have you taken? Check all that apply.

34 responses



Have you ever considered moving to another location (can be inside or outside of the Aurora-Richland area) to avoid future flood losses, impacts, or damages?

38 responses

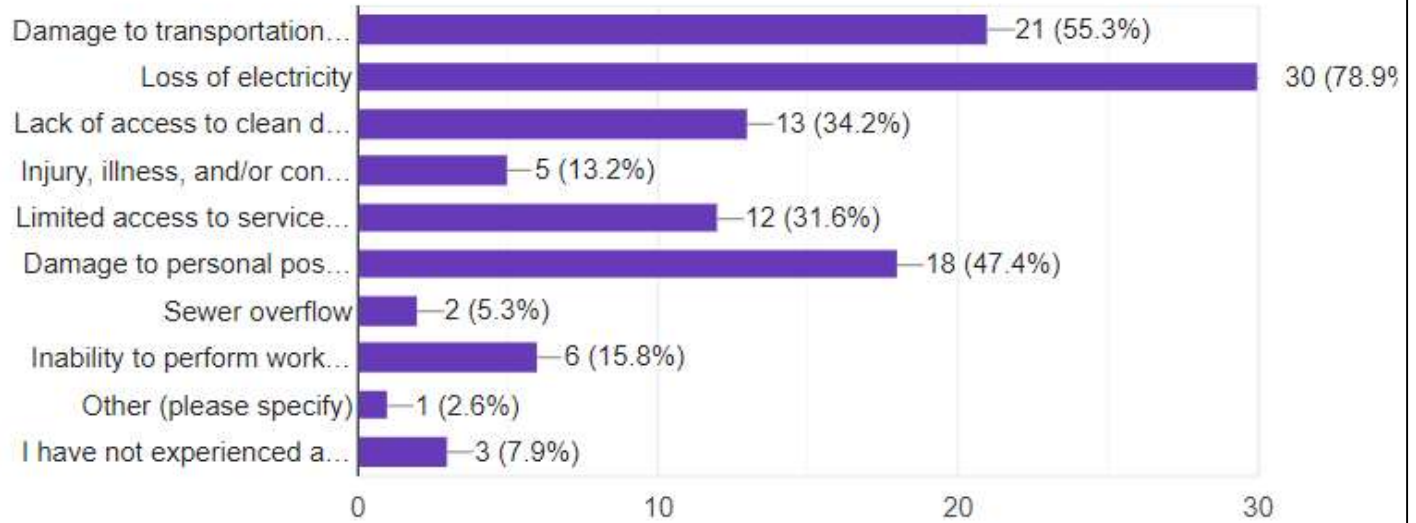




Aside from any impacts to your home or business, have you experienced any other negative impacts as a result of flooding events? Check all that apply.



38 responses



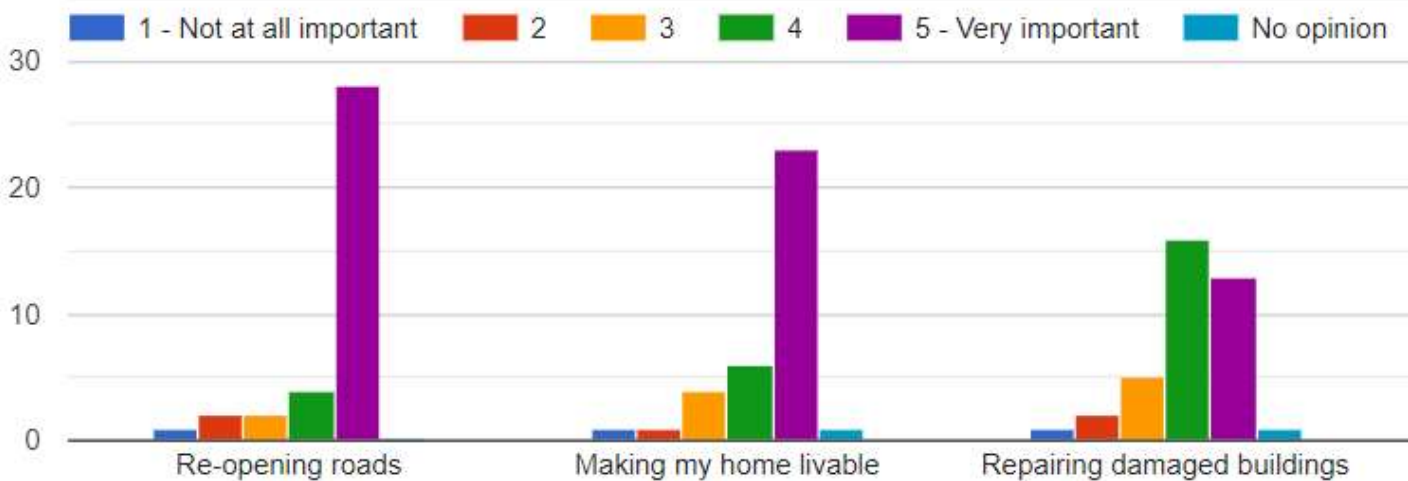
#### Comments on previous question (optional)

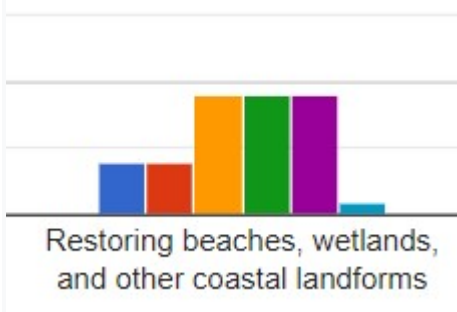
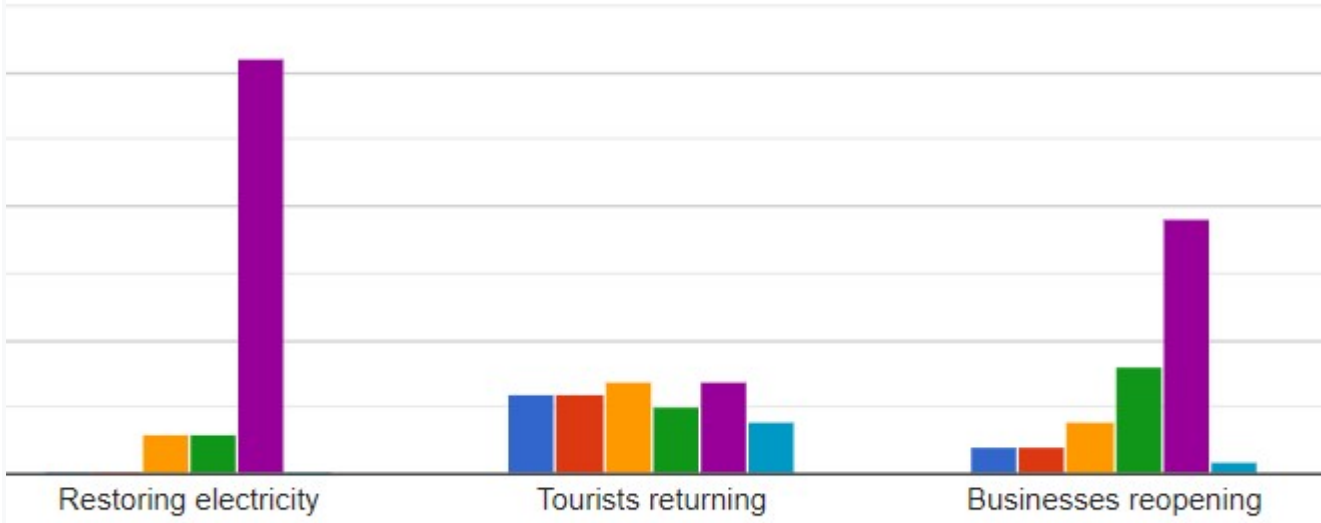
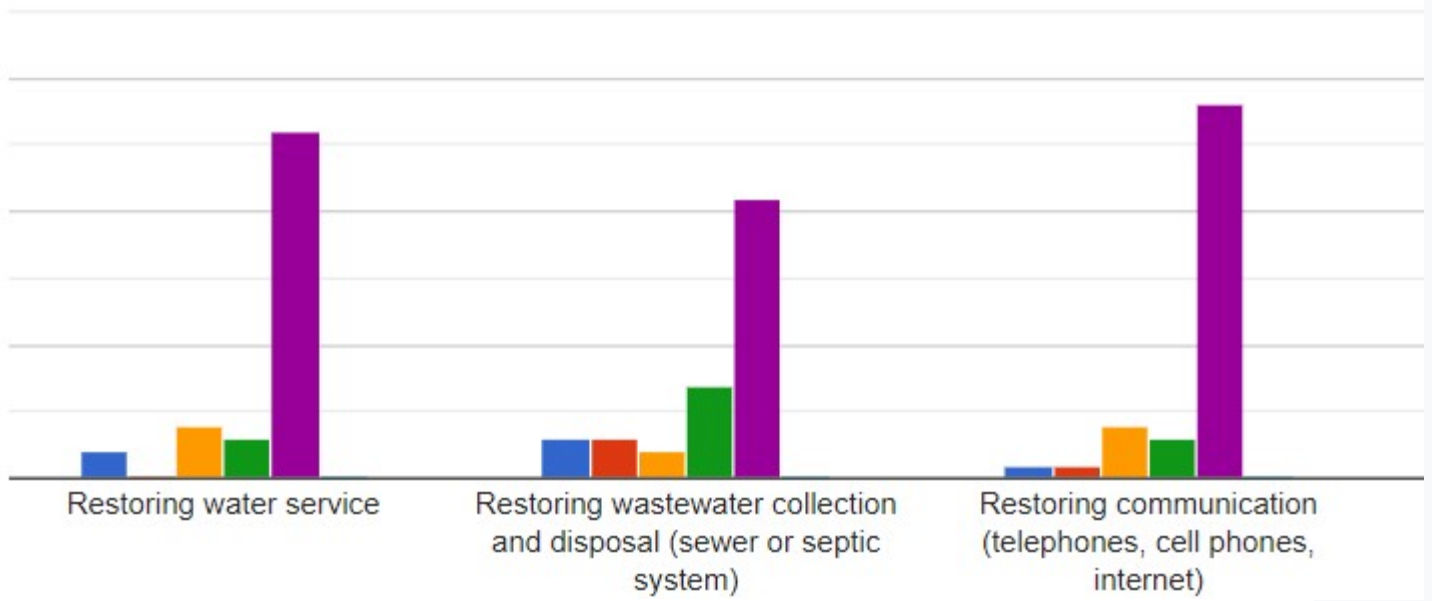
- Century Link phone boxes all over the town are in low lying places of water rising. I left Century Link and went with Spectrum just so I could have better phone and internet service. Before Spectrum only heavy rainy days the phone would be staticy and internet would be extremely slow to the place you could not do anything.
- We have been flooded in (no road access) until water levels dropped, be have lost out door pets when we had to let them out to prevent them from drowning, my husband was unable to get home to us from work for several days due to flooding. We have lost several vehicles due to flooding.
- 2011 Hurricane Irene shut down everything.
- Displacement

**Are there any specific areas of your community vulnerable to coastal hazards? If so, please list them by location. Please use street intersections or landmarks to describe locations.**

- Lack of high speed internet for our citizens to monitor and communicate w/emergency officials during periods of severe storm. This is one of our key infrastructure shortfalls and needs addressed by the government for funding.
- Hickory Point Road east of the Aurora/Bayview ferry terminal. Low road, bridge wash out.
- Most of Bateman Road, between Bay City Road and Idalia Road. Bay City Road between the County Line and Hwy 33.
- Baycity road from SR 1924 all the way down to Hwy. 33 to include bateman road, west road, royal hwy., and SR 1917. All of south creek area, Hickory point, and the back part of town on the other side of main street away from the caution light.
- Anything close to the creek from bateman on bay city to spring creek area to 33 towards hobucken. Downtown by the boat ramp and everything from main st towards the creek. I'm sure there are many more but those are areas that I know can flood some even with just heavy rain
- Within the city limits, the ditches overflow and have no drainage during heavy rains or storms.
- Protecting the Town water (406 Pearl St.) & sewer (3 WWTP Road) utility.
- Especially low-income areas in Aurora & its surrounding areas that have no recourse to prevent flooding or deal with it once it happens.
- 6th and Main Street
- River banks overflowing into Aurora even during an excessive amount of rain.

Please rank the following activities, intended to restore daily life after a coastal storm.





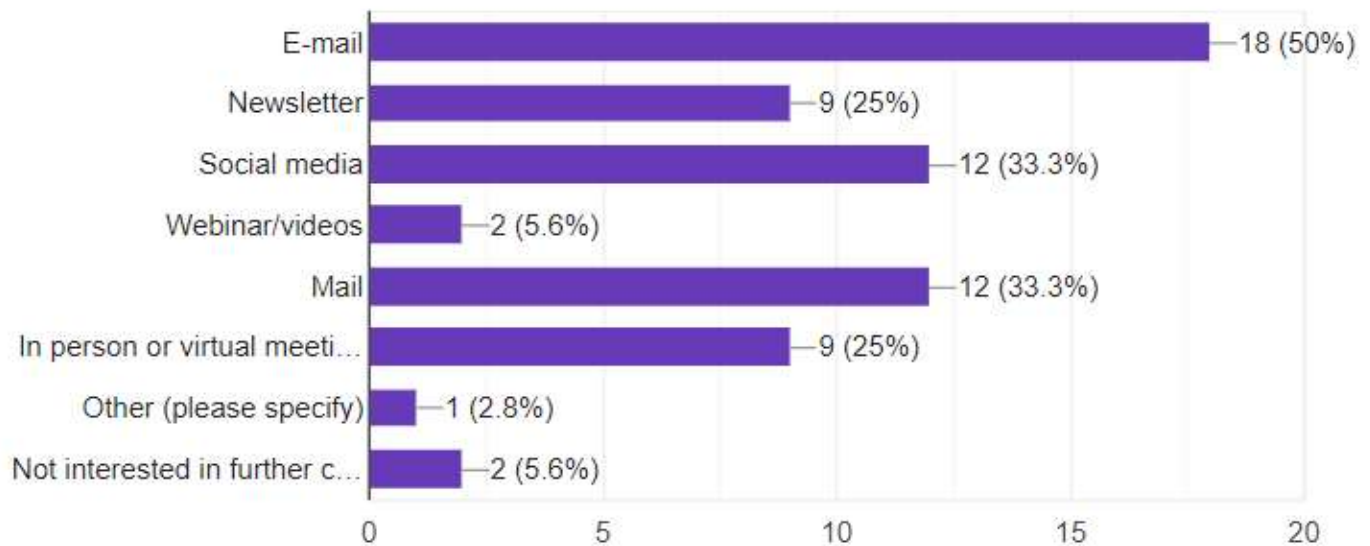
## Is there anything else you would like to share with us regarding flooding and coastal resilience in the Aurora-Richland community?

- Thanks for taking an interest in the citizen's concerns on the south side of the Pamlico. They have long been neglected and have many needs as a rural under-served community.
- As I stated earlier, I feel part of the issues with high storm water and flooding here in the Aurora Richland Township area is unrestricted drainage in our ditches, creeks and waterways. At one time this was handled in the name of mosquito control, but I am not sure who or what persons or governmental entity is possibly responsible for the remediation of these issues
- Land value seems to go down, taxes go up and anytime you try to do anything no matter who you call it's not their department (road fixed, drainage issue, grass cut on side of hwy, etc) I hope this survey really helps and isn't just a waste of time
- I'd like to dike my waterfront. (Waterfront is 150 ft. (marsh) from lawn.
- My family moved to an elevated home, many in this community cannot afford to move.
- The social fabric of our community is irreparably impacted by the increasingly strong storms. They are getting more severe.
- I have already moved from waterfront, partially due to storms
- Groceries store

## Stakeholder Engagement

How would you like the Town of Aurora to communicate with you and/or your community regarding this program or on similar programs in the future?

36 responses



**Comment field. Complete if "Other (please specify)" was checked in previous question.**

Newspaper

Basic/understandable storm insurance should be a priority.

Are there any local or community groups or organizations you feel we should coordinate with to create awareness of this program or similar programs in the future? If yes, please provide their name, website, and contact information if possible.

- COST
- Aurora Community Watch, Aurora Seniors Club, Aurora/Richland Township Chamber of Commerce
- Fire Department, community watch
- South Creek Drainage District, Town of Aurora, Aurora/Richland Township Chamber of Commerce.
- South Creek Drainage District, Richland Township, Aurora Women's Club
- I have received text about covid vaccines and hurricane information, that same system could announce other things
- Aurora Volunteer Fire Department. Kevin Bonner.
- Library, Fire/Rescue, Emergency Services
- (I)T
- Auroralife.org
- Citizen on Southside Together Charles Cannon 252-916-3924

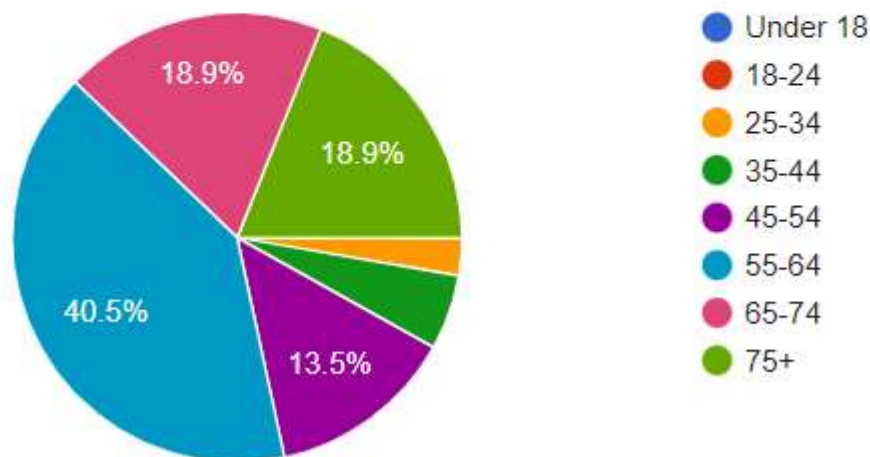
Are there any upcoming events where we could share information about this program?

- upcoming meetings are published at <http://www.auroralife.us>
- Various civic clubs meetings. Fire Department.

## Demographic Information (optional)

Tell us your age.

37 responses

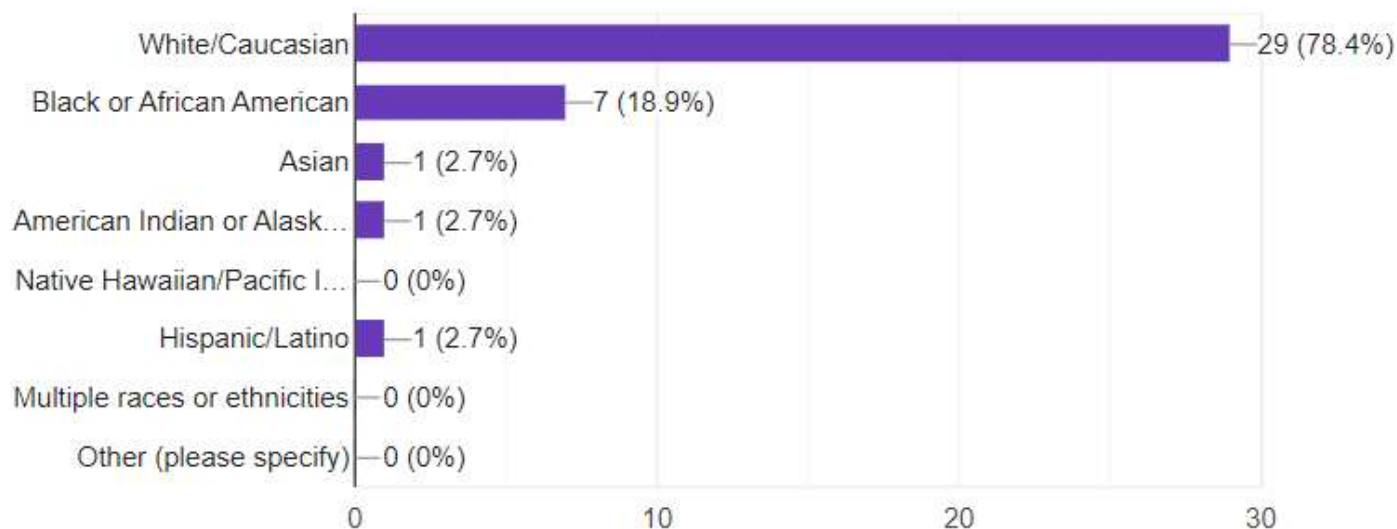




### What race/ethnicity best describes you? Check all that apply.

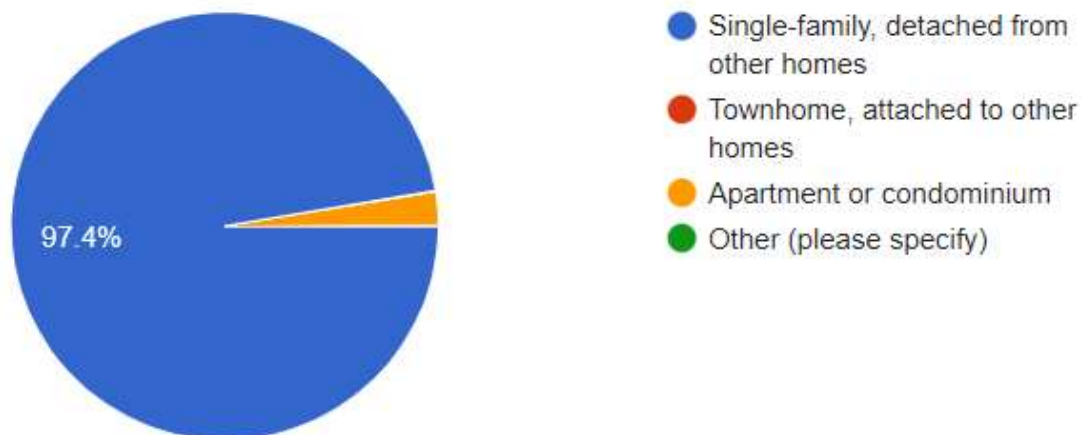


37 responses



### Which type of housing best describes your home?

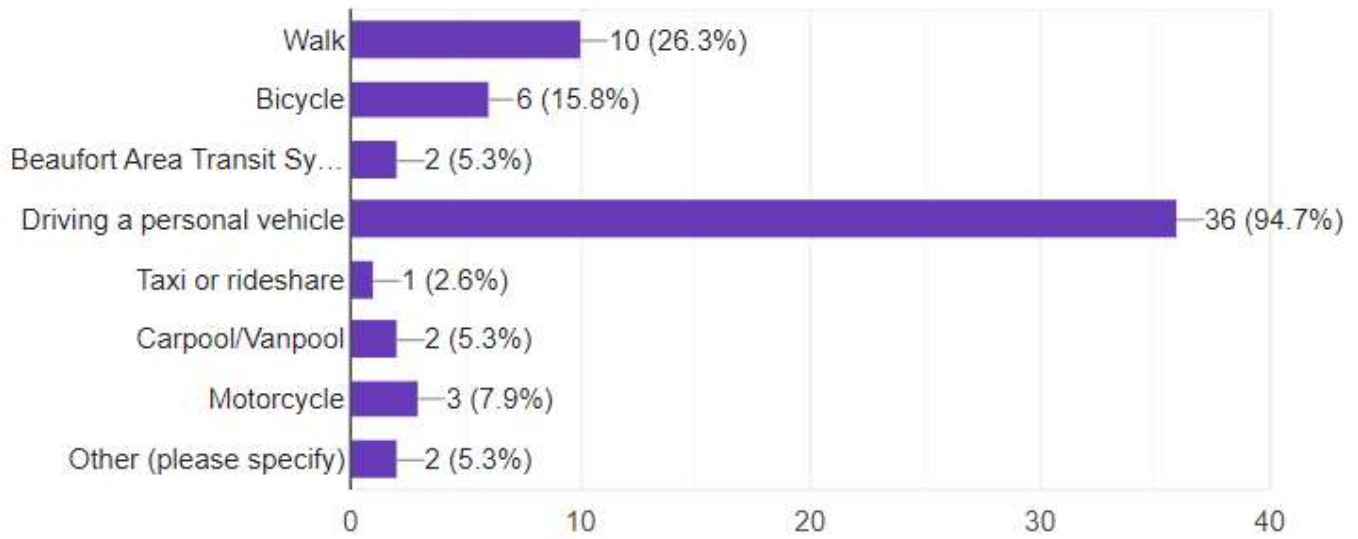
38 responses



# How do you travel in the Aurora-Richland area? Select all that apply.



38 responses



**Comment field. Complete if "Other (please specify)" was checked in previous question.**

- Driviing school bus for Arapahoe Charter School
- via helicopter

# RESILIENCY PUBLIC OPEN HOUSES

*Drop in anytime during meeting hours.*

## AURORA

Mon, Feb 14  
4:00 - 6:00 pm  
Aurora Community Center  
295 Main St



## WASHINGTON

Tues, Feb 15  
4:00 - 6:30 pm  
Washington Civic Center  
Ballroom, 110 Gladden St

## BELHAVEN

Wed, Feb 16  
4:00 - 6:00 pm  
Belhaven Civic Center  
257 W Pungo St

## BEAUFORT COUNTY

Thurs, Feb 17  
4:00 - 6:30 pm  
Beaufort County Community  
College, Building 10,  
Multipurpose Room  
5337 US-264

## VIRTUAL VIA ZOOM

Mon, Feb 21, 6:00 - 7:30 pm  
Go to: [www.zoom.us](http://www.zoom.us)  
Click: Join A Meeting  
Meeting ID: 646 627 9358  
Meeting Passcode: 123  
Call-In Option:  
+1 301 715 8592

Jamie Heath  
Planner

Mid-East Commission  
(252) 296-1656



**VISIT US ON THE WEB**  
[BeaufortCountyResiliency.org](http://BeaufortCountyResiliency.org)



Part of the N.C. Resilient Coastal Communities Program



AUROLA



RESILIENCY  
***PUBLIC OPEN HOUSES***

Mon, Feb 14, Aurora Community Center  
295 Main St, 4:00 - 6:00 pm

**VIRTUAL OPTION**

Mon, Feb 21, 6:00 - 7:30 pm  
Visit **BeaufortCountyResiliency.org**  
for Zoom meeting information

**Help us prioritize projects to enhance our  
community's resilience to flooding**

## The Town of Aurora seeks public input on resiliency projects to enhance community resilience to flooding

February 2, 2022

AURORA, NC - In Fall 2021, the Town of Aurora asked for public input on issues, needs, and opportunities related to flooding in our community via a public survey. The town is now inviting the public to attend an open house to gather input on community priorities. Draft resiliency actions will be provided for public review, including potential investments in policy and regulatory actions, public education, infrastructure improvements, and nature-based projects. Public input will be used to inform priority projects and actions.

### The Town of Aurora

- Monday, Feb. 14 – Aurora Community Center, 295 Main St., 4:00 p.m. to 6:00 p.m.

The public may drop-in any time during meeting hours. There will be no formal presentation. A virtual open house will provide the same information as the in-person public meeting.

- Monday, Feb. 21 – Virtual Open House, Go to: [www.zoom.us](https://www.zoom.us), Click: Join A Meeting, Meeting ID: 646 627 9358, Meeting Passcode: 123, Call-In Option: +1 301 715 859, 6:00 p.m. to 7:30 p.m.

### Beaufort County Communities - Resiliency Web Information

- An online storymap with more information will be available from Feb. 11 through Feb. 28 at: [BeaufortCountyResiliency.org](https://BeaufortCountyResiliency.org).

These meetings are part of the N.C. Resilient Coastal Communities Program. The program facilitates a community-driven process for setting coastal resilience goals, assessing existing and needed local capacity, and identifying and prioritizing projects to enhance community resilience to coastal hazards. This initiative, funded through the N.C. State Legislature and the National Fish and Wildlife Foundation, provides funding to local governments to help overcome barriers in coastal resilience and adaptation planning, boost local government capacity, and support a proactive, sustainable, and equitable approach to coastal resilience planning and project implementation.

More information on the N.C. Resilient Coastal Communities Program is available at <https://deq.nc.gov/about/divisions/coastal-management/coastal-adaptation-and-resiliency/nc-resilient-coastal-communities-program>

For questions about the public open houses, contact Jamie Heath, Mid-East Commission, at (252) 296-1656.



Link to Washington Daily News open house article

<https://www.thewashingtondailynews.com/2022/02/08/public-invited-to-discuss-community-flood-resiliency-efforts/>

**Link to Online Resiliency Storymap**

[www.BeaufortCountyResiliency.org](http://www.BeaufortCountyResiliency.org)



# OPEN HOUSE SIGN-IN SHEET

**Title** Town of Aurora & Richland Township Resiliency Open House  
**Date** Feb. 14, 2022      **Time** 4:00 – 6:00 PM      **Location** Aurora Community Center

Name	Email (Optional)	Phone (Optional)
Curt Hendrix		252-531-3416
Colby Jordan		252-671-5034
Laura Jordan		252-634-7600
KURT RYAN		717-462-3926
Chuck Bonner		252-943-5391
Cliff Williams	Cliff.Williams@aurora.nc.gov	252-637-8778

# WELCOME

Thank you for attending the Resiliency Open House!

- ✓ Sign In
- ✓ Collect a Handout
- ✓ Visit the Information Stations
- ✓ Talk with the Project Team
- ✓ Complete a Comment Sheet

## Public Open House Stations



### RESILIENCY

What is resiliency?

Flooding in Beaufort County



What does resiliency mean to you?

North Carolina Resilient Coastal Communities Program

 *Public input opportunity*



### A COMMUNITY PLAN

Resiliency vision

Community Action Team

Building upon previous plans

Public survey



### RISK & VULNERABILITY

Vulnerable community assets

Top flood related hazards



### PROJECTS & PRIORITIES

Suite of potential solutions

Preliminary strategies and their feasibility

Action strategy areas



Provide input on your top (3) preferred actions

Provide input on your top (1) preferred natural/nature-based or hybrid action 



### RESOURCES

Resiliency resources

Resident resources



### COMMENTS

Submit your comment sheet 





## NORTH CAROLINA RESILIENT COASTAL COMMUNITIES PROGRAM



## PROGRAM BASICS

**THE ISSUE:** Flooding and other coastal hazards have devastating impacts on the economies and livelihoods of communities across eastern North Carolina. Coastal development and climate change continue to amplify these risks, and several barriers like economic and capacity constraints hinder the actions needed to enhance resilience and reduce vulnerability.

