

Evaluation of Risk

To quantify the potential economic risk to assets within the county, Estimated Values for assets with a moderate to high value were summarized by asset type and ownership (Table 4 and Table 5). Estimated values were assigned by finding the maximum value (Parcel Value, Land Value, or Improvement Value) associated with an asset’s parcel. This value was calculated by assuming the value of assets that overlap are reflected in the cost estimate of the larger asset area (i.e., the cost of a government building in a historic district would be captured in the overall estimated cost for the historic district). This assumption was carried over into grouped estimated value calculations, and spatial duplicates were removed within each category. Estimated values for each Asset Type should be considered independently since assets with multiple type designations were included in the evaluation of each of their assigned types (see [Appendix C](#) for individual asset details).

Table 4. Calculation of Total Asset Value at Risk by Asset Type

ASSET TYPE ¹	NUMBER OF ASSETS AT RISK	TOTAL ESTIMATED ASSET VALUE ²
Highly Vulnerable (Value 3)³		
Roads	13 bridge structures, 30 road segments (approximately 2 miles)	Unknown
Schools	2	\$5,840,100
Water and Sewer Utilities	5	\$1,502,650
Hazardous Waste	1	\$1,457,800
Food and Supplies	1	\$162,100
Cultural Site	1	\$89,500
Electric Utilities	1	\$7,200
Moderately Vulnerable (Value 2)³		
River	1	\$0 unknown
Roads	1 bridge structures, 47 Road Segments (approximately 9 miles)	\$0 unknown
Parks and Recreation	7	\$27,532,690
Hospital or Local Clinic	4	\$11,440,960
Landfill	5	\$7,392,830
Schools	1	\$6,843,300
Water and Sewer Utilities	8	\$1,389,000
Church	4	\$1,086,000
Public Housing	1	\$944,900
Pharmacy	1	\$940,700
Hazardous Waste	3	\$910,500
Electric Utilities	4	\$567,470
Cemetery	3	\$513,900
Communications	4	\$293,790
Undeveloped Floodplain	1	\$278,740
Law Enforcement or Corrections	1	\$243,900
Food and Supplies	3	\$166,600

ASSET TYPE ¹	NUMBER OF ASSETS AT RISK	TOTAL ESTIMATED ASSET VALUE ²
Federal Government	1	\$94,000
Restaurants	1	\$89,000
Fire Station	1	\$73,900
City Government	1	\$64,300
Community Center	1	\$41,600
Group Home	1	\$35,600
Cultural Site (Plymouth Historic District)	1	unknown\$0

1 **Asset Type** – Asset were categorized based on the services they provide. Those that provide multiple services were assigned a primary asset type (used in value summary) but were also assigned secondary asset types for consideration in their service to the community.

2 **Estimated Value** – Assets were assigned monetary values at the parcel level (Estimated Asset Value = Land Value and Improvement Value) with the exception of churches and cemeteries that share the same parcel. For these assets, cemeteries were assigned the land value and churches were assigned the parcel improvement value. discussed below. For Parcels that spanned multiple parcels the sum of parcel values was used. This process was selected to make conservative estimations—it is unlikely the full parcel will be affected by exposure event. However, estimates are subject to the currentness and completeness of parcel assessor records.

3 **Total Vulnerability** = Hazard Exposure + Sensitivity Score – Adaptive Capacity

Table 5. Calculation of Total Asset Value at Risk by Ownership Type

OWNERSHIP CATEGORY	NUMBER OF ASSETS AT RISK	TOTAL ASSET VALUE AT RISK
Highly Vulnerable (Value 3)		
County	1	\$5,022,000
Private, Unknown or Encumbrance	50	\$3,707,840
Town of Creswell	2	\$218,210
Town of Plymouth	1	\$111,300
Moderately Vulnerable (Value 2)		
Other	2	\$40,266,700
Private, Unknown or Encumbrance	85	\$22,477,650
State	1	\$22,236,040
County	6	\$9,941,840
Town of Plymouth	6	\$5,737,250
Town of Roper	1	\$266,000
Town of Creswell	4	\$249,300

7 PROJECT PORTFOLIO

The overall purpose of the Program is to support coastal communities in identifying, prioritizing, and pursuing resilience projects that reduce and minimize risks posed by coastal hazards. This project portfolio is intended to include traditional “hard” infrastructure projects, “soft” nature-based solutions, and “hybrid” solutions that include both hard and soft components and policy solutions.

