

# Edenton, NC RCCP Resilience Strategy

## CAT Meeting #2

February 27, 2023



## Agenda

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1. **Project Update**
2. **Vision and Goal Setting**
3. **Asset Inventory**
4. **Preliminary Vulnerability Assessment Results**
5. **Next Steps**
6. **Discussion**

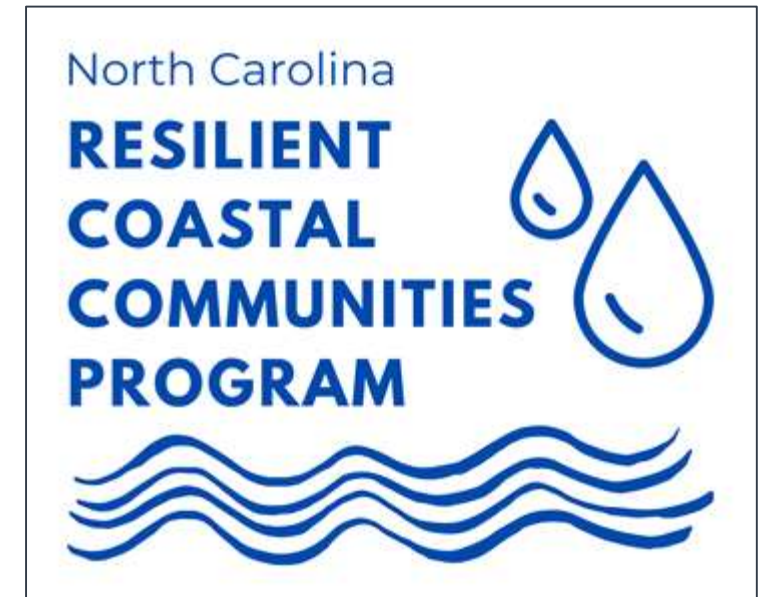


# Project Update



## Resilient Coastal Communities Program

- **Phase 1:** Perform a risk and vulnerability assessment, develop a community action team, and engage with the public.
  - Deliverable: Vulnerability Assessment Report
- **Phase 2:** Develop community- and data-driven process to identify priority actions that can be taken to adapt to short- and long-term hazards.
  - Deliverable: Project Portfolio

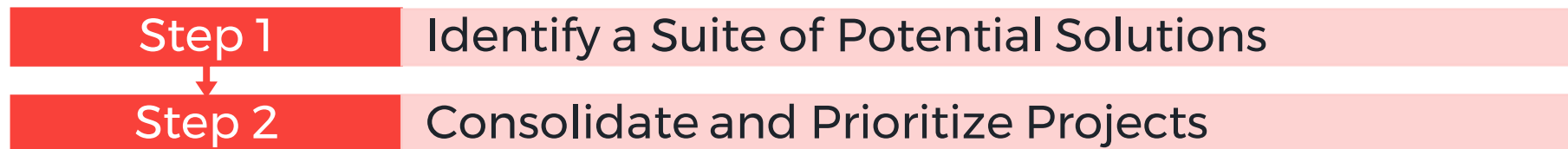


## Scope

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



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





## 2018 Resilience Evaluation and Needs Assessment (RENA)

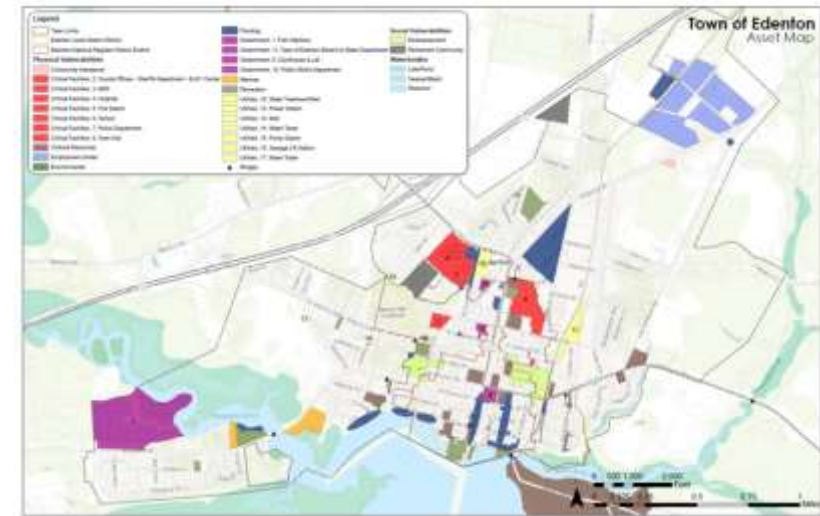
- 2016 – 2018 DCM conducted a pilot program in 5 communities
- Assessed impacts of flooding, winds, and other hazards
- Goal: develop a resiliency planning framework for coastal communities
- Edenton Assessment completed in 2018
  - This plan builds on those findings
    - Historical assets
    - Redevelopment areas
    - Retirement Communities
    - Critical assets
    - Resilience priority hotspots

### Town of Edenton



### Resilience Evaluation and Needs Assessment

Final Report  
May 2018



## Schedule Update



February

### **CAT Meeting 2**

Review preliminary vulnerability assessment, begin to brainstorm resilience actions, discuss goals and vision

early April

### **CAT Meeting 3 (virtual)**

Review final draft vulnerability assessment, discuss outcomes and recommendations, discuss prioritization criteria for resilience actions, narrow down resilience actions

early May

### **CAT Meeting 4**

Review final draft report

### **Public Meeting 2**

Present vulnerability assessment findings and project portfolio

# Vision & Goal Setting





# Public Feedback

Which of these suggestions fit into your vision for a resilient Edenton? What goals can achieve these outcomes?

[illegible]

- ## Public Meeting #1 Feedback: “What would it mean to you to be protected from flooding?”

- Safety for vulnerable populations
- Safety and less loss
- Sustainability and longevity
- Peace of mind
- Ability to quickly recover
- Keep the character of the town intact
- Avoiding damage and less cleanup

How do we want to build upon these efforts to achieve resilience in Edenton?

