NORTH CAROLINA
Flood Resiliency
BLUEPRINT

Shoreline in Goose Creek Park, NC

NORTH CAROLINA FLOOD RESILIENCY BLUEPRINT

Tar-Pamlico River Basin Action Strategy (RBAS)

Riverfront homes along boardwalk in Washington, NC

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EXECUTIVE SUMMARY

The Tar-Pamlico River Basin Action Strategy (RBAS) is a foundational component of North Carolina's Flood Resiliency Blueprint and provides a comprehensive, science-based framework for reducing flood risk and enhancing long-term resilience throughout the basin. Developed through extensive technical analysis, stakeholder engagement, and economic evaluation, the strategy identifies and prioritizes actions that address current and future flood hazards while supporting resilient communities, economies, and ecosystems.

Flood resilience is the ability of communities, infrastructure systems, natural resources, and local economies to prepare for, withstand, adapt to, and recover from flooding. As climate conditions change and development patterns evolve, building resilience requires proactive investments that reduce flood impacts while preparing communities for increasing rainfall intensity, sea level rise, and land use changes.

The Tar-Pamlico River Basin is North Carolina's third-largest river basin, encompassing approximately 6,150 square miles across 19 counties and serving nearly 400,000 residents. Population growth is expected to continue through 2060, increasing demands on infrastructure and community services. The basin contains diverse urban, rural, agricultural, and coastal landscapes, as well as many economically vulnerable communities with poverty rates above the state average. At the same time, significant land development is projected, with developed areas expected to expand substantially by the end of the century. These trends, combined with a changing climate characterized by increasing temperatures, precipitation, and storm intensity, are expected to further elevate flood risk across the basin.

Flooding within the basin results from a combination of riverine, rainfall-driven, coastal, and stormwater flooding, as well as risks associated with dam and levee systems. These hazards are compounded by more frequent and severe weather events, sea level rise, and ongoing development pressures. Historical flooding events, including Hurricanes Floyd (1999) and Matthew (2016), illustrate the widespread social, economic, and environmental consequences of flooding and underscore the need for sustained investment in resilience.

Analysis conducted as part of the RBAS indicates that flood risk is both significant and growing. Approximately 19,926 buildings are currently exposed to flood hazards, with that number projected to increase to 26,071 by the year 2100. The basin also contains 306 dams, including 44 classified as high-risk structures, and four levee systems, many of which

Aerial View of Cape Hatteras Island, NC

Key Takeaways

- Flood risk in the Tar Pamlico River Basin is significant and growing, driven by more frequent and severe weather, development, and aging infrastructure.
- The RBAS provides a comprehensive, data-driven roadmap for reducing flood risk and strengthening resilience across the basin.
- The RBAS evaluated 347 resilience actions and identified 33 priority actions that address both locally identified needs and basin-wide flood risks.
- Priority actions focus on protecting high-risk communities, critical infrastructure, and vulnerable populations.
- Successful implementation will depend on sustained funding, coordination, and improved data and modeling.
- Building local capacity will be critical to advancing projects and improving long-term resilience outcomes across the basin.

present elevated risk profiles. Vulnerability assessments identified several areas of particular concern, including Rocky Mount, Princeville, Greenville, Washington, and coastal communities, where future modeling projects expanded flood exposure and increased damages, especially in low-lying and coastal areas.

The RBAS follows a structured five-step planning process designed to support transparent, data-driven decision-making. This process includes: (1) inventorying existing data, plans, and projects; (2) conducting thorough community and stakeholder engagement; (3) performing a basin-wide flood risk and vulnerability assessment; (4) identifying potential resilience actions; and (5) prioritizing actions through benefit-cost and effectiveness evaluations. Throughout this process, the strategy incorporated extensive input from local governments, tribal communities, nonprofit organizations, residents, and other stakeholders, with particular emphasis on engaging under-resourced and historically vulnerable populations.

A total of 347 resilience actions were evaluated through this process. These actions were assessed based on their ability to reduce flood risk, enhance resilience, address community priorities, and provide long-term economic and environmental benefits. The resulting portfolio of prioritized actions includes a balanced mix of structural improvements, nature-based solutions, and policy and planning initiatives that together support a comprehensive, multi-layered approach to flood resilience. Of the 33 prioritized actions, four are regional in scale, 28 are local, and one is building-specific (**Table 2. Prioritized Resiliency Actions List for the Tar-Pamlico River Basin**).

Successful implementation of the RBAS will require sustained coordination among federal, state, regional, tribal, and local partners. The strategy identifies a range of potential funding sources, including federal mitigation and watershed programs, state grant programs, and local funding mechanisms. Given the scale and complexity of many recommended projects, implementation will depend on leveraging multiple funding streams, fostering strategic partnerships with agencies such as the Federal Emergency Management Agency (FEMA), the U.S. Army Corps of Engineers (USACE), and state agencies, and providing support for local cost-share requirements. Building local capacity will be particularly important to ensure that under-resourced communities can effectively compete for funding, manage projects, and realize the long-term benefits of resilience investments.

Through coordinated implementation, the Tar-Pamlico River Basin Action Strategy provides a roadmap for reducing flood risk, strengthening community resilience, and supporting sustainable growth across the basin for generations to come.