Nature-based Solutions incorporate creation, protection, or restoration of ecosystem elements to improve resilience to natural disasters such as flooding. For example, projects that improve the functions of floodplains and wetlands can help alleviate flooding and improve water quality.

	Nature-based Solutions (NBS)	
Built	Hybrid	Natural
Hard, gray, engineered structures built to address development objectives	Combination of ecosystem elements and hard engineering interventions to address development objectives	Creation, protection or restoration of only ecosystem elements to address development objectives

Built vs. Nature-Based Solutions

Identification of Resilience Projects

To develop a list of resilience projects for Washington County, a preliminary list of potential projects was created based on projects in existing plans such as the [Hurricane Matthew Resilient Redevelopment Plan](#) (2017) and [Northeastern NC Regional Hazard Mitigation Plan](#) (2021). The CAT reviewed the preliminary list of potential projects to remove projects already completed or no longer relevant to the county and add any additional projects for consideration. CAT members in consultation with SWCA then added or refined project ideas keeping the following principles in mind. Projects should:

- ✓ Support essential community functions that are critical for absorbing, adapting to, or rebounding from hazards
- ✓ Facilitate hazard preparedness, risk management, and mitigation actions that reduce hazard vulnerability
- ✓ Enable post-disaster community recovery and redevelopment that integrates community resilience objectives

Resilience projects in the portfolio are intended to reduce exposure and sensitivity to hazards as well as strengthen the adaptive capacity of community assets and vulnerable populations.

Project Prioritization

A shortened project list was reviewed at the March public meeting for feedback. CAT members refined the project list following that meeting, keeping in mind public input, the risk and vulnerability assessment results, and the following project selection criteria:

Project Impact:

- ✓ Overall benefit to the community, reflects vision and goals statement
- ✓ Advances prior efforts/aligns with other plans
- ✓ Has potential co-benefits, e.g., provides a recreational amenity, contributes to local economy, preserves a habitat, strengthens resilience to non-climate stressors like pandemics
- ✓ Important for long-term resilience (i.e., taking climate change, sea level rise, and other future conditions into account)
- ✓ Reduces vulnerability of key assets to coastal hazards (or increases the adaptive capacity of a critical asset or vulnerable population)
- ✓ Reduces economic risk posed by coastal hazards in one or more sectors

- ✓ Supports social equity

Project Feasibility:

- ✓ Capacity to implement and maintain
- ✓ Technical soundness
- ✓ Likely positive benefit-cost ratio
- ✓ Identifiable sources of funding

The high-priority projects agreed upon by the CAT are described in more detail below. Generally, these projects were understood by the CAT to have broad community-wide risk reduction benefits or to benefit vulnerable populations, to be feasible, to align with the county’s long-term resilience goals, to build upon other plans, and to link to efforts already underway.

Priority Projects

The following projects were identified as high priority by the Washington County CAT. Projects are *not* listed in order of priority; they are all high-priority projects. Click the links below to jump to the details for each project:

1. [Backup Generators or Other Equipment for Critical Facilities](#)
2. [Identify Strategic Drainage Improvements Outside of the Scuppernong Watershed](#)
3. [Implement Key Drainage Improvements in Areas of Interest \(AOIs\)](#)
4. [Install River Gauges](#)
5. [New Emergency Operations Center \(EOC\)](#)
6. [Remove Abandoned Structures and Critical Infrastructure from the Floodplain](#)
7. [Update Ordinances to Reduce Non-point Source Pollution](#)
8. [Structure Mitigation – Floodproofing](#)
9. [Retrofit County Court House](#)
10. [Share Information about Wetland Mitigation Banks and/or Water Farms with Landowners](#)
11. [Identify and Upgrade Broadband for County Buildings and Other Critical Facilities Connected via Copper/Legacy Internet](#)
12. [Emergency Vehicle and School Bus Route Improvements](#)
13. [Expand and Publicize Availability of Transportation and Community Buildings During Hazardous Conditions](#)
14. [Develop Water Management Guide for Landowners, Homeowners, and Renters](#)