## Existing Plans & Efforts

**RENA:** identifies assets & priority hazards, summarizes efforts already underway, and provides project recommendations from the public, town staff, and DCM

**Chowan County & Town of Edenton Joint Land Use Plan:** sets policies for Natural Hazards Areas including conservation of fragile environments, continued enforcement of flood damage prevention and building code requirements, discouraging development in the most hazardous areas, and pursuing land acquisition

**Albemarle Regional Hazard Mitigation Plan:** assesses risk and vulnerability to natural and technological hazards, reviews capabilities, and establishes a mitigation action plan for the five-county region

**Chowan County Resilient Redevelopment Plan:** summarizes the impact from Hurricane Matthew and presents strategies for resilient redevelopment, including several infrastructure and property protection projects within Edenton

**Albemarle Regional Resilience Portfolio:** evaluates climate change impacts on hazards and presents broad strategies to support resilience at the regional level

**Neighborhood Redevelopment Plans:** plans to redevelop areas of Edenton to preserve historic housing, provide affordable and standard housing, reestablish local commercial corridors, and stabilize the community

## Brainstorming a Vision & Goals

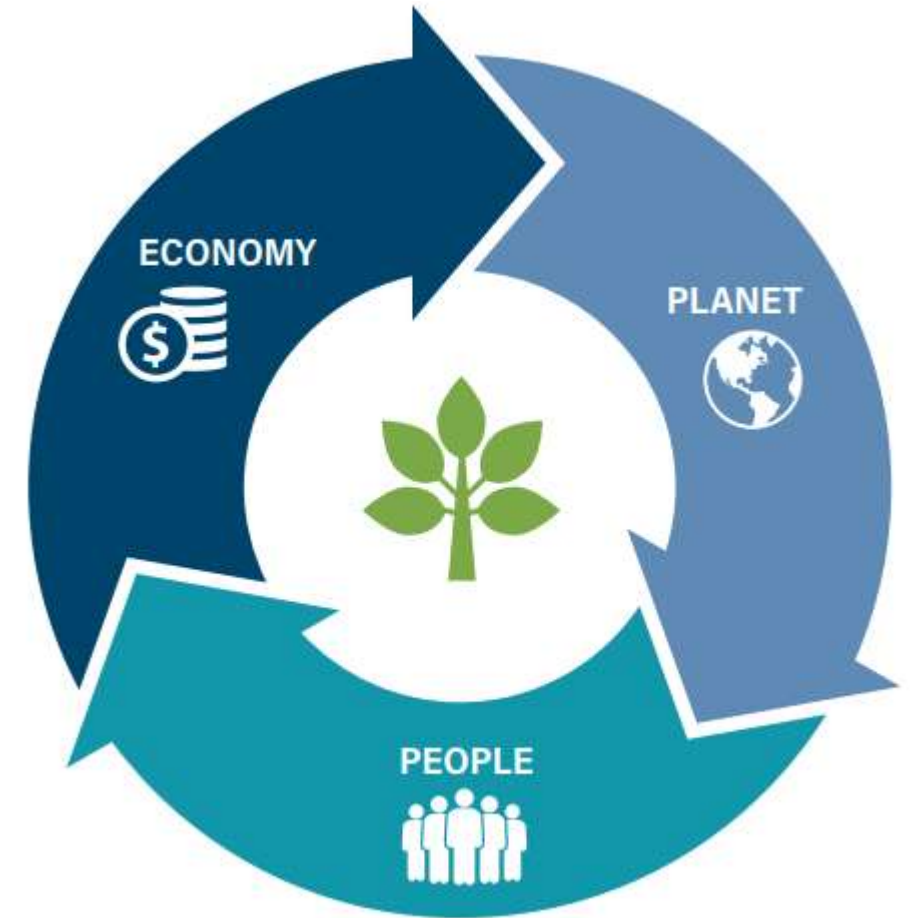
**Vision:** aspirational statement; future oriented

What do you want the town to have achieved in 10+ years? Where do you want the town to be in relation to coastal hazards?

**Goals:** specific, measurable steps to achieve the vision; can relate to preparedness, recovery, community engagement, construction, restoration, etc.

WSP team will draft vision and goal statements for CAT review based on today's discussion.

**Triple bottom line: Reflect social, environmental, and economic factors of resilience**



Source: NC Resilient Coastal Communities Planning Handbook

# Asset Inventory



# Asset Inventory

- Critical assets
  - Roads/Evacuation routes
  - Water & sewer lines
  - Community government service offices
  - Schools
  - Health services
  - Public safety or emergency services (police, fire, etc.)
  - Historic and cultural properties, districts, key community resources
- Natural infrastructure
  - Natural areas (wetlands, forests, floodplains)
  - Open space and parks
- Socially vulnerable populations