TERMS & ACRONYMS

AADT	Annual Average Daily Traffic
Action	In the Blueprint, "actions" denote specific flood resilience measures identified and ranked at the basin scale. DEQ, in collaboration with communities, utilizes the Flood Resiliency Blueprint Tool to assess and prioritize these actions based on a variety of parameters.
ALE	Annualized Loss Estimate
AMEXCAN	Association of Mexicans in North Carolina
Annual-Chance Flood Event	The probability that a flood event will occur in a given year.
ADSO	Association of State Dam Safety Officials
Basin	An area of land that contains a common set of waterbodies (streams, rivers, lakes, or wetlands) that all drain into a single larger body of water. Watersheds can be defined at multiple geographic scales. In North Carolina, 17 "major" watersheds (basins) are defined by statute.
BCA	Benefit-Cost Analysis
Benefit Cost Analysis	A decision-making tool used to evaluate the cost-effectiveness of resilience actions based on expected losses avoided and cost of implementation (FEMA, 2026).
BCR	Benefit Cost Ratio
Benefit Cost Ratio	The result of a BCA, equal to the net action benefits divided by the action costs. A ratio of 1.0 or greater indicates the project is cost effective (FEMA, 2009).
BLE	Base Level Engineering
BRIC	Building Resilient Infrastructure and Communities
BUILD	Better Utilizing Investments to Leverage Development
CAMA	Coastal Area Management Act
CB&TC	North Carolina Budget and Tax Center
CDBG	Community Development Block Grants
CDBG-DR	Community Development Block Grants- Disaster Recovery
CDBG-MIT	Community Development Block Grants- Mitigation
CIP	Capital Improvement Plan
COG	Council of Governments
CWA	Carolina Wetlands Association
CWSRF	Clean Water State Revolving Fund
DEQ	North Carolina Department of Environmental Quality
DOT	Department of Transportation
DWR	Division of Water Resources
DWSRF	Drinking Water State Revolving Fund
ECL	End of Century Lower
ECH	End of Century Higher
ECS	End of Century Severe
EEG	Environmental Enhancement Grant
EPA	Environmental Protection Agency
EWP	Emergency Watershed Protection
FEMA	Federal Emergency Management Agency

Flood Resilience	The capacity of individuals, a community, business, or natural environment to reduce, withstand, respond to, and recover from flooding by positively mitigating the impacts of changing conditions and challenges including more extreme weather, increasing rain fall, and sea level rise, and adapting to those conditions.
FMA	Flood Mitigation Assistance
FPMS	Floodplain Management Services
H&H	Hydrologic and Hydraulic
HMGP	Hazard Mitigation Grant Program
Local Action Plan	Plans submitted through the Blueprint Tool that consist of flood resilience action(s) submitted by local governments or delegated authorities of local governments.
Locally Prioritized Actions	Actions where local governments know specific actions are needed; inductively collected from direct outreach with local government stakeholders; prioritized and vetted through community engagement and have greater public support.
LSAC	Levee Safety Action Classifications
MCL	Mid Century Lower
MCH	Mid Century Higher
MPO	Metropolitan Planning Organization
NC	North Carolina
NCB&TC	North Carolina Budget and Tax Center
NCBA	North Carolina Black Alliance
NCCN	North Carolina Conservation Network

Bridge across Tar River, Greenville, NC

NCDA&CS	North Carolina Department of Agriculture and Consumer Services
NCEM	North Carolina Emergency Management
NCGA	North Carolina General Assembly
NCICS	North Carolina Institute for Climate Studies
NCIDR	North Carolina Inclusive Disaster Recovery Network
NCLWF	North Carolina Land & Water Fund
NFIP	National Flood Insurance Program
NFWF	National Fish and Wildlife Foundation
NGO	Nongovernmental Organizations
NLD	National Levee Database
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NRI	National Risk Index
OSBM	North Carolina Office of State Budget and Management
PDM	Pre-Disaster Mitigation
PROTECT	Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation
Pre-Identified Action	Mitigation actions that have been identified through the research performed in Step 1 of the Blueprint process. These actions have been previously proposed in existing studies, plans, and programs.
Proposed Action	Actions that were developed through Step 3 of the Blueprint process based on the results of the flood risk and vulnerability analysis. These actions are conceptual and would require future feasibility studies to determine effectiveness.
RAISE	Rebuilding American Infrastructure with Sustainability and Equity
RBAG	River Basin Advisory Group
RBAS	River Basin Action Strategy
RCCP	Resilient Coastal Communities Program
RL	Repetitive Loss
RPO	Rural Planning Organization
SDTSA	State Designated Tribal Statistical Area
SERA	State Emergency Response Application
SCSJ	Southern Coalition for Social Justice
SILC	North Carolina Statewide Independent Living Council
SLR	Sea Level Rise
SRF	State Revolving Fund
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
Vulnerability Assessment Based Actions	Actions compiled through a deductive process to mitigate flood risks identified through the RBAS Vulnerability Assessment results.
WFPO	Watershed and Flood Prevention Operations
WIFIA	Water Infrastructure and Innovation Act
WRDG	Water Resources Development Grant

Outer Banks Coastline in Buxton, NC

INTRODUCTION

In 2021, the North Carolina General Assembly directed the North Carolina Department of Environmental Quality (DEQ) to develop a statewide Flood Resiliency Blueprint. The Blueprint serves as the backbone of North Carolina's (NC) flood resiliency planning and is based on the best available science, stakeholder engagement, and sound decision-making to develop cost-effective projects. At the heart of the Blueprint is an online decision-support tool to help local governments, agencies, and non-governmental partners develop, evaluate, and prioritize resilience actions, as well as plan and marshal funding to implement those priorities. The Blueprint supports a wide array of potential actions such as floodplain restoration, stream debris removal, elevation of utilities, stormwater controls, and policy changes. The Blueprint will make North Carolina more resilient to flooding by funding projects that limit flood extent and severity, allowing communities to recover more quickly and limit future risk as storms become more frequent and severe.