*Building resilience to natural hazards is vital for communities to help maintain quality of life, healthy growth, durable systems, and conservation of resources for present and future generations.*

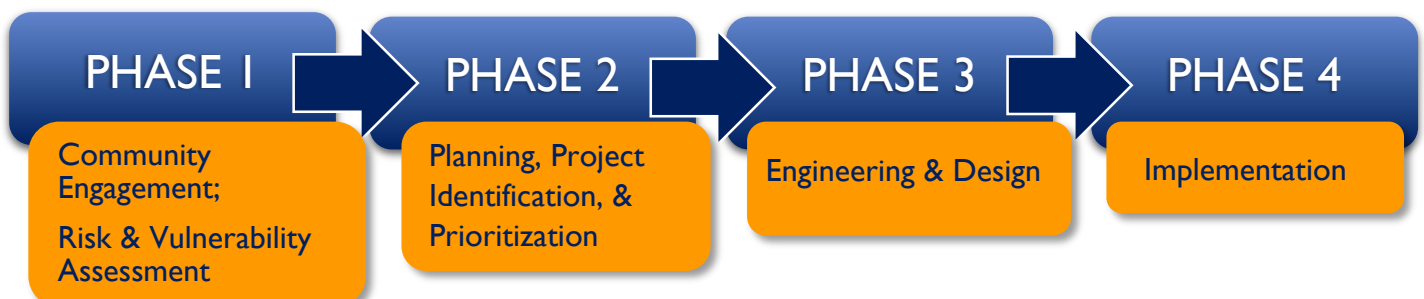
**OBJECTIVES:** The NC Resilient Coastal Communities Program provides **financial grants and technical assistance** to support a proactive, locally-driven, and equitable approach to coastal resilience planning and project implementation.

**ELIGIBILITY:** County and municipal governments in the 20 CAMA counties are eligible to receive assistance through the RCCP. Any qualified organizations may apply to provide technical assistance.

**FRAMEWORK:** The RCCP provides a phased framework to assess coastal risks and vulnerabilities, engage community stakeholders, and develop projects to strategically improve the resiliency of communities and their natural and built infrastructure. The four phases of the program include:

### NC'S FUTURE

Intensity of tropical storms and hurricanes, storm surge flooding, heavy precipitation events, sea level rise, and tidal flooding are all expected to increase in our state (NC Climate Science Report 2020). More must be done to safeguard communities from loss of life, economic hardships, and the destructive impacts of intensifying coastal and climate risks.





## Program Goals:

- Address barriers to coastal resilience in North Carolina at the local level, such as limited capacity, economic constraints, and social inequities;
- Assist communities with risk and vulnerability assessments and developing a portfolio of well-planned and prioritized projects;
- Advance coastal resilience projects to “shovel-ready” status, or ready for implementation; and
- Provide funding for project implementation and link to additional funding streams.

**PROGRAM ORIGINS:** The Resilient Coastal Communities Program is a component of the statewide North Carolina Resilient Communities Program, called for in the North Carolina Climate Risk Assessment and Resilience Plan. It is also a continuation of several years of coastal resiliency work at DCM.

## PROGRAM PARTNERS:



## PROGRAM FUNDERS:



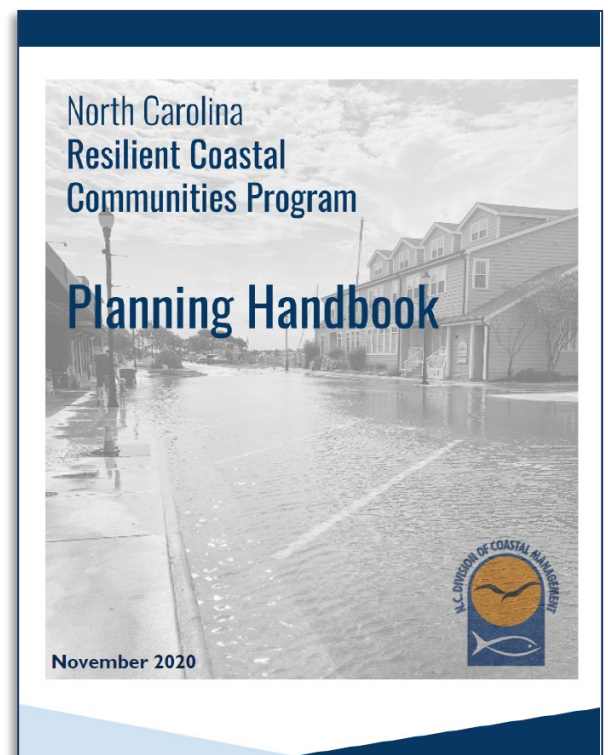
## PROGRAM PLANNING HANDBOOK:

Communities and contractors participating in this program are provided guidance to complete Phases 1 and 2 in DCM’s Program Planning Handbook, available [here](#).

**HOW TO APPLY:** Applications for Phases 1 and 2 are closed for the current round. Applications for grant funding to complete Phases 3 and/or 4 will open in Winter 2021. Communities wishing to receive funding for engineering, design, and/or implementation must complete the requirements of the RCCP Planning Handbook – via Phase I and 2 participation or independently.

**PROGRAM CONTACT:** Email us at [RCCP@ncdner.gov](mailto:RCCP@ncdner.gov) with any questions about the program.

**WEBSITE:** Also visit our website [here](#) for updates.



# COMMENT FORM

Thank you for attending the Aurora/Richland Township Resiliency Open House!

## CONTACT INFORMATION

Name			
Address (Optional)			
E-mail Address (Optional)			
Would you like to be informed of future resiliency efforts?	<input type="checkbox"/>	Yes	No

## Draft Resiliency Actions

### 1. Which of the following draft actions do you prefer? Please select your top three (3).

<input type="checkbox"/>	<b>Wetland Restoration Wastewater Treatment Plant</b> <i>Comment:</i>	<i>Hybrid Action</i>
<input type="checkbox"/>	<b>Drainage Ditch and Tributary Maintenance Plan</b> <i>Comment:</i>	<i>Policy/Regulatory-Based Action</i>
<input type="checkbox"/>	<b>Stream Clean-up Partnership</b> <i>Comment:</i>	<i>Staffing, Funding and Resources Action</i>
<input type="checkbox"/>	<b>Bailey Creek Tributary Improvements</b> <i>Comment:</i>	<i>Natural/Nature-Based Action</i>
<input type="checkbox"/>	<b>Easements for Ditches and Tributaries</b> <i>Comment:</i>	<i>Policy/Regulatory-Based Action</i>
<input type="checkbox"/>	<b>Phosphate Waste as Fill to Support Development</b> <i>Comment:</i>	<i>Infrastructure Action</i>
<input type="checkbox"/>	<b>South Creek Flood Controls</b> <i>Comment:</i>	<i>Natural/Nature-Based Action</i>
<input type="checkbox"/>	<b>Aurora and Richland Township Master Plan</b> <i>Comment:</i>	<i>Policy/Regulatory-Based Action</i>
<input type="checkbox"/>	<b>Community Retreat Parking Lot</b> <i>Comment:</i>	<i>Infrastructure Action</i>

### 2. Which of the following natural/nature-based or hybrid actions do you prefer? Select one.

<input type="checkbox"/>	<b>Wetland Restoration Wastewater Treatment Plant</b> <i>Comment:</i>	<i>Hybrid Action</i>
<input type="checkbox"/>	<b>Bailey Creek Tributary Improvements</b> <i>Comment:</i>	<i>Natural/Nature-Based Action</i>
<input type="checkbox"/>	<b>South Creek Flood Controls</b> <i>Comment:</i>	<i>Natural/Nature-Based Action</i>



RCCP STAPLEE Criteria Worksheet  
Aurora / Richland Township



STAPLEE Criteria >>

STAPLEE Criteria >>	Social		Technical			Administrative			Political			Legal			Economic				Environmental					TOTAL
	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT Waste Sites	Consistent w/ Community Environmental Goals	Consistent w/ Federal Laws	
<b>Considerations for Alternative Actions</b>																								
<b>Wastewater Treatment Plant (WWTP) Strategies</b>																								
<b>ACTION: Wetland Restoration at Wastewater Treatment Plant</b> Restore wetland function for the WWTP. Clean out sludge and reline ponds. Elevate sides of WWTP for storm surge protection.																								
1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	0	0	1	1	19
<b>Ditching and Maintenance Strategies</b>																								
<b>ACTION: Drainage Ditch and Tributary Maintenance Plan</b> Map and design a maintenance plan to clean out drainage ditches and tributaries. Develop a list of areas that can be turned into bioswales for treatment of runoff.																								
1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	19
<b>ACTION: Easements for Ditches and Tributaries</b> Develop easements to maintain drainage ditches and tributaries. Once easements are obtained identify locations where SCMs can be implemented to provide capacity or treat water.																								
1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	19
Partner with Duke Energy to clear trees and branches from electric easements in town. Clear trees proactively, rather than waiting for damage to electric infrastructure to occur.																								
1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	14
Maintain continual contact/working relationship with electric service providers in the Town of Aurora and the Richland Township to address the following: 1) Disaster preparedness techniques (e.g., tree trimming, vegetation planting requirements, pole replacement); 2) Identification of critical electrical facilities needing retrofit or upgrade and map with elevation reference marks; 3) Identification of problem areas and potential solutions; and 4) Communication with town officials during and immediately after a natural hazard event that results in loss of electrical power.																								
1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	14
<b>Planning &amp; Policy Strategies</b>																								
<b>ACTION: Aurora and Richland Township Master Plan</b> Develop a Master Plan for the Town of Aurora and the Richland Township, with focus on Climate Change and Growth. a. Equitable Opportunity, b. Zoning, c. Economic Development, d. Resiliency, Healthy, and Livable Community																								
1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	19



RCCP STAPLEE Criteria Worksheet  
Aurora / Richland Township



STAPLEE Criteria >>

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<b>Considerations for Alternative Actions</b>																								
<b>Stormwater Strategies</b>																								
<b>ACTION: Stream Clean-up Partnership</b> Clean up trash from streams, possibly in partnership with a local non-profit organization. (The stream behind the railroad track needs particular attention.)	1	1	1	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	17
<b>Flood Mitigation Strategies</b>																								
<b>ACTION: Bailey Creek Tributary Improvements</b> Improve tributaries within Township to slow down water.	1	1	1	1	1	1	0	0	1	1	1	0	0	0	1	1	1	1	1	1	0	1	1	17
<b>ACTION: South Creek Flood Controls</b> Implement upstream flood controls on South Creek.	1	1	1	1	1	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	0	1	1	18
Install tide gates at outfalls of South Creek and the Pamlico.	1	1	1	0	0	1	0	1	1	1	1	0	1	1	1	1	1	0	1	0	0	0	1	15
<b>ACTION: Phosphate Waste as Fill to Support Development</b> Use phosphate waste (fill) to raise land for future development.	1	1	1	1	0	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	0	1	17
Explore the feasibility of intentional inundation/water farming upstream. Landowner partnership(s) would be required.	1	1	1	1	0	0	0	0	1	1	1	0	0	1	1	1	1	0	1	0	0	1	1	14
<b>Transportation Strategies</b>																								
<b>ACTION: Community Retreat Parking Lot</b> Develop a community parking lot with cameras which is located outside the flood hazard area, where residents can park vehicles during storms	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	18
<b>ACTION: Education and Recreation on Mitigation Land</b> Explore the feasibility of partnering with Nutrien to develop a public education and recreation area on mitigation credit land.	1	1	1	0	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1	17
Educate the public in the Richland township regarding drought and saltwater intrusion in private drinking water wells.	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	14



RCCP STAPLEE Criteria Worksheet  
Aurora / Richland Township



STAPLEE Criteria >>

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<b>Considerations for Alternative Actions</b>																								
Educate the public on what individual homeowners can do towards resiliency.	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	14
Connect homeowners with resources to make their properties more resilient, such as roof grants.	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	14

# WELCOME

## Thank you for attending the Resiliency Open House!

- ✓ Sign In
- ✓ Collect a Handout
- ✓ Visit the Information Stations
- ✓ Talk with the Project Team
- ✓ Complete a Comment Sheet

## Public Open House Stations



### RESILIENCY

What is resiliency?

Flooding in Beaufort County



What does resiliency mean to you?

North Carolina Resilient Coastal Communities Program



Public input opportunity



### A COMMUNITY PLAN

Resiliency vision

Community Action Team

Building upon previous plans

Public survey



### RISK & VULNERABILITY

Vulnerable community assets

Top flood related hazards



### PROJECTS & PRIORITIES

Suite of potential solutions

Preliminary strategies and their feasibility

Action strategy areas



Provide input on your top (3) preferred actions

Provide input on your top (1) preferred natural/nature-based or hybrid action



### RESOURCES

Resiliency resources

Resident resources



### COMMENTS

Submit your comment sheet





# RESILIENCY

## What is Resiliency?

“Resilience is the ability to adapt to changing conditions brought about by climate change and withstand—and rapidly recover from—disruption due to hazardous events such as hurricanes, coastal storms, and flooding. This applies to individuals, to communities, to our infrastructure, to our economic vitality and to the environment.” (Adapted from NOAA definition)

## Flooding in Beaufort County







Flooding in Beaufort County is often caused by severe storms, hurricanes, and tropical storms that result in heavy rainfall and high coastal waters. Building resilience to flooding is vital for communities to maintain quality of life, sustainable systems, and conservation of resources for present and future generations.

**THE ISSUE:** Flooding and other coastal hazards have devastating impacts on the economies and livelihoods of communities across eastern North Carolina. Coastal development and climate change continue to amplify these risks, and several barriers like economic and capacity constraints hinder the actions needed to enhance resilience and reduce vulnerability.

**NORTH CAROLINA'S FUTURE:** Intensity of tropical storms and hurricanes, storm surge flooding, heavy precipitation events, sea level rise, and tidal flooding are all expected to increase in our state (NC Climate Science Report 2020). More must be done to safeguard communities from loss of life, economic hardships, and the destructive impacts of intensifying coastal and climate risks.



## did you know?

-  Approximately 25% of Beaufort County land is located in a flood zone.
-  Since 1991, there has been \$91,373,500 in property damage in Beaufort County (NOAA storm events database).
-  Vulnerable populations are often at higher risk during floods. In Beaufort County, vulnerable populations include low-income populations, seniors, limited English speaking populations, and zero car households.
-  North Carolina has been impacted by three “billion-dollar” flooding events Hurricanes Matthew (2016), Florence (2018), and Dorian (2019) since 2015, imposing financial burdens on many communities, particularly in the eastern part of the state. (UNC Financial Risk of Flood Events in Eastern North Carolina Study)
-  There are 1,616 total repetitive loss properties in Beaufort County with 5,816 total number of losses.
-  Hurricane Florence impacted 1,167 houses in Beaufort County as reported through individual assistance claims.

# WHAT DOES RESILIENCY MEAN TO YOU?



*a healthy  
future for our  
kids*



# WHAT DOES RESILIENCY MEAN TO YOU?



Thanks **Aurora & Richland Township**  
for spending Valentine's Day with us!





# NORTH CAROLINA

# RESILIENT COASTAL COMMUNITIES PROGRAM

## Program Overview

**Program Objectives:** The Resilient Coastal Communities Program (RCCP) provides financial grants and technical assistance to support a proactive, locally-driven, and equitable approach to coastal resilience planning and project implementation.

**Program Framework:** The RCCP provides a phased framework to assess coastal risks and vulnerabilities, engage community stakeholders, and develop projects to strategically improve the resiliency of communities and their natural and built infrastructure.

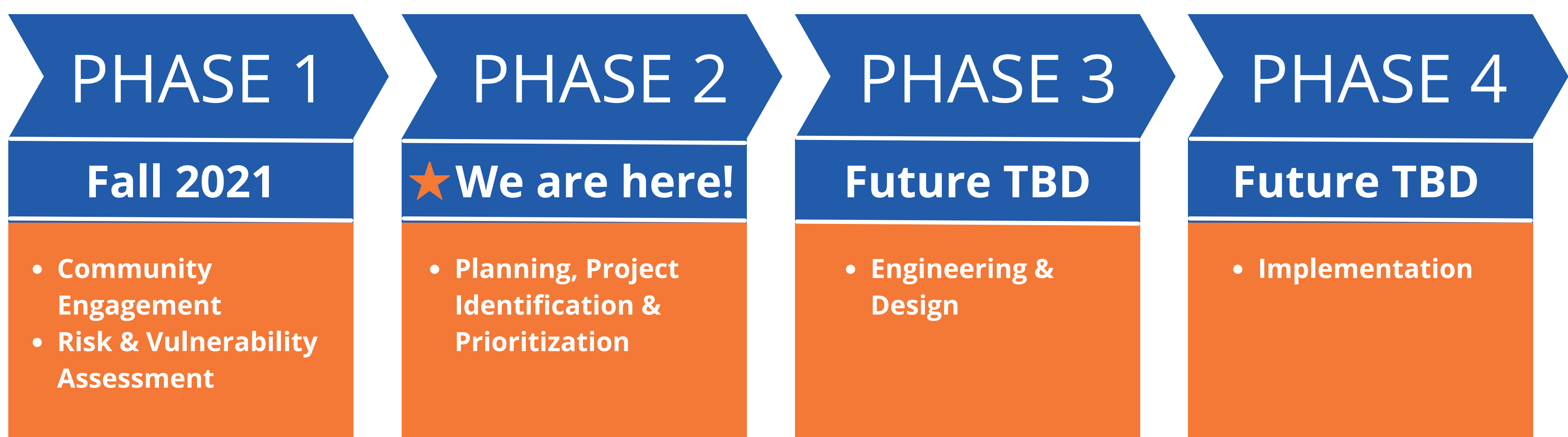
### Program Goals:

- Address barriers to coastal resilience in North Carolina at the local level, such as limited capacity, economic constraints, and social inequities.
- Assist communities with risk and vulnerability assessments and developing a portfolio of well planned and prioritized projects.
- Advance coastal resilience projects to “shovel-ready” status, or ready for implementation.
- Provide funding for project implementation and link to additional funding streams.

### Beaufort County Communities

In Spring 2021, four Beaufort County communities were selected to participate in the first two phases of the RCCP: Beaufort County, Town of Aurora, City of Washington, and Town of Belhaven. Following Phase 2, each community will have the opportunity to submit one (1) proposed project to the North Carolina Division of Coastal Management for consideration to enter into Phase 3. The proposed project must be a **nature-based solution**. 🌿

### RCCP Process



## RCCP Program Information

**CONTACT:** Email us at [RCCP@ncdner.gov](mailto:RCCP@ncdner.gov) with any questions about the program.

**WEBSITE:** <https://deq.nc.gov/about/divisions/coastal-management/coastal-adaptation-and-resiliency/nc-resilient-coastal-communities-program>



# A COMMUNITY PLAN

## Town of Aurora - Richland Township Resiliency Vision

*The Aurora and Richland Township community is resilient to natural hazards and climate-related changes due to an intact network of natural resources, quality municipal infrastructure and services, a healthy and sustainable economy, and proactive, effective response and recovery capabilities.*

### Community Action Team *Thank You!*

A Community Action Team participated throughout the planning process.

- Chuck Bonner, Town of Aurora, Public Works Director
- Joe Calhoun, COST Community Group
- Charles Cannon, COST Community Group
- Bill Cary, Town of Aurora Resident
- Curt Hendrix, Town of Aurora, Recreation Coordinator
- Martyn Johnson, Beaufort County Economic Development, Director
- Judi Lannon, Town of Aurora, Administrator
- Kurt Ryan, Town of Aurora Resident
- Sue Squires, Beaufort County Economic Development, Economic Development Specialist
- Tina Taylor, Town of Aurora, Commissioner

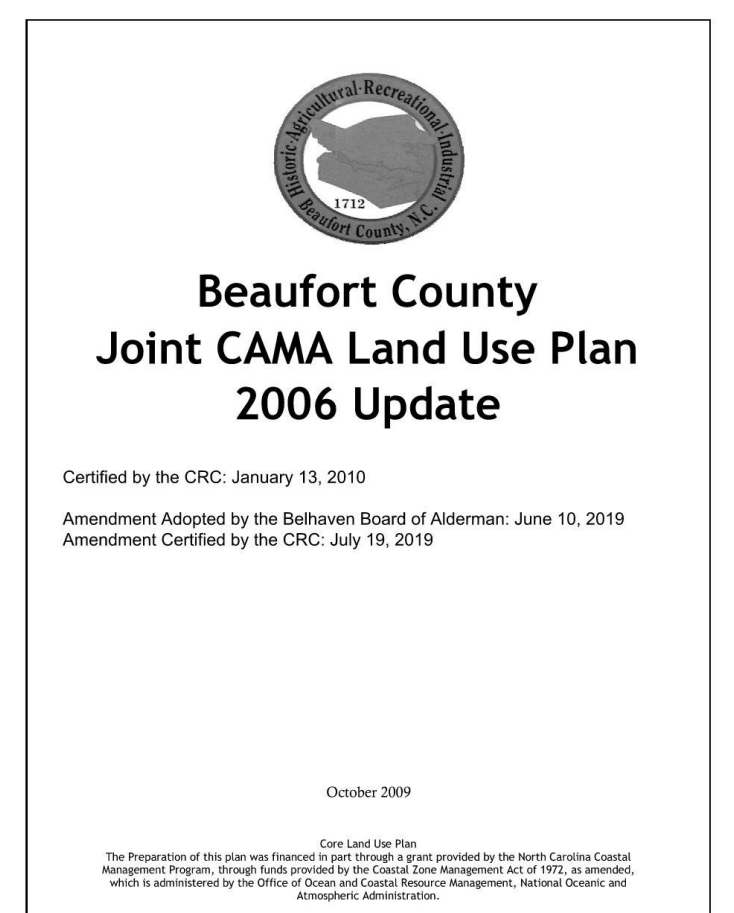
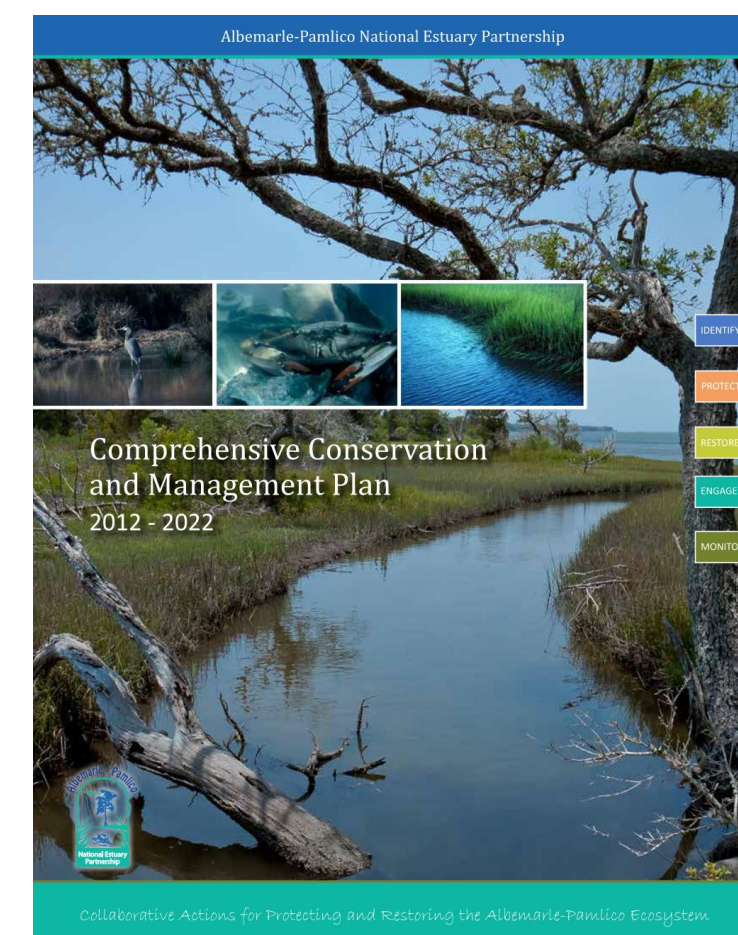
### Community Action Team Meetings

- 1: Vision and Goals, Existing Plans, and Community Engagement  
*September 2021*
- 2: Existing Conditions - Critical Assets & Natural Infrastructure  
*October 2021*
- 3: Risk & Vulnerability Assessment  
*November 2021*
- 4: Suite of Potential Strategies & Public Meeting Planning  
*December 2021*
- 5: Preliminary Project Prioritization  
*January 2022*
- 6: Public Input & Draft Resiliency Strategy Elements  
*February 2022 (Future)*



### Building upon previous plans

- Albemarle Pamlico Comprehensive Conservation and Management Plan (CCMP)
- Aurora Industrial Park Plans
- Beaufort County CAMA Land Use Plan
- Beaufort County Economic Development FY 21-22 Work Plan
- Pamlico Peninsula Resilient Region Report
- Pamlico Sound Regional Hazard Mitigation Plan





# A COMMUNITY PLAN

## Public survey

### Identifying issues, needs, and opportunities

A public survey was used to gather public input related to flooding and other natural events in our community.

## AURORA/RICHLAND TOWNSHIP

### Distribution methods

- Online survey at AuroraFloodSurvey.org
- Hard copy surveys distributed at Aurora Library, Post Office, Town Hall, Aurora-Richland Chamber of Commerce, Aurora-Richland Senior Club
- Notifications included flyers, Town of Aurora Facebook page, and AuroraLife.us website

### Respondents

- 38 survey respondents, mix of new and lifelong residents

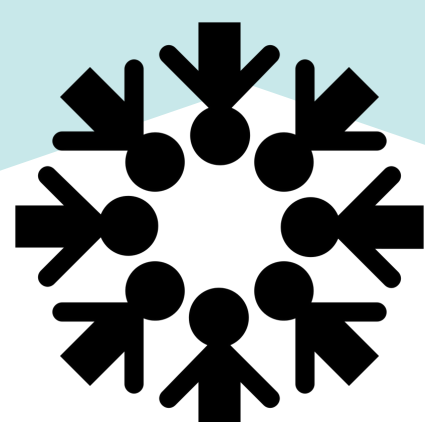
### What we heard from survey participants

#### *In general, we are concerned about flooding.*

- Most respondents worried (55.3%) or slightly worried (36.8%) about future coastal storms
- 68.4% experienced increasing flooding issues throughout their time living or working in the area
- 84.2% witnessed storm surge flooding
- 62.5% had their home or business directly impacted by storm surge flooding
- 78.9% experienced loss of electricity during storms
- 32.4% had elevated properties and utilized flood-resistant materials
- 29.4% had no protection to their property despite the threat of flooding

## Community outreach

- Community Action Team
- Public survey (online & hard copy)
- Flyers
- Public open house



## “ survey quotes

*“In the past 10-12 years I have seen it 4-5 ft. higher than I never seen as a kid growing up. It also takes longer for flood waters to recede.”*

*“Much of my family and friends have lost everything during storms like Irene and Florence.”*

*“The water that has come up onto my property has made the land too acidic to grow a garden, not to mention the damage it did under my house that the insurance did not acknowledge at the time and now the main beams are falling apart.”*

*“We had a bad hurricane and were without lights or water for days. Water came up under our house wetting the underside of the floors. FEMA helped some but said it wasn't that bad since water didn't actually come in. Over the past few years, we have had mold issues and had to replace multiple areas of flooring due to wood rotting from exposure to the river water. Several neighbors have had similar issues and those closer to the creek have had to completely rebuild.”*

*“Wind from storms has significantly impacted damage and outages to the township, mostly from downed trees and impacts to structures and electric power, causing long outages, sometimes in the 3-4 day length until power companies can respond and restore power. We are at the end of the line.”*

*“Lack of high speed internet for our citizens to monitor and communicate with emergency officials during periods of severe storm. This is one of our key infrastructure shortfalls and needs addressed by the government for funding.”*



# RISK & VULNERABILITY

**Risks** refer to multi-hazard threats to communities such as flooding, storm surge, or sea level rise that may occur amidst storms or as a result of a changing climate.

**Vulnerability** of critical assets and natural infrastructure to a hazard is a function of the exposure, sensitivity, and adaptive capacity.

- **Exposure** refers to the probability of physical contact between an asset and a hazard.
- **Sensitivity** is the degree to which an asset is impacted by a hazard.
- **Adaptive Capacity** is the ability of an asset to change its characteristics or behavior in response to a hazard.

**Vulnerability =**  
**Exposure + Sensitivity - Adaptive Capacity**

## Aurora's most vulnerable assets

The planning team mapped critical assets and infrastructure with input from the Community Action Team. Critical assets included those that enabled the continuous operation of critical community functions essential to human health, safety, or economic security. The top flooding related hazards were then mapped as an overlay. The team then explored the vulnerability of each critical asset by evaluating potential exposure, sensitivity, and adaptive capacity.

The following assets were identified as being the most vulnerable to flooding:

- **Potter Oil**
- **Town of Aurora System Well (Well #1)**
- **Town of Aurora System Well (Well #2)**
- **Town of Aurora Wastewater Treatment Plant**
- **Aurora Ferry Terminal**
- **Roads**
- **Wetlands**
- **Streams**

## TOP FLOOD RELATED HAZARDS BEAUFORT COUNTY

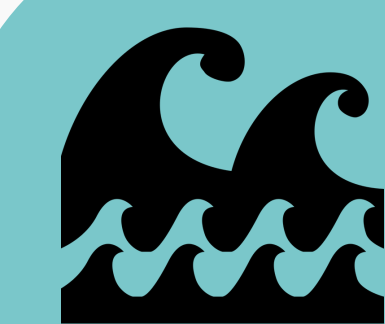
### FLOODING / FLOOD ZONES

The covering or submerging of normally dry land with a large amount of water.



### STORM SURGE

A rising of the sea because of atmospheric pressure changes and wind associated with a storm.



### SEA LEVEL RISE

An increase in the level of the world's oceans due to the effects of global warming.



# DEVELOPING PROJECTS & PRIORITIES

## ▶ **Developed a suite of potential solutions**

Based on the results of the risk and vulnerability analysis, the Contractor and Community Action Team brainstormed potential projects aimed at reducing exposure and sensitivity to flooding related hazards. The team strived to capture a range of actions. Since Beaufort County is a Hurricane Florence-declared county, the projects must include natural/nature-based or hybrid options. Projects were organized in the following strategy areas:

- policy/regulatory
- staffing, funding and resources
- emergency services
- infrastructure
- natural/nature-based
- hybrid options (combination of natural/nature-based with another area)

Strategies were reviewed for their ability to avoid flooding, accommodate flooding, protect resources against flooding-related impacts, retreat resources from flooding, and/or build adaptive capacity to mitigate or respond to flooding.

## ▶ **Evaluated preliminary draft strategies and their feasibility**

The Contractor and Community Action Team then evaluated the potential strategies based on the STAPLEE Method developed by FEMA, which is a checklist to quickly evaluate and compare strategies using the following topics:

- **Administrative** - Which adaptation strategies are implementable by community leadership?
- **Political** - Which adaptation strategies are politically acceptable within the community?
- **Legal** - Which adaptation strategies are legally implementable by the community under state and municipal law?
- **Economic** - What are the cost-effective adaptation strategies available to the community?
- **Environmental** - Which adaptation strategies are most favorable to the environment as determined by community conservation plans?
- **Social** - What are the socially acceptable adaptation strategies in the community?
- **Technical** - What are the technically feasible adaptation strategies in the community?

The team also compared the benefit and cost of the draft strategies.