## Critical Assets

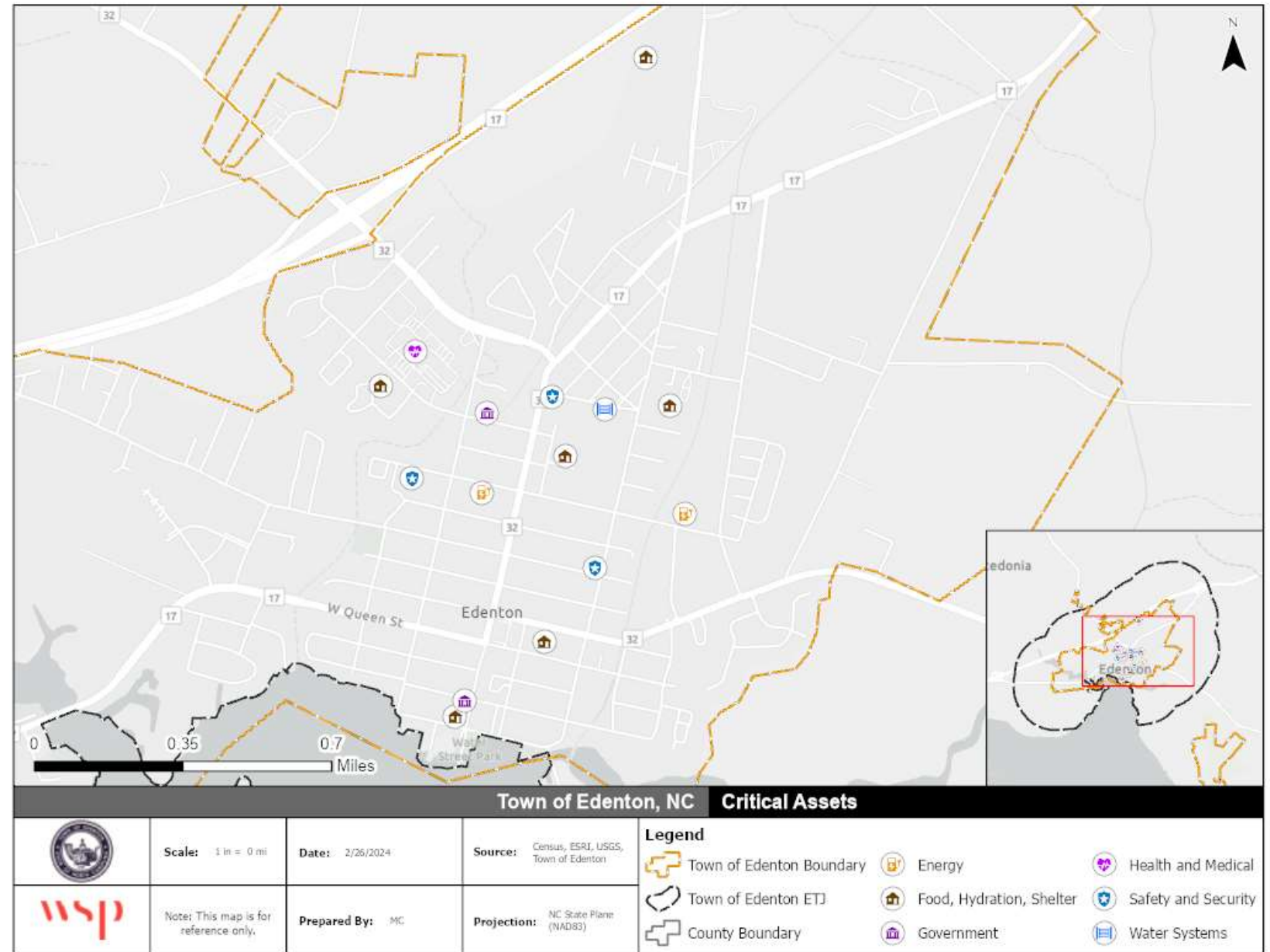
Asset	Address	FEMA Lifeline
Edenton Police Department	301 N. Oakum Street	Safety and Security
Chowan County Public Safety Center	305 W. Freemason Street	Safety and Security
Edenton Public Works Department	118 W. Hicks Street	Government
Edenton Electric Department	107 W. Freemason Street	Energy
Edenton Fire Department	704 N. Broad Street	Safety and Security
Water Tower	304 Park Avenue	Water Systems
Shepard-Pruden Memorial Library	106 W. Water Street	Food, Hydration, Shelter
John A Holmes High School	600 Woodard Street	Food, Hydration, Shelter
Chowan Senior Center	101 Court Street	Food, Hydration, Shelter
ECU Health Chowan Hospital	211 Virginia Road	Health and Medical
Town of Edenton Municipal Offices	400 S. Broad Street	Government
Substation	227 E. Freemason Street	Energy
College of the Albemarle/Temporary High School	824 N. Oakum	Food, Hydration, Shelter

Highlighted assets were identified as essential to community operations for the sensitivity analysis