Over the past decade, North Carolina has experienced an increasing number of significant flood events, including Hurricanes Matthew (2016), Florence (2018), and Helene (2024). In just the last two years alone, Hurricanes Helene and Debby, Tropical Storm Chantal, and Potential Tropical Cyclone Eight have caused devastating impacts across the entire state. These events underscore the urgent need for proactive planning and strategic investments to strengthen flood resilience throughout the state.

Flood resilience cannot be achieved by any one agency or program alone. It depends on strong coordination among communities; local, tribal, state, and federal governments; and a broad network of public and private stakeholders, including residents and businesses. Through strategic planning, collaboration, and targeted investment, communities can reduce flood-related damages and improve their ability to recover when flooding occurs.

The North Carolina Flood Resiliency Blueprint was created to support this collaborative approach by providing the data, tools, and decision-making framework needed to identify priorities and guide investments. By addressing gaps in existing flood mitigation efforts and focusing resources on actions that reduce future flood risk, the Blueprint helps lessen the economic, environmental, and social impacts of flooding. Through close partnerships with local governments and state agencies, the Blueprint promotes proactive, coordinated investments that enhance long-term resilience for communities across North Carolina.

Trail at Goose Creek State Park, NC

The Blueprint is built upon three foundational components:

1 DATA

The DEQ Flood Resiliency Blueprint has partnered with NCEM to develop enhanced advisory flood models. These models provide communities with improved information about existing and future flood risks, enabling data-driven planning and decision-making.

2 TOOLS

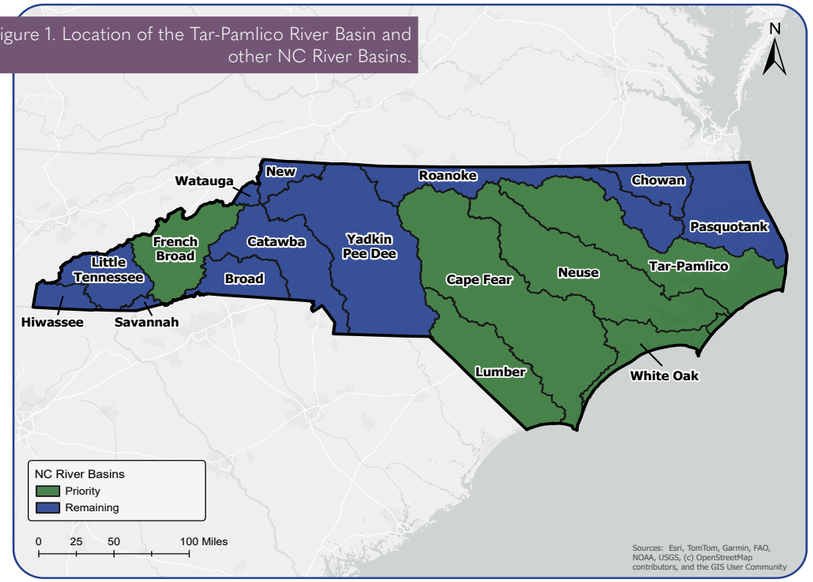
The Blueprint Tool is a free, web-based resource that provides flood risk data, mapping capabilities, and resilience planning support. It equips communities with the information necessary to evaluate vulnerabilities, identify mitigation opportunities, and develop informed flood resilience strategies.

3 PROCESS

Blueprint staff work directly with stakeholders across the state to facilitate clear, actionable flood resilience planning at multiple geographic scales. This collaborative process helps ensure that local needs, priorities, and expertise are incorporated into resilience planning efforts.

The Blueprint serves as a flood planning framework and decision-support system that enables state, tribal, regional, and local stakeholders to identify, prioritize, and implement effective flood resilience strategies. The initial phase involves six priority basins of North Carolina – Cape Fear, French Broad, Lumber, Neuse, Tar-Pamlico and White Oak (**Figure 1**).

Figure 1. Location of the Tar-Pamlico River Basin and other NC River Basins.



By leveraging the best available science and data, the Blueprint helps communities better understand current and future flood risks in their river basins. The framework is designed to be adaptive, incorporating new information as it becomes available to ensure that planning and investment decisions are still effective. Through improved coordination among agencies and programs at all levels of government, the Blueprint seeks to maximize the use of available resources and support informed decisions that increase flood resilience across NC.

BLUEPRINT GOALS

The Blueprint is guided by three overarching goals:

1 Develop a statewide online decision-support tool.

The Blueprint Tool was created to serve stakeholders and communities in their flood resiliency planning efforts by offering flood risk data in tandem with a decision support tool. This Tool offers a flood resilience and community data hub to bolster the flood mitigation work that is already happening.