## **Solicit community input on draft strategies**

*Available at the **Projects and Priorities** station.*

## ▶ **Review community input and prioritize strategies**

## ▶ **Submit one (1) natural/nature-based or hybrid solution in application for Phase 3 consideration**

## ▶ **Develop Project Portfolio and Resiliency Plan**



# ACTION STRATEGY AREAS

## Policy/Regulatory

Actions, such as enacted ordinances, regulations, public policy, and/or laws to aid in increasing resilience and reaching program objectives. (Examples: Low-impact development (LID) practices, drainage easements, zoning requirements)

## Staffing, Funding and Resources

Actions that identify, assign, and/or allocate staffing, funding, and/or resources to bolster local ability/capacity. (Examples: Dedicated staff to clear storm debris)

## Emergency Services

Actions aimed at ensuring no disruptions to emergency services during and/or following a hazardous event. These strategies help ensure that the community has adequate capacity to plan for and respond in case of an emergency. (Examples: Redundant communication systems, back-up emergency command center, emergency response routes on elevated roadways, relocated police station)

## Infrastructure

Actions that build structures or install equipment (e.g., powerlines, communication systems, roads, bridges, stormwater infrastructure) that are needed for the community and/or region to function properly during and after hazardous events. (Examples: stormwater management systems, WWTP upgrades, flood attenuation structures)

## Natural/Nature-Based

Actions that consider and enhance the natural landscape's ability to provide ecosystem services like flood reduction and wave dampening. Natural infrastructure (aka green infrastructure) refers to ecosystems or natural systems, including wetlands, forests, beaches, dunes, and rivers or streams. (Examples: conserving or restoring existing forests and wetlands)

## Hybrid (Combination of Natural/Nature-Based + Other Strategy Area Above)

Actions that incorporate traditional, or "grey", infrastructure, with natural, or green, infrastructure. This may also include a combination of natural/nature-based with another strategy area defined above. (Example: new stormwater drain/outfall + a living shoreline)



**To qualify for Phase 3, the selected project must be a Natural/Nature-Based or Hybrid strategy.**



# DRAFT ACTIONS

## AURORA / RICHLAND TOWNSHIP

*Place a dot on your preferred action.*



### **Wetland Restoration at Wastewater Treatment Plant**

This unique WWTP uses the natural function of a wetland in its process to desanitize and purify wastewater. This project will restore wetland function by removing sludge, relining ponds, and elevating sides of the WWTP for storm surge protection. This project will also help ensure that clean water re-enters the river for many years to come.



*Place a dot on your preferred action.*

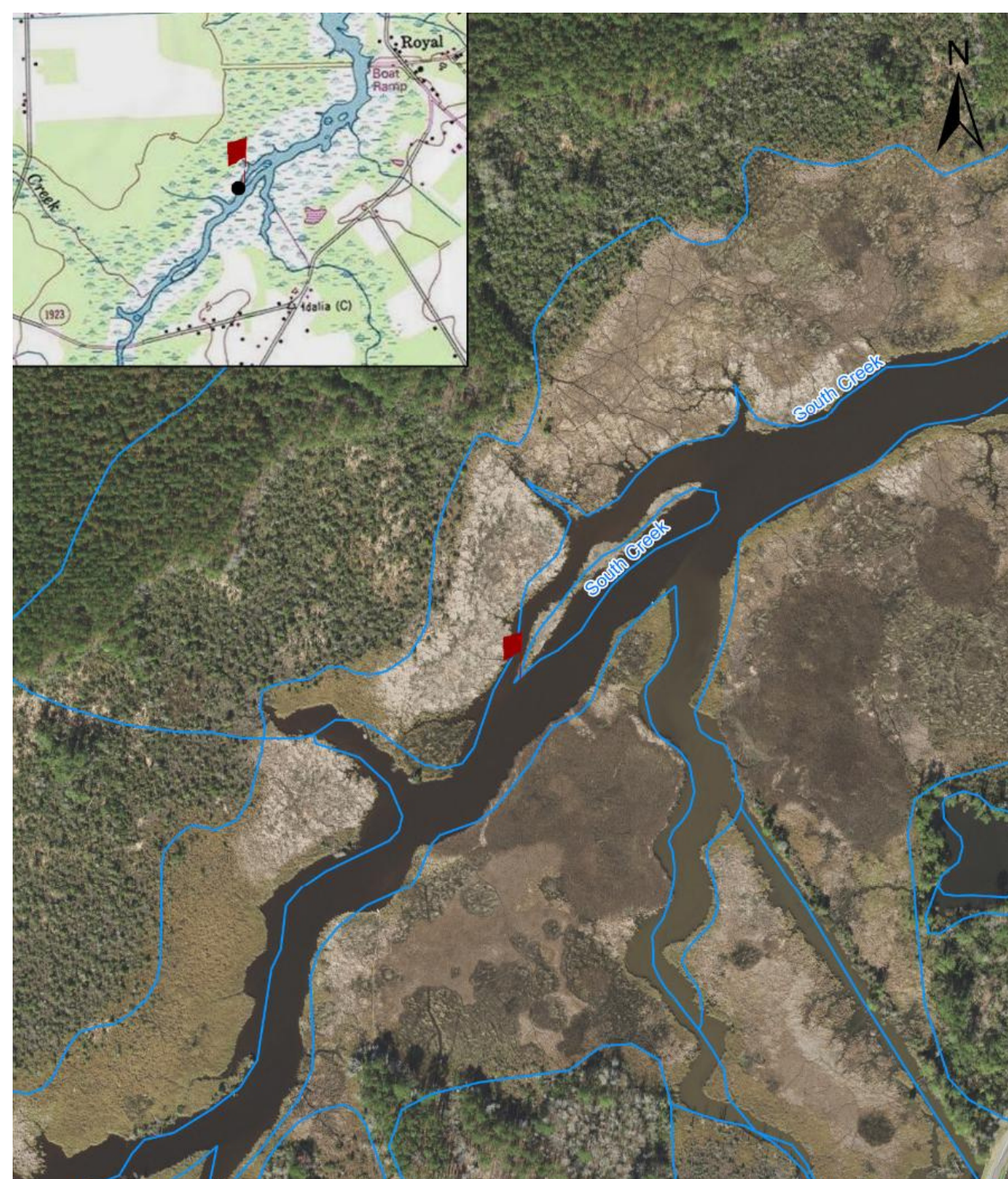


### **Bailey Creek Tributary Improvements**

Improve Bailey Creek to slow down water. Use nature-based solutions to improve the stream beds and natural functions of the stream to decrease storm surge and stormwater runoff effects.



*Place a dot on your preferred action.*



### **South Creek Flood Controls**

Implement upstream flood controls on South Creek to intentionally inundate unused land and/or farmland. This effort will be a collaborative effort between property owners and the town. The town should consider providing incentives to the property owners being affected by the intentional flooding.





*Place a dot on your preferred action.*



### **Drainage Ditch and Tributary Maintenance Plan**

Develop a maintenance plan for cleaning out drainage ditches and tributaries. Identify areas that could be turned into bioswales for treatment of runoff. This project will help reduce flooding and improve water quality.

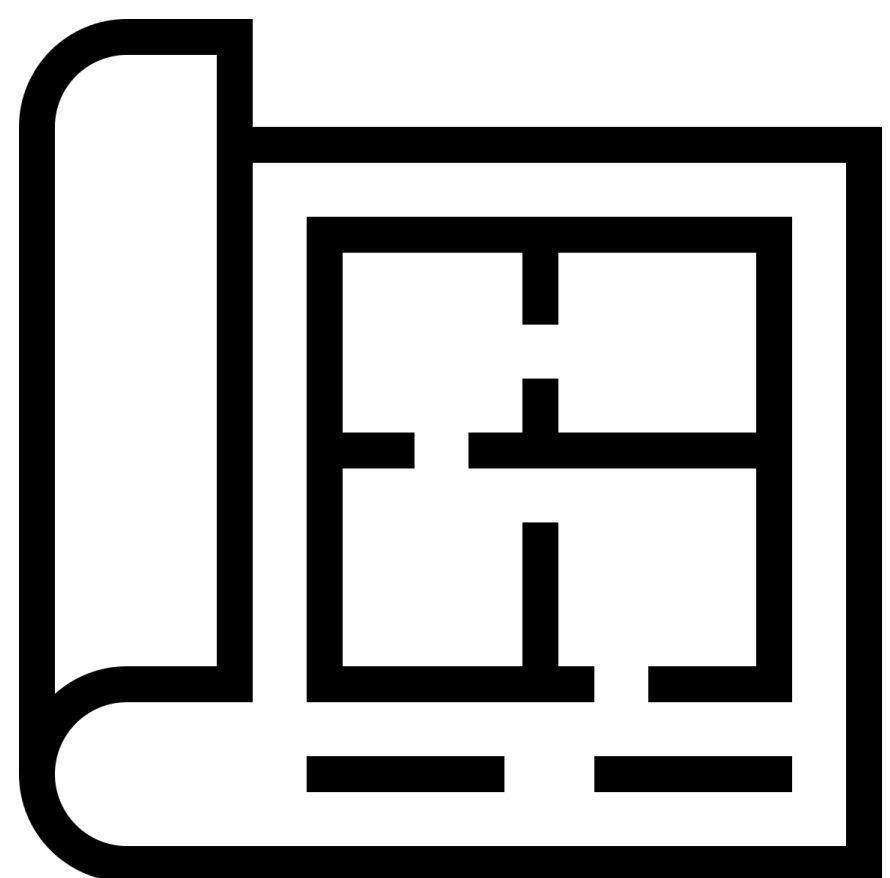
*Place a dot on your preferred action.*



### **Easements for Ditches and Tributaries**

Develop easements to maintain drainage ditches and tributaries. Once easements are obtained, identify locations where stormwater control methods could be implemented to provide water capacity and/or treat water.

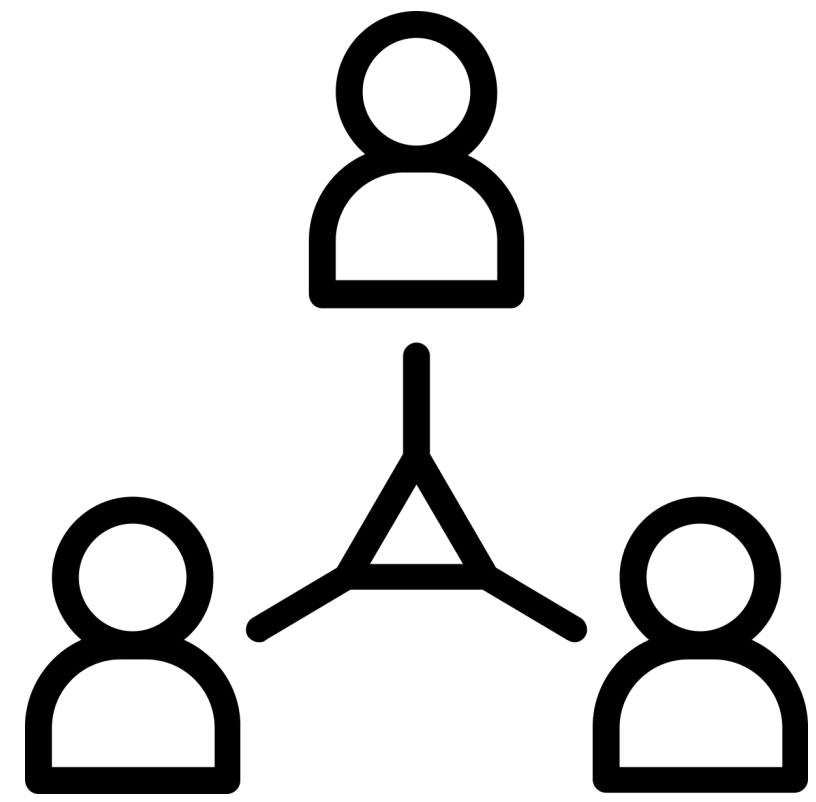
*Place a dot on your preferred action.*



### **Aurora and Richland Township Master Plan**

Develop a Master Plan for the Town of Aurora and the Richland Township, with focus on Climate Change and Growth. The master plan will incorporate: a. Equitable Opportunity, b. Zoning, c. Economic Development, d. Resiliency, Healthy, and Livable Community.

*Place a dot on your preferred action.*



### **Stream Clean-up Partnership**

Partner with local non-profit organizations and/or other organizations to cleanup debris in streams. This project will help reduce trash buildup from storm events.

*Place a dot on your preferred action.*



### **Phosphate Waste as Fill to Support Development**

Partner with Nutrien to use phosphate waste as fill to raise land for future development. This is a sustainable and resilient solution for the use of phosphate waste. Phosphate waste is currently being used for projects including driveways, roads, and freeboard.

*Place a dot on your preferred action.*



### **Community Retreat Parking Lot**

Develop a secure community parking lot outside of flood hazard areas where community members could park their vehicles during storms. The retreat location could also serve as a community amenity outside of major storm events.

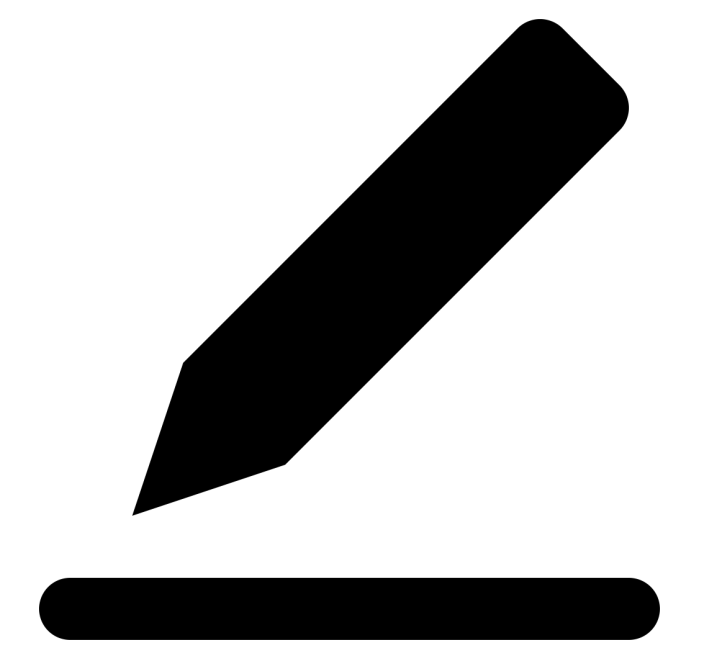
*Place a dot on your preferred action.*



### **Education and Recreation on Mitigation Land**

Explore the feasibility of partnering with Nutrien to develop a public education and recreation area. Nutrien owns hundreds of acres of mitigation land in and around the Town of Aurora/Richland Township. The area could be used for passive recreation (e.g., walking trails).

**Do you have ideas for how to improve resiliency to flooding in our community? Please add your ideas here.**







## **APPENDIX C**



















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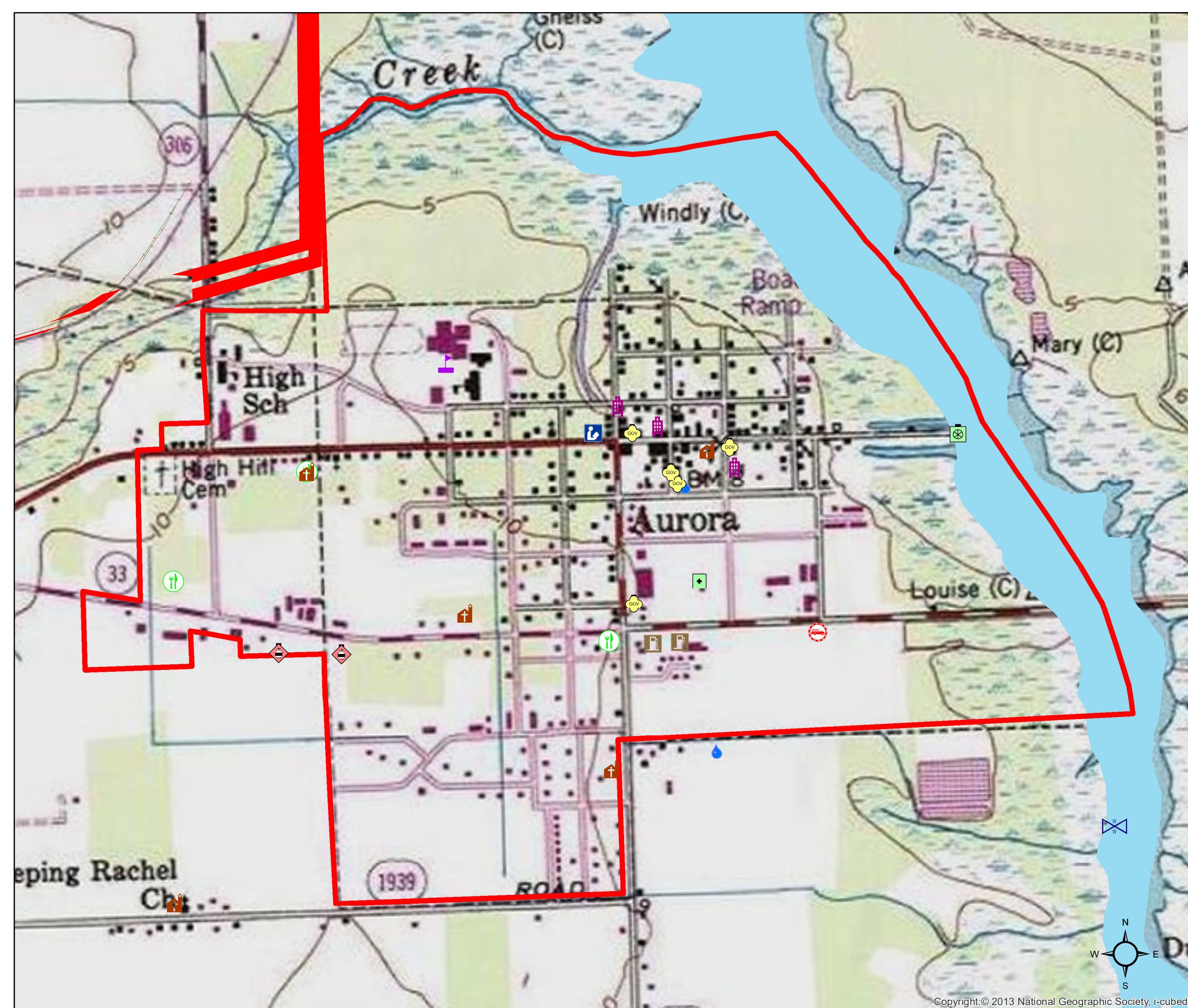
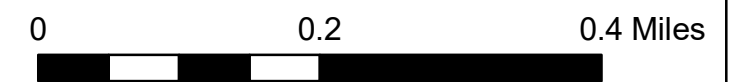
### **Risk and Vulnerability Assessment Materials**



# NC Resilient Coastal Communities Program Town of Aurora Critical Assets & Topography

## Legend






















-  Churches
-  Community Buildings and Facilities
-  Duke Transmission Easements
-  Education
-  Fire and EMS Stations
-  Food
-  Fuel Stations
-  Government Services
-  Libraries
-  Medical
-  Propane Suppliers
-  Public Water Supply Wells
-  Transportation Facilities
-  Wastewater Discharge Permits
-  Rail
-  Bridges
-  Aurora Town Limits
-  Surface Water

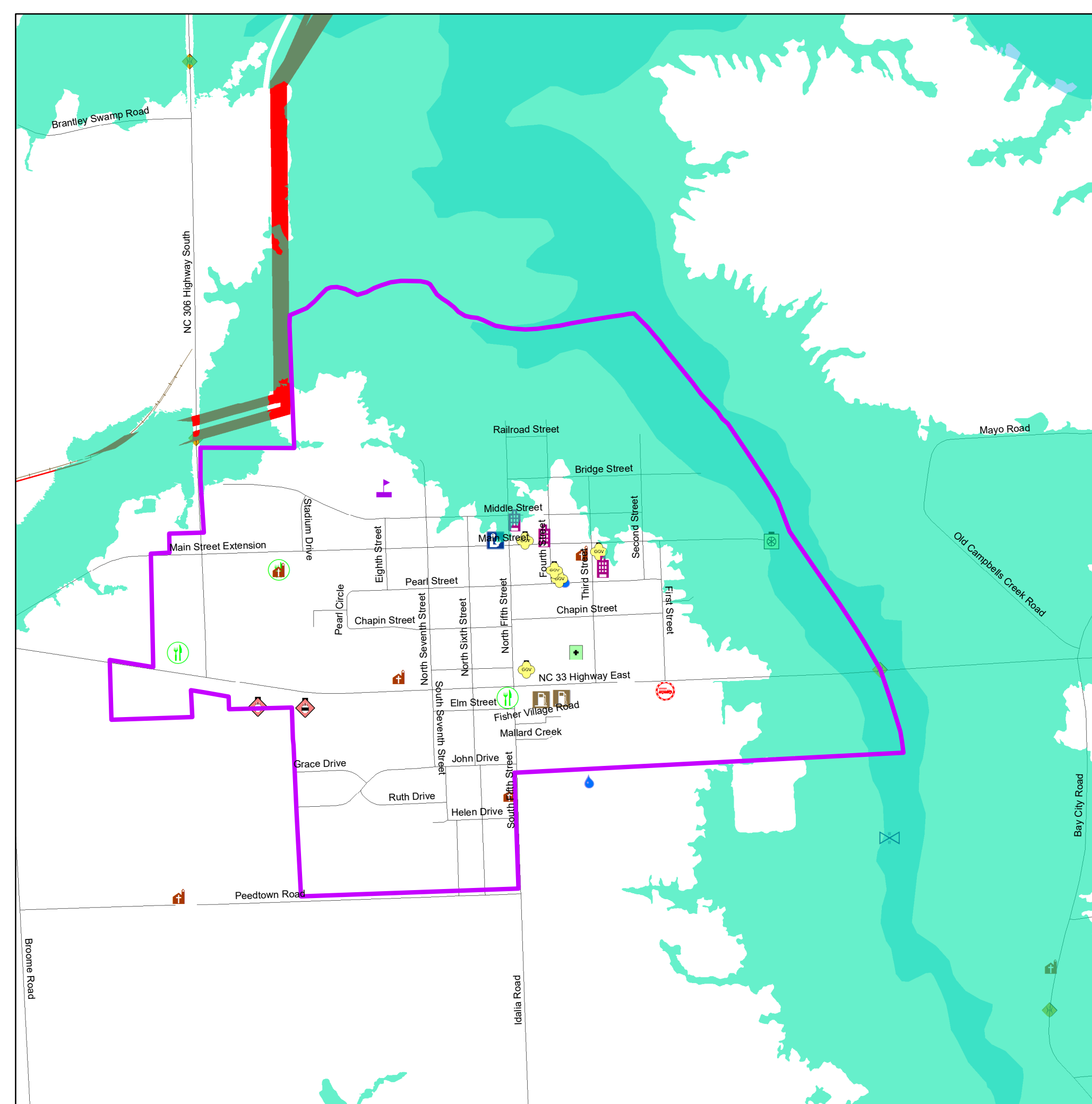
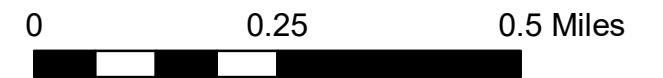
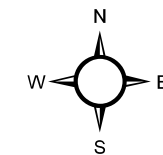




# NC Resilient Coastal Communities Program Town of Aurora Critical Assets & 100-year Floodplain






















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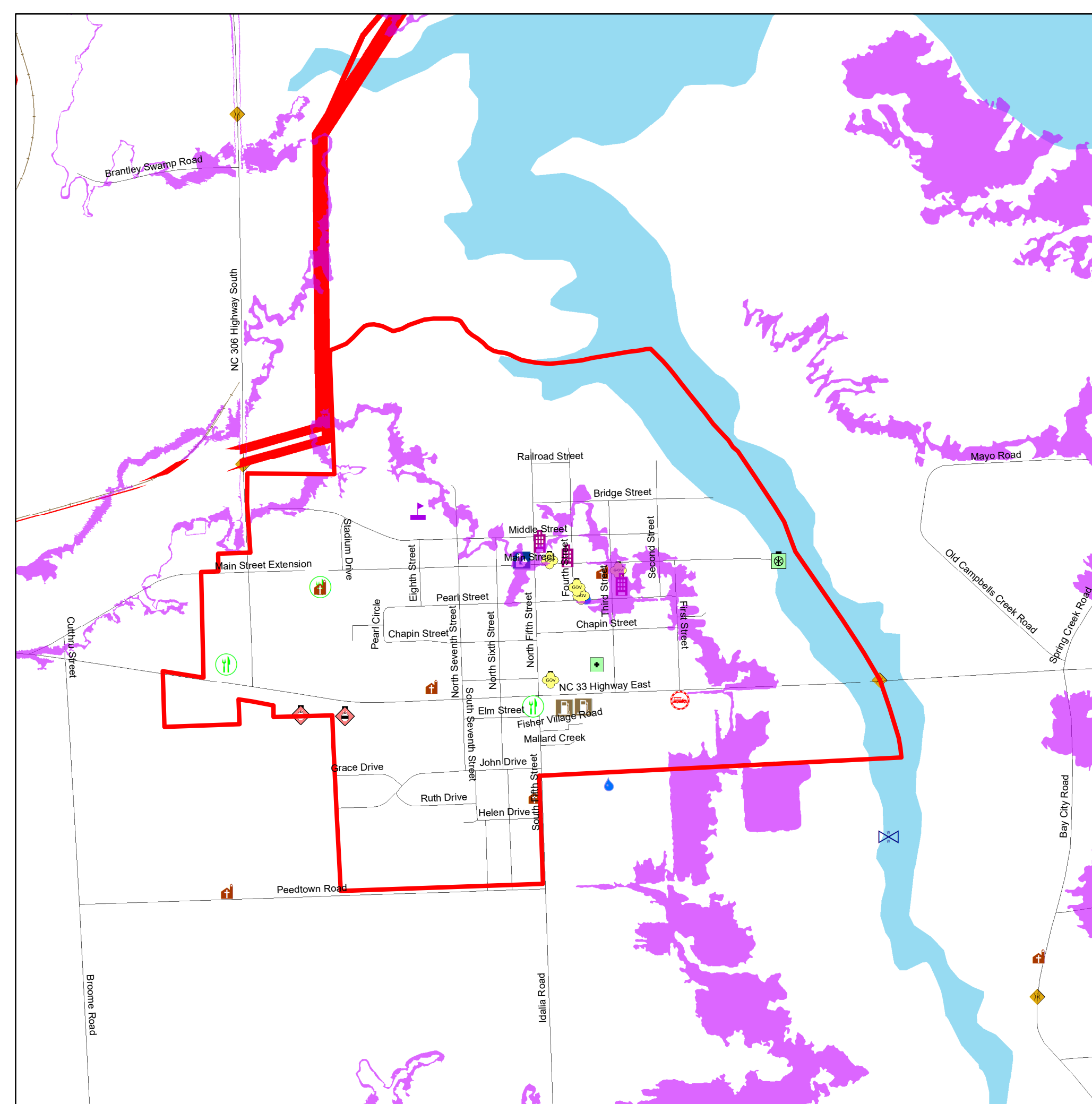
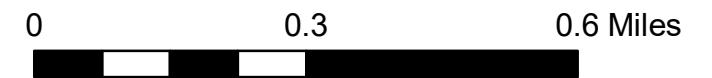
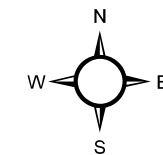
-  100-year Floodplain
-  Churches (7.1% in 100-yr FP)
-  Community Buildings and Facilities (25% in 100-yr FP)
-  Duke Transmission Easements (22.9% in 100-yr FP)
-  Education (None in 100-yr FP)
-  Fire and EMS Stations (None in 100-yr FP)
-  Food (None in 100-yr FP)
-  Fuel Stations (None in 100-yr FP)
-  Government Services (None in 100-yr FP)
-  Libraries (None in 100-yr FP)
-  Medical (None in 100-yr FP)
-  Propane Suppliers (None in 100-yr FP)
-  Public Water Supply Wells (None in 100-yr FP)
-  Transportation Facilities (25% in 100-yr FP)
-  Wastewater Discharge Permits (100% in 100-yr FP)
-  Rail
-  Road Network (43.7% in 100-yr FP)
-  Bridges (100% in 100-yr FP)
-  Aurora Town Limits
-  Beaufort County
-  Surface Water



# NC Resilient Coastal Communities Program Town of Aurora Critical Assets & 500-year Floodplain






















## Legend

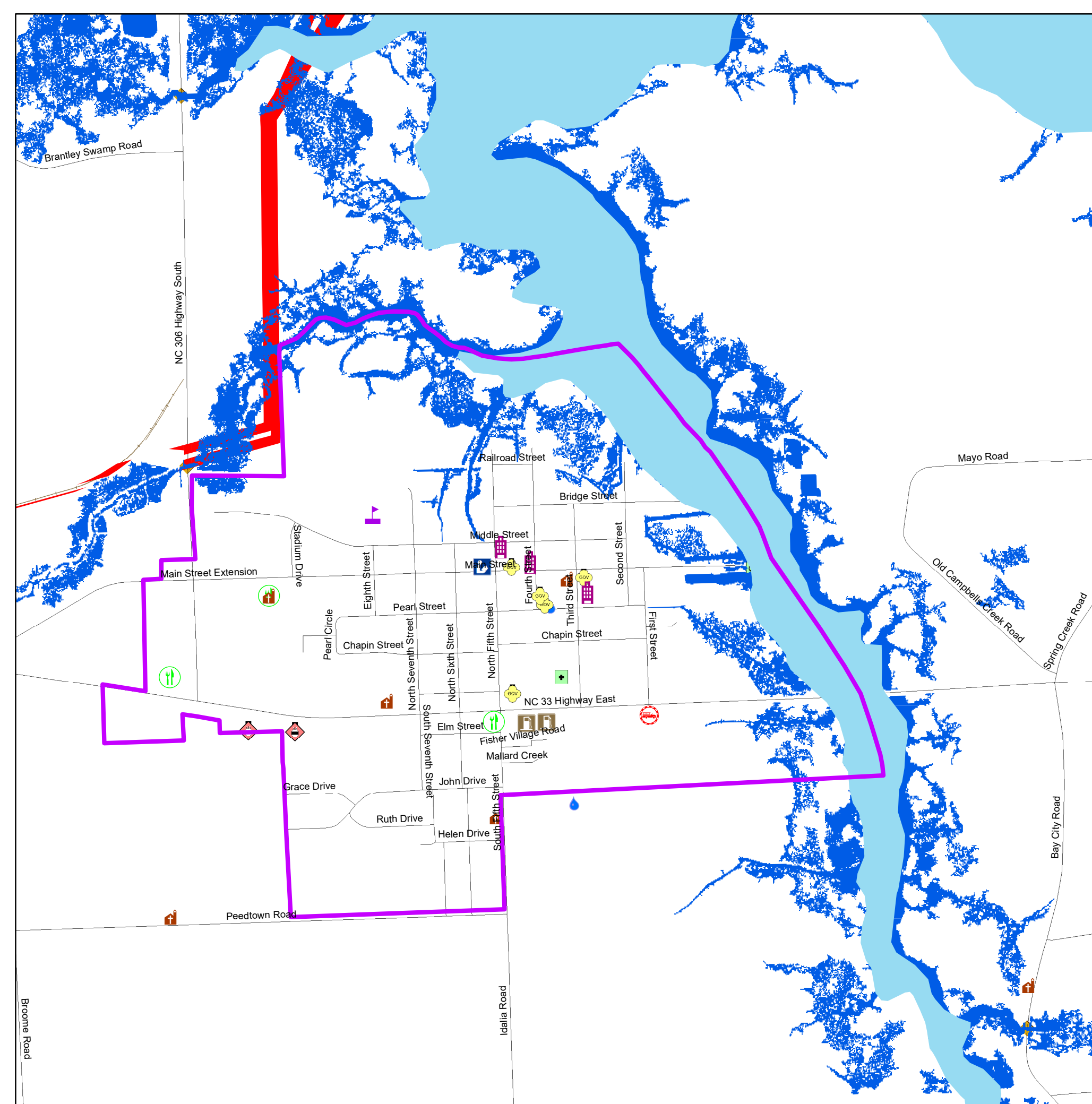
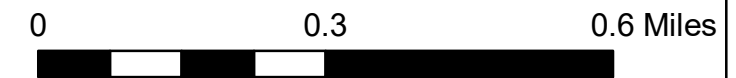
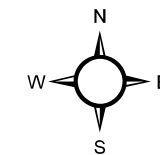
-  500-year Floodplain
-  Churches (14.3% in 500-yr FP)
-  Community Buildings and Facilities (25% in 500-yr FP)
-  Duke Transmission Easements (6.9% in 500-yr FP)
-  Education (None in 500-yr FP)
-  Fire and EMS Stations (None in 500-yr FP)
-  Food (None in 500-yr FP)
-  Fuel Stations (None in 500-yr FP)
-  Government Services (20% in 500-yr FP)
-  Libraries (100% in 500-yr FP)
-  Medical (None in 500-yr FP)
-  Propane Suppliers (None in 500-yr FP)
-  Public Water Supply Wells (None in 500-yr FP)
-  Transportation Facilities (25% in 500-yr FP)
-  Wastewater Discharge Permits (None in 500-yr FP)
-  Rail
-  Road Network (25.8% in 500-yr FP)
-  Bridges (None in 500-yr FP)
-  Aurora Town Limits
-  Beaufort County
-  Surface Water