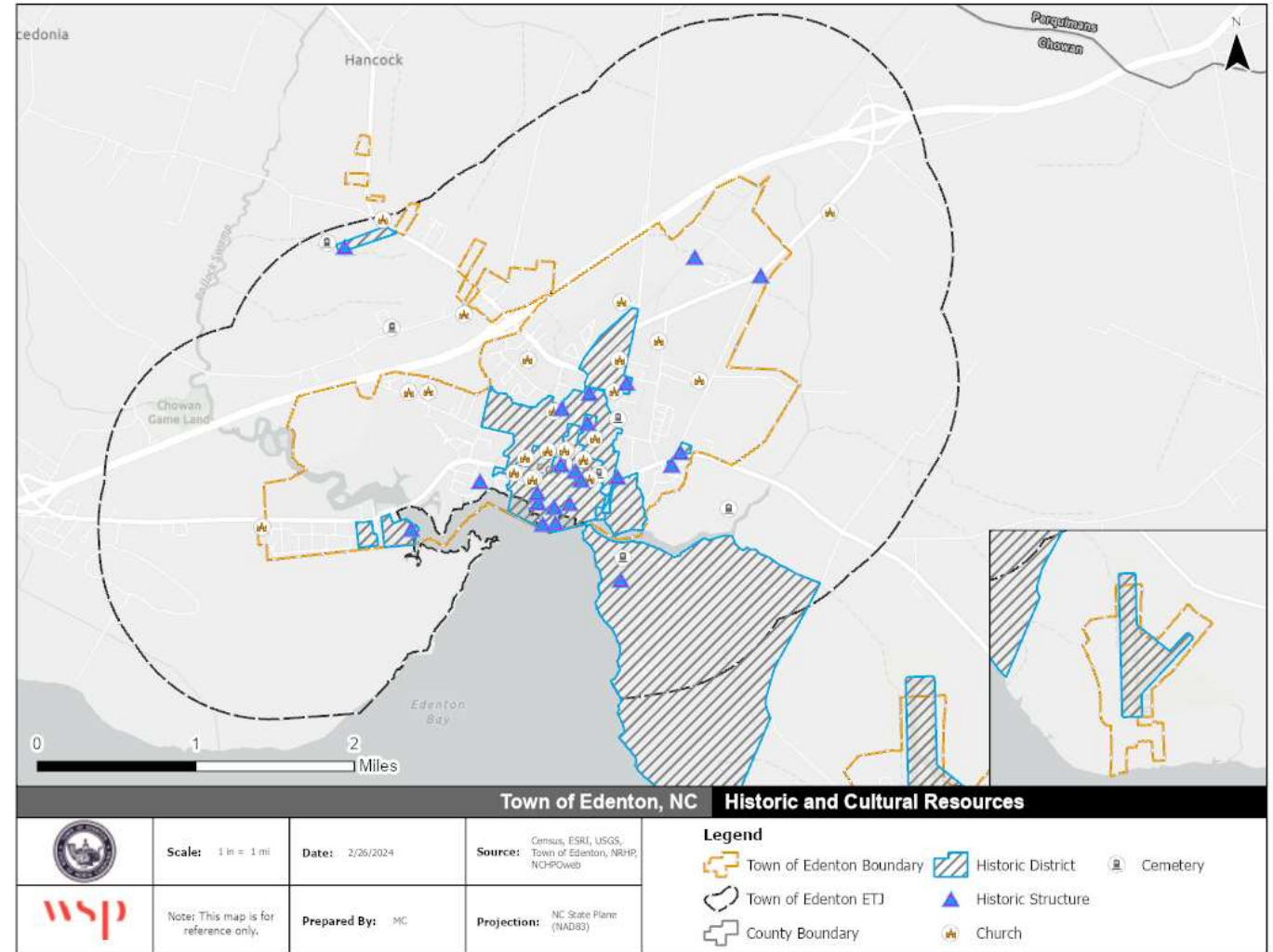
Asset Inventory

# Critical Assets



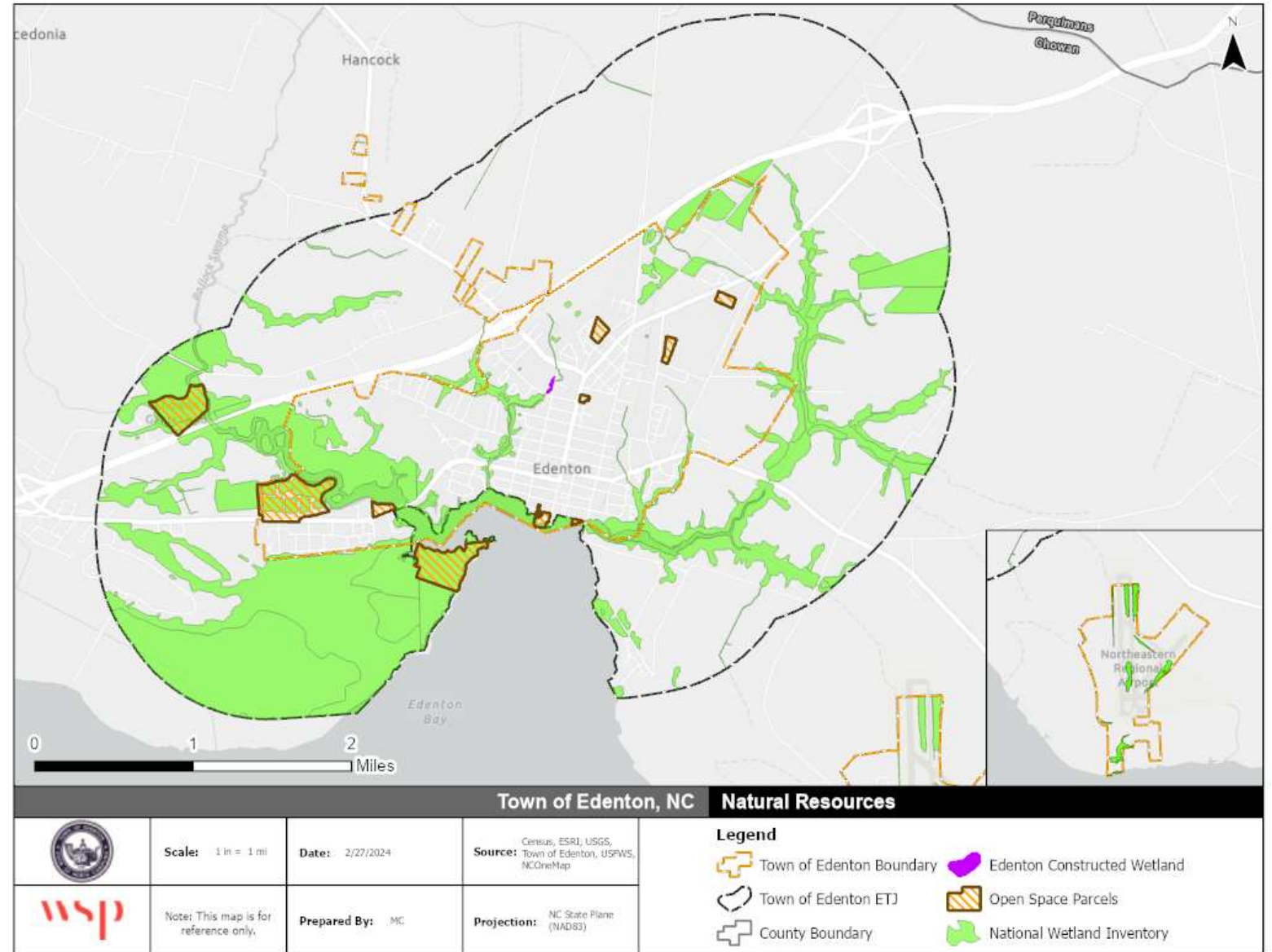
## Historic & Cultural Resources

- Historic sites and districts identified by NC State Historic Preservation Office with one of the following statuses:
  - NR – listed on the National Register of Historic Places
  - DOE – determined eligible for listing
  - SL – potentially eligible for listing
- Historic assets included in the RENA
- Churches
- Cemeteries