2 Establish community- and basin-specific planning processes.

Through the River Basin Action Strategies (RBAS), the Blueprint creates a structured approach to identify and develop solutions tailored to the needs and priorities of individual communities and river basins. Addressing this challenge on a basin-wide scale allows for a more coordinated approach that is in concert with the hydrologic profile of the basin.

3 Create a repeatable statewide methodology.

Developing RBAS plans for all North Carolina river basins using a consistent methodology that enables each basin to identify and advance appropriate flood resilience solutions.

PROGRAM APPROACH

To achieve these goals, the Blueprint program is being implemented through three integrated phases:

- Blueprint Process Development: Establishing a statewide planning framework that utilizes the best available data, science, and resources.
- Blueprint Tool Development: Creating an accessible platform that supports planning, analysis, and stakeholder engagement across North Carolina.
- River Basin Action Strategy Development: Developing RBAS plans for all eligible North Carolina river basins using a consistent methodology that enables each basin to identify and advance appropriate flood resilience solutions.

Together, these efforts (broken down into the eight key steps in **Figure 2**) provide NC with a comprehensive, data-driven approach to reducing flood risk, strengthening community resilience, and supporting long-term recovery and adaptation in the face of increasing flood hazards.

RATIONALE AND OBJECTIVES OF THE RBAS

The RBAS is a strategic plan specific to an individual river basin developed with the assistance of the Blueprint process and Tool. The strategy will be informed by community and stakeholder input and will outline specific flood resilience actions and potential funding sources.

The Blueprint process includes a unified approach to identifying resiliency actions across the state, but each basin has its unique needs. DEQ's objective for the RBAS is to identify priority regions and mitigation actions within each basin. Additionally, any data needs or limitations are presented to highlight the growth and continued efforts needed within the basin. Development of an RBAS will utilize the latest detailed flood modeling datasets for both current and future conditions, ensuring that long-term planning is incorporated. Stakeholder engagement is also a large component of the RBAS process to ensure that decisions and recommendations are made in conjunction with local and regional entities and the specific needs of the basin. Overall, the RBAS will result in a list of prioritized actions, providing a starting point for making the basin more resilient to flooding.

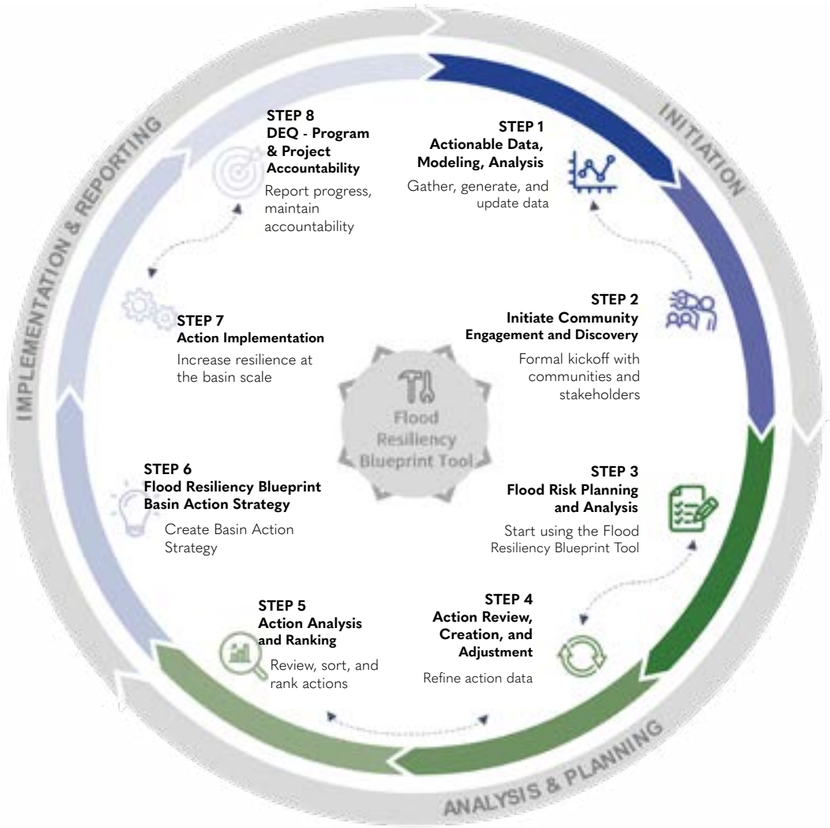


Figure 2. DEQ Flood Resiliency Blueprint Tool and Planning Process (DEQ, 2024a).

The Bodie Island Lighthouse in Dare County, NC

BASIN OVERVIEW

About the Basin

Location

The Tar-Pamlico River Basin is the third-largest river basin in NC, spanning approximately 6,150 square miles of land and open water in the northeastern part of the state. The headwaters of the Tar River originate in Person County and the basin encompasses a portion of 19 counties (**Figure 3**). In these counties, there are 67 municipalities with Greenville, Rocky Mount, Wilson, Henderson, and Tarboro having the largest populations.