# NC Resilient Coastal Communities Program Town of Aurora Critical Assets & 1 ft. Sea Level Rise Scenario (30-year Projection)

## Legend






















-  1 ft. Sea Level Rise Scenario Area
-  Surface Water
-  Churches (None in potential SLR area)
-  Community Buildings and Facilities (None in potential SLR area)
-  Duke Transmission Easements (18.3% in potential SLR area)
-  Education (None in potential SLR area)
-  Fire and EMS Stations (None in potential SLR area)
-  Food (None in potential SLR area)
-  Fuel Stations (None in potential SLR area)
-  Government Services (None in potential SLR area)
-  Libraries (None in potential SLR area)
-  Medical (None in potential SLR area)
-  Propane Suppliers (None in potential SLR area)
-  Public Water Supply Wells (None in potential SLR area)
-  Transportation Facilities (None in potential SLR area)
-  Wastewater Discharge Permits (100% in potential SLR area)
-  Rail
-  Road Network (4.8% in potential SLR area)
-  Bridges (56% in potential SLR area)
-  Aurora Town Limits
-  Beaufort County

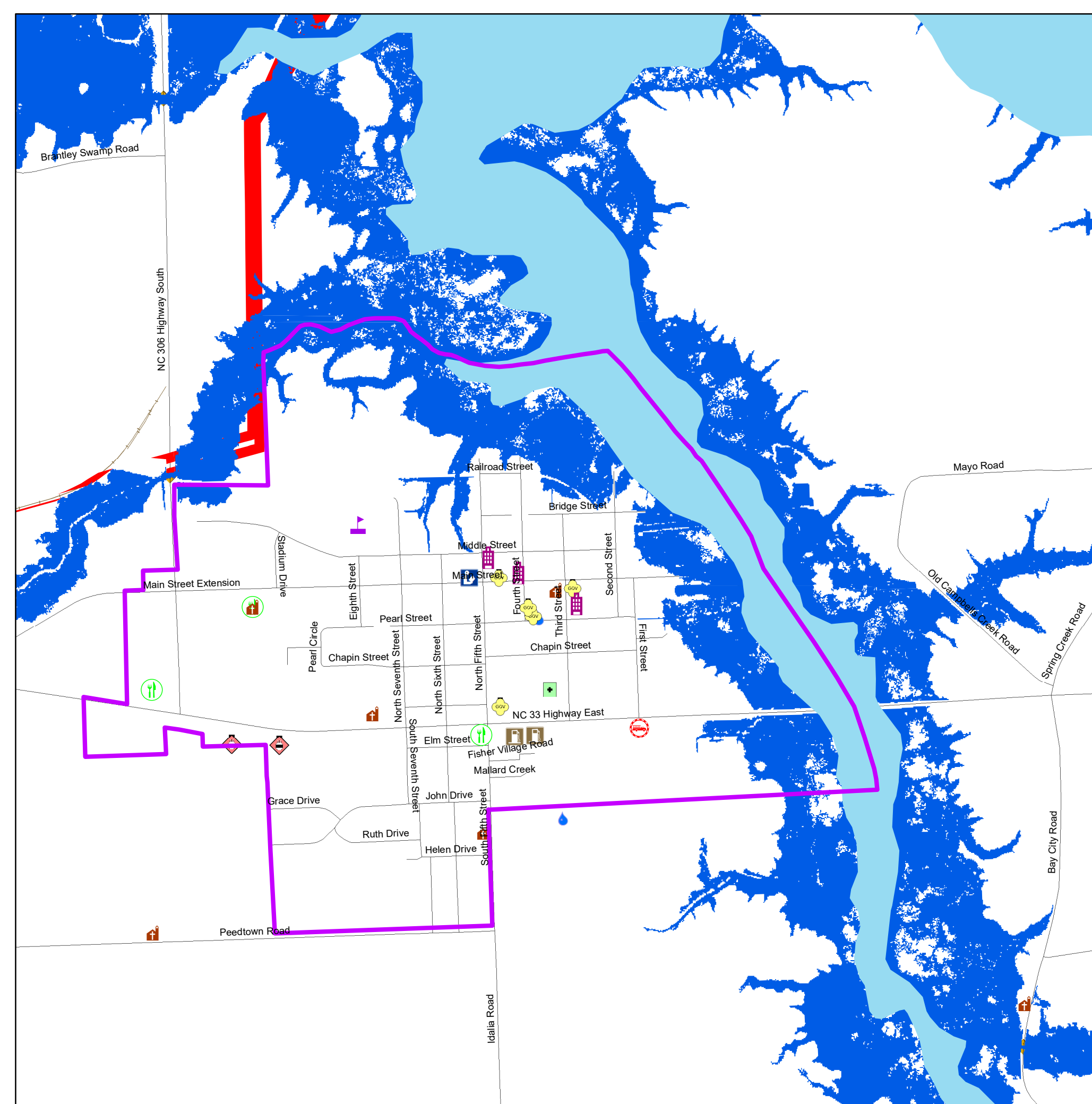
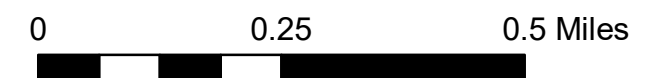
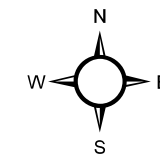




# NC Resilient Coastal Communities Program Town of Aurora Critical Assets & 2 ft. Sea Level Rise Scenario (60-year Projection)










## Legend

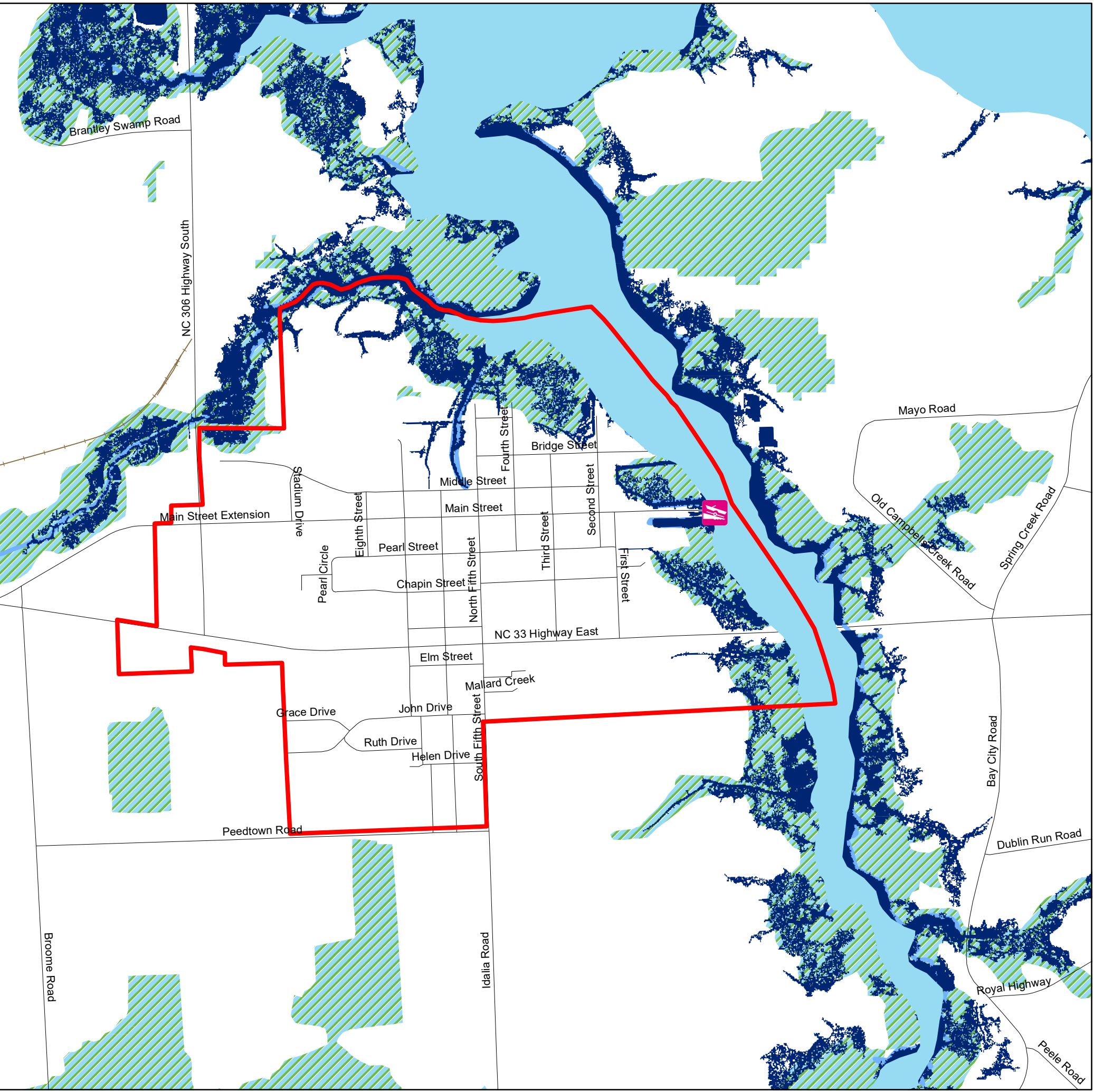
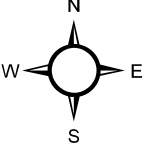
-  2 ft. Sea Level Rise Scenario Area
-  Surface Water
-  Churches (None in potential SLR area)
-  Community Buildings and Facilities (None in potential SLR area)
-  Duke Transmission Easements (19.8% in potential SLR area)
-  Education (None in potential SLR area)
-  Fire and EMS Stations (None in potential SLR area)
-  Food (None in potential SLR area)
-  Fuel Stations (None in potential SLR area)
-  Government Services (None in potential SLR area)
-  Libraries (None in potential SLR area)
-  Medical (None in potential SLR area)
-  Propane Suppliers (None in potential SLR area)
-  Public Water Supply Wells (None in potential SLR area)
-  Transportation Facilities (25% in potential SLR area)
-  Wastewater Discharge Permits (100% in potential SLR area)
-  Rail
-  Road Network (11.8% in potential SLR area)
-  Bridges (60% in potential SLR area)
-  Aurora Town Limits
-  Beaufort County



**NC Resilient Coastal Communities Program:  
Town of Aurora  
Boat Ramps/Streams/Wetlands &  
1 ft. Sea Level Rise Scenario  
(30 year projection)**








**Legend**

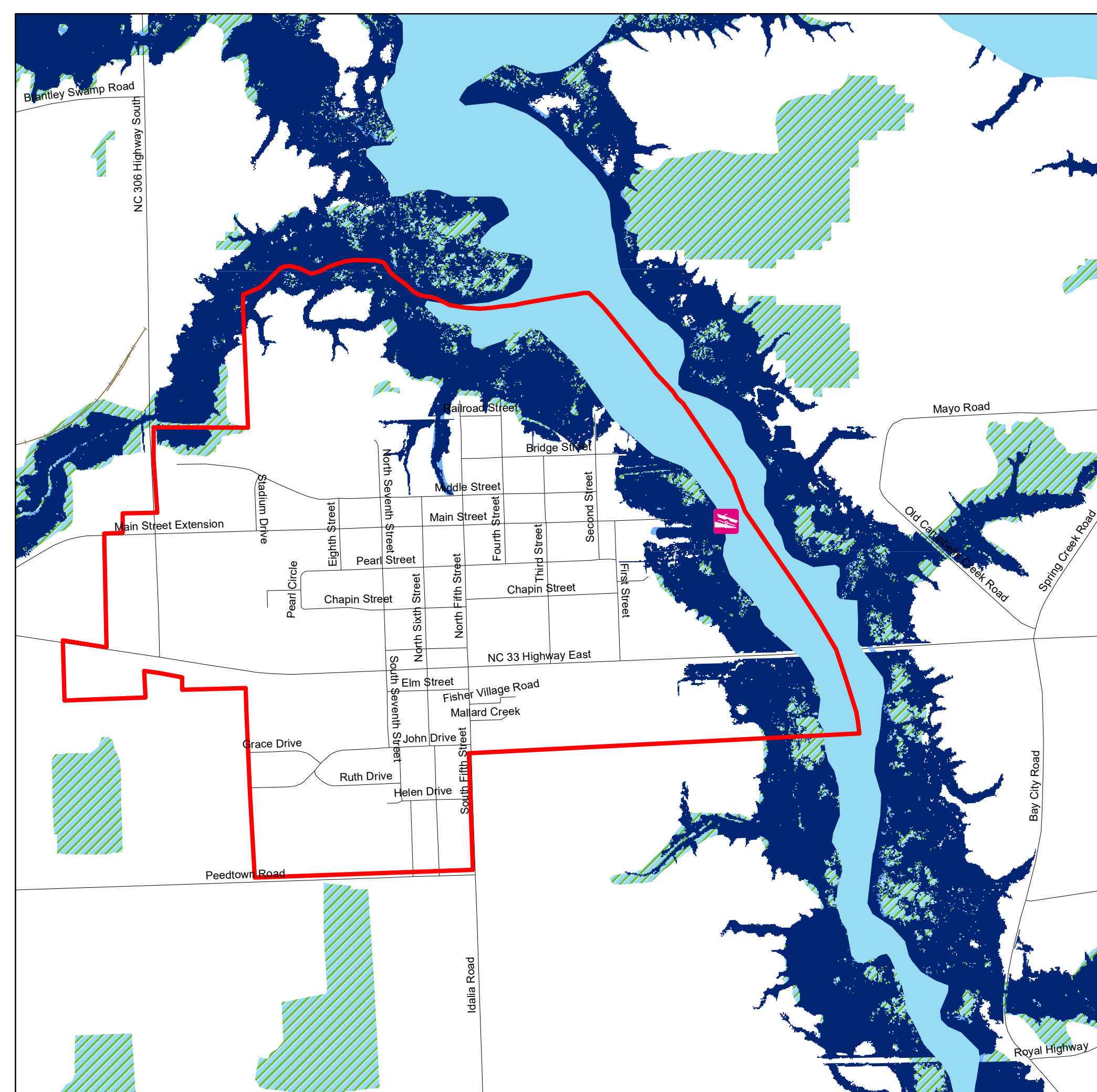
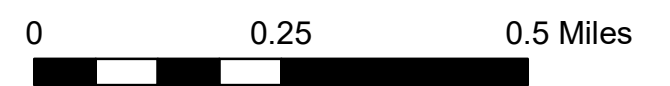
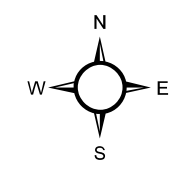
-  1 ft. Sea Level Rise Scenario
-  Surface Water
-  Streams (91.1% in potential SLR area)
-  Public Boat Ramps (None in potential SLR area)
-  Wetlands (37.7% in potential SLR area)
-  Rail
-  Roads
-  Aurora Town Limits
-  Beaufort County



# NC Resilient Coastal Communities Program: Town of Aurora Boat Ramps/Streams/Wetlands & 2 ft. Sea Level Rise Scenario (60 year projection)

## Legend

-  2 ft. Sea Level Rise Scenario
-  Surface Water
-  Streams (93.1% in potential SLR area)
-  Public Boat Ramps (50% in potential SLR area)
-  Wetlands (42.2% in potential SLR area)
-  Rail
-  Roads
-  Aurora Town Limits
-  Beaufort County





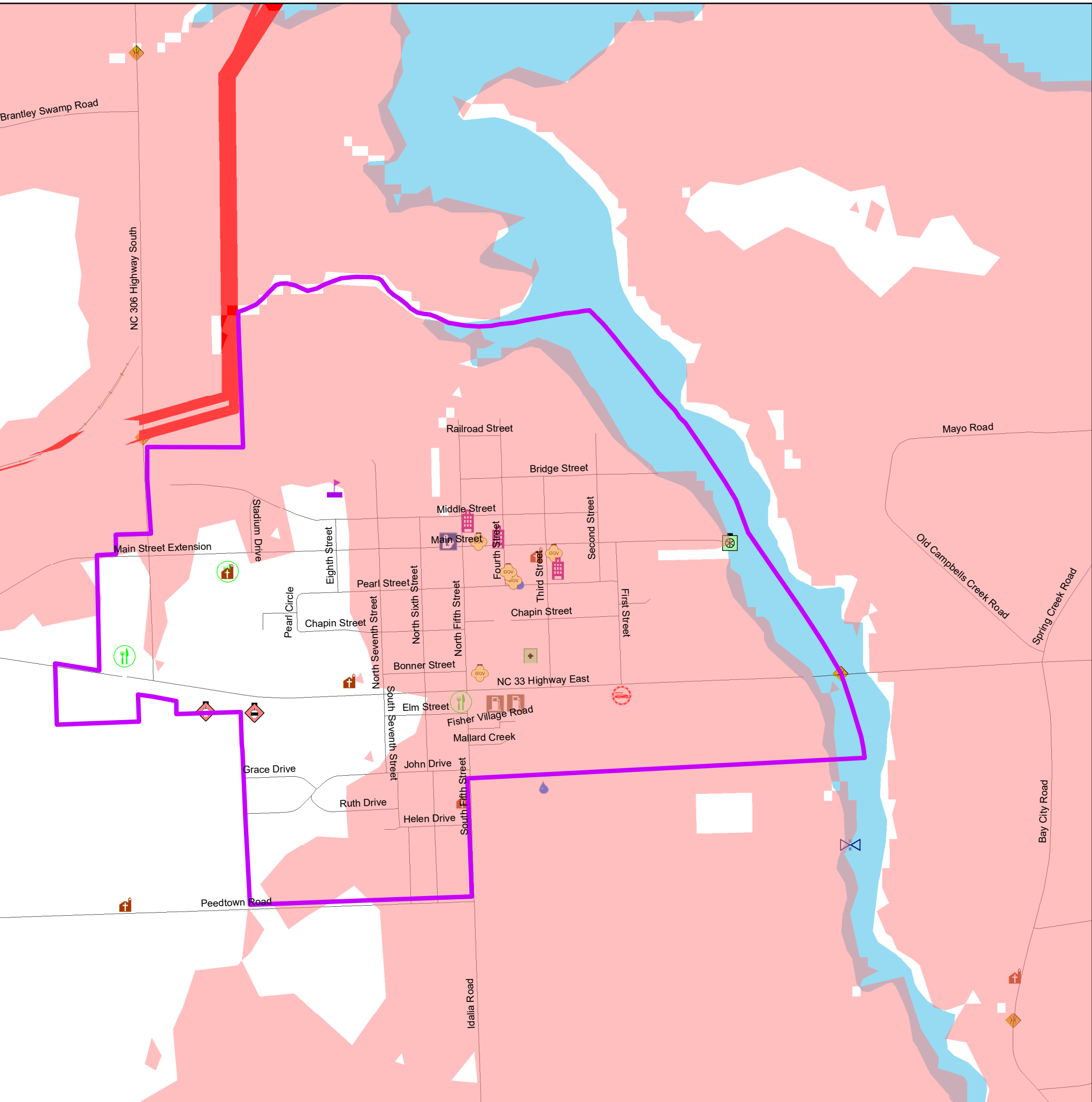
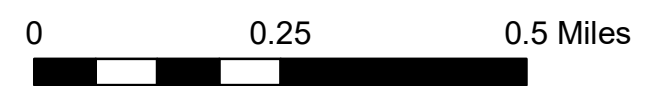
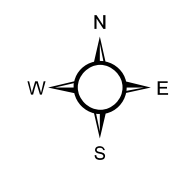
# NC Resilient Coastal Communities Program

## Town of Aurora

### Critical Assets & Potential Storm Surge for Category 2 Event

#### Legend

- Cat. 2 Event Potential Storm Surge Area
- Churches (42.9% in potential SS area)
- Community Buildings and Facilities (75% in potential SS area)
- Duke Transmission Easements (22.1% in potential SS area)
- Education (None in potential SS area)
- Fire and EMS Stations (25% in potential SS area)
- Food (20% in potential SS area)
- Fuel Stations (50% in potential SS area)
- Government Services (100% in potential SS area)
- Libraries (100% in potential SS area)
- Medical (100% in potential SS area)
- Propane Suppliers (None in potential SS area)
- Public Water Supply Wells (100% in potential SS area)
- Transportation Facilities (75% in potential SS area)
- Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (66.8% in potential SS area)
- Bridges (60% in potential SS area)
- Aurora Town Limits
- Beaufort County
- Surface Water





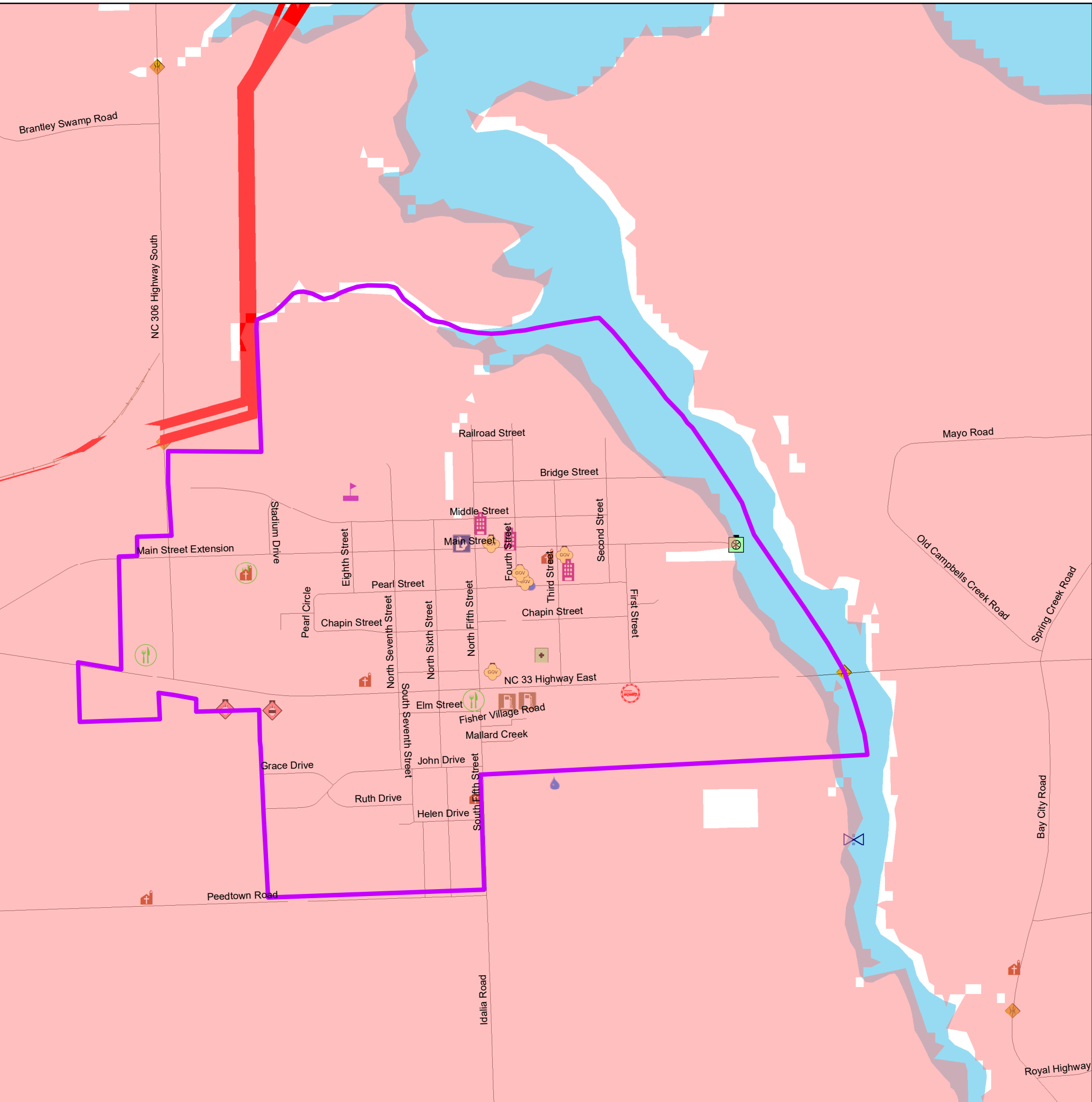
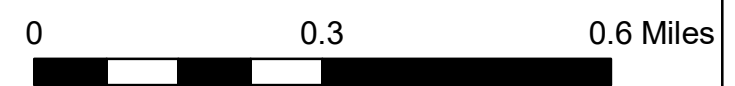
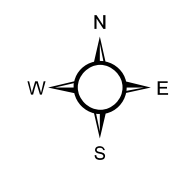
# NC Resilient Coastal Communities Program

## Town of Aurora

### Critical Assets & Potential Storm Surge for Category 3 Event

#### Legend

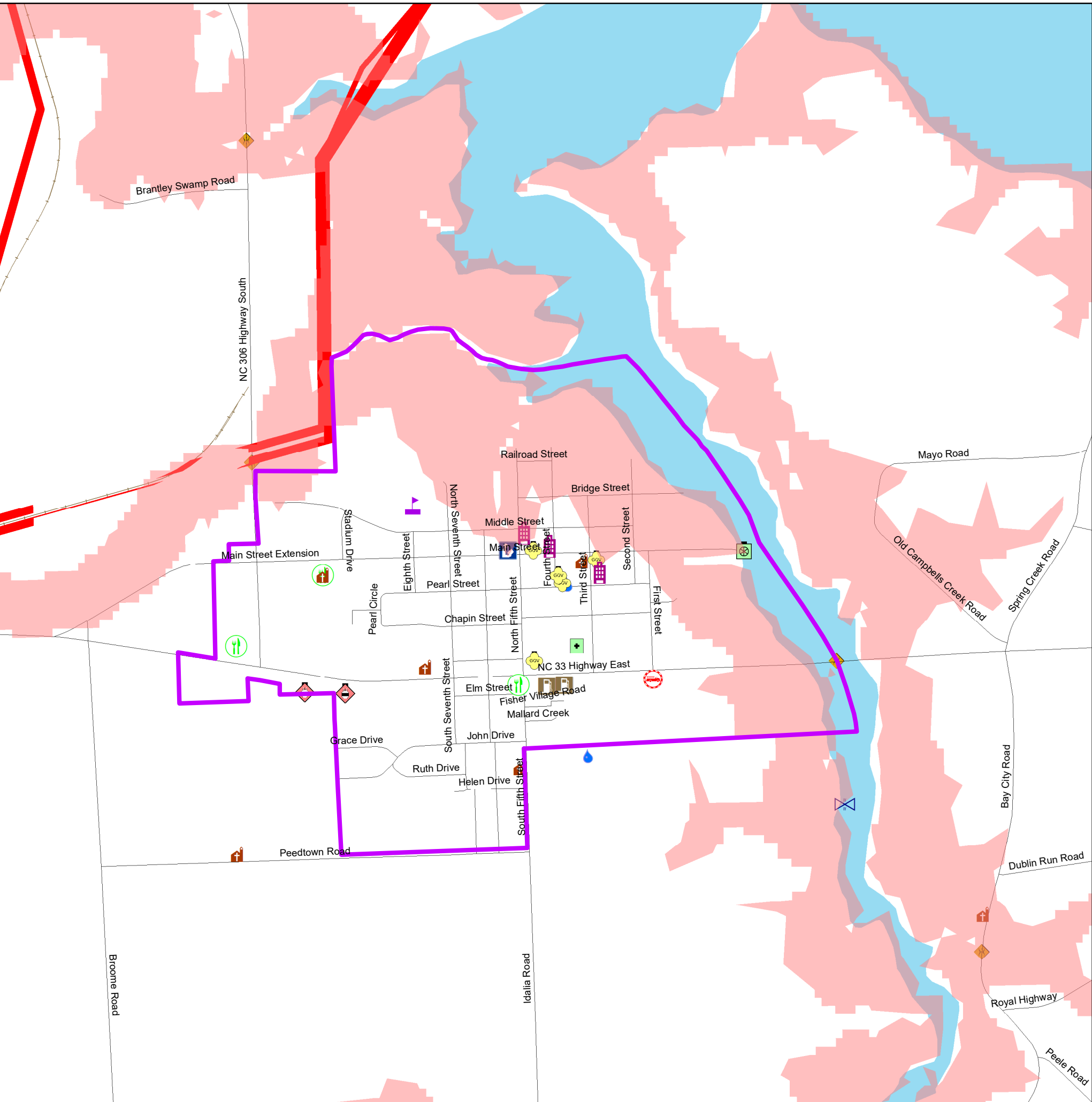
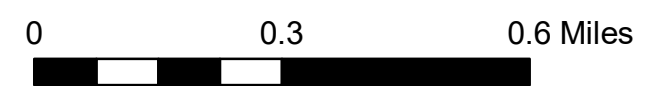
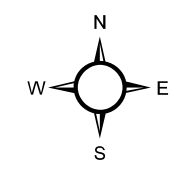
- Cat. 3 Event Potential Storm Surge Area
- Churches (71.4% in potential SS area)
- Community Buildings and Facilities (75% in potential SS area)
- Duke Transmission Easements (74% in potential SS area)
- Education (100% in potential SS area)
- Fire and EMS Stations (50% in potential SS area)
- Food (60% in potential SS area)
- Fuel Stations (50% in potential SS area)
- Government Services (100% in potential SS area)
- Libraries (100% in potential SS area)
- Medical (100% in potential SS area)
- Propane Suppliers (100% in potential SS area)
- Public Water Supply Wells (100% in potential SS area)
- Transportation Facilities (75% in potential SS area)
- Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (72.4% in potential SS area)
- Bridges (76% in potential SS area)
- Aurora Town Limits
- Beaufort County
- Surface Water