## Natural Infrastructure

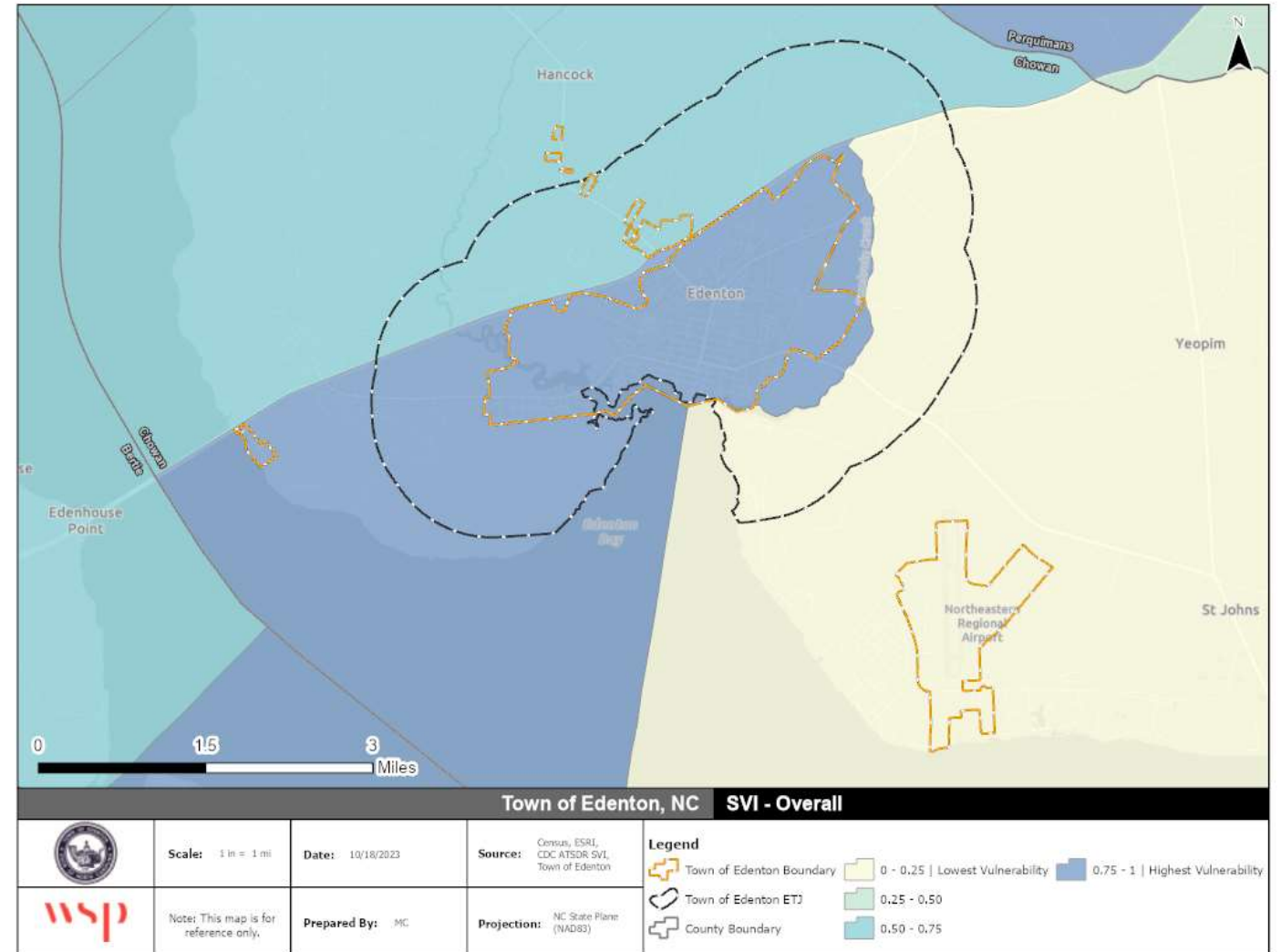
- Parks
- State land
- Federal land – National Fish Hatchery
- Wetlands from National Wetlands Inventory (includes constructed wetland on N. Granville St)



Asset  
Inventory

## Socially Vulnerable Populations

- CDC Social Vulnerability Index depicts relative vulnerability by Census Tract
- Too large of an area to identify vulnerable locations within the town