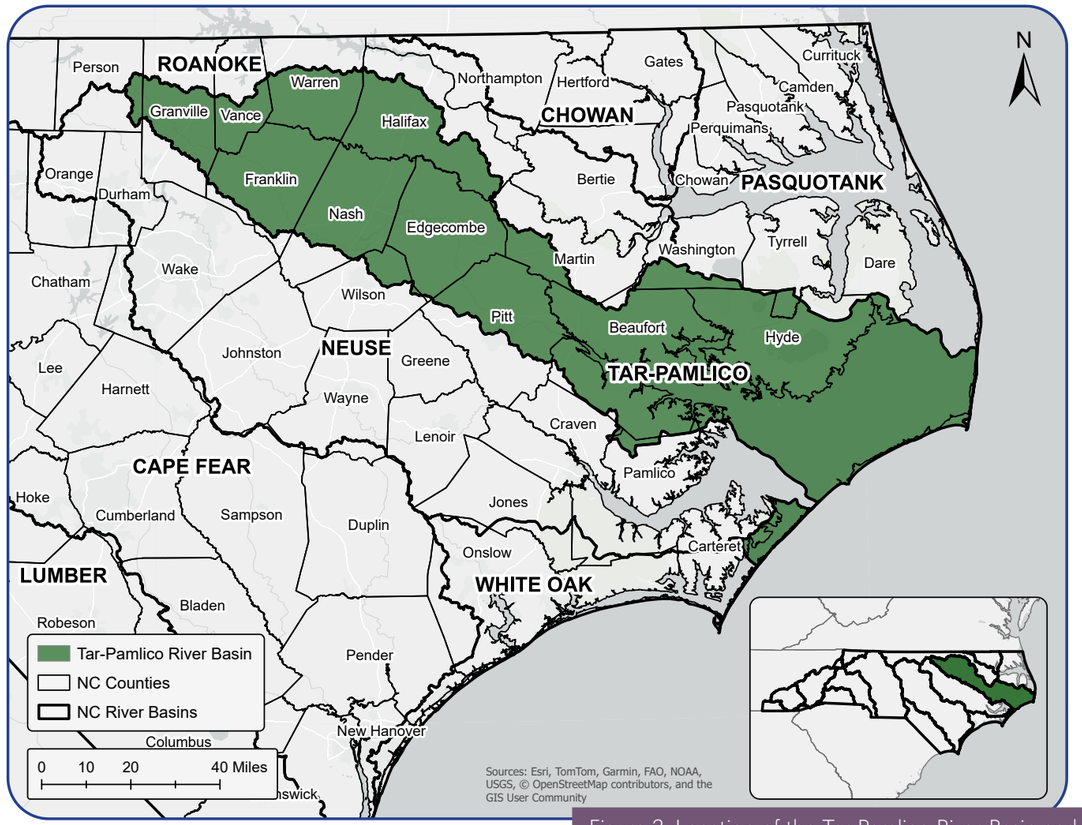


Figure 3. Location of the Tar-Pamlico River Basin and other NC River Basins.

Demographics

As of the 2020 US Census, there are an estimated 398,956 people living in the Tar-Pamlico River Basin (DEQ, 2026).

The county level poverty rate of 18.2% is higher than the state average of 13.2%. Additionally, the median county household income of $57,997 is lower than the state median of $69,904 (US Census Bureau, 2023).

The basin contains the Haliwa-Saponi Tribe, which is located within the third largest state designated tribal statistical area (SDTSA) in NC. The tribe consists of 3,800 enrolled members that reside in Halifax, Warren, Nash, and Franklin Counties with its headquarters in the Town of Hollister (NCDOA, n.d.).

There are five Councils of Government (COGs) serving these communities that provide additional services and support (**Figure 4**).