Project 1: Backup Generators or Other Equipment for Critical Facilities

PROJECT DESCRIPTION	Seek funding to ensure redundant power and equipment for critical facilities, including generators, backup water pumps or pump parts, or potential renewable energy solutions. Specifically: Create list of critical facilities that need a generator or other forms of redundant power, equipment, or parts and acquire/maintain these to ensure that critical facilities and infrastructure remain operational during emergencies or power outages.
LOCATION	Washington County
SOURCE	Northeastern Regional Hazard Mitigation Plan April 2021
SCOPING QUESTIONS	Who will maintain the list of generators and equipment? Who will be responsible for servicing/conducting maintenance?
HAZARD(S) ADDRESSED	All hazards
SUPPORTING FUNCTION	Emergency response, communications
TYPE OF SOLUTION	Structure and infrastructure
ESTIMATED TIMELINE	1 year
RESPONSIBLE ENTITY	Washington County Emergency Management
POTENTIAL PARTNERS	Town of Plymouth
EXISTING FUNDING	None identified by CAT
POTENTIAL FUNDING SOURCES	FEMA Emergency Management Performance Grant (EMPG); Generators for critical facilities are also eligible under the FEMA Pre-Disaster Mitigation (PDM) Program
PROJECT ESTIMATED COST	\$10,000–\$25,000 each
ANTICIPATED BENEFIT	High – Action would assist with maintaining emergency communications, response, and capacity. Extra pump parts will help to address flooding and reduce need for external assistance.
PRIORITY RATING	High

Project 2: Identify Strategic Drainage Improvements Outside of the Scuppernong Watershed

PROJECT DESCRIPTION	The Scuppernong Water Study will provide detailed hydrologic assessment for areas of flooding concern within the Scuppernong River watershed. This project would involve pursuing similar analysis in other areas of concern within the county that are not part of the Scuppernong Study. This analysis would help identify and prioritize areas where debris removal or other solutions, such as those mentioned in project 3, can be implemented.
LOCATION	Areas of the county outside the Scuppernong watershed
SOURCE	CAT meeting
SCOPING QUESTIONS	What areas are priorities for the study?
HAZARD(S) ADDRESSED	Runoff, storm surge, riverine flooding, sea level rise, erosion
SUPPORTING FUNCTION	Education, plans and policies, communications
TYPE OF SOLUTION	Plans and policies, ordinances, nonregulatory programs
ESTIMATED TIMELINE	1 year
RESPONSIBLE ENTITY	WCSWCD
POTENTIAL PARTNERS	APNEP, NC Cooperative Extension, NC Sea Grant, Kris Bass Engineering, Washington County Planning Department
EXISTING FUNDING	None identified by CAT
POTENTIAL FUNDING SOURCES	North Carolina Division of Water Infrastructure (DWI) Local Assistance for Stormwater Infrastructure Investments (LASII) program, Golden LEAF Foundation , FEMA Hazard Mitigation Grant Program (HMGP)
PROJECT ESTIMATED COST	\$100,000–\$400,000
ANTICIPATED BENEFIT	High – Action would be beneficial to better understand water flow in the area and use the findings to prioritize necessary actions to address flooding and runoff.
PRIORITY RATING	High

Project 3: Implement Key Drainage Improvements in Areas of Interest

PROJECT DESCRIPTION	<p>This could include several potential types of drainage improvement, which Project 2 above can help prioritize and site. Maps depicting potential work needed for some areas of interest already identified are included in Appendix F. Drainage improvement methods could include:</p> <ul style="list-style-type: none"> • Remove debris from waterways and ditches, restoring hydraulic efficiency. • Resizing undersized culverts. • Two-stage ditch at Moccasin Canal – both as a drainage improvement and a demonstration project for landowners to see. • Water farming/wetland mitigation banks. Coastal farmlands could be converted to wetlands and established as conservation easements or mitigation banks in exchange for payments to landowners. • Aquatic weed spraying, clearing/snagging, and beaver control.
LOCATION	Countywide – specific locations to be determined with partners and study described in Project 2 above.
SOURCE	Hurricane Matthew Redevelopment Plan ; Regional Resilience Portfolio for Albemarle Region; CAT discussions; public meetings.
SCOPING QUESTIONS	Identify landowners and potential partners. Prioritize locations based on Project 2.
HAZARD(S) ADDRESSED	Flooding, riverine flooding, runoff, storm surge, sea level rise
SUPPORTING FUNCTION	Business/economic development (farming), residents, transportation
TYPE OF SOLUTION	Structure and infrastructure, nature-based solutions
ESTIMATED TIMELINE	1–5 years
RESPONSIBLE ENTITY	WCSWCD, landowners
POTENTIAL PARTNERS	Town of Plymouth, Town of Creswell, Scuppernon Water Management Study partners
EXISTING FUNDING	None identified by the CAT
POTENTIAL FUNDING SOURCES	Pending Streamflow Rehabilitation Assistance Program (StRAP) grants applied for by WCSWCD, Other sources to be determined based on projects selected.
PROJECT ESTIMATED COST	\$50,000–\$1,000,000
ANTICIPATED BENEFIT	High – Action would have significant benefit on reducing flooding impacts for landowners and transportation throughout the county.
PRIORITY RATING	High