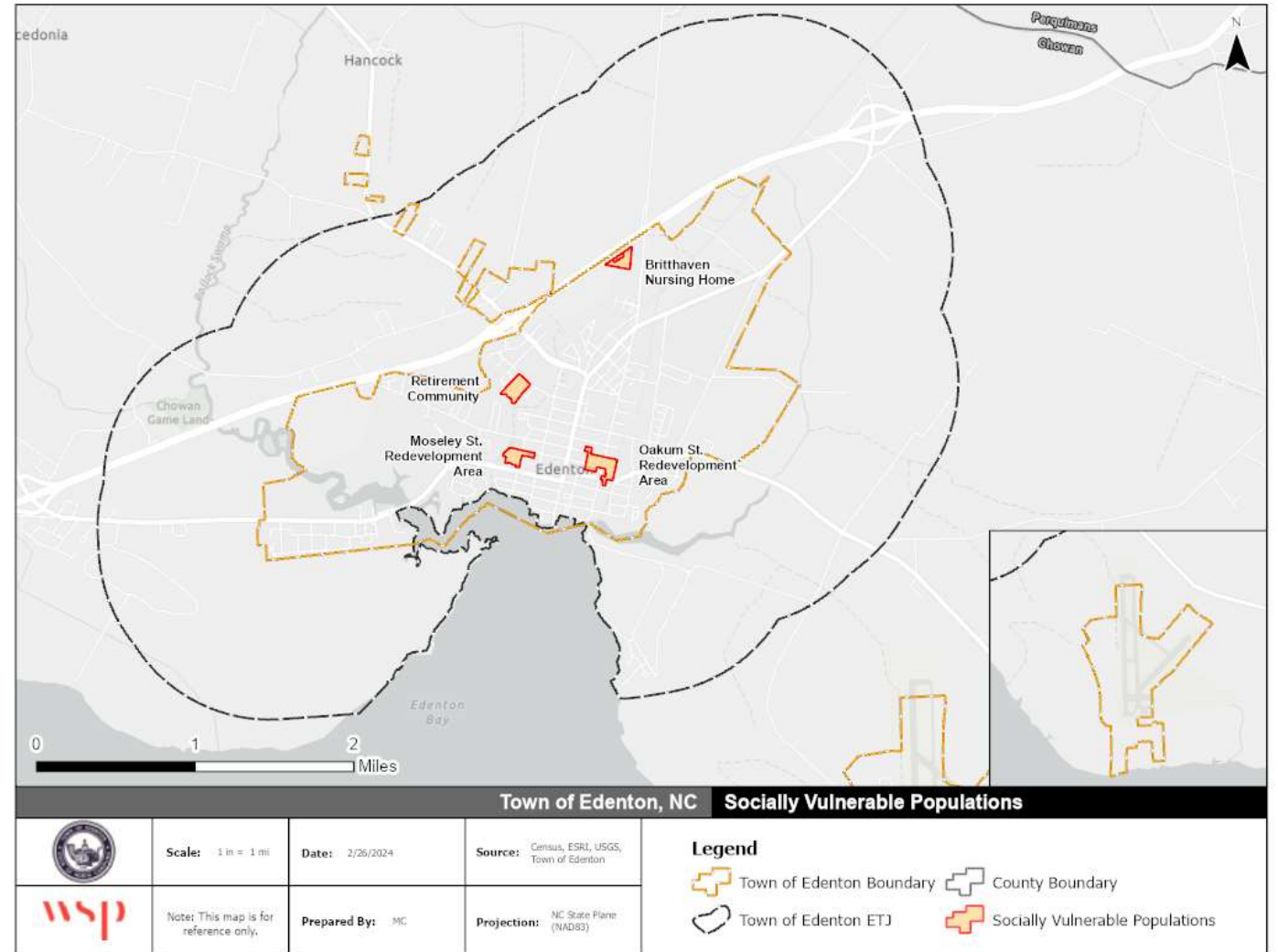




## Socially Vulnerable Populations

- Socially Vulnerable Areas identified through RENA project:

1. North Oakum St. Redevelopment Area
2. Moseley St. Redevelopment Area
3. Edenton Primetime Retirement Community
4. Chowan River Rehabilitation & Nursing Center / Britthaven Nursing Home



## Asset Inventory

Are we missing any key assets?

Other locally significant assets or infrastructure?

Buildings or locations with cultural, ecological, public health, social, or economic value to Edenton?



Figure 6 | Required Critical Assets to Map

Source: NC Resilient Coastal Communities Planning Handbook



# Assessing Vulnerability



## Hazards & Stressors

### Potential Hazards

- Sea level rise
- Riverine & coastal flooding
- Stormwater flooding
- Storm surge & wind-driven tidal flooding
- Erosion

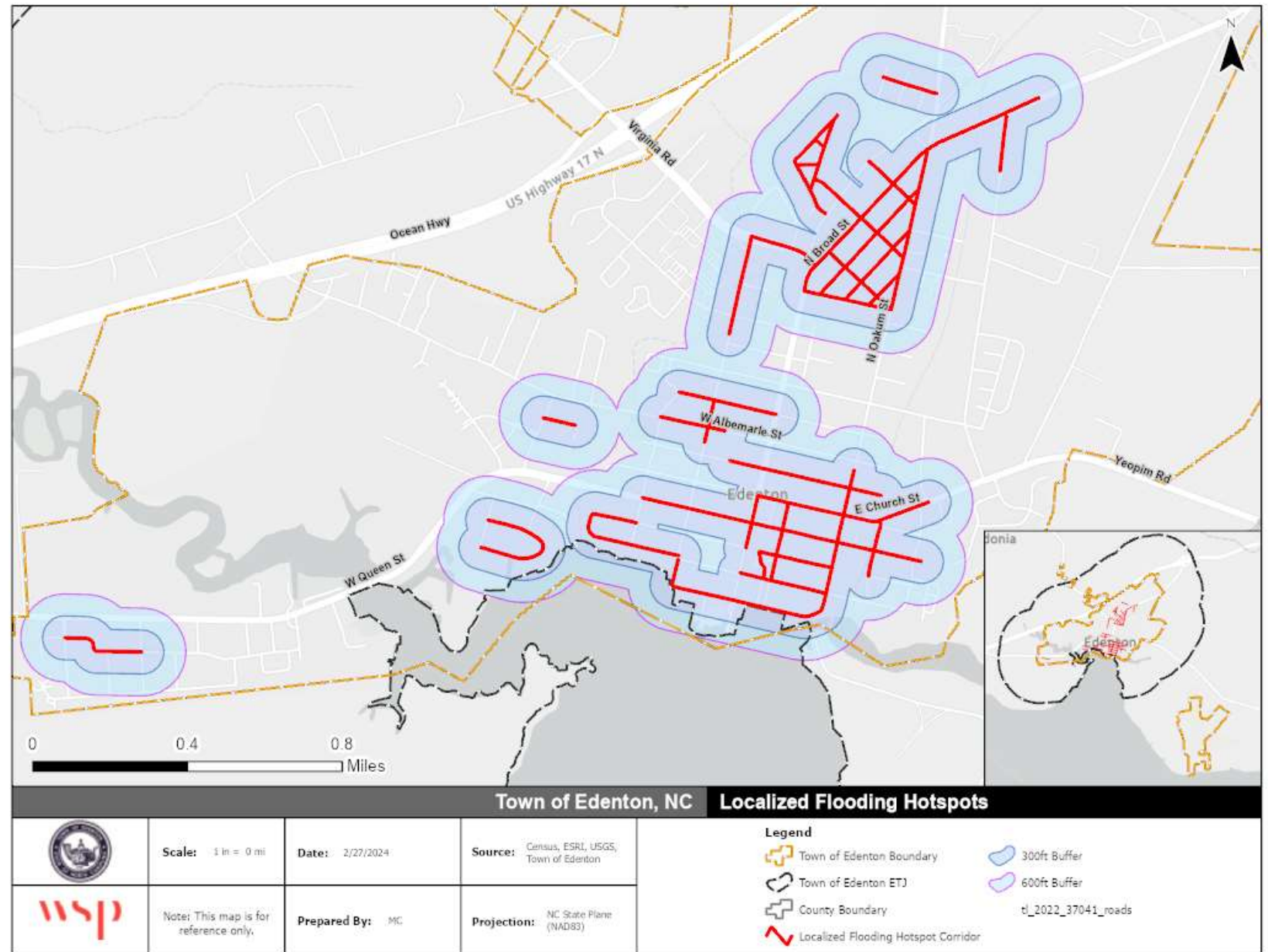
### Non-Climate Stressors

- Aging infrastructure
- Population dynamics
- Economic shifts
- Altered drainage patterns
- Land cover change (redevelopment/new development)