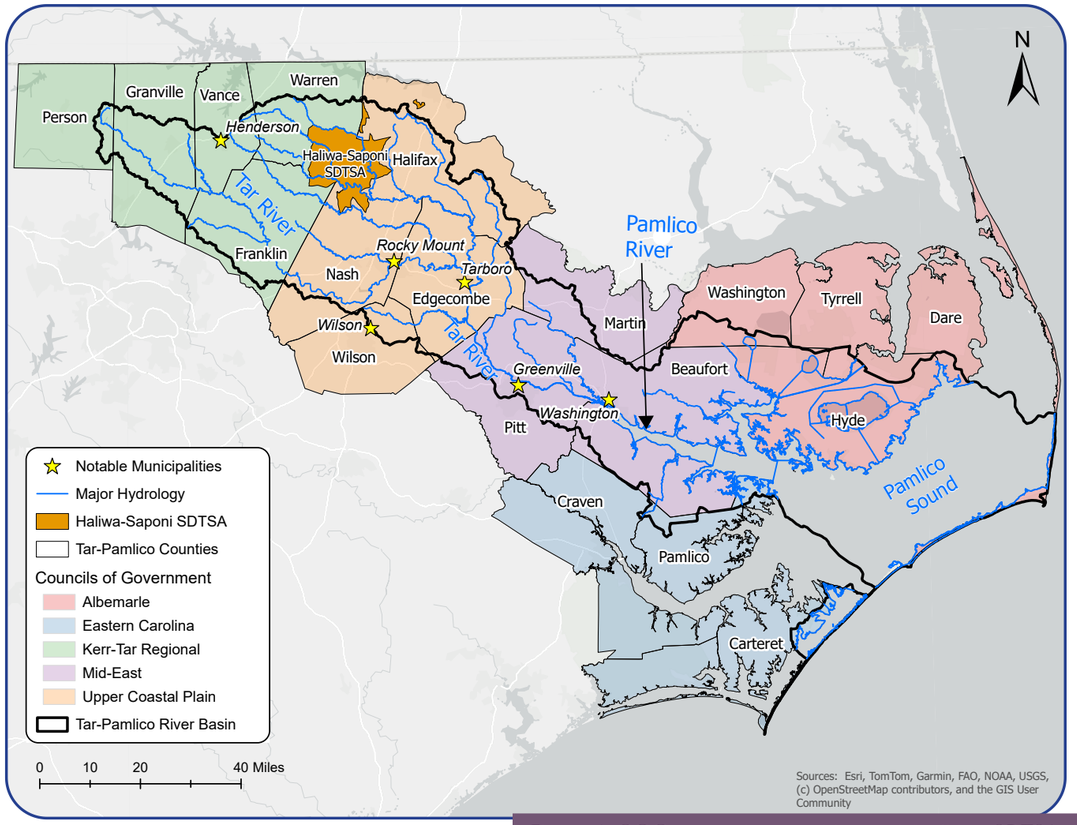


Figure 4. COGs, counties, notable municipalities, SDTSA, and major waterways of the Tar-Pamlico River Basin.

Climate

The climate of the Tar-Pamlico River Basin, like much of the southeastern United States, is classified as a humid, subtropical climate characterized by hot, humid summers and mild winters (Koppen-Geiger Climate Classification) (GloH2O, 2025)). According to 1991-2020 climate normals, the average annual temperature in the basin is 61.6 °F, which is higher than the state's annual average of 59.9 °F. The basin experiences an average annual rainfall of 51.4 inches per year, in line with North Carolina's annual average (PRISM, 2025).

Flood Risk

The Tar-Pamlico River Basin has experienced multiple severe flooding events, causing widespread social, environmental, and economic impacts on communities throughout the basin. Five main flooding sources were identified within the basin: riverine flooding, rainfall-driven flooding, coastal flooding and sea level rise, urban and stormwater flooding, and flooding resulting from the breach of dams and levees. Compound flooding is a concern within the basin, especially within the coastal communities. Compound flooding results from the interaction of two or more flooding sources, most commonly coastal, riverine, and rainfall-drven in any combination. Other secondary flooding sources including groundwater flooding may contribute to flooding within the basin. However, groundwater flooding was not assessed as a separate source in this report.

FEMA's National Risk Index (NRI) investigates a county's vulnerability to 18 hazards, including riverine and coastal flooding, relative to all counties within the U.S. (FEMA, n.d.). The Tar-Pamlico River Basin includes counties spanning the full range of flood risk levels, from Person County in the 13th percentile statewide to Carteret County in the 98th percentile. NRI scores for counties within the Tar-Pamlico River Basin are provided in **Appendix A**.

In addition to the NRI, FEMA's National Flood Insurance Program (NFIP) collects data on flood related insurance claims including information on Repetitive Loss (RL) properties. These properties have flooded multiple times over a 10-year period causing more than $1,000 in damages for each flooding event (FEMA, 2020). **Figure 5** shows the NFIP payments, as of 2019, and total RL properties, as of 2025, within the Tar-Pamlico River Basin counties.

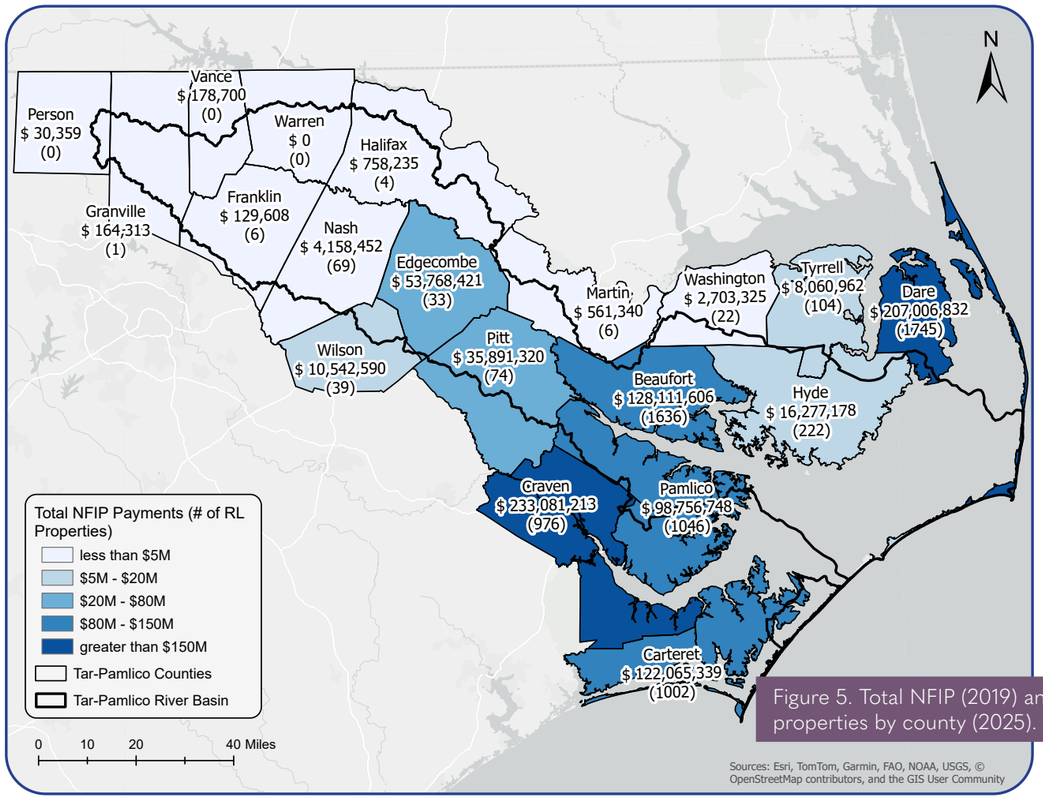


Figure 5. Total NFIP (2019) and total RL properties by county (2025).