Project 4: Install River Gauges

PROJECT DESCRIPTION	There are currently only three gauges in the NCEM Flood Inundation Mapping and Alert Network countywide: one in Roper on Kendrick Creek, one in Plymouth on Conaby Creek, and one in Van Swamp along North Carolina Highway 32 South. This project would install additional gauges within the upstream portion of the county to help improve flood predictions and track flooding trends. The following potential locations have been identified for consideration: Eddiesmith Canal, Highland Canal, Kendrick Creek, Mackey’s Creek, Main Canal, Scuppernong River, Swinson Swamp, Beaver Dam Branch. Part of this project would include confirming locations and functionality of existing gauges.
LOCATION	Upstream areas of Washington County
SOURCE	Hurricane Matthew Resilient Redevelopment Plan
SCOPING QUESTIONS	Project 2 could help to identify priority locations to install gauges. Who would be responsible for maintenance of gauges?
HAZARD(S) ADDRESSED	Flooding, riverine flooding, runoff, storm surge, sea level rise
SUPPORTING FUNCTION	Emergency response, transportation
TYPE OF SOLUTION	Structure and infrastructure
ESTIMATED TIMELINE	1–2 years
RESPONSIBLE ENTITY	Washington County Emergency Management, WCSWCD
POTENTIAL PARTNERS	National Weather Service (NWS), WCSWCD, NCDPS
EXISTING FUNDING	None identified by the CAT
POTENTIAL FUNDING SOURCES	Southeast Coastal Ocean Observing Regional Association (SECOORA) , NWS, Washington County Drainage Fund
PROJECT ESTIMATED COST	\$25,000–\$50,000 each
ANTICIPATED BENEFIT	High – Action would have significant benefit in understanding water flow patterns in the County, flooding impacts, and areas in need of key drainage solutions.
PRIORITY RATING	High

Project 5: New Emergency Operations Center (EOC)

PROJECT DESCRIPTION	Construct a new dedicated EOC facility. Washington County has been working toward establishing a new EOC for many years. The county will continue to look for opportunities to move forward with this project. The county’s existing facility is minimally adequate and relies on shared space with county administration—there is a need for a new and dedicated facility.
LOCATION	Washington County
SOURCE	Northeastern Regional Hazard Mitigation Plan April 2021
SCOPING QUESTIONS	Identify best location for facility. Ensure that facility is being constructed or upgraded with emergency shelter criteria in mind. Identify local partners.
HAZARD(S) ADDRESSED	All hazards
SUPPORTING FUNCTION	Emergency response, community resilience
TYPE OF SOLUTION	Structure and infrastructure
ESTIMATED TIMELINE	1-2 years
RESPONSIBLE ENTITY	Washington County Emergency Management
POTENTIAL PARTNERS	Washington County EMS, Washington County E911
EXISTING FUNDING	Legislative appropriations, local Washington County funding
POTENTIAL FUNDING SOURCES	NCDPS Emergency Preparedness Grants , FEMA EMPG Program includes funding for both sheltering and EOC FEMA Pre-Disaster Mitigation (PDM) Program FEMA Emergency Operations Center Grant Program
PROJECT ESTIMATED COST	High
ANTICIPATED BENEFIT	High – Action would have immediate benefit in providing emergency response capacity.
PRIORITY RATING	High

Project 6: Remove Abandoned Structures and Critical Infrastructure from the Floodplain