# NC Resilient Coastal Communities Program Town of Aurora Critical Assets & Potential Storm Surge for Category 1 Event

## Legend





















- Cat. 1 Event Potential Storm Surge Area
- Churches (21.4% in potential SS area)
- Community Buildings and Facilities (25% in potential SS area)
- Duke Transmission Easements (19.8% in potential SS area)
- Education (None in potential SS area)
- Fire and EMS Stations (None in potential SS area)
- Food (None in potential SS area)
- Fuel Stations (None in potential SS area)
- Government Services (None in potential SS area)
- Libraries (100% in potential SS area)
- Medical (None in potential SS area)
- Propane Suppliers (None in potential SS area)
- Public Water Supply Wells (None in potential SS area)
- Transportation Facilities (50% in potential SS area)
- Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (42.9% in potential SS area)
- Bridges (48% in potential SS area)
- Surface Water
- Aurora Town Limits
- Beaufort County

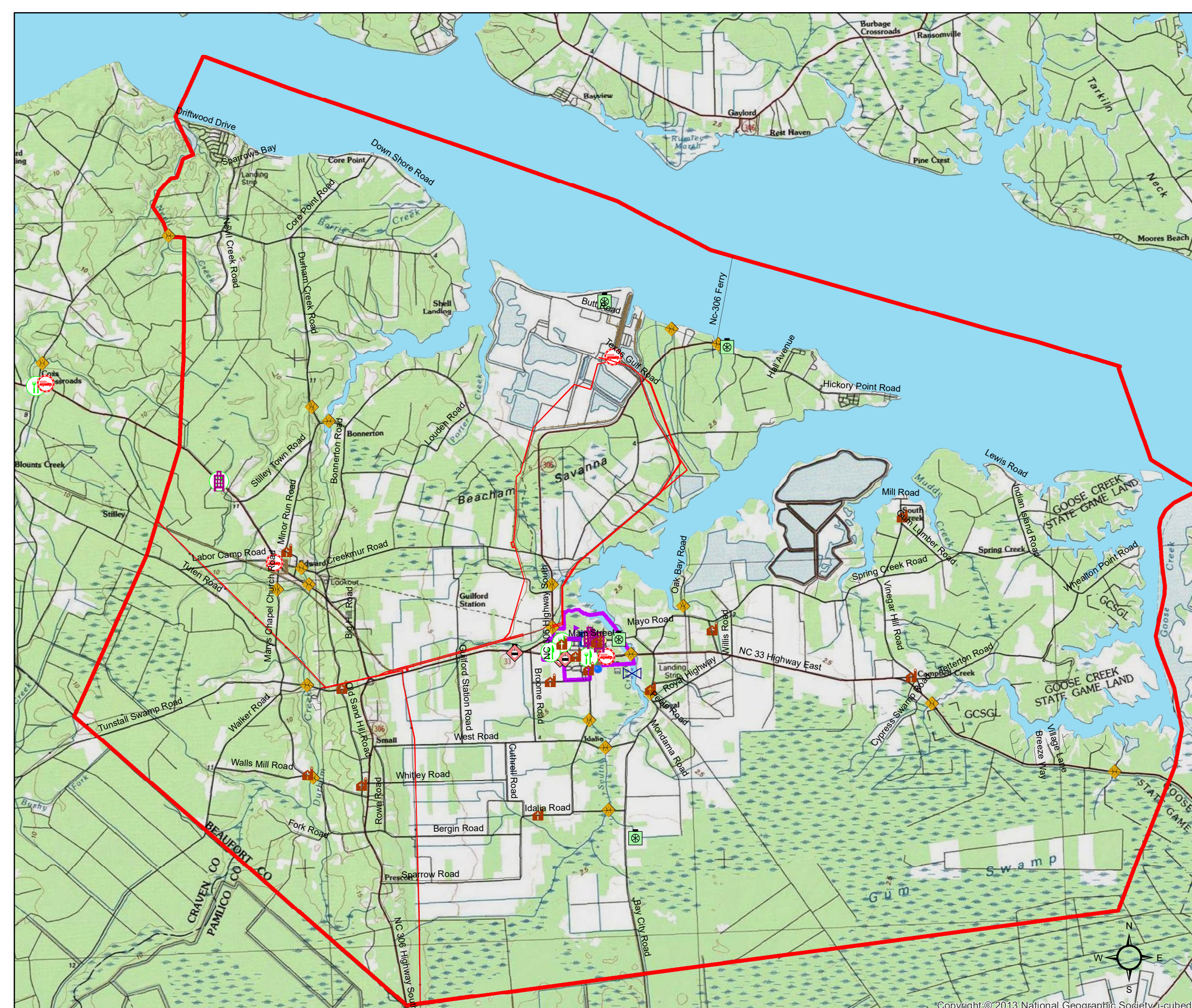




# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & Topography

## Legend























-  Churches
-  Community Buildings and Facilities
-  Duke Transmission Easements
-  Education
-  Fire and EMS Stations
-  Food
-  Fuel Stations
-  Government Services
-  Libraries
-  Medical
-  Propane Suppliers
-  Public Water Supply Wells
-  Transportation Facilities
-  Wastewater Discharge Permits
-  Rail
-  Road Network
-  Bridges
-  Aurora Town Limits
-  Richland Township
-  Surface Water

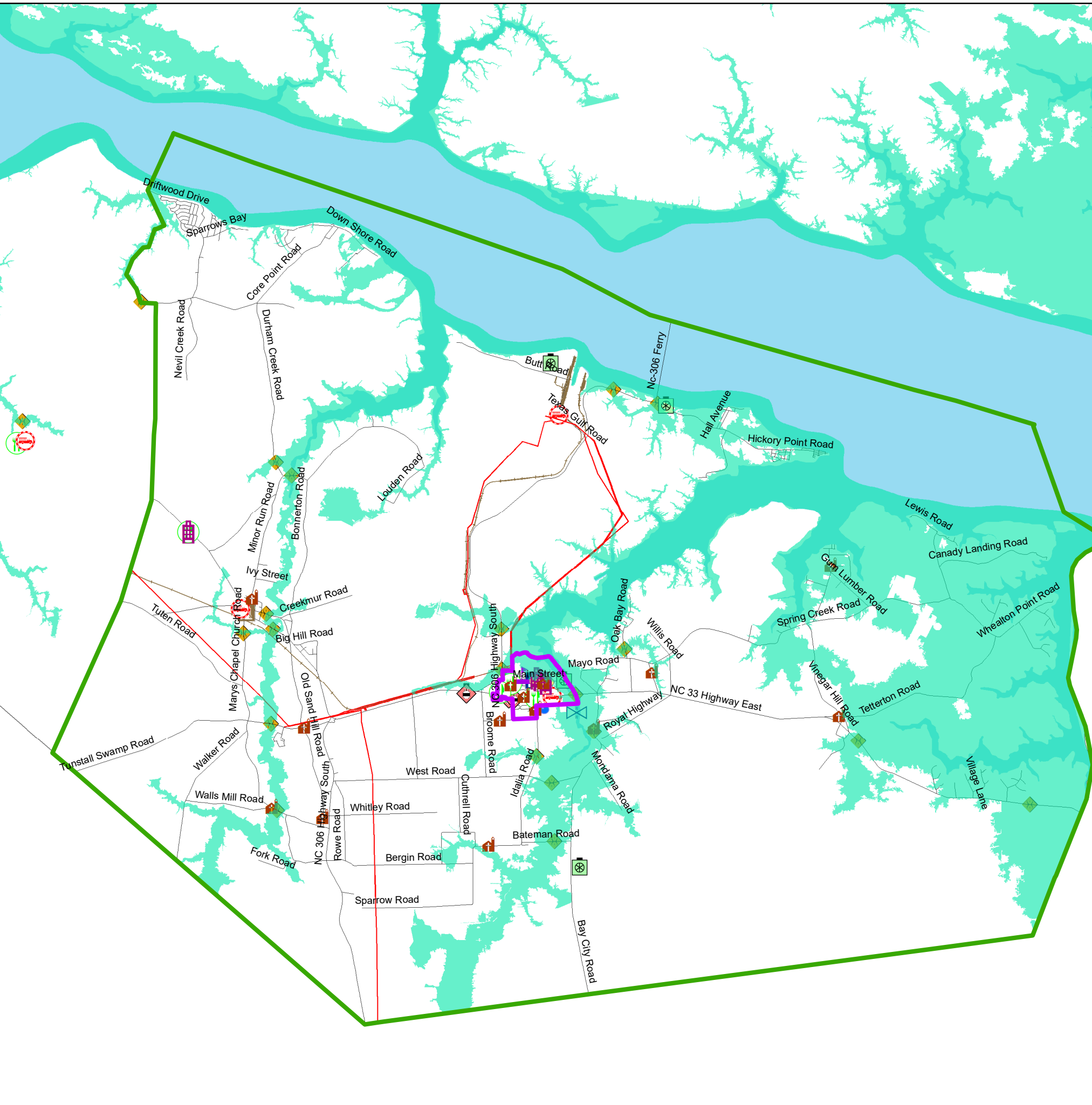
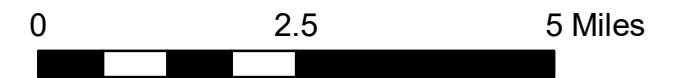
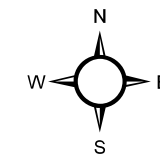




# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & 100-year Floodplain

## Legend























-  100-year Floodplain
-  Churches (7.1% in 100-yr FP)
-  Community Buildings and Facilities (25% in 100-yr FP)
-  Duke Transmission Easements (22.9% in 100-yr FP)
-  Education (None in 100-yr FP)
-  Fire and EMS Stations (None in 100-yr FP)
-  Food (None in 100-yr FP)
-  Fuel Stations (None in 100-yr FP)
-  Government Services (None in 100-yr FP)
-  Libraries (None in 100-yr FP)
-  Medical (None in 100-yr FP)
-  Propane Suppliers (None in 100-yr FP)
-  Public Water Supply Wells (None in 100-yr FP)
-  Transportation Facilities (25% in 100-yr FP)
-  Wastewater Discharge Permits (100% in 100-yr FP)
-  Rail
-  Road Network (43.7% in 100-yr FP)
-  Bridges (100% in 100-yr FP)
-  Aurora Town Limits
-  Richland Township
-  Beaufort County
-  Surface Water

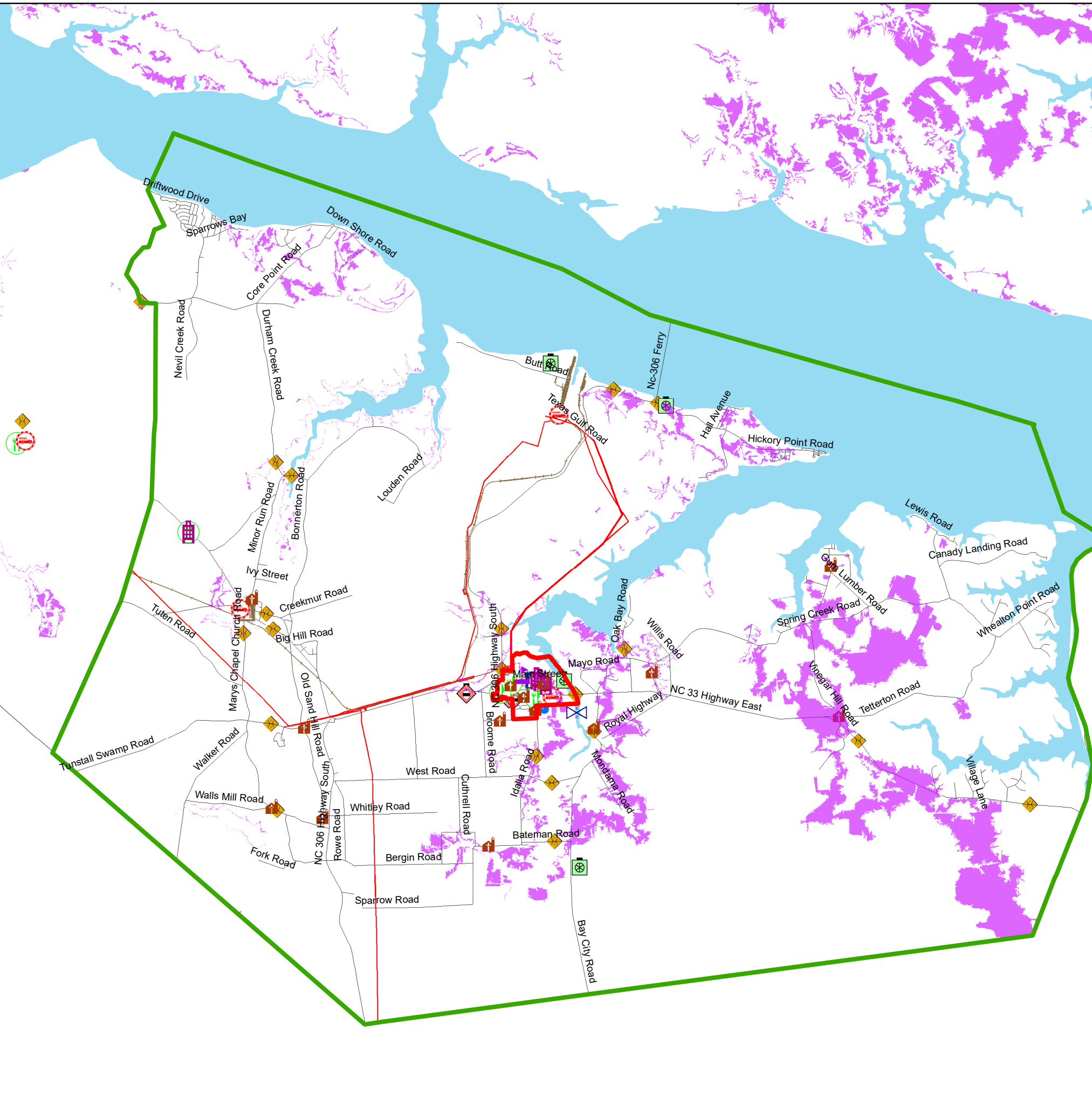
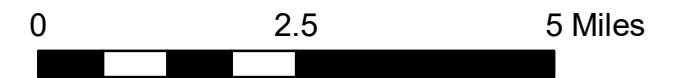
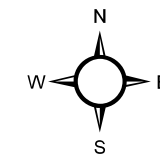




# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & 500-year Floodplain

## Legend












-  500-year Floodplain
-  Churches (14.3% in 500-yr FP)
-  Community Buildings and Facilities (25% in 500-yr FP)
-  Duke Transmission Easements (6.9% in 500-yr FP)
-  Education (None in 500-yr FP)
-  Fire and EMS Stations (None in 500-yr FP)
-  Food (None in 500-yr FP)
-  Fuel Stations (None in 500-yr FP)
-  Government Services (20% in 500-yr FP)
-  Libraries (100% in 500-yr FP)
-  Medical (None in 500-yr FP)
-  Propane Suppliers (None in 500-yr FP)
-  Public Water Supply Wells (None in 500-yr FP)
-  Transportation Facilities (25% in 500-yr FP)
-  Wastewater Discharge Permits (None in 500-yr FP)
-  Rail
-  Road Network (25.8% in 500-yr FP)
-  Bridges (None in 500-yr FP)
-  Aurora Town Limits
-  Richland Township
-  Beaufort County
-  Surface Water

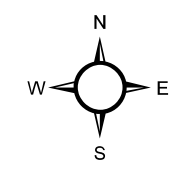
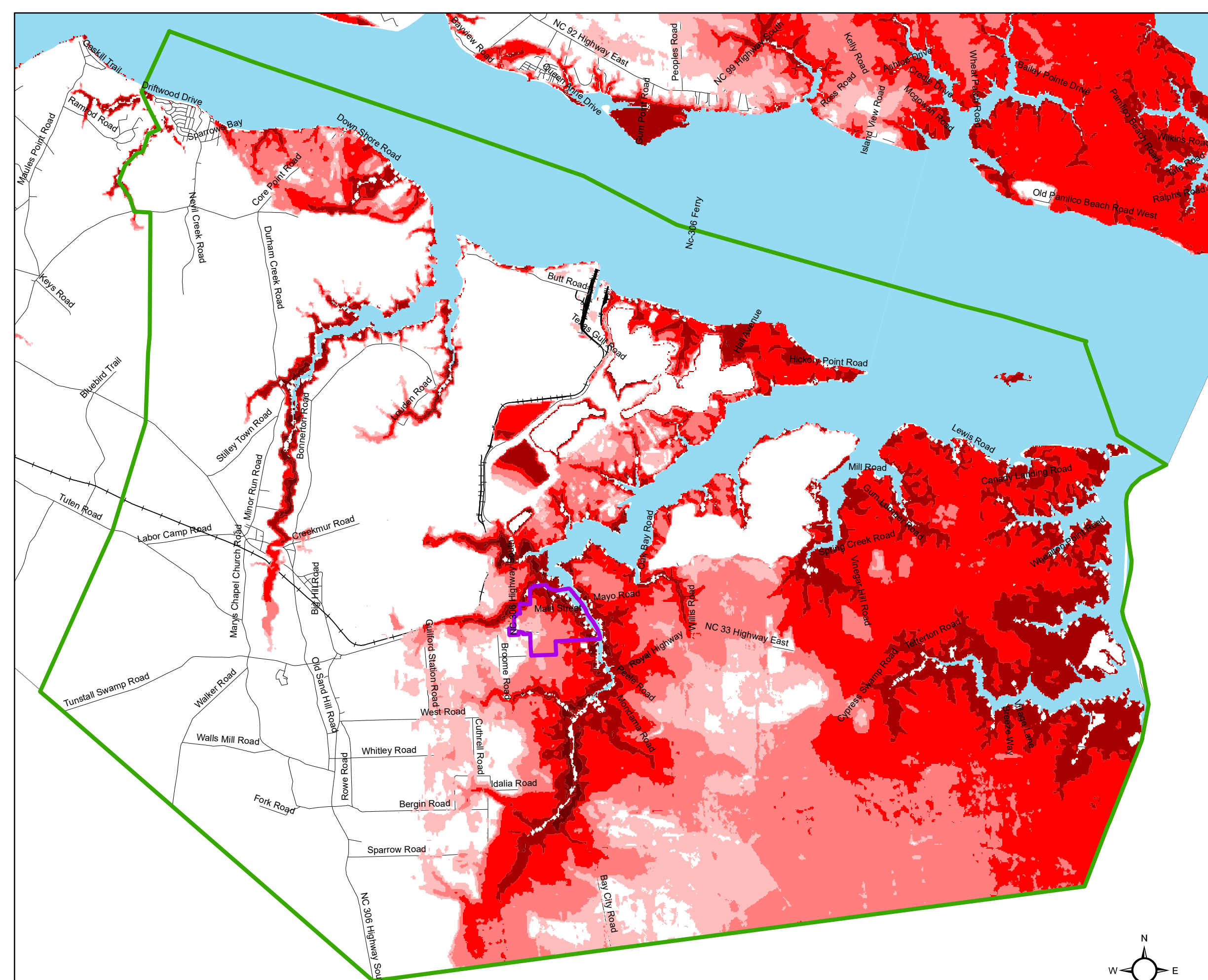


# NC Resilient Coastal Communities Program: Beaufort County Hurricane Florence Storm Surge, 2018

## Legend























### Hurricane Florence Storm Surge

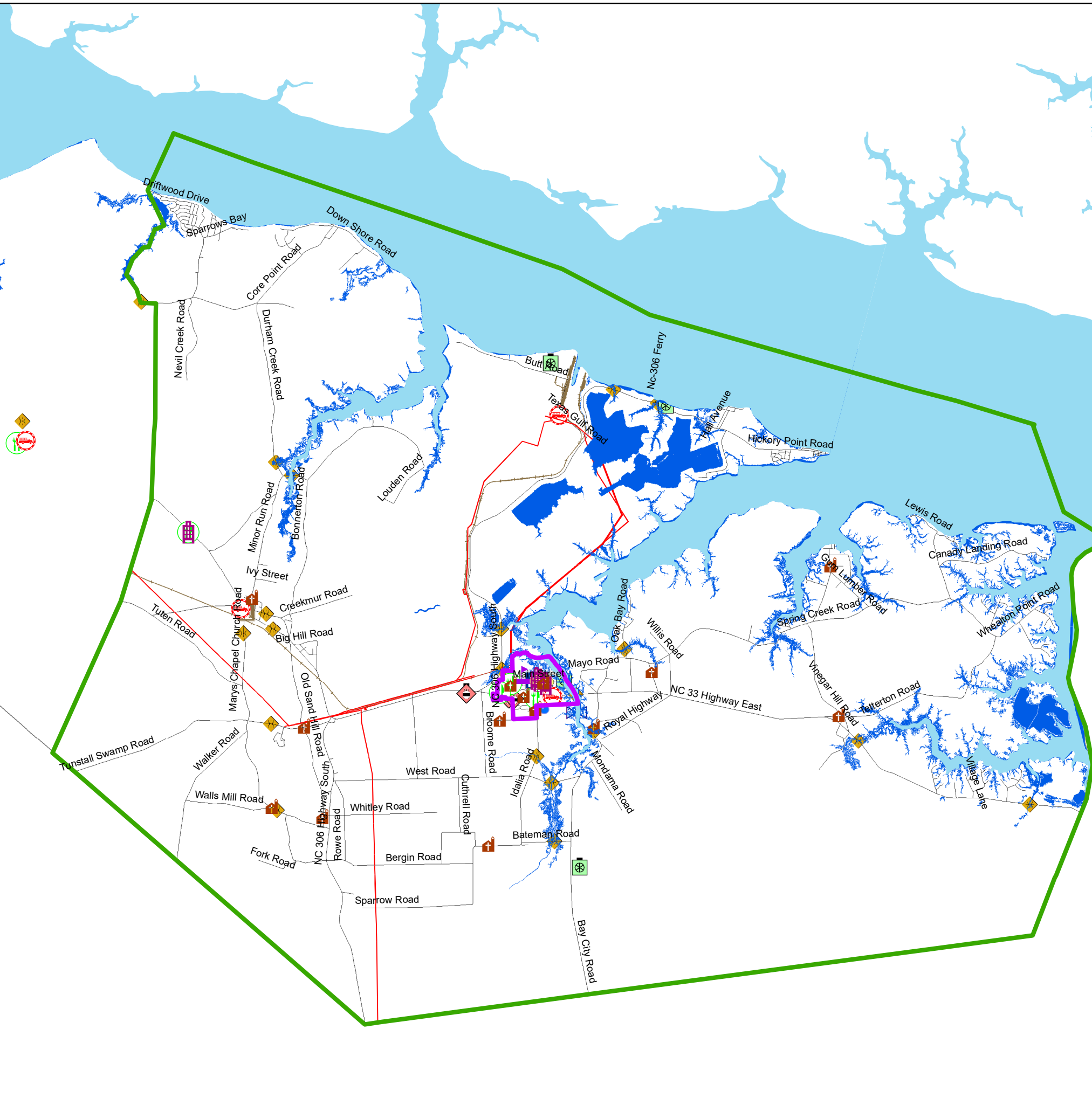
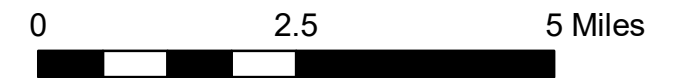
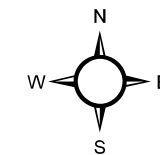
-  Less than 1 ft. above ground
-  Greater than 1 ft. above ground
-  Greater than 3 ft. above ground
-  Greater than 6 ft. above ground
-  Greater than 9 ft. above ground
-  Surface Water
-  Rail
-  Road Network
-  Aurora Town Limits
-  Richland Township
-  Beaufort County



# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & 1 ft. Sea Level Rise Scenario (30-year Projection)

## Legend























-  1 ft. Sea Level Rise Scenario Area
-  Surface Water
-  Churches (None in potential SLR area)
-  Community Buildings and Facilities (None in potential SLR area)
-  Duke Transmission Easements (18.3% in potential SLR area)
-  Education (None in potential SLR area)
-  Fire and EMS Stations (None in potential SLR area)
-  Food (None in potential SLR area)
-  Fuel Stations (None in potential SLR area)
-  Government Services (None in potential SLR area)
-  Libraries (None in potential SLR area)
-  Medical (None in potential SLR area)
-  Propane Suppliers (None in potential SLR area)
-  Public Water Supply Wells (None in potential SLR area)
-  Transportation Facilities (None in potential SLR area)
-  Wastewater Discharge Permits (100% in potential SLR area)
-  Rail
-  Road Network (4.8% in potential SLR area)
-  Bridges (56% in potential SLR area)
-  Aurora Town Limits
-  Richland Township
-  Beaufort County

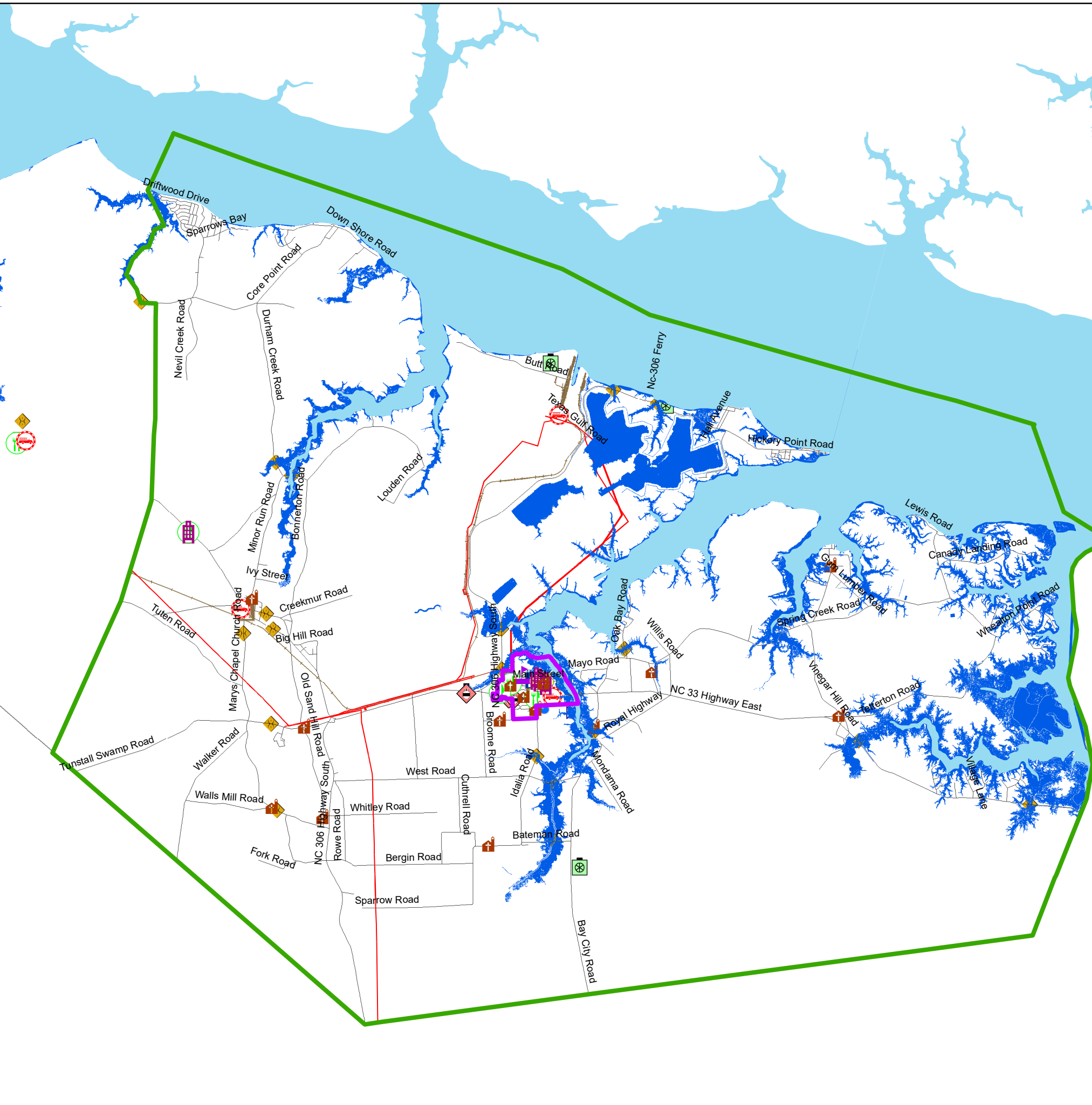
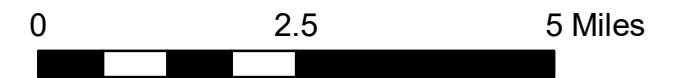
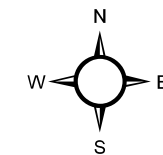




# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & 2 ft. Sea Level Rise Scenario (60-year Projection)

## Legend



-  2 ft. Sea Level Rise Scenario Area
-  Surface Water
-  Churches (None in potential SLR area)
-  Community Buildings and Facilities (None in potential SLR area)
-  Duke Transmission Easements (19.8% in potential SLR area)
-  Education (None in potential SLR area)
-  Fire and EMS Stations (None in potential SLR area)
-  Food (None in potential SLR area)
-  Fuel Stations (None in potential SLR area)
-  Government Services (None in potential SLR area)
-  Libraries (None in potential SLR area)
-  Medical (None in potential SLR area)
-  Propane Suppliers (None in potential SLR area)
-  Public Water Supply Wells (None in potential SLR area)
-  Transportation Facilities (25% in potential SLR area)
-  Wastewater Discharge Permits (100% in potential SLR area)
-  Rail
-  Road Network (11.8% in potential SLR area)
-  Bridges (60% in potential SLR area)
-  Aurora Town Limits
-  Richland Township
-  Beaufort County