History of Flooding

The Tar-Pamlico River Basin has experienced major hurricanes and tropical storm events over the past 30 years, including Hurricane Fran (1996), Hurricane Floyd (1999), and Hurricane Matthew (2016). These storms have brought high levels of flooding and damage to communities across the Tar-Pamlico Basin.

Hurricane	Year	Basin Impacts
Fran	1996	• 6 inches of rain • Storm surge of 9 feet was observed in Belhaven and Washington • $5+ billion in damages across NC* • 23 NC deaths (NWS, n.d.-a)
Floyd	1999	• Preceded by Hurricane Dennis 2 weeks prior which created highly saturated conditions • Peak rainfall of 16 inches • Record flood depths at 11 locations throughout basin (USACE, 2024) • 36 NC deaths (NWS, n.d.-b)
Matthew	2016	• Parts of the basin received 18 inches of rain in a 36-hour period • $1.5+ billion in flood damages in NC* (NWS, 2021) • Record Tar-Pamlico storm surge height (multiple locations

*Damages not adjusted for inflation

In addition to named storms, unnamed localized flooding events impact communities in the Tar-Pamlico River Basin every year. Events such as high tide, flash flooding, and intense rainfall can cause major damage to infrastructure, homes, and businesses. In August 2025, two fatalities occurred in Spring Hope, NC due to severe flash flooding from an unnamed storm event (George, 2025). Additionally, areas such as the Outer Banks are susceptible to multiple types of these localized flooding events, leading to the potential for increased risk. The Town of Buxton experienced structure collapses in September 2025 due to intense tidal flooding (National Park Service, 2025). These two specific accounts of localized flooding in the basin are an example of the major flood challenges that Tar-Pamlico River Basin communities are facing.

Basin Dynamics

Land Use Changes and Development

The percentage of the Tar-Pamlico River Basin that is developed is expected to almost triple from 2023 to 2050 and increase by four-fold by 2100. The predicted increase in developed areas throughout the basin could impact surface runoff levels, water storage capacity, and reduce the level of natural stormwater mitigation.

	Current Conditions	2050 Conditions	2100 Conditions
Land Use Type	**Land Use Percentage**		
Open Water	24.9%	24.9%	24.9%
Forest	21.9%	19.0%	14.6%
Cultivated Land	21.7%	15.5%	13.0%
Wetlands	18.8%	12.0%	11.8%
Developed Area	6.7%	23.5%	30.6%

Sources: (MRLC, 2023) and (EPA, 2025)

Climate

North Carolina has warmed over the past century, and temperatures will continue to rise. Average annual precipitation has largely remained the same but is becoming more concentrated in larger and more intense events. More frequent and intense storms will lead to increased levels of flooding in coastal and low-lying communities (NCICS, 2020).

Lake Mattamuskeet at sunrise

Population Shifts

The North Carolina Office of State Budget and Management (OSBM) projects an additional 16.7% in growth by 2060 across the Tar-Pamlico River Basin. Although the total population within the Tar-Pamlico River Basin is expected to increase, population changes will not be uniform across the communities within the basin. The populations of some communities are expected to increase while others are expected to decrease (**Table 1**). Franklin County is expected to grow faster than any other county in the basin from 2020 to 2060 (OSBM, 2025).

Table 1. Population Projections for the Tar-Pamlico River Basin Counties (OSBM, 2025).

County	Census 2020 Population	Projected 2040 Population	Projected 2060 Population	% Change 2020-2060
Beaufort	44,652	43,819	43,820	-1.9
Carteret	67,686	78,322	87,576	29.4
Craven	100,720	103,336	103,335	2.6
Dare	36,915	44,583	58,521	58.5
Edgecombe	48,900	48,730	48,731	-0.3
Franklin	68,573	112,525	143,437	109.2
Granville	60,992	73,991	88,979	45.9
Halifax	48,622	40,304	33,096	-31.9
Hyde	4,589	3,819	2,787	-39.3
Martin	22,031	18,021	14,303	-35.1
Nash	94,970	102,907	103,375	8.9
Pamlico	12,276	12,918	12,918	5.2
Person	39,097	42,411	45,770	17.1
Pitt	170,243	208,982	252,666	48.4
Tyrrell	3,245	3,480	3,479	7.2
Vance	42,578	41,221	41,222	-3.2
Warren	18,642	18,804	18,804	0.9
Washington	11,003	8,882	6,840	-37.8
Wilson	78,784	79,352	79,356	0.7

Rocky Mount, Nash County, NC

RIVER BASIN ACTION STRATEGY DEVELOPMENT PROCESS

The RBAS development process involved five main steps (**Figure 1**). Step 1 involved the development of an inventory of local actions, existing data, planning efforts, research projects, studies, and existing regional-scale modeling within the basin. The community engagement process (Step 2) has been an ongoing process, with the River Basin Advisory Group (RBAG) receiving updates and providing feedback throughout. Step 3 involved conducting flood risk and vulnerability analyses and developing regional resiliency actions to address identified areas of concern. Steps 4 and 5 of the Blueprint process involved the development of a list of priority resilience actions. This section summarizes the outcomes from these steps.