PROJECT DESCRIPTION	<p>Remove an estimated 75 abandoned structures/homes in the floodplain including unanchored utilities and other debris swept into floodway by Hurricane Matthew. Replace them with green space.</p> <p>Removal of critical infrastructure that supports services such as transportation, water, energy, communications, and medical services from the floodplain is currently underway, but there is more to be accomplished and will require assistance from Washington County Emergency Management. Some examples of specific projects that would be beneficial include:</p> <ul style="list-style-type: none"> • Adding lift stations to sewer pipes in Roper that are currently at water level. • Planning ahead to relocate larger infrastructure, such as wastewater treatment facilities, when they need to be replaced due to age or repaired after a disaster. <p>A first step would be to create a confirmed list and map of abandoned properties and identify critical infrastructure that would benefit from upgrades or replacement.</p>
LOCATION	Countywide; specific properties and infrastructure to be confirmed
SOURCE	Hurricane Matthew Redevelopment Plan and Northeastern Regional Hazard Mitigation Plan (April 2021)
SCOPING QUESTIONS	What are the major roadblocks to removing abandoned structures? What will be the use of the greenspace and who will manage it?
HAZARD(S) ADDRESSED	Flooding
SUPPORTING FUNCTION	Reduce debris hazards, increase resiliency of critical infrastructure.
TYPE OF SOLUTION	Structure and infrastructure
ESTIMATED TIMELINE	In progress, 5–10 years to complete
RESPONSIBLE ENTITY	Washington County Planning Department
POTENTIAL PARTNERS	Alex Crosland, Buyout Manager, and Fern Hickey, Buyout Specialist, at NCORR; Washington County Utilities
EXISTING FUNDING	County General Fund
POTENTIAL FUNDING SOURCES	FEMA Building Resilient Infrastructure and Communities (BRIC) , FEMA Flood Mitigation Assistance (FMA) Program, U.S. Department of Housing and Urban Development Community Development Block Grant – Neighborhood Revitalization (CDBG-NR) Program County General Fund (\$10k annually 10-4350-600)
PROJECT ESTIMATED COST	High
ANTICIPATED BENEFIT	High – Action would have significant benefit on risk reduction.
PRIORITY RATING	High

Project 7: Update Ordinances to Reduce Non-point Source Pollution

PROJECT DESCRIPTION	The Land Use Plan mentions that non-point-source pollution sources include crop production, animal feed lots, failing septic systems, forestry, and runoff from roads and parking lots. CAT members indicated these concerns would be a high priority to address for any new development (e.g., using permeable pavement on new parking lots). This project could also include policy updates within ordinances such as the zoning or subdivision ordinance to address these issues (especially for new construction within a known floodplain).
LOCATION	Washington County
SOURCE	Washington County Land Use Plan
SCOPING QUESTIONS	How severe is the pollution? What are some low-cost ways to reduce pollution from these sources? What model ordinances might the County use?
HAZARD(S) ADDRESSED	Flooding, riverine flooding, runoff, storm surge, sea level rise
SUPPORTING FUNCTION	Public Health and Safety
TYPE OF SOLUTION	Plans and policies, Structure and infrastructure, Potential for nature-based solutions to help improve runoff water quality
ESTIMATED TIMELINE	1-5 years
RESPONSIBLE ENTITY	Washington County Planning Department
POTENTIAL PARTNERS	WCSWCD, North Carolina Department of Environmental Quality (NCDEQ), USSW, Town of Plymouth, Town of Creswell
EXISTING FUNDING	None identified by the CAT
POTENTIAL FUNDING SOURCES	EPA 319 Grant , NC DWI LASII
PROJECT ESTIMATED COST	Variable – depends on project specifics
ANTICIPATED BENEFIT	High – Action would have benefit for public health and safety.
PRIORITY RATING	High