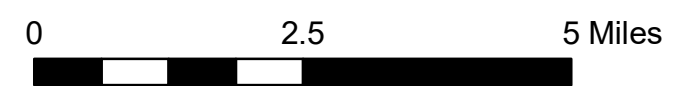
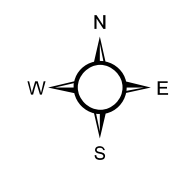
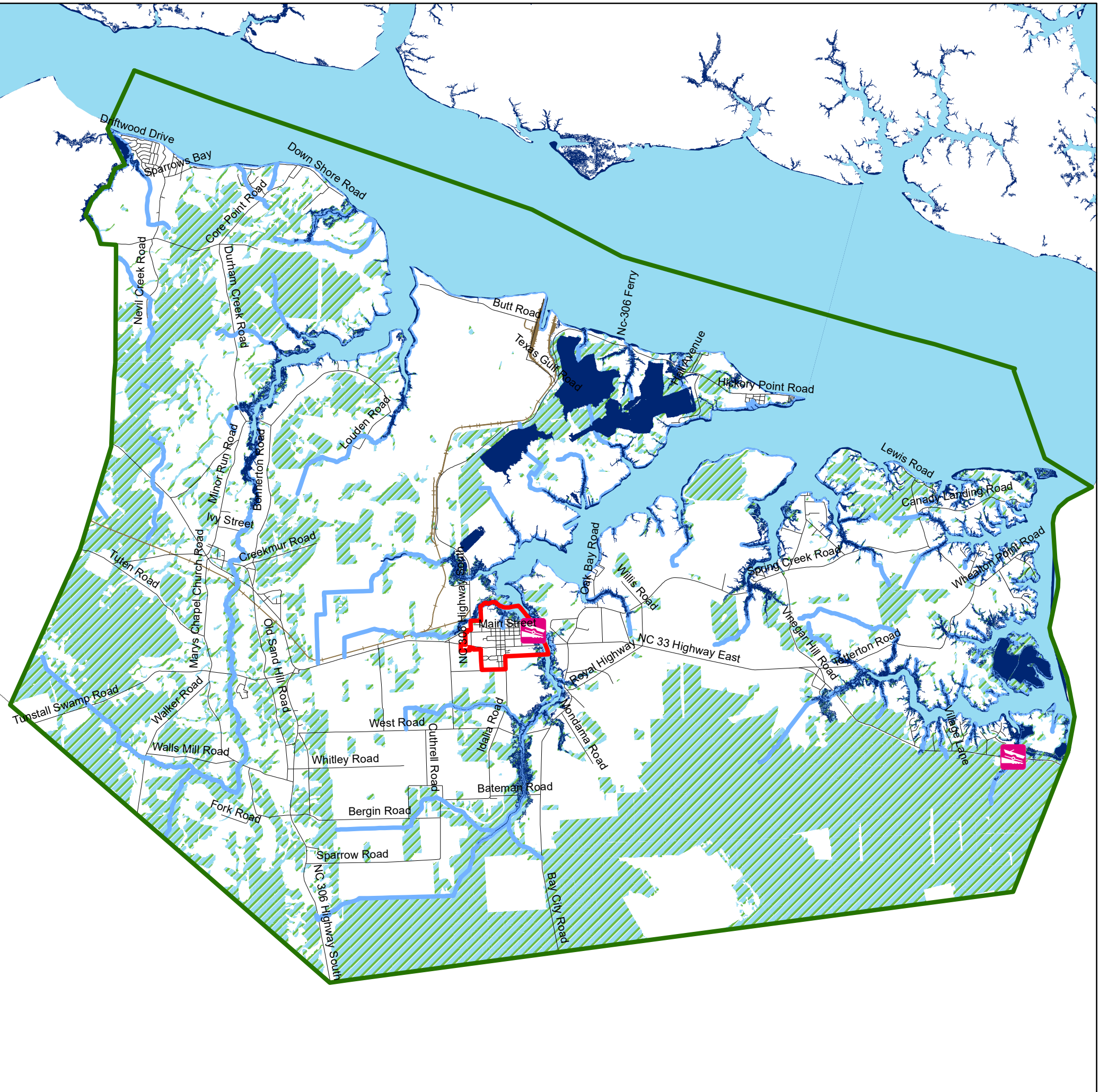




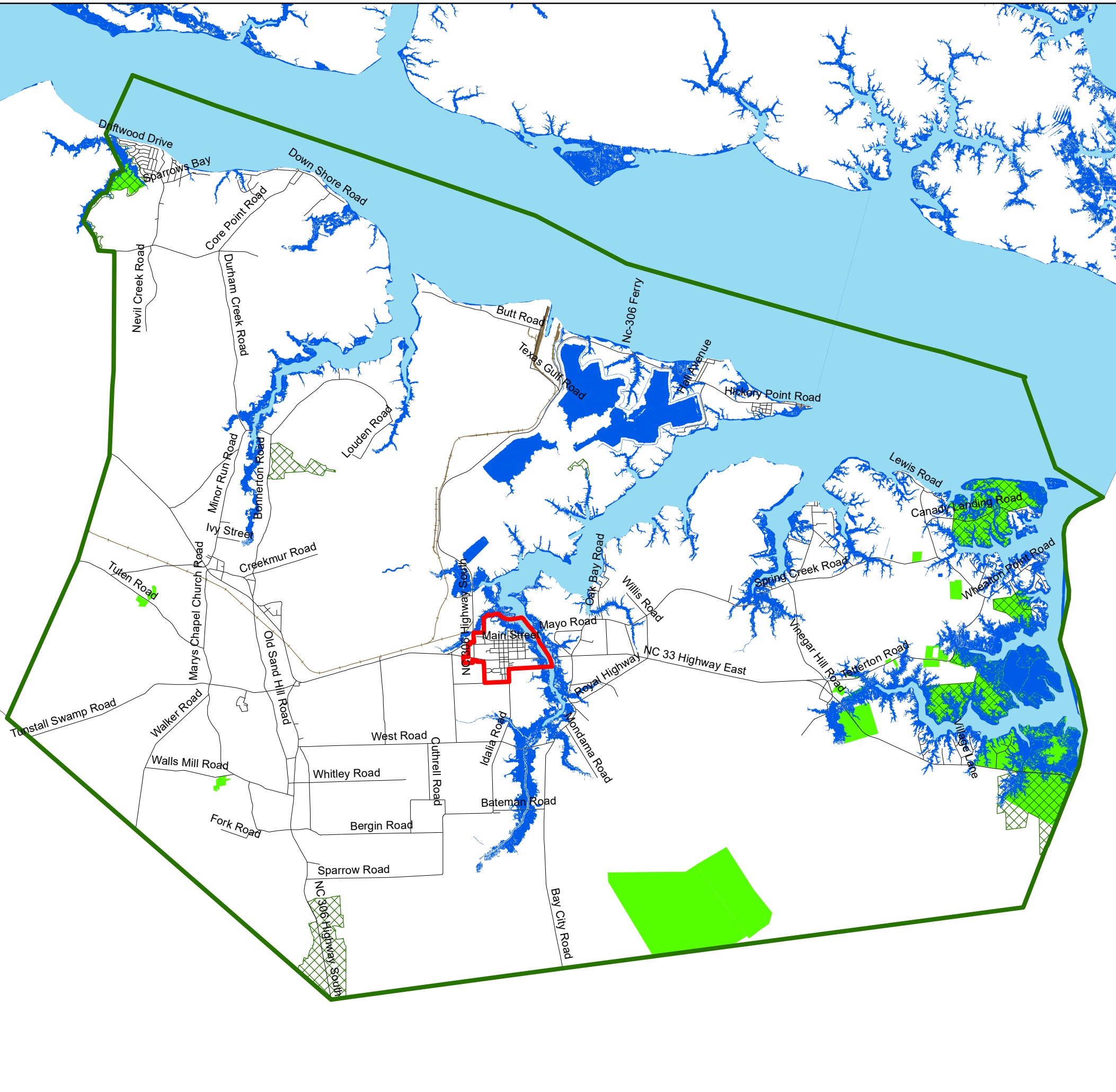
# NC Resilient Coastal Communities Program: Town of Aurora & Richland Township Boat Ramps/Streams/Wetlands & 1 ft. Sea Level Rise Scenario (30 year projection)

## Legend

-  1 ft. Sea Level Rise Scenario
-  Surface Water
-  Streams (91.1% in potential SLR area)
-  Public Boat Ramps (None in potential SLR area)
-  Wetlands (37.7% in potential SLR area)
-  Rail
-  Roads
-  Aurora Town Limits
-  Richland Township
-  Beaufort County

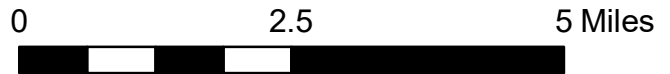
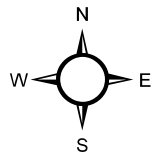


**NC Resilient Coastal Communities Program:  
Town of Aurora & Richland Township  
Managed Areas/Natural Areas &  
2 ft. Sea Level Rise Scenario  
(60 year projection)**



**Legend**

- 2 ft. Sea Level Rise Scenario
- Surface Water
- Natural Areas (71.4% in potential SLR area)
- Managed Areas (52.6% in potential SLR area)
- Rail
- Road Network
- Aurora Town Limits
- Richland Township
- Beaufort County












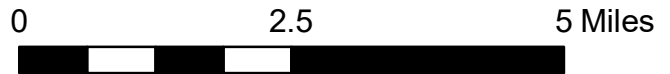
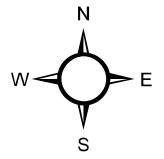
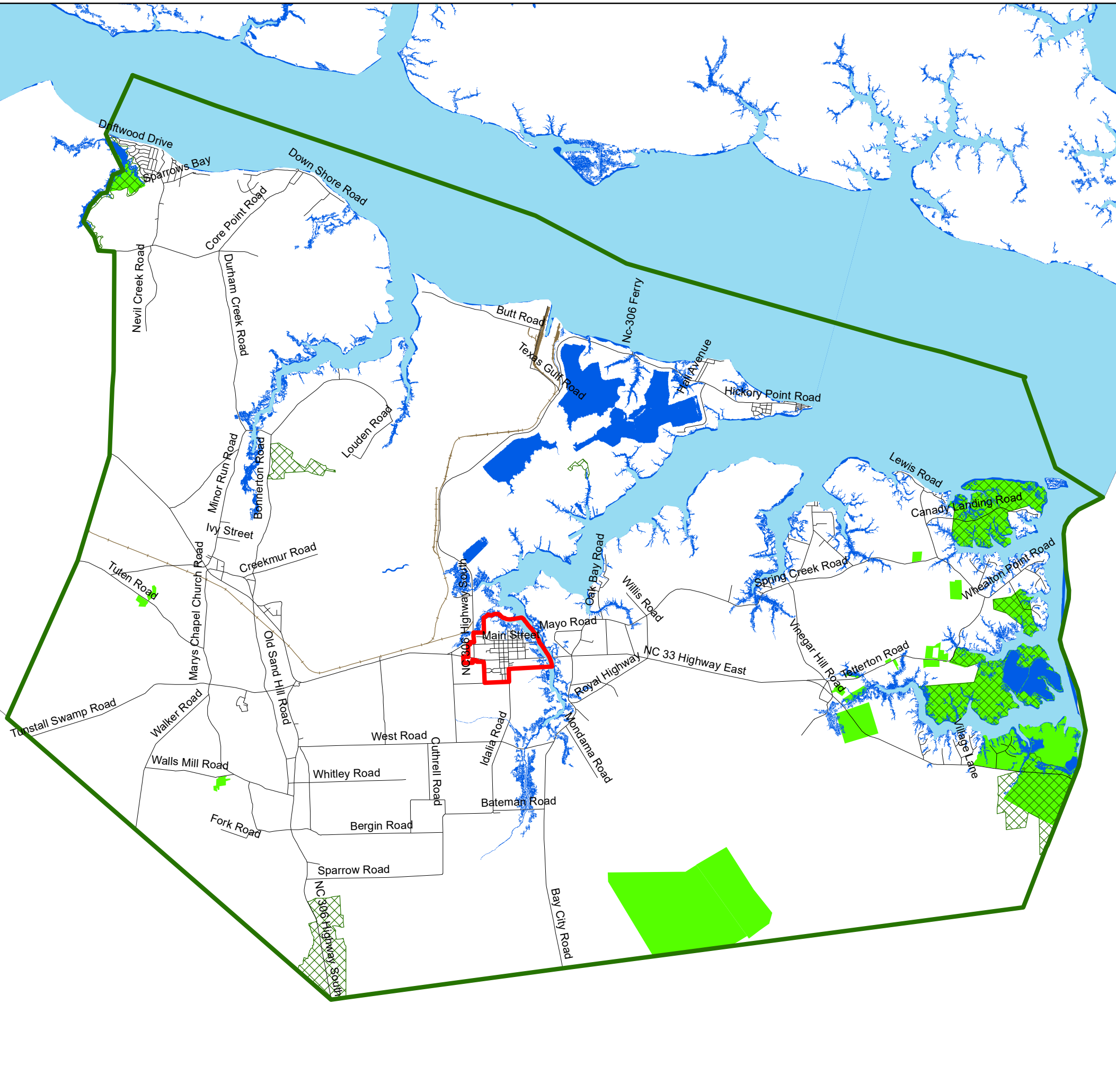




# NC Resilient Coastal Communities Program: Town of Aurora & Richland Township Managed Areas/Natural Areas & 1 ft. Sea Level Rise Scenario (30 year projection)

## Legend

-  1 ft. Sea Level Rise Scenario
-  Surface Water
-  Natural Areas (71.4% in potential SLR area)
-  Managed Areas (36.8% in potential SLR area)
-  Rail
-  Road Network
-  Aurora Town Limits
-  Richland Township
-  Beaufort County

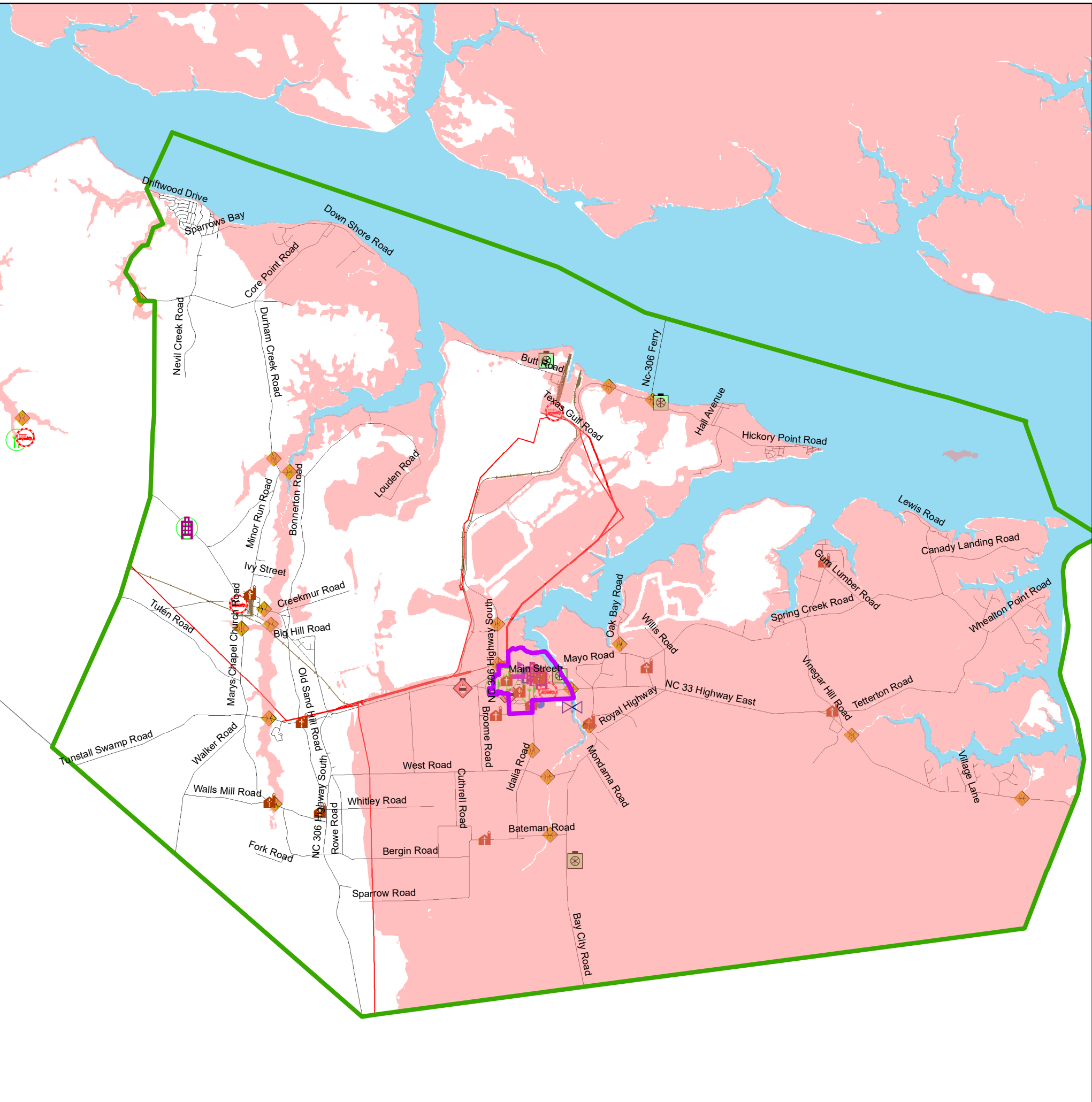
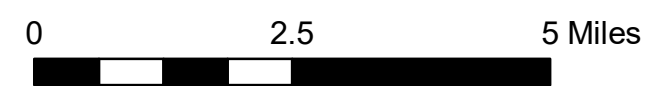
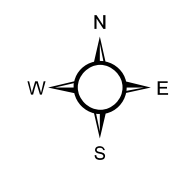




# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & Potential Storm Surge for Category 3 Event

## Legend

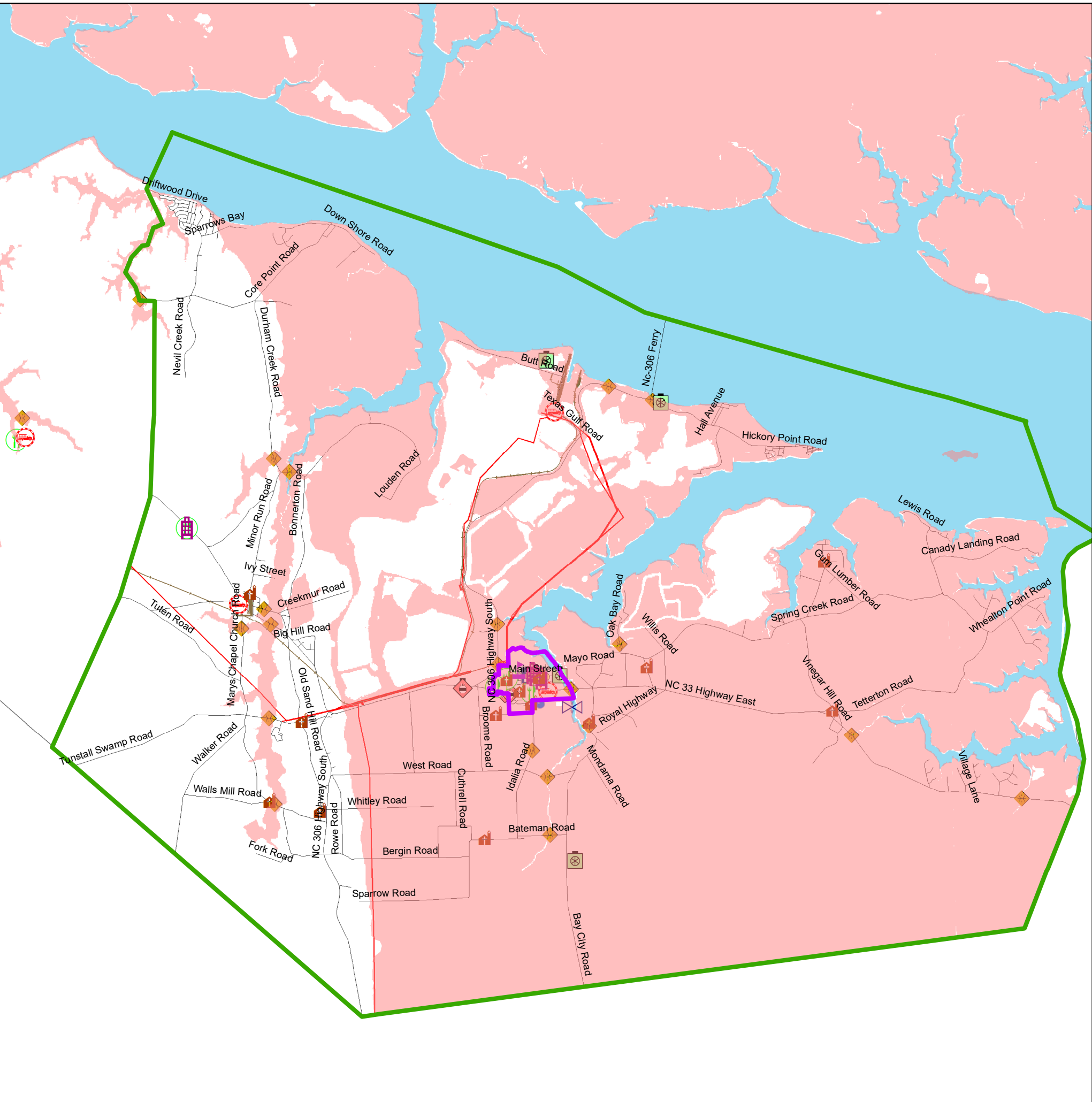
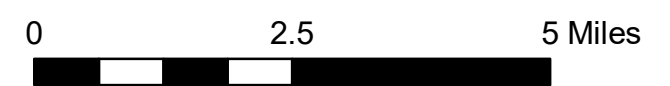
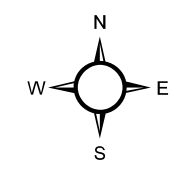
- Cat. 3 Event Potential Storm Surge Area
- Churches (71.4% in potential SS area)
- Community Buildings and Facilities (75% in potential SS area)
- Duke Transmission Easements (74% in potential SS area)
- Education (100% in potential SS area)
- Fire and EMS Stations (50% in potential SS area)
- Food (60% in potential SS area)
- Fuel Stations (50% in potential SS area)
- Government Services (100% in potential SS area)
- Libraries (100% in potential SS area)
- Medical (100% in potential SS area)
- Propane Suppliers (100% in potential SS area)
- Public Water Supply Wells (100% in potential SS area)
- Transportation Facilities (75% in potential SS area)
- Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (72.4% in potential SS area)
- Bridges (76% in potential SS area)
- Aurora Town Limits
- Richland Township
- Beaufort County
- Surface Water



# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & Potential Storm Surge for Category 4 Event

## Legend

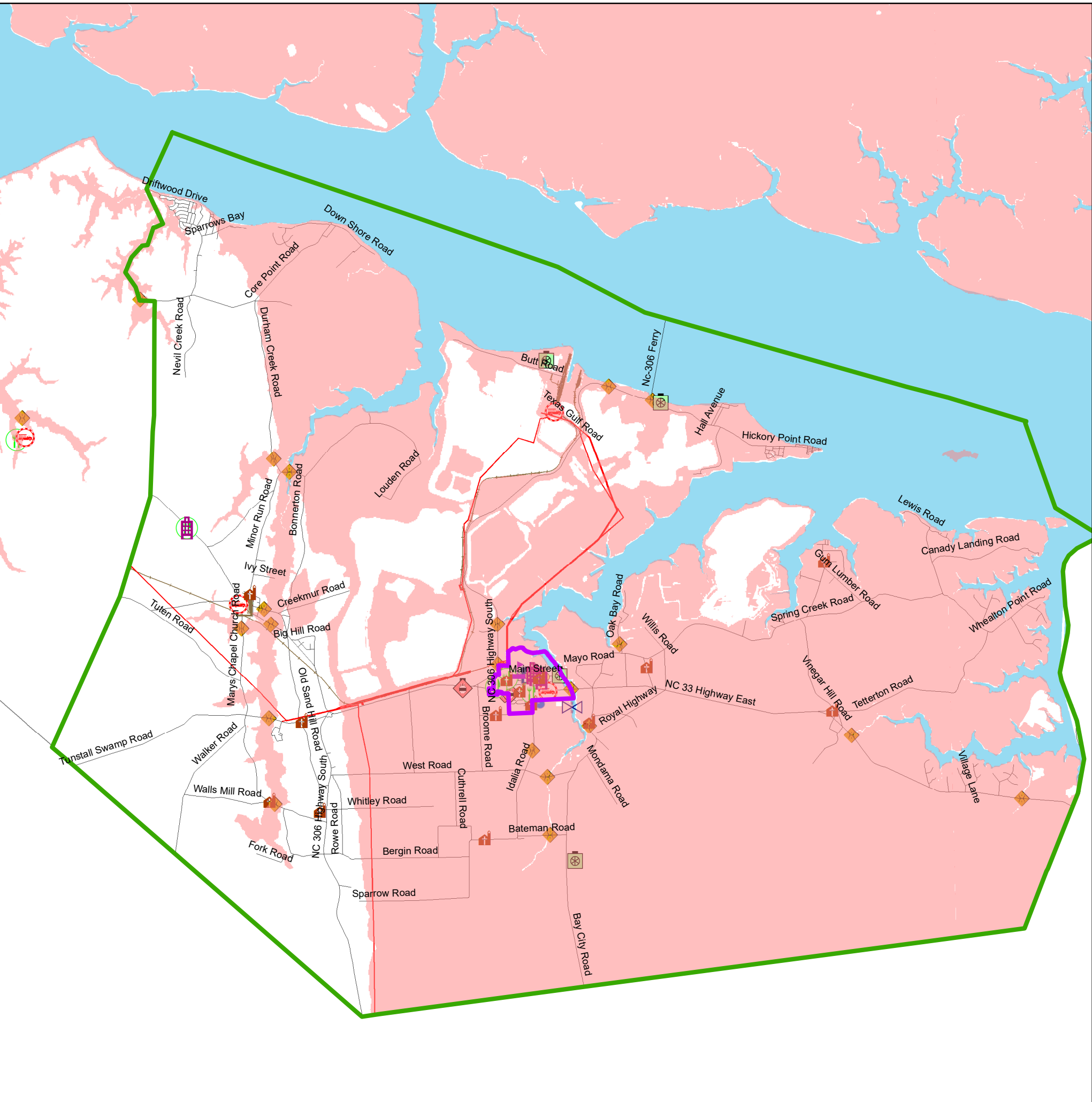
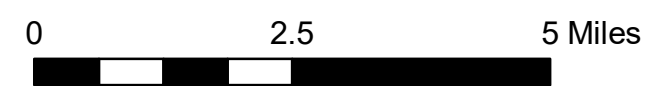
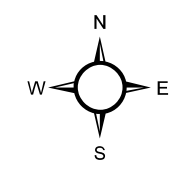
- Cat. 4 Event Potential Storm Surge Area
- Churches (71.4% in potential SS area)
- Community Buildings and Facilities (75% in potential SS area)
- Duke Transmission Easements (79.4% in potential SS area)
- Education (100% in potential SS area)
- Fire and EMS Stations (50% in potential SS area)
- Food (80% in potential SS area)
- Fuel Stations (50% in potential SS area)
- Government Services (100% in potential SS area)
- Libraries (100% in potential SS area)
- Medical (100% in potential SS area)
- Propane Suppliers (100% in potential SS area)
- Public Water Supply Wells (100% in potential SS area)
- Transportation Facilities (75% in potential SS area)
- Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (75% in potential SS area)
- Bridges (80% in potential SS area)
- Aurora Town Limits
- Richland Township
- Beaufort County
- Surface Water



# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & Potential Storm Surge for Category 5 Event

## Legend

- Cat. 5 Event Potential Storm Surge Area
- Churches (71.4% in potential SS area)
- Community Buildings and Facilities (75% in potential SS area)
- Duke Transmission Easements (80.2% in potential SS area)
- Education (100% in potential SS area)
- Fire and EMS Stations (50% in potential SS area)
- Food (80% in potential SS area)
- Fuel Stations (75% in potential SS area)
- Government Services (100% in potential SS area)
- Libraries (100% in potential SS area)
- Medical (100% in potential SS area)
- Propane Suppliers (100% in potential SS area)
- Public Water Supply Wells (100% in potential SS area)
- Transportation Facilities (75% in potential SS area)
- Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (78.5% in potential SS area)
- Bridges (80% in potential SS area)
- Aurora Town Limits
- Beaufort County
- Richland Township
- Surface Water

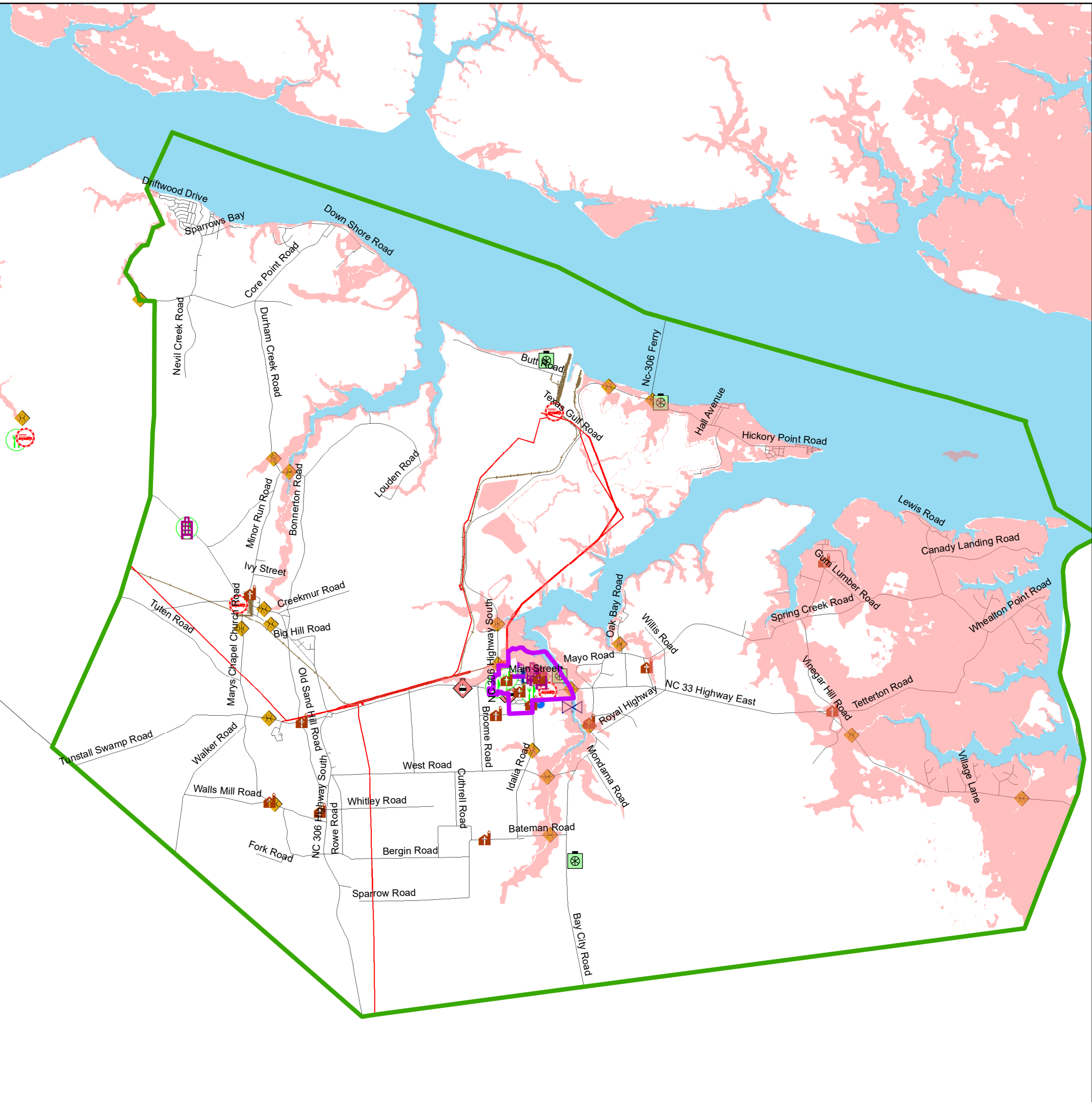
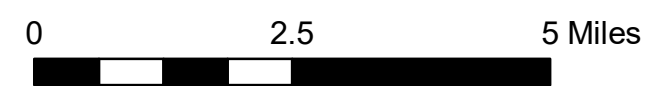
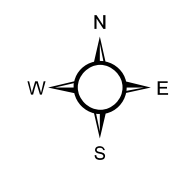




# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & Potential Storm Surge for Category 1 Event

## Legend

- Cat. 1 Event Potential Storm Surge Area
- Churches (21.4% in potential SS area)
- Community Buildings and Facilities (25% in potential SS area)
- Duke Transmission Easements (19.8% in potential SS area)
- Education (None in potential SS area)
- Fire and EMS Stations (None in potential SS area)
- Food (None in potential SS area)
- Fuel Stations (None in potential SS area)
- Government Services (None in potential SS area)
- Libraries (100% in potential SS area)
- Medical (None in potential SS area)
- Propane Suppliers (None in potential SS area)
- Public Water Supply Wells (None in potential SS area)
- Transportation Facilities (50% in potential SS area)
- Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (42.9% in potential SS area)
- Bridges (48% in potential SS area)
- Surface Water
- Aurora Town Limits
- Richland Township
- Beaufort County

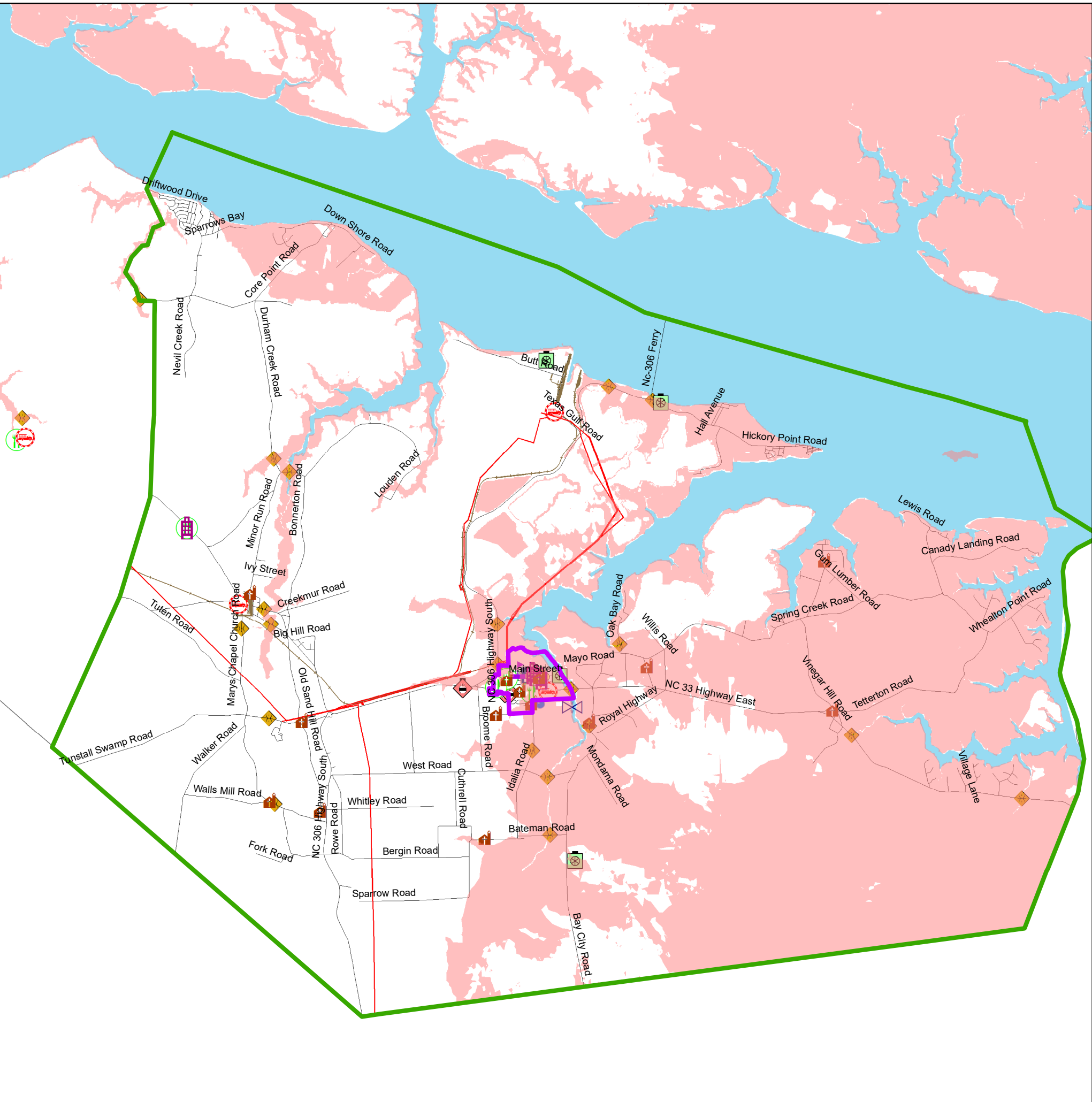
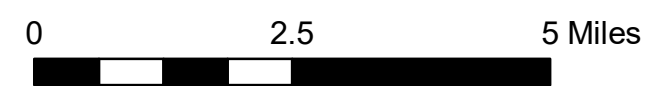
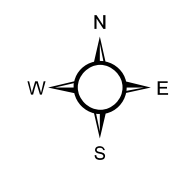




# NC Resilient Coastal Communities Program Town of Aurora & Richland Township Critical Assets & Potential Storm Surge for Category 2 Event

## Legend

- Cat. 2 Event Potential Storm Surge Area
- Churches (42.9% in potential SS area)
- Community Buildings and Facilities (75% in potential SS area)
- Duke Transmission Easements (22.1% in potential SS area)
- Education (None in potential SS area)
- Fire and EMS Stations (25% in potential SS area)
- Food (20% in potential SS area)
- Fuel Stations (50% in potential SS area)
- Government Services (100% in potential SS area)
- Libraries (100% in potential SS area)
- Medical (100% in potential SS area)
- Propane Suppliers (None in potential SS area)
- Public Water Supply Wells (100% in potential SS area)
- Transportation Facilities (75% in potential SS area)
- Wastewater Discharge Permits (None in potential SS area)
- Rail
- Road Network (66.8% in potential SS area)
- Bridges (60% in potential SS area)
- Aurora Town Limits
- Richland Township
- Beaufort County
- Surface Water

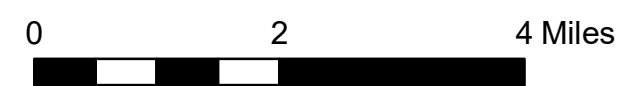
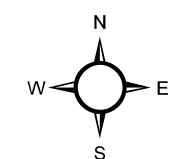
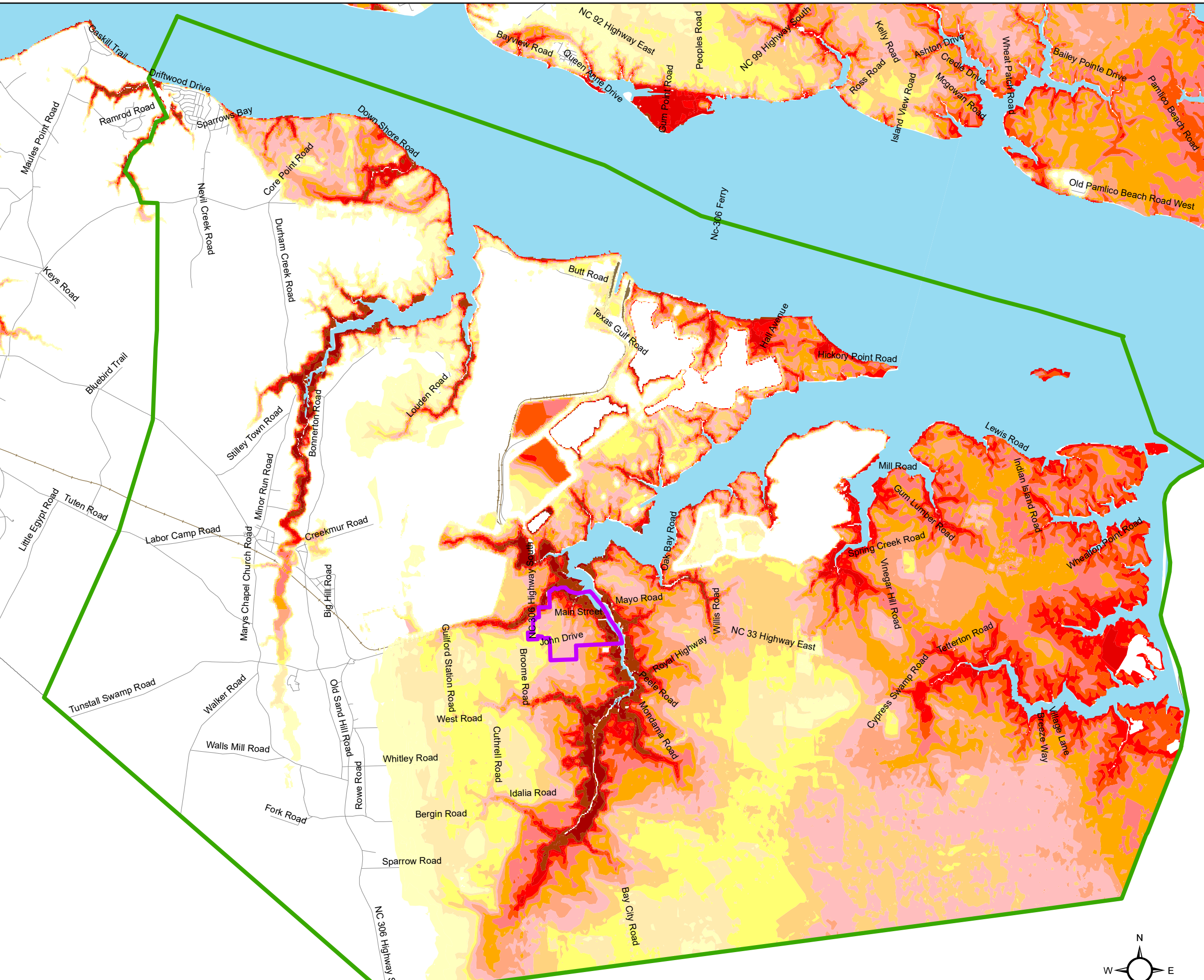


# NC Resilient Coastal Communities Program: Town of Aurora & Richland Township Potential Storm Surge for Cat. 3 Event

## Legend

### Cat. 3 Event Storm Surge Potential

- 00 to 01 feet above ground
- 01 to 02 feet above ground
- 02 to 03 feet above ground
- 03 to 04 feet above ground
- 04 to 05 feet above ground
- 05 to 06 feet above ground
- 06 to 07 feet above ground
- 07 to 08 feet above ground
- 08 to 09 feet above ground
- 09 to 10 feet above ground
- 10 to 11 feet above ground
- 11 to 12 feet above ground
- 12 to 13 feet above ground
- 13 to 14 feet above ground
- 14 to 15 feet above ground
- Surface Water
- Rail
- Road Network
- Aurora Town Limits
- Richland Township
- Beaufort County



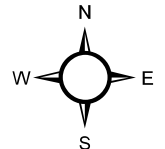
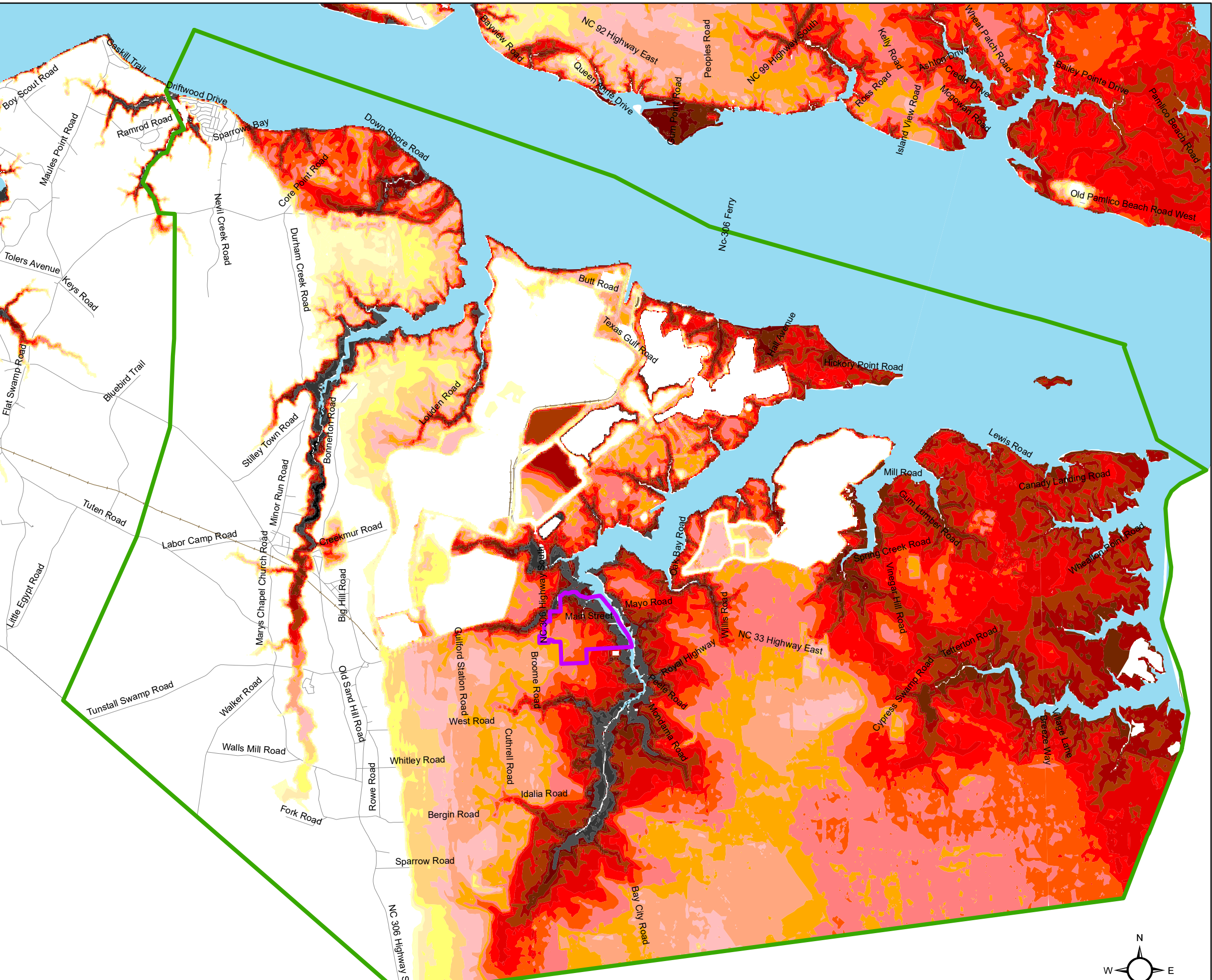


# NC Resilient Coastal Communities Program: Town of Aurora & Richland Township Potential Storm Surge for Cat. 4 Event

## Legend

### Cat. 4 Event Storm Surge Potential

- 00 to 01 feet above ground
- 01 to 02 feet above ground
- 02 to 03 feet above ground
- 03 to 04 feet above ground
- 04 to 05 feet above ground
- 05 to 06 feet above ground
- 06 to 07 feet above ground
- 07 to 08 feet above ground
- 08 to 09 feet above ground
- 09 to 10 feet above ground
- 10 to 11 feet above ground
- 11 to 12 feet above ground
- 12 to 13 feet above ground
- 13 to 14 feet above ground
- 14 to 15 feet above ground
- 15 to 16 feet above ground
- 16 to 17 feet above ground
- 17 to 18 feet above ground
- 18 to 19 feet above ground
- 19 to 20 feet above ground
- Surface Water
- Rail
- Road Network
- Town of Aurora
- Richland Township
- Beaufort County



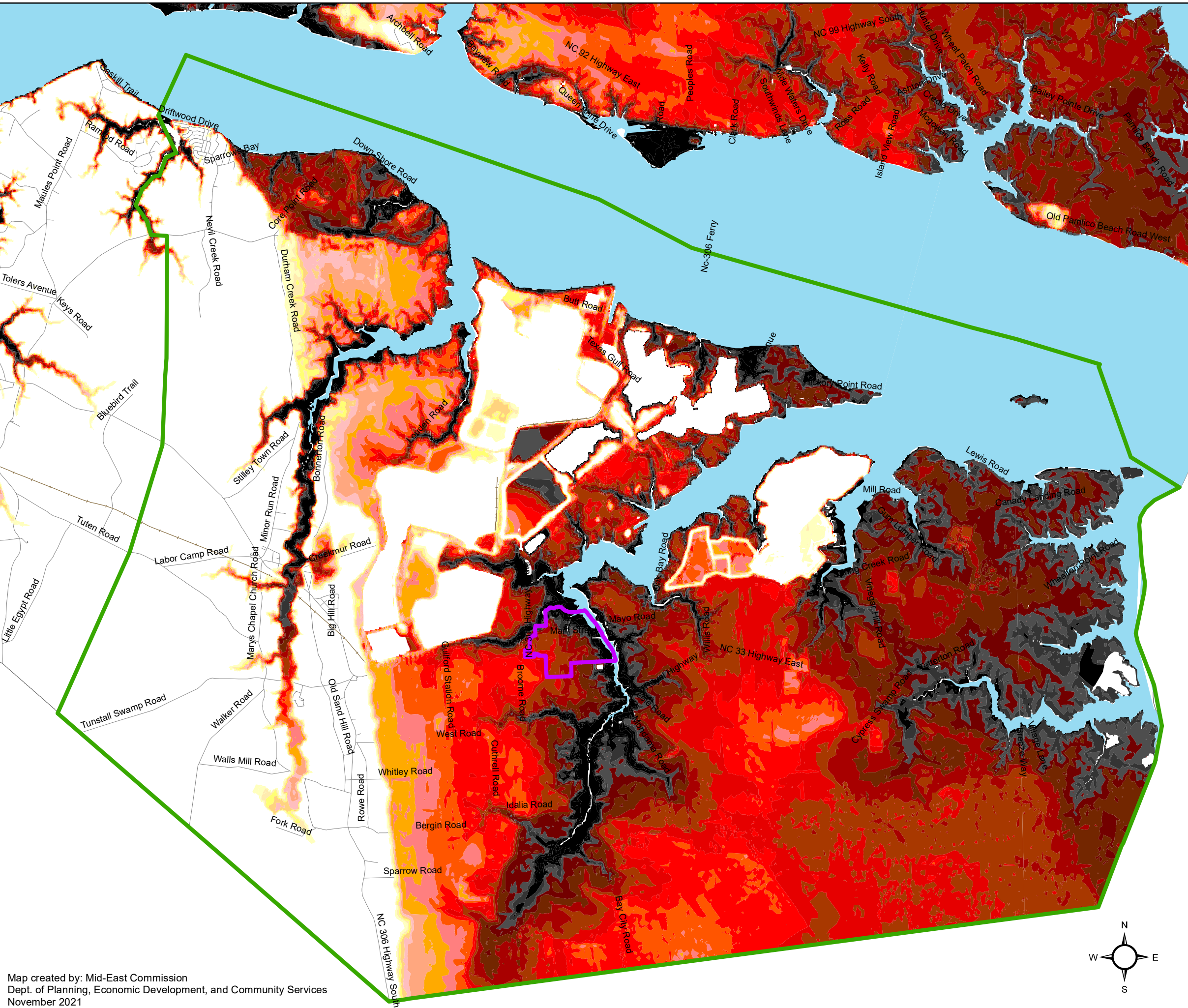


**NC Resilient Coastal Communities Program:  
Town of Aurora &  
Richland Township  
Potential Storm Surge  
for Cat. 5 Event**

**Legend**

**Cat. 5 Event Storm Surge Potential**

- 00 to 01 feet above ground
- 01 to 02 feet above ground
- 02 to 03 feet above ground
- 03 to 04 feet above ground
- 04 to 05 feet above ground
- 05 to 06 feet above ground
- 06 to 07 feet above ground
- 07 to 08 feet above ground
- 08 to 09 feet above ground
- 09 to 10 feet above ground
- 10 to 11 feet above ground
- 11 to 12 feet above ground
- 12 to 13 feet above ground
- 14 to 15 feet above ground
- 15 to 16 feet above ground
- 16 to 17 feet above ground
- 17 to 18 feet above ground
- 18 to 19 feet above ground
- 19 to 20 feet above ground
- Greater than 20 feet above ground
- Surface Water
- Rail
- Road Network
- Town of Aurora
- Richland Township
- Beaufort County



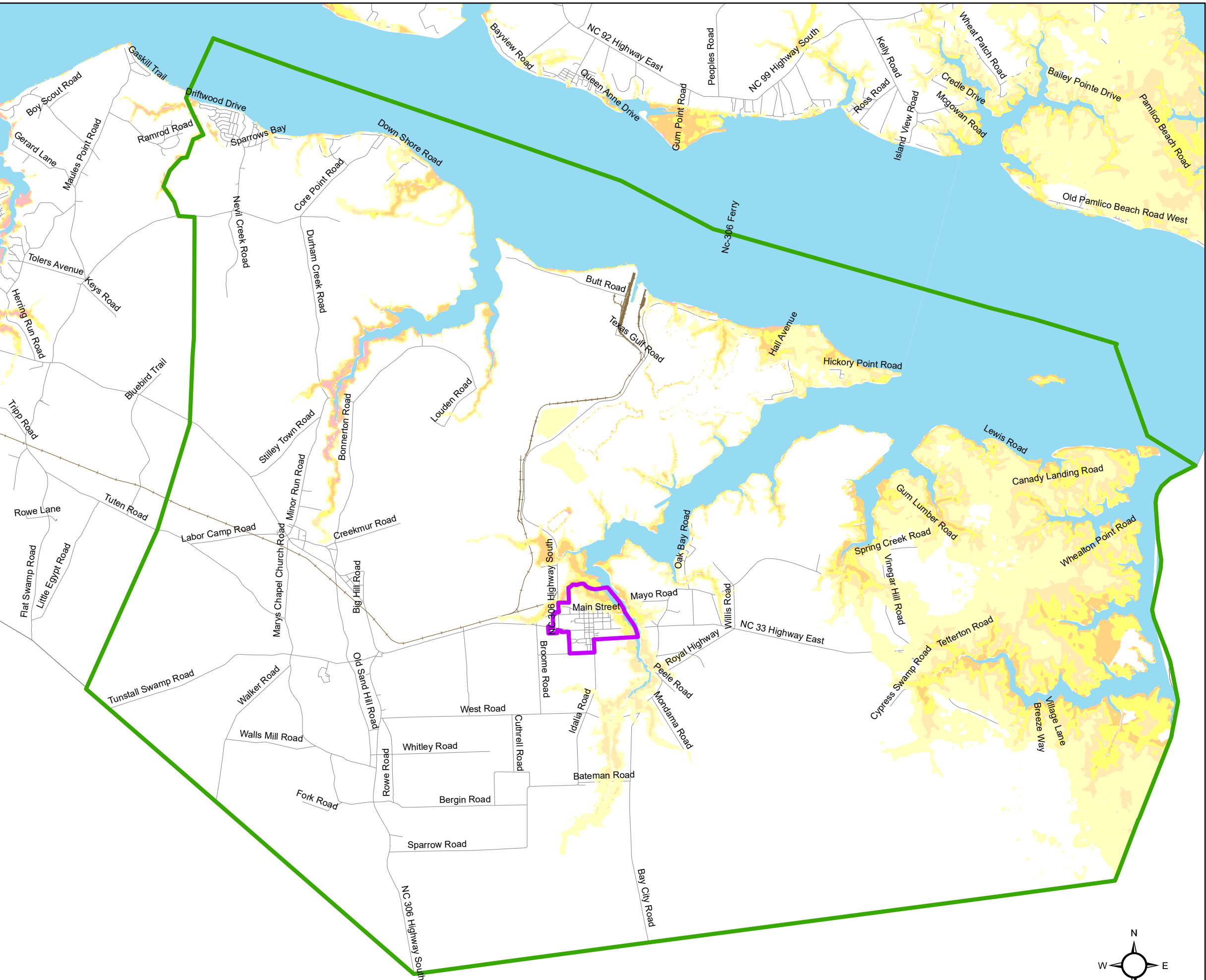
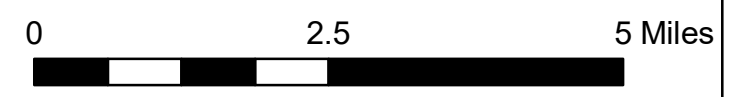
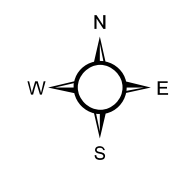


# NC Resilient Coastal Communities Program: Town of Aurora & Richland Township Potential Storm Surge for Cat. 1 Event

## Legend

### Cat. 1 Event Storm Surge Potential

- 00 to 01 feet above ground
- 01 to 02 feet above ground
- 02 to 03 feet above ground
- 03 to 04 feet above ground
- 04 to 05 feet above ground
- 05 to 06 feet above ground
- 06 to 07 feet above ground
- Aurora Town Limits
- Richland Township
- Surface Water
- Rail
- Road Network
- Beaufort County

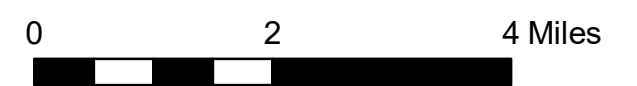
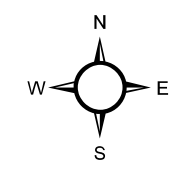
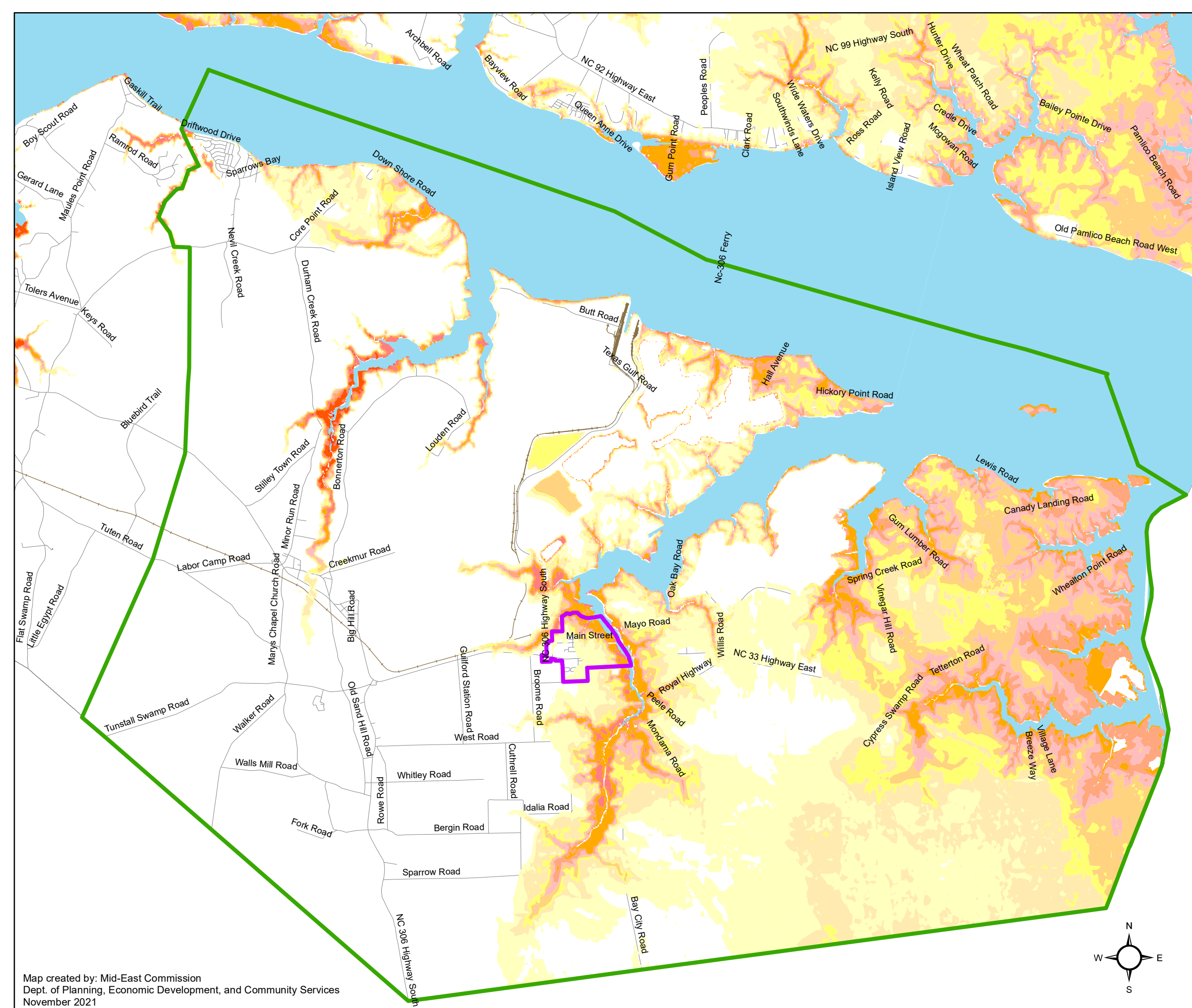


# NC Resilient Coastal Communities Program: Town of Aurora & Richland Township Potential Storm Surge for Cat. 2 Event

## Legend

### Cat. 2 Event Storm Surge Potential

- 00 to 01 foot above ground
- 01 to 02 feet above ground
- 02 to 03 feet above ground
- 03 to 04 feet above ground
- 04 to 05 feet above ground
- 05 to 06 feet above ground
- 06 to 07 feet above ground
- 07 to 08 feet above ground
- 08 to 09 feet above ground
- 09 to 10 feet above ground
- 10 to 11 feet above ground
- Surface Water
- Rail
- Road Network
- Aurora Town Limits
- Richland Township
- Beaufort County