ACTIONABLE DATA, MODELING, & ANALYSIS

Inventory of Existing Data, Programs, & Studies

A literature review of all potential data, studies, plans, and programs (through January 2025) was performed to obtain knowledge on resiliency planning and action implementation within the Tar-Pamlico River Basin. The outcome is a list of 347 resiliency actions that have been proposed, planned, or completed within the Tar-Pamlico River Basin (see **Appendix A**). Qualifying actions fall under one of the following investment types: structural, non-structural, nature-based, planning, and policy. Common themes that emerged from the inventory of existing data, programs, and studies were post-hurricane recovery, future flood prevention through resiliency, and funding sources.

The existing flood risk data within the Tar-Pamlico River Basin comes in the form of hydrologic and hydraulic (H&H) modeling and floodplain data. National, statewide, and local level data sources were inventoried, and this data was utilized to determine the level of flood risk and vulnerability in communities across the basin. DEQ collaborated with NCEM to complete 2D flood modeling for the Tar-Pamlico River Basin as part of the Blueprint process and development of the RBAS. The 2D modeling work considered both current and future conditions flooding. A complete list of the modeling and dataset sources identified through the literature review can be found in **Appendix A**.

Local & Regional Capacity

The capacity of communities is a key factor in their ability to develop, fund, manage, and implement resiliency actions. Governmental structure, population, demographics, and socioeconomics all influence a community's capacity. Understanding each community's staffing, budget, and programmatic composition is vital to assessing its ability to successfully participate in the Blueprint process.

The Blueprint Capacity Analysis assessed each municipality and county's capacity to participate in the following six components:
1) Blueprint Tool and planning process training;
2) Independent or supported use of the Blueprint Tool to identify, analyze, and prioritize action strategies;
3) Project feasibility or conceptual design creation for selected strategies;
4) Action strategy funding;
5) Action strategy implementation; and
6) Ongoing stewardship or management of completed action strategies.

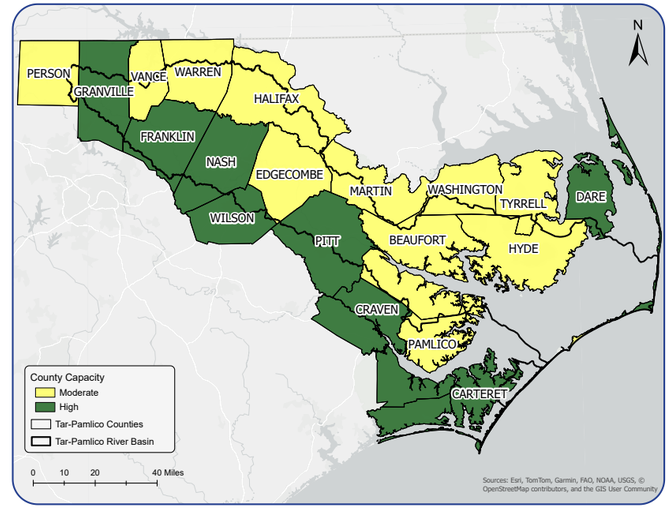


Figure 6. Tar-Pamlico Basin county level overall Blueprint capacity.

According to the analysis, eleven counties in the Tar-Pamlico River Basin have moderate capacity and 8 counties have high capacity to participate in the Blueprint process (**Figure 6**). Municipalities and unincorporated communities were more varied, with 37 low, 22 moderate, and 7 high overall capacity ratings (**Figure 7**). Details on the metrics and data that were used in the capacity analysis can be found in **Appendix C**.

Effective flood risk reduction and resilience-building depend on the ability of local governments to lead and support the implementation of resilience projects. Strengthening local capacity through dedicated resources, technical assistance, and funding support will enable communities to develop plans, secure investments, and successfully administer grant-funded initiatives.

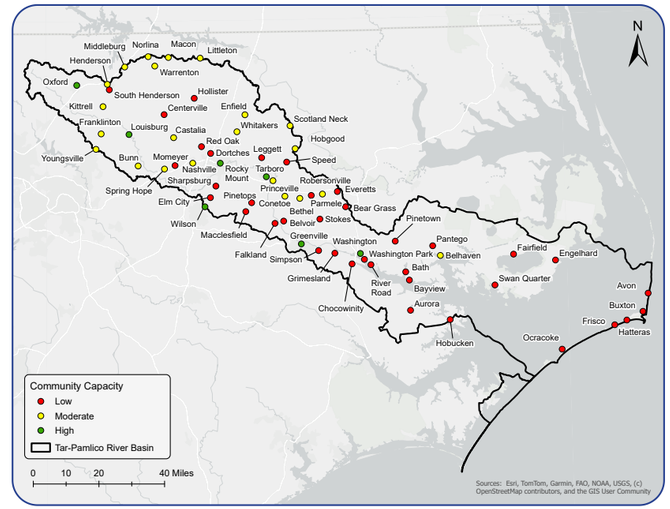


Figure 7. Tar-Pamlico Basin community level overall Blueprint capacity.

COMMUNITY ENGAGEMENT & DISCOVERY

Engagement with Local Communities & Agencies