Project 8: Structure Mitigation - Floodproofing

PROJECT DESCRIPTION	Projects may include acquisition/elevation, mitigation/reconstruction, and wet/dry floodproofing to residential and nonresidential structures. Washington County and participating municipal jurisdictions will continue to list vulnerable and/or repetitive loss properties and identify treatment options as funding becomes available.
LOCATION	Countywide
SOURCE	Northeastern Regional Hazard Mitigation Plan April 2021
SCOPING QUESTIONS	What County staff would support this function? Is there interest from residents?
HAZARD(S) ADDRESSED	Flooding, sea level rise
SUPPORTING FUNCTION	Public health and safety, community resilience
TYPE OF SOLUTION	Structure and Infrastructure
ESTIMATED TIMELINE	Ongoing
RESPONSIBLE ENTITY	Washington County Planning Department
POTENTIAL PARTNERS	NC State Mitigation Program, private property owners, Towns
EXISTING FUNDING	None identified by the CAT
POTENTIAL FUNDING SOURCES	FEMA Flood Mitigation Assistance (FMA) Program, NC Strategic Buyout Program
PROJECT ESTIMATED COST	\$50,000–\$100,000 each
ANTICIPATED BENEFIT	High – Action would reduce long-term flood impacts and reduce repetitive loss which can result in less financial loss/recovery costs over time.
PRIORITY RATING	High

Project 9: Retrofit County Court House

PROJECT DESCRIPTION	Reroute drain spouts to a central storm drain to alleviate flooding. Upgrading elevator shaft drainage system in the basement of the courthouse. The elevator is currently functioning but threatened during flood conditions (currently reliant on sump pump) and has broken in the past. If the elevator is broken, this impacts ADA accessibility for the courthouse. Figure 8 shows a map of the courthouse location.
LOCATION	120 Adams Street, Plymouth, NC 27962, Washington County
SOURCE	Hurricane Matthew Redevelopment Plan
SCOPING QUESTIONS	
HAZARD(S) ADDRESSED	Flooding
SUPPORTING FUNCTION	Community resilience, accessibility
TYPE OF SOLUTION	Structure and Infrastructure
ESTIMATED TIMELINE	In progress, 1 year
RESPONSIBLE ENTITY	Washington County Maintenance Department
POTENTIAL PARTNERS	Town of Plymouth
EXISTING FUNDING	\$125,000 local Washington County General Fund (pending board approval of FY25 County budget)
POTENTIAL FUNDING SOURCES	Washington County General Fund
PROJECT ESTIMATED COST	\$25,000–\$125,000
ANTICIPATED BENEFIT	High – Will improve county facility resilience and ensure ADA accessibility.
PRIORITY RATING	High



Figure 8. Location of County Courthouse to be retrofitted.

Project 10: Share Information about Wetland Mitigation Banks and/or Water Farms with Landowners

PROJECT DESCRIPTION	Coastal farmlands could be converted to wetlands and established as conservation easements or mitigation banks in exchange for payments to landowners. Or similarly, certain lands could be designated as “water farms,” with payments to landowners for retaining water on the land under certain flood conditions. A first step toward this will be sharing information with landowners about this type of project and its benefits.
LOCATION	Countywide, specific locations to be determined
SOURCE	Regional Resilience Portfolio for the Albemarle Region
SCOPING QUESTIONS	What entity would administer this type of solution?
HAZARD(S) ADDRESSED	Flooding, riverine flooding, runoff, storm surge, sea level rise
SUPPORTING FUNCTION	Community resilience
TYPE OF SOLUTION	Nature-based plans and policies
ESTIMATED TIMELINE	2–5 years
RESPONSIBLE ENTITY	WCSWCD
POTENTIAL PARTNERS	NCDEQ
EXISTING FUNDING	None identified by the CAT
POTENTIAL FUNDING SOURCES	NC DWI Stream & Wetland Mitigation Program , NCDEQ Mitigation Sources
PROJECT ESTIMATED COST	Variable depending on project but likely low
ANTICIPATED BENEFIT	High – Action would have significant benefit in areas with flooding issues and can provide reliable, long-term income for landowners.
PRIORITY RATING	High

Project 11: Identify and Upgrade Broadband for County Buildings and Other Critical Facilities Connected via Copper/Legacy Internet