# Aurora

## Benefit/Cost Ratings

Strategy	Benefit	Cost
List Strategy Here.		
1. Conduct a study to evaluate alternatives for improving the WWTP. <b>Comments:</b>	MEDIUM	LOW
2. Restore wetland function for the WWTP. Clean out sludge and reline ponds. Elevate sides of WWTP for storm surge protection. <b>Comments:</b>	HIGH	MEDIUM
3. Explore solutions for dealing with nutria (the invasive animal) damaging the wetland at the WWTP. Possibly partner with NC Wildlife Resources. <b>Comments:</b>	LOW	LOW
6. Develop an education program at the WWTP. <b>Comments:</b>	LOW	LOW
7. Improve the WWTP with trails / amenities as part of an overall project. <b>Comments:</b>	LOW	MEDIUM
8. Map and design a maintenance plan to clean out drainage ditches and tributaries. Develop a list of areas that can be turned into bio-swales for treatment of runoff. <b>Comments:</b>	MEDIUM	LOW
9. Develop easements to maintain drainage ditches and tributaries. Once easements are obtained identify locations where SCMs can be implemented to provide capacity or treat water. <b>Comments:</b>	MEDIUM	HIGH
10. Partner with Duke Energy to clear trees and branches from electric easements in town. Clear trees proactively, rather than waiting for damage to electric infrastructure to occur. <b>Comments:</b>	HIGH	LOW
11. Maintain continual contact/working relationship with electric service providers in the Town of Aurora and the Richland Township to address the following: 1) Disaster preparedness techniques (e.g., tree trimming, vegetation planting requirements, pole replacement); 2) Identification of critical electrical facilities needing retrofit or upgrade and map with elevation reference marks; 3) Identification of problem areas and potential solutions; and 4) Communication with town officials during and immediately after a natural hazard event that results in loss of electrical power. <b>Comments:</b>	MEDIUM	LOW



Strategy	Benefit	Cost
12. Implement a stormwater ordinance. <b>Comments:</b>	MEDIUM	MEDIUM
13. Implement a bioswale policy. <b>Comments:</b>	MEDIUM	MEDIUM
14. Implement a pervious surface policy. Explore the feasibility of incorporating this into the town's zoning or subdivision ordinance. <b>Comments:</b>	LOW	MEDIUM
15. Implement a stormwater utility. <b>Comments:</b>	MEDIUM	MEDIUM
16. Evaluate zoning and subdivision regulations for changes to zoning districts to account for flooding (special districts with restrictive zoning may be needed to begin disinvestment in vulnerable areas). <b>Comments:</b>	MEDIUM	MEDIUM
17. Create elevated Town review procedures for future projects in vulnerable areas, limiting new development or infrastructure in areas that are particularly vulnerable. <b>Comments:</b>	MEDIUM	MEDIUM
18. Evaluate permitted uses for zoning districts (make informed decisions about uses that will add infrastructure to vulnerable areas). <b>Comments:</b>	MEDIUM	MEDIUM
19. Assess setbacks in all zoning districts. <b>Comments:</b>	MEDIUM	MEDIUM
20. Set up processes for transfer of development rights, conservation easements, and/or setback requirements. <b>Comments:</b>	HIGH	MEDIUM
21. Assess requirement for minimum lot sizes/land use to reduce structures in vulnerable areas. <b>Comments:</b>	LOW	MEDIUM
22. Participate in the National Flood Insurance Program (NFIP) Community Rating System (CRS). <b>Comments:</b>	MEDIUM	MEDIUM
23. Long term: Concentrate development density to the south and west side of town to higher elevations. (A constraint is that Nutrien owns a lot of land for mitigation credit purposes.) <b>Comments:</b>	HIGH	MEDIUM
24. Conduct future planning for development hubs (zoning). <b>Comments:</b>	MEDIUM	MEDIUM



Strategy	Benefit	Cost
25. Develop a Master Plan for the Town of Aurora and the Richland Township, with focus on Climate Change and Growth. a. Equitable Opportunity, b. Zoning, c. Economic Development, d. Resiliency, Healthy, and Livable Community <b>Comments:</b>	MEDIUM	MEDIUM
26. Develop a Town of Aurora Land Use Plan (preferred) or update the town’s portion of the Beaufort County CAMA Land Use Plan in partnership with the county. <b>Comments:</b>	MEDIUM	MEDIUM
27. Identify data gaps and collect necessary data to plan for infrastructure investments that are part of implementation plan for adaptation. <b>Comments:</b>	MEDIUM	MEDIUM
28. Continue to coordinate all development/planning decisions with review of appropriate CAMA LUP’s including stated redevelopment policies and actions. <b>Comments:</b>	MEDIUM	LOW
29. Evaluate the feasibility of land acquisition by government, communities, businesses, or nonprofit organizations of vulnerable parcels for permanent protection and management. <b>Comments:</b>	MEDIUM	MEDIUM
30. Evaluate the equitable relocation or buyout potential of structures and infrastructure in vulnerable areas. <b>Comments:</b>	MEDIUM	HIGH
31. Install backflow valve/tide gates on stormwater drains. <b>Comments:</b>	MEDIUM	HIGH
32. Explore the feasibility of using public land to develop stormwater features such as bioswales and retention ponds. <b>Comments:</b>	MEDIUM	MEDIUM
33. Allow coastal wetlands to migrate landward to provide habitat and natural buffer to coastal storms. <b>Comments:</b>	MEDIUM	HIGH
34. Restore Indian Island at the confluence of the Pamlico River and South Creek to control water flow and increase habitat (Nutrien owned). <b>Comments:</b>	MEDIUM	HIGH
35. Restore wetlands in the Holland and Deephole Point areas for flood attenuation. <b>Comments:</b>	MEDIUM	MEDIUM
36. Restore and connect wetlands along Aurora shoreline. <b>Comments:</b>	MEDIUM	MEDIUM

Strategy	Benefit	Cost
37. Conduct wetland and stream restoration south of Bateman Road. <b>Comments:</b>	MEDIUM	HIGH
38. Restore shoreline along Butt Road to protect WWTP and Public Works Facilities. <b>Comments:</b>	MEDIUM	HIGH
40. Clean up trash from streams, possibly in partnership with a local non-profit organization. (The stream behind the railroad track needs particular attention.) <b>Comments:</b>	HIGH	LOW
41. Improve tributaries within Township to slow down water. <b>Comments:</b>	HIGH	MEDIUM
42. Implement upstream flood controls on South Creek. <b>Comments:</b>	HIGH	MEDIUM
43. Install tide gates at outfalls of South Creek and the Pamlico. <b>Comments:</b>	HIGH	HIGH
44. Use phosphate waste (fill) to raise land for future development. <b>Comments:</b>	HIGH	HIGH
45. Explore the feasibility of intentional inundation/water farming upstream. Landowner partnership(s) would be required. <b>Comments:</b>	HIGH	HIGH
46. Evaluate improvements to the NC Hwy 33 bridge over Campbell's Creek to decrease the flooding along NC Hwy 33 and adjacent land. <b>Comments:</b>	MEDIUM	HIGH
50. Implement an appropriate water flow solution at the Bay City Rd./Bateman Rd. bridge. <b>Comments:</b>	MEDIUM	HIGH
52. Develop a community parking lot with cameras which is located outside the flood hazard area, where residents can park vehicles during storms <b>Comments:</b>	HIGH	MEDIUM
53. Coordinate with the NC Dept. of Transportation and the Mid-East Rural Planning Organization (RPO) for improvements to NC Hwy 33, a major evacuation route. <b>Comments:</b>	MEDIUM	HIGH
54. Conduct a study to assess flooding on NC Hwy 33 and identify problem areas. <b>Comments:</b>	MEDIUM	MEDIUM

Strategy	Benefit	Cost
55. Design and construct walking trails/nature walk behind S.W. Snowden Elementary. a. Tie in with future greenway, b. Tie in near Creedmur Road (near Phosphate Plant). <b>Comments:</b>	MEDIUM	MEDIUM
56. Conduct education on historical fossil culture (Fossil Trail). <b>Comments:</b>	LOW	LOW
57. Develop a comprehensive outreach strategy to educate stakeholders about SLR and coastal vulnerabilities and provide continuing education to affected communities and citizens. Leverage educational resources available through the NC Division of Coastal Management. <b>Comments:</b>	MEDIUM	MEDIUM
58. Educate workforce on the importance of building resiliency to maintain a healthy local economy. <b>Comments:</b>	MEDIUM	LOW
59. Explore the feasibility of partnering with Nutrien to develop a public education and recreation area on mitigation credit land. <b>Comments:</b>	LOW	LOW
60. Educate the public in the Richland township regarding drought and saltwater intrusion in private drinking water wells. <b>Comments:</b>	LOW	LOW
61. Educate the public on what individual homeowners can do towards resiliency. <b>Comments:</b>	LOW	LOW
62. Connect homeowners with resources to make their properties more resilient, such as roof grants. <b>Comments:</b>	LOW	LOW

## Benefit-Cost Overview

The cost or the economic case for different strategies or actions must be considered when developing resilience strategies. An informal cost-benefit analysis should be used to review proposed adaptation actions. Ratings of high, medium, or low are assigned to the anticipated costs and the benefits associated with each action based on general criteria that are established by the community.

Make sure to explore and identify potential funding mechanisms for project or action item implementation.

<b>Benefit/cost ratings</b>	
	<b>Benefit</b>
HIGH	Action would have significant impact on risk reduction
MEDIUM	Action would have an impact on risk reduction
LOW	Long-term benefits are difficult to quantify in the short term
	<b>Cost</b>
HIGH	Existing funding is not adequate
MEDIUM	Requires budget reappportionment or amendment
LOW	Funding available under the existing budget



RCCP STAPLEE Criteria Worksheet  
Aurora



STAPLEE Criteria >>	Social		Technical			Administrative			Political			Legal			Economic				Environmental					TOTAL
	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT Waste Sites	Consistent w/ Community Environmental Goals	Consistent w/ Federal Laws	
<b>Considerations for Alternative Actions</b>																								
<b>Wastewater Treatment Plant (WWTP) Strategies</b>																								
2. Restore wetland function for the WWTP. Clean out sludge and reline ponds. Elevate sides of WWTP for storm surge protection. Comments:																								
1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	0	0	1	1	19
<b>Ditching and Maintenance Strategies</b>																								
8. Map and design a maintenance plan to clean out drainage ditches and tributaries. Develop a list of areas that can be turned into bioswales for treatment of runoff. Comments:																								
1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	19
9. Develop easements to maintain drainage ditches and tributaries. Once easements are obtained identify locations where SCMs can be implemented to provide capacity or treat water. Comments:																								
1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	19
10. Partner with Duke Energy to clear trees and branches from electric easements in town. Clear trees proactively, rather than waiting for damage to electric infrastructure to occur. Comments:																								
1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	14
11. Maintain continual contact/working relationship with electric service providers in the Town of Aurora and the Richland Township to address the following: 1) Disaster preparedness techniques (e.g., tree trimming, vegetation planting requirements, pole replacement); 2) Identification of critical electrical facilities needing retrofit or upgrade and map with elevation reference marks; 3) Identification of problem areas and potential solutions; and 4) Communication with town officials during and immediately after a natural hazard event that results in loss of electrical power. Comments:																								
1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	14
<b>Planning &amp; Policy Strategies</b>																								
25. develop a Master Plan for the Town of Aurora and the Richland Township, with focus on Climate Change and Growth. a. Equitable Opportunity, b. Zoning, c. Economic Development, d. Resiliency, Healthy, and Livable Community Comments:																								
1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	19
<b>Stormwater Strategies</b>																								
40. Clean up trash from streams, possibly in partnership with a local non-profit organization. (The stream behind the railroad track needs particular attention.) Comments:																								
1	1	1	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	17
<b>Flood Mitigation Strategies</b>																								
41. Improve tributaries within Township to slow down water. Comments:																								
1	1	1	1	1	1	0	0	0	1	1	1	0	0	0	1	1	1	1	1	1	0	1	1	17

RCCP STAPLEE Criteria Worksheet  
Aurora



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<b>Considerations for Alternative Actions</b>																								
42. Implement upstream flood controls on South Creek. Comments:	1	1	1	1	1	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	0	1	1	18
43. Install tide gates at outfalls of South Creek and the Pamlico. Comments:	1	1	1	0	0	1	0	1	1	1	1	0	1	1	1	1	1	0	1	0	0	0	1	15
44. Use phosphate waste (fill) to raise land for future development. Comments:	1	1	1	1	0	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	0	1	17
45. Explore the feasibility of intentional inundation/water farming upstream. Landowner partnership(s) would be required. Comments:	1	1	1	1	0	0	0	0	1	1	1	0	0	1	1	1	1	0	1	0	0	1	1	14
<b>Transportation Strategies</b>																								
52. Develop a community parking lot with cameras which is located outside the flood hazard area, where residents can park vehicles during storms Comments:	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	18
59. Explore the feasibility of partnering with Nutrien to develop a public education and recreation area on mitigation credit land. Comments:	1	1	1	0	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1	17
60. Educate the public in the Richland township regarding drought and saltwater intrusion in private drinking water wells. Comments:	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	14
61. Educate the public on what individual homeowners can do towards resiliency. Comments:	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	14
62. Connect homeowners with resources to make their properties more resilient, such as roof grants. Comments:	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	14



# TOWN OF AURORA

## CRITICAL ASSET & NATURAL INFRASTRUCTURE VULNERABILITY

Asset	Exposure Score 0-3	Sensitivity Score 0-3	Adaptive Capacity 0-3	Vulnerability Score 0-6
<i>Asset name</i>	<i>0 = no exposure 1 = low 2 = medium 3 = high</i>	<i>0 = no sensitivity 1 = low 2 = medium 3 = high</i>	<i>0 = no adaptive capacity 1 = low 2 = medium 3 = high</i>	<i>0-2 = low 3-4 = medium 5-6 = high</i>
<b>Emergency</b>				
Fire and EMS Stations	2	3	1	Med
<b>Government Services</b>				
Aurora Town Hall	3	2	1	Med
Aurora/Richland Chamber of Commerce	2	2	1	Med
Former Town of Aurora Police Dept. Building	2	2	1	Med
Town of Aurora Public Works Dept.	2	3	1	Med
US Post Office	2	3	1	Med
<b>Community</b>				
Aurora Community Center	1	2	1	Low
Aurora Fossil Museum	2	2	1	Med
Aurora History Museum	3	2	1	Med
<b>Churches</b>				
Aurora First Baptist Church	1	1	2	Low
Aurora United Methodist Church	1	1	2	Low
Campbell's Creek United Methodist Church	1	1	2	Low
Dublin Grove Original Free Will Baptist Church	3	1	2	Low
Fresh Anointing Worship Center	1	1	2	Low
Jone's Chapel Baptist Church	1	1	2	Low
Mary's Chapel Christian Church	3	1	2	Low
South Creek Church	2	1	2	Low
<b>Food</b>				
Family Dollar (Aurora)	2	3	1	Med

<b>Asset</b>	<b>Exposure Score 0-3</b>	<b>Sensitivity Score 0-3</b>	<b>Adaptive Capacity 0-3</b>	<b>Vulnerability Score 0-6</b>
St. John's Missionary Baptist Church Food Pantry	2	3	1	Med
<b>Fuel</b>				
Aurora Mini Mart	2	3	2	Med
Potter Oil	3	3	1	High
<b>Education</b>				
SW Snowden Elementary School	2	3	1	Med
<b>Medical</b>				
Vidant Family Medical Center	2	3	1	Med
<b>Water/Wastewater</b>				
Town of Aurora system well (Well #1)	3	3	0	High
Town of Aurora system well (Well #2)	2	3	0	High
Town of Aurora Wastewater Treatment Plant	3	3	1	High
<b>Library</b>				
Aurora BHM Regional Library	2	3	1	Med
<b>Public Land and Parks</b>				
Aurora Boat Ramp and Fishing Pier	3	2	1	Med
Smith's Creek Boat Ramp	3	2	1	Med
Public Dock	3	2	1	Med
<b>Transportation</b>				
Roads (Exposure: 2.66; Sensitivity: 71%)	3	3	1	High
Bridges (Exposure: 2.02; Sensitivity: 48%)	3	2	1	Med
Aurora Ferry Terminal	3	3	0	High
Bay City Rd. Agricultural Airfield	2	1	0	Med
<b>Natural Resources</b>				
Wetlands (Exposure: 2.67; Sensitivity: 71%)	3	3	1	High
Streams (Exposure: 2.98; Sensitivity: 97%)	3	3	1	High
Natural Areas (Exposure: 2; Sensitivity: 71%)	2	3	1	Med
Managed Areas (Exposure: 1.7; Sensitivity: 58%)	2	3	1	Med
<b>Hazards</b>				
Underground Storage Tanks (Exposure: 2; Sensitivity: 55%)	2	3	1	Med



## Assess Vulnerability

This assessment explores the vulnerability of critical assets, natural infrastructure, and social systems. Use your team's judgement and any available data to estimate each asset's vulnerability to combined hazards.

### Critical Asset & Natural Infrastructure Vulnerability

Vulnerability of critical assets and natural infrastructure to a hazard is a function of the exposure, sensitivity, and adaptive capacity:

**Exposure** refers to the probability of physical contact between an asset and a hazard.

**Sensitivity** is the degree to which an asset is impacted by a hazard.

**Adaptive Capacity** is the ability of an asset to change its characteristics or behavior in response to a hazard.

$$\text{Vulnerability} = \text{Exposure} + \text{Sensitivity} - \text{Adaptive Capacity}$$

RCCP STAPLEE Criteria Worksheet  
Aurora / Richland Township



STAPLEE Criteria >>

STAPLEE Criteria >>	Social		Technical			Administrative			Political			Legal			Economic				Environmental					TOTAL
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<b>Considerations for Alternative Actions</b>																								
<b>Wastewater Treatment Plant (WWTP) Strategies</b>																								
<b>ACTION: Wetland Restoration at Wastewater Treatment Plant</b>																								
Restore wetland function for the WWTP. Clean out sludge and reline ponds. Elevate sides of WWTP for storm surge protection.																								
1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	0	0	1	1	19
<b>Ditching and Maintenance Strategies</b>																								
<b>ACTION: Drainage Ditch and Tributary Maintenance Plan</b>																								
Map and design a maintenance plan to clean out drainage ditches and tributaries. Develop a list of areas that can be turned into bioswales for treatment of runoff.																								
1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	19
<b>ACTION: Easements for Ditches and Tributaries</b>																								
Develop easements to maintain drainage ditches and tributaries. Once easements are obtained identify locations where SCMs can be implemented to provide capacity or treat water.																								
1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	19
Partner with Duke Energy to clear trees and branches from electric easements in town. Clear trees proactively, rather than waiting for damage to electric infrastructure to occur.																								
1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	14
Maintain continual contact/working relationship with electric service providers in the Town of Aurora and the Richland Township to address the following: 1) Disaster preparedness techniques (e.g., tree trimming, vegetation planting requirements, pole replacement); 2) Identification of critical electrical facilities needing retrofit or upgrade and map with elevation reference marks; 3) Identification of problem areas and potential solutions; and 4) Communication with town officials during and immediately after a natural hazard event that results in loss of electrical power.																								
1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	14
<b>Planning &amp; Policy Strategies</b>																								
<b>ACTION: Aurora and Richland Township Master Plan</b>																								
Develop a Master Plan for the Town of Aurora and the Richland Township, with focus on Climate Change and Growth. a. Equitable Opportunity, b. Zoning, c. Economic Development, d. Resiliency, Healthy, and Livable Community																								
1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	19

RCCP STAPLEE Criteria Worksheet  
Aurora / Richland Township



STAPLEE Criteria >>

STAPLEE Criteria >>	Social		Technical			Administrative			Political			Legal			Economic				Environmental					TOTAL
	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT Waste Sites	Consistent w/ Community Environmental Goals	Consistent w/ Federal Laws	
<b>Considerations for Alternative Actions</b>																								
<b>Stormwater Strategies</b>																								
<b>ACTION: Stream Clean-up Partnership</b> Clean up trash from streams, possibly in partnership with a local non-profit organization. (The stream behind the railroad track needs particular attention.)	1	1	1	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	17
<b>Flood Mitigation Strategies</b>																								
<b>ACTION: Bailey Creek Tributary Improvements</b> Improve tributaries within Township to slow down water.	1	1	1	1	1	1	0	0	1	1	1	0	0	0	1	1	1	1	1	1	0	1	1	17
<b>ACTION: South Creek Flood Controls</b> Implement upstream flood controls on South Creek.	1	1	1	1	1	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	0	1	1	18
Install tide gates at outfalls of South Creek and the Pamlico.	1	1	1	0	0	1	0	1	1	1	1	0	1	1	1	1	1	0	1	0	0	0	1	15
<b>ACTION: Phosphate Waste as Fill to Support Development</b> Use phosphate waste (fill) to raise land for future development.	1	1	1	1	0	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	0	1	17
Explore the feasibility of intentional inundation/water farming upstream. Landowner partnership(s) would be required.	1	1	1	1	0	0	0	0	1	1	1	0	0	1	1	1	1	0	1	0	0	1	1	14
<b>Transportation Strategies</b>																								
<b>ACTION: Community Retreat Parking Lot</b> Develop a community parking lot with cameras which is located outside the flood hazard area, where residents can park vehicles during storms	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	18
<b>ACTION: Education and Recreation on Mitigation Land</b> Explore the feasibility of partnering with Nutrien to develop a public education and recreation area on mitigation credit land.	1	1	1	0	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1	17
Educate the public in the Richland township regarding drought and saltwater intrusion in private drinking water wells.	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	14

RCCP STAPLEE Criteria Worksheet  
Aurora / Richland Township



STAPLEE Criteria >>

STAPLEE Criteria >>	Social		Technical			Administrative			Political			Legal			Economic				Environmental					TOTAL
	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT Waste Sites	Consistent w/ Community Environmental Goals	Consistent w/ Federal Laws	
Considerations for Alternative Actions																								
Educate the public on what individual homeowners can do towards resiliency.	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	14
Connect homeowners with resources to make their properties more resilient, such as roof grants.	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	14





# TOWN OF AURORA

## RISK ESTIMATE

Sector	Number of Critical Assets at Risk	Asset Value
<i>E.g., government facilities, utilities, natural infrastructure</i>	<i>#</i>	<i>\$/X,000,000</i>
Emergency Management	0	-
Law Enforcement	0	-
Fire and EMS Stations	4	\$894,068
911 Dispatch	0	-
Government Services	5	\$1,273,480
Food (no grocery stores)	3	\$1,915,744
Food Pantries	2	\$276,132
Water/Wastewater	3	\$424,378
Electric Power Grid	1	\$55,623,937
Fuel Stations	4	\$516,756
Propane Suppliers	3	\$379,686
Roads	227 (569.86 miles)	\$2,899,917,245
Bridges	29	\$22,720,920
Ferry Systems	1	\$12,826,370
Medical	1	\$268,492
Schools	1	\$6,215,859
Libraries	1	\$105,296
Churches	14	\$2,106,318
Community Buildings and Facilities	4	\$698,568
Hazards	22	\$56,773,544
Wetlands	439 (49717.5 ac.)	\$3,353,050,618.05
Streams	79 (233.8 Stream Miles)	\$745,455,775.68
Parks/Public Land	7	\$333,936
Public Boat Ramps	2	\$784,399
Natural Areas	7	\$8,572,021
Managed Areas	19	\$9,692,735

### Estimate Risk

Determine what levels of risk call for actions to reduce that risk and increase resilience.

Hazard Mitigation Plans contain risk assessments that used NCEM's iRISK data for building footprints, building values, and other data on critical facilities. These data can be extracted, expanded to include additional critical assets and natural infrastructure, and updated with current economic data. It will be useful to have a good understanding of the locations of vulnerable populations that may need targeted assistance including where there may be clusters that allow for neighborhood-scale strategies.



## **APPENDIX D**

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### **Project Portfolios**



# TOWN OF AURORA / RICHLAND TOWNSHIP

## Wetland Restoration at Wastewater Treatment Plant

Project Summary				
Project Name	Wetland Restoration at Wastewater Treatment Plant (WWTP)			
Project Description	This unique WWTP uses the natural function of a wetland in its process to de-sanitize and purify wastewater. This project will restore wetland function by removing sludge, relining ponds, and elevating sides of the WWTP for storm surge protection. This project will also help ensure that clean water re-enters the river for many years to come.			
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) <ul style="list-style-type: none"> <li>▪ Flooding / Flood Zones</li> <li>▪ Storm Surge</li> <li>▪ Sea Level Rise</li> </ul>			
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy/Regulatory, Staffing, Funding & Resources, Emergency Services, Infrastructure, Nature-Based, Hybrid) <ul style="list-style-type: none"> <li>▪ Hybrid</li> </ul>			
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) <ul style="list-style-type: none"> <li>▪ Protect</li> </ul>			
Project Estimated Cost	\$250,000 - \$350,000			
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <ul style="list-style-type: none"> <li>▪ Resilient Coastal Communities Program Grant</li> <li>▪ Golden Leaf Foundation</li> <li>▪ BRIC</li> </ul>			
Project Estimated Timeline	1-3 years			
Priority Rating	High			
Potential Submission for RCCP Phase 3	◆	Yes	No	<i>Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.</i>

# Project Map



### Legend



Project Area

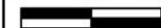
### Wetland Restoration at Wastewater Treatment Plant Vicinity Map

This project will restore wetland function by removing sludge, relining ponds, and elevating sides of the WWTP for storm surge protection. This project will also help ensure that clean water re-enters the river for many years to come.

Aurora, NC

Scale:

0 200 400



US Feet





# TOWN OF AURORA / RICHLAND TOWNSHIP

## Bailey Creek Tributary Improvements

### Project Summary

Project Name	Bailey Creek Tributary Improvements			
Project Description	Improve Bailey Creek to slow down water. Use nature-based solutions to improve the stream bed and natural functions of the stream to decrease storm surge and stormwater runoff effects.			
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) <ul style="list-style-type: none"> <li>▪ Flooding / Flood Zones</li> <li>▪ Storm Surge</li> <li>▪ Sea Level Rise</li> </ul>			
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy/Regulatory, Staffing, Funding & Resources, Emergency Services, Infrastructure, Nature-Based, Hybrid) <ul style="list-style-type: none"> <li>▪ Nature-Based</li> </ul>			
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) <ul style="list-style-type: none"> <li>▪ Build Adaptive Capacity</li> </ul>			
Project Estimated Cost	\$300,000 - \$500,000 for approx. 2,000ft of stream			
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <ul style="list-style-type: none"> <li>▪ Golden Leaf Foundation</li> <li>▪ BRIC</li> <li>▪ FEMA Flood Mitigation Assistance (FMA)</li> </ul>			
Project Estimated Timeline	1-3 years			
Priority Rating	Medium			
Potential Submission for RCCP Phase 3	Yes	◆	No	<i>Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.</i>

### Project Map





# TOWN OF AURORA / RICHLAND TOWNSHIP

## Easements for Ditches and Tributaries

### Project Summary

Project Name	Easements for Ditches and Tributaries				
Project Description	Develop easements to maintain drainage ditches and tributaries. Once easements are obtained, identify locations where stormwater control methods could be implemented to provide water capacity and/or treat water.				
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) <ul style="list-style-type: none"> <li>▪ Flooding / Flood Zones</li> <li>▪ Storm Surge</li> <li>▪ Sea Level Rise</li> </ul>				
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy/Regulatory, Staffing, Funding & Resources, Emergency Services, Infrastructure, Nature-Based, Hybrid) <ul style="list-style-type: none"> <li>▪ Hybrid</li> </ul>				
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) <ul style="list-style-type: none"> <li>▪ Accommodate / Protect</li> </ul>				
Project Estimated Cost	\$50,000 - \$75,000				
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <ul style="list-style-type: none"> <li>▪ Golden Leaf Foundation</li> <li>▪ BRIC</li> <li>▪ American Rescue Plan Act (ARPA) of 2021</li> </ul>				
Project Estimated Timeline	1-2 years				
Priority Rating	High				
Potential Submission for RCCP Phase 3		Yes	◆	No	<i>Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.</i>

### Project Map



# TOWN OF AURORA / RICHLAND TOWNSHIP

## Drainage Ditch and Tributary Maintenance Plan

### Project Summary

Project Name	Drainage Ditch and Tributary Maintenance Plan			
Project Description	Development of a maintenance plan for cleaning out drainage ditches and tributaries. Identify areas that could be turned into bioswales for treatment of runoff. This project will help reduce flooding and improve water quality.			
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) <ul style="list-style-type: none"> <li>▪ Hazard A</li> <li>▪ Hazard B</li> <li>▪ Hazard C</li> </ul>			
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy/Regulatory, Staffing, Funding & Resources, Emergency Services, Infrastructure, Nature-Based, Hybrid) <ul style="list-style-type: none"> <li>▪ Nature-based</li> </ul>			
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) <ul style="list-style-type: none"> <li>▪ Accommodate / Protect</li> </ul>			
Project Estimated Cost	\$100,000 - \$150,000			
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <ul style="list-style-type: none"> <li>▪ Golden Leaf Foundation</li> <li>▪ BRIC</li> <li>▪ American Rescue Plan Act (ARPA) of 2021</li> </ul>			
Project Estimated Timeline	1-2 years			
Priority Rating	High			
Potential Submission for RCCP Phase 3		Yes	◆	No <i>Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.</i>

### Project Map





# TOWN OF AURORA / RICHLAND TOWNSHIP

## Community Retreat Parking Lot

### Project Summary

Project Name	Community Retreat Parking Lot				
Project Description	Develop a secure community parking lot outside of flood hazard areas where community members could park their vehicles during storms. The retreat location could also serve as a community amenity outside of major storm events.				
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) <ul style="list-style-type: none"> <li>▪ Flooding / Flood Zone</li> <li>▪ Storm Surge</li> <li>▪ Sea Level Rise</li> </ul>				
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy/Regulatory, Staffing, Funding & Resources, Emergency Services, Infrastructure, Nature-Based, Hybrid) <ul style="list-style-type: none"> <li>▪ Infrastructure</li> </ul>				
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) <ul style="list-style-type: none"> <li>▪ Protect / Build Adaptive Capacity</li> </ul>				
Project Estimated Cost	\$150,000 – \$225,000 per acre				
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <ul style="list-style-type: none"> <li>▪ American Rescue Plan Act (ARPA) of 2021</li> <li>▪ HUD’s Community Dev. Block Grants</li> <li>▪ FEMA Hazard Mitigation Grant Program (HMGP)</li> </ul>				
Project Estimated Timeline	1-3 years				
Priority Rating	High				
Potential Submission for RCCP Phase 3		Yes	◆	No	<i>Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.</i>

### Project Map



# TOWN OF AURORA / RICHLAND TOWNSHIP

## Aurora and Richland Township Master Plan

### Project Summary

Project Name	Aurora and Richland Township Master Plan				
Project Description	Develop a Master Plan for the Town of Aurora and the Richland Township, with focus on Climate Change and Growth. The master plan will incorporate: a. Equitable Opportunity, b. Zoning, c. Economic Development, d. Resiliency, Healthy, and Livable Community				
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) <ul style="list-style-type: none"> <li>▪ Flooding / Flood Zone</li> <li>▪ Storm Surge</li> <li>▪ Sea Level Rise</li> </ul>				
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy/Regulatory, Staffing, Funding & Resources, Emergency Services, Infrastructure, Nature-Based, Hybrid) <ul style="list-style-type: none"> <li>▪ Policy/Regulatory</li> </ul>				
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) <ul style="list-style-type: none"> <li>▪ Build Adaptive Capacity</li> </ul>				
Project Estimated Cost	\$60,000 - \$80,000				
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <ul style="list-style-type: none"> <li>▪ Golden Leaf Foundation</li> <li>▪ BRIC</li> <li>▪ American Rescue Plan Act (ARPA) of 2021</li> </ul>				
Project Estimated Timeline	1-2 years				
Priority Rating	High				
Potential Submission for RCCP Phase 3		Yes	◆	No	<i>Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.</i>

### Project Map