# Hazard Updates

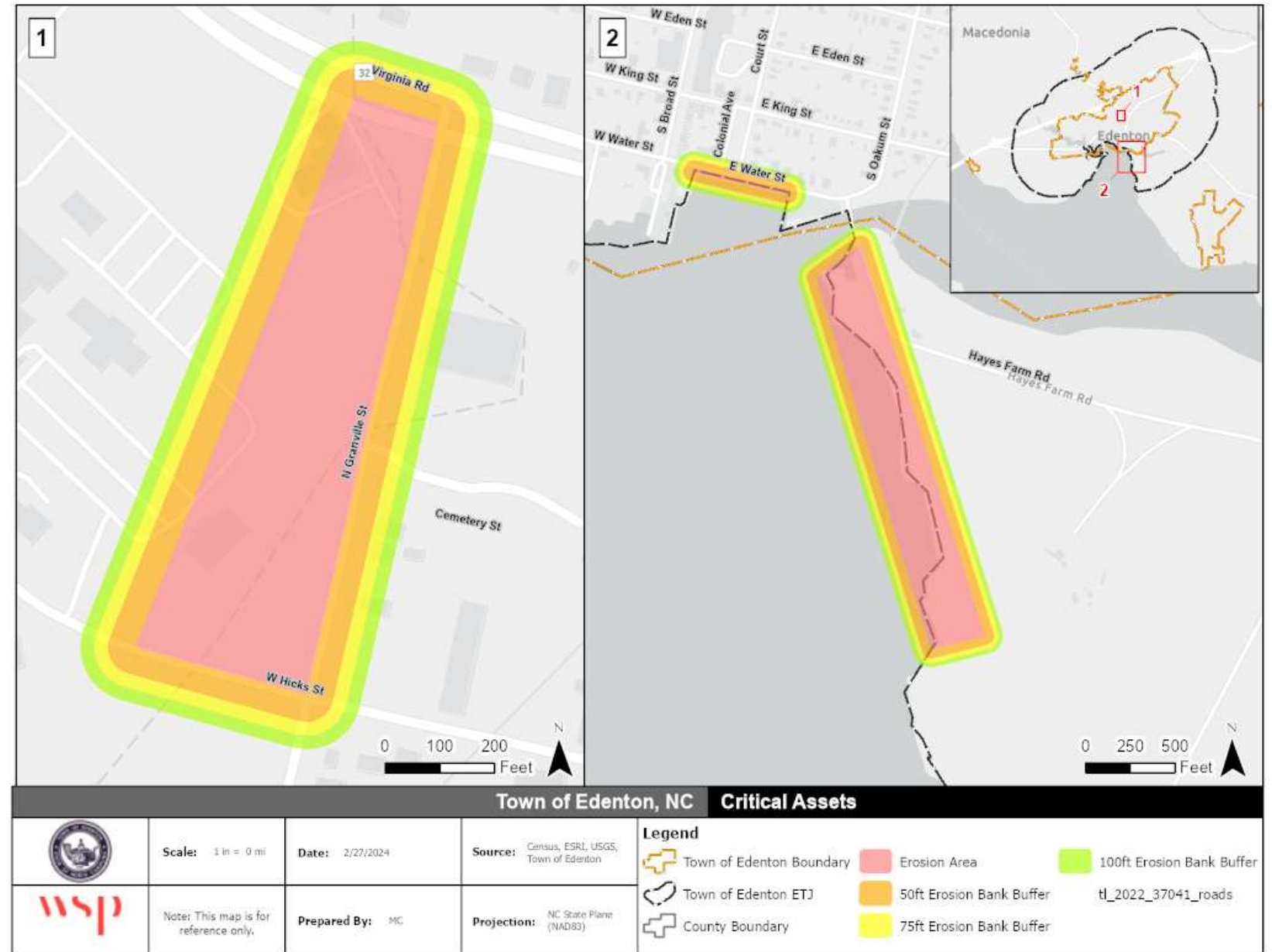
Stormwater  
flooding areas



Assessing Vulnerability

# Hazard Updates

Erosion  
hotspots



## Vulnerability Assessment Inputs

Vulnerability is a function of **Exposure**, **Sensitivity**, and **Adaptive Capacity**

Exposure, Sensitivity, and Adaptive Capacity are rated on a scale of 0 to 3 for each asset

- 0 = None
- 1 = Low
- 2 = Medium
- 3 = High

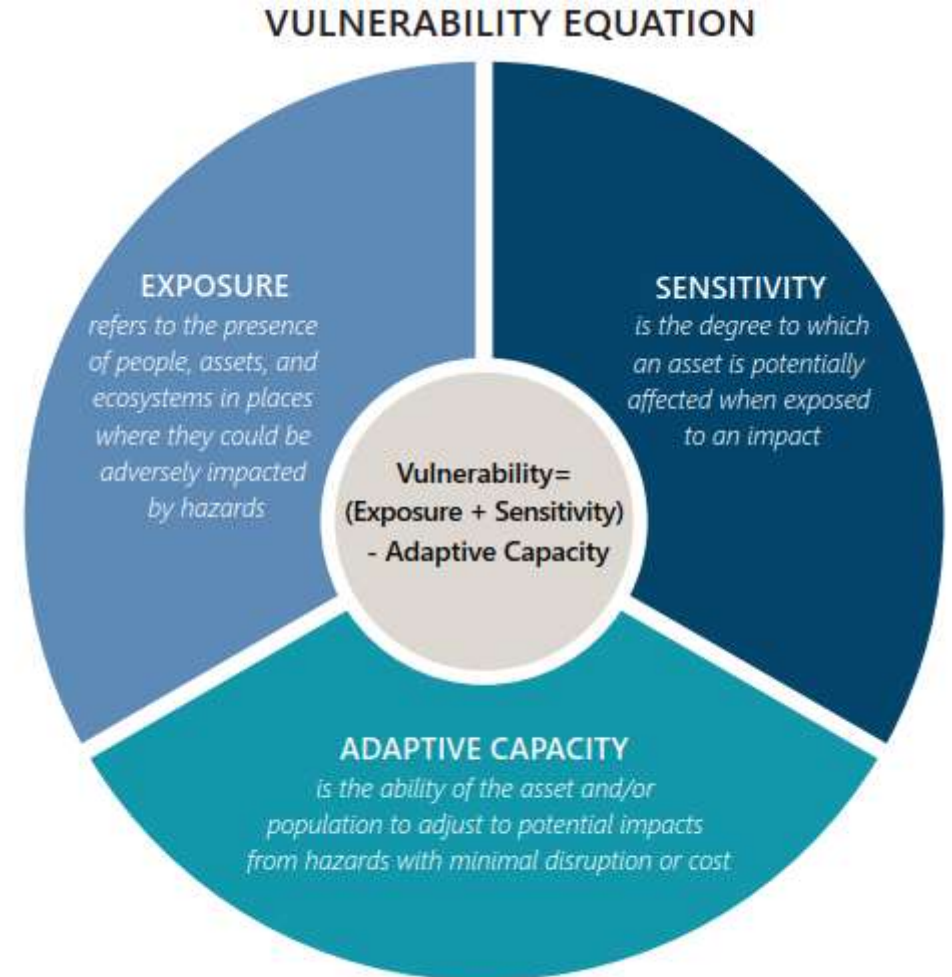


Figure 8 | The vulnerability equation used to derive community vulnerability to climate and non-climate related hazards.