PROJECT DESCRIPTION	Some internet/broadband services use copper wiring that is often susceptible to water intrusion and leads to unreliable service and outages during flooding events. Make a list of county buildings/assets and other critical facilities that use copper/legacy connections and connect them to a more reliable provider, such as the Microelectronics Center of North Carolina (MCNC) fiber network.
LOCATION	Countywide, specific facilities to be determined
SOURCE	CAT Meeting #3
SCOPING QUESTIONS	Identify county buildings, assets, and critical facilities that use copper/legacy connections.
HAZARD(S) ADDRESSED	All hazards
SUPPORTING FUNCTION	Emergency communications and response
TYPE OF SOLUTION	Structure and infrastructure
ESTIMATED TIMELINE	1–2 years
RESPONSIBLE ENTITY	Washington County IT Department
POTENTIAL PARTNERS	MCNC, NC Department of Information Technology, Albemarle Commission
EXISTING FUNDING	None identified by the CAT
POTENTIAL FUNDING SOURCES	FEMA Pre-Disaster Mitigation (PDM) Program
PROJECT ESTIMATED COST	\$5,000 - \$100,000 depending on scope
ANTICIPATED BENEFIT	High – Action would enhance communications reliability which support emergency response.
PRIORITY RATING	High

Project 12: Emergency Vehicle and School Bus Route Improvements

PROJECT DESCRIPTION	<p>Elevation or protection of road segments that are primary routes for emergency vehicles and school buses. Washington County Schools Transportation Department has identified some specific road segments that are frequently blocked by flooding and can result in school closures when there has been recent rain. These include Crossroad in Roper, Folly Road in Roper, Cherry Road in Creswell, and the end of Main Street into Mackey’s Road in Plymouth.</p> <p>Natasha Earle-Young, North Carolina Department of Transportation (NCDOT) Policy Director, shared the following information in response to an inquiry about this project and offered to meet with the County to discuss further: DOT reviewed the roads and DOT did not study them due to the low traffic volume in our statewide resiliency improvement plan. However, our roadway inundation tool does say flood at the 10-year reoccurrence interval on main street in Plymouth and Cherry Road in Creswell. There is nothing in the system showing flooding in the 10 year for the other two roads in Roper. The road description needs to be more specific with the start and end points. There also needs to be information included about alternate routes that can be taken for these areas and the length of the detour. This will help define the criticality of the routes.</p>
LOCATION	Countywide, specific locations noted above.
SOURCE	Town of Creswell, Washington County Schools Transportation Department
SCOPING QUESTIONS	Work with Washington County Schools Transportation, Washington County Emergency Management, fire departments, and law enforcement to develop comprehensive list of most commonly flooded road segments that impact school bus and emergency vehicle routes. Work with NCDOT to more accurately evaluate the impact of flooding on these road segments and identify potential solutions.
HAZARD(S) ADDRESSED	Flooding
SUPPORTING FUNCTION	Transportation, education, community resilience
TYPE OF SOLUTION	Structure and Infrastructure
ESTIMATED TIMELINE	2–10 years
RESPONSIBLE ENTITY	NCDOT, Washington County
POTENTIAL PARTNERS	Washington County School District, Washington County Emergency Management, Fire Departments, Police and Sheriff’s Departments
EXISTING FUNDING	None identified by CAT
POTENTIAL FUNDING SOURCES	To be determined in consultation with NCDOT; potentially State Transportation Improvement Program
PROJECT ESTIMATED COST	High
ANTICIPATED BENEFIT	High – Action would reduce impacts to education and emergency vehicle access and improve transportation routes throughout the County.
PRIORITY RATING	High

Project 13: Expand and Publicize Availability of Transportation and Community Buildings During Hazardous Conditions

PROJECT DESCRIPTION	Expand hours and availability of countywide transportation service and community buildings such as churches and/or public facilities that serve residents (and service animals and/or household pets, if needed) during extreme heat or evacuation periods, and advertise that these services are available to residents through the existing emergency alert system.
LOCATION	Countywide
SOURCE	CAT Meetings #3 and #5
SCOPING QUESTIONS	Identify existing resources and potential partners.
HAZARD(S) ADDRESSED	All Hazards
SUPPORTING FUNCTION	Communication, transportation, community resilience
TYPE OF SOLUTION	Plans and policies, Education and outreach
ESTIMATED TIMELINE	1–2 years
RESPONSIBLE ENTITY	Washington County Emergency Management
POTENTIAL PARTNERS	Riverlight Transit, local churches, Washington County Recreation
EXISTING FUNDING	None identified by CAT
POTENTIAL FUNDING SOURCES	Both sheltering and EOC would be eligible activities under EMPG funding FEMA EMPG
PROJECT ESTIMATED COST	Low – less than \$10,000
ANTICIPATED BENEFIT	High – Action would enhance emergency response capacity and build community resilience.
PRIORITY RATING	High

Project 14: Develop Water Management Guide for Landowners, Homeowners, and Renters

PROJECT DESCRIPTION	Discussion with residents has shown that most people do not know for sure what they are expected to do to maintain ditches, storm drains, and other water management systems. What are they responsible for doing? And what are they allowed to do? How does what they do on their land impact downstream neighbors and the system as a whole? This project would be to develop and distribute information in the form of key talking points and summary information tailored to local audiences. Messaging should include compelling numbers that help explain how the water management system is interconnected and what people can do to help maintain it and not pass along negative impacts to their neighbors. The messages should also touch on what water management actions are handled by entities such as Washington County or other agencies.
LOCATION	Countywide
SOURCE	Public meetings and CAT Meeting #5
SCOPING QUESTIONS	Identify potential partners for communications and the best channels to share information.
HAZARD(S) ADDRESSED	Flooding, riverine flooding, runoff, storm surge, sea level rise
SUPPORTING FUNCTION	Reducing flooding, capacity building
TYPE OF SOLUTION	Education and outreach
ESTIMATED TIMELINE	1 year
RESPONSIBLE ENTITY	WCSWCD
POTENTIAL PARTNERS	NC Cooperative Extension, Town of Plymouth
EXISTING FUNDING	None identified by CAT
POTENTIAL FUNDING SOURCES	Local Washington County General Fund allocations for advertising
PROJECT ESTIMATED COST	Low – less than \$10,000
ANTICIPATED BENEFIT	High – Action would reduce actions that contribute to negative outcomes for local landowners and surrounding infrastructure.
PRIORITY RATING	High

Other Projects Considered

All other projects considered by the CAT are documented in Table 6. Some of the other projects considered were not prioritized because they had been completed or were already in progress since being identified in previous planning efforts. Others were very localized (e.g., Town-owned) and not perceived by the CAT to have sufficient benefit to the community at large to be considered high priority. Others would not substantially contribute to reducing coastal hazard risks or were considered infeasible by the CAT for any of the reasons noted in the criteria above, and so were not prioritized.

Table 6. Other Projects Considered for Washington County, North Carolina

PROJECT NAME	PROJECT DESCRIPTION	SOURCE
Housing Elevation	During Hurricane Matthew, five homes within the county experienced extensive flooding, causing serious problems for the homeowners, and were identified as likely candidates for elevation.	Hurricane Matthew Redevelopment Plan
Elevate Treatment Plant Entry Road (Town of Plymouth)	Elevate treatment plant entry road (Gage Lane).	Hurricane Matthew Redevelopment Plan
Relocate Elderly Housing Complex (Town of Plymouth)	Relocate elderly housing complex in Plymouth to prevent future flood damage, isolation and evacuation issues, emergency response issues, etc.	Hurricane Matthew Redevelopment Plan
Water and Sewer Plan	The Land Use Plan states there is a need for an updated water and sewer plan. Would need studies for any future development.	Washington County Land Use Plan
Flood Zone Structures Database	The Land Use Plan states a need for a database of existing structures within the flood zone.	Washington County Land Use Plan
Stormwater Planning	Participate in region-wide stormwater planning. Identify needs and develop collaborative approaches to reducing stormwater flooding.	Regional Resilience Portfolio for Albemarle Region
Resilience Hub	Create a resilience hub that offers information, guidance, and technical assistance to residents and business owners on hazards and mitigation options.	Regional Resilience Portfolio for Albemarle Region

8 NEXT STEPS

This Resilience Strategy can be used to continue efforts in the county including:

- Maintaining a network of team members that continue planning and addressing future resilience concerns, including the Towns of Plymouth and Creswell, which also participated in Program Phases 1 & 2
- Development of “shovel-ready” projects
- Integrating resilience strategies into the local Coastal Area Management Act land use plan and other policy documents
- Completing additional feasibility studies for existing or future resilience projects
- Leveraging the strategy and portfolio to apply for additional grant opportunities
- Providing feedback to the DCM about the Program and the strategy process

This Resilience Strategy will support the next phases in the Program:

- Phase 3: Engineering and Design
- Phase 4: Implementation