Source: NC Resilient Coastal Communities Planning Handbook



## Exposure Analysis

Exposure is determined by comparing asset locations to hazard impact areas.

Exposure is rated by hazard and then averaged to produce an overall score for each asset.

Hazard	Exposure			
	0 - None	1 - Low	2 - Medium	3 - High
Sea Level Rise	No Exposure	Asset in 3 ft extent	Asset in 2 ft extent	Asset in 1 ft extent
Riverine & Coastal Flood	No Exposure	Asset in 0.2% floodplain	Asset in AE / A Zones	Asset in VE / V Zones
Stormwater	No Exposure	Asset within 1 block (600 ft)	Asset within 1/2 block (300 ft)	Asset located along stormwater hotspot
Storm Surge	No Exposure	Asset in Cat 5 surge zone	Asset in Cat 3-4 surge zone	Asset in Cat 1-2 surge zone
Erosion	No Exposure	Asset within 100 ft of hot spot	Asset within 75 ft of hot spot	Asset within 50 ft of hot spot



## Exposure Analysis Results

Example: Critical Assets

Asset	Hazard					Average	Exposure
	Sea Level Rise	Riverine & Coastal Flood	Stormwater	Storm Surge	Erosion		
Edenton Police Department	0	0	2	0	0	0.4	Low
Chowan County Public Safety Center	0	0	2	0	0	0.4	Low
Edenton Public Works Department	0	0	2	0	0	0.4	Low
Edenton Electric Department	0	0	1	0	0	0.2	Low
Edenton Fire Department	0	0	3	0	0	0.6	Low
Water Tower	0	0	3	0	0	0.6	Low
Shepard-Pruden Memorial Library	0	0	2	2	0	0.8	Low
John A Holmes High School	0	0	0	0	0	0	None
Chowan Senior Center	0	0	2	1	0	0.6	Low
ECU Health Chowan Hospital	0	0	0	0	0	0	None
Town of Edenton Municipal Offices	0	0	2	0	0	0.4	Low

# Sensitivity Analysis

Sensitivity describes the degree to which an asset is cumulatively impacted by hazards. It includes:

- how severely hazards impact an asset
- whether similar assets are impacted
- how essential an asset is to community operations.

## Sensitivity Scoring Criteria:

### Critical Assets

- 1 point if over 66% of that asset type is affected by hazards (or over 50% if there are less than 3 assets of that type)
- 1 point if individual asset is affected by multiple hazards
- 1 point if the individual asset is essential to community operations

### Historic & Cultural Resources

- 1 point for community & cultural value
- 1 point if affected by multiple hazards
- 1 point if year built is earlier than 1900

### Natural Resources

- low = <25% of asset area is affected by 2' SLR
- medium = 25-50% of asset area is affected by 2' SLR
- high = >50% of asset area is affected by 2' SLR

### Socially Vulnerable Populations

- 1 point for social vulnerability
- 1 point if over 50% of that asset type is affected by hazards
- 1 point if individual location is affected by multiple hazards

## Sensitivity Analysis Results

Example: Critical Assets

Asset	Criteria			Total	Sensitivity
	66%+ of Asset Type Affected	Impacted by Multiple Hazards	Essential to Operations		
Edenton Police Department	1	0	1	2	Medium
Chowan County Public Safety Center	1	0	1	2	Medium
Edenton Public Works Department	1	0	1	2	Medium
Edenton Electric Department	1	0	1	2	Medium
Edenton Fire Department	1	0	1	2	Medium
Water Tower	1	0	1	2	Medium
Shepard-Pruden Memorial Library	0	1	0	1	Medium
John A Holmes High School	0	0	0	0	None
Chowan Senior Center	0	1	0	1	Low
ECU Health Chowan Hospital	0	0	1	1	Low
Town of Edenton Municipal Offices	1	0	0	1	Low

## Adaptive Capacity

Adaptive capacity describes an asset's ability to adapt to or withstand hazard impacts.

Adaptive capacity will be ranked on a scale of 0 to 3 for each asset. This is a subjective rating.

Factors to consider:

- Is the asset already protected? (e.g. elevated or floodproofed building)
- Is retrofit, relocation, or another alternative possible; are there multiple options for adaptation?
- Can another facility provide temporary service if/when the asset is affected?

WSP team will propose scoring for CAT review

### TYPES OF ADAPTATION STRATEGIES



Once major needs and priorities are defined, specific adaptation strategies can be developed, vetted, and defined.



#### 01 Protection

Protection strategies are structurally defensive measures that directly protect vulnerable structures, allowing them to be left largely unaltered.



#### 02 Accommodation

Accommodation strategies alter physical design of vulnerable structures to allow the structure or land use to stay in place with modification.



#### 03 Retreat

Retreat from areas or infrastructure where protection or accommodation will not be efficient or effective can be voluntary, incentivized, or done gradually.



#### 04 Avoidance

Avoidance involves guiding new development away from areas that are subject to coastal hazards and can be done by implementing policy and/or offering of incentives.

Source: Florida Adaptation Planning Guidebook

# Next Steps



## Next Steps

- Finalize asset inventory
  - Additional asset information due by **March 8<sup>th</sup>**
- Review vulnerability assessment results and evaluate adaptive capacity
  - WSP to provide draft results by **March 22<sup>nd</sup>** for review
- Schedule next Committee meeting for early April  
*(to be held virtually)*







# Questions?



[wsp.com](https://wsp.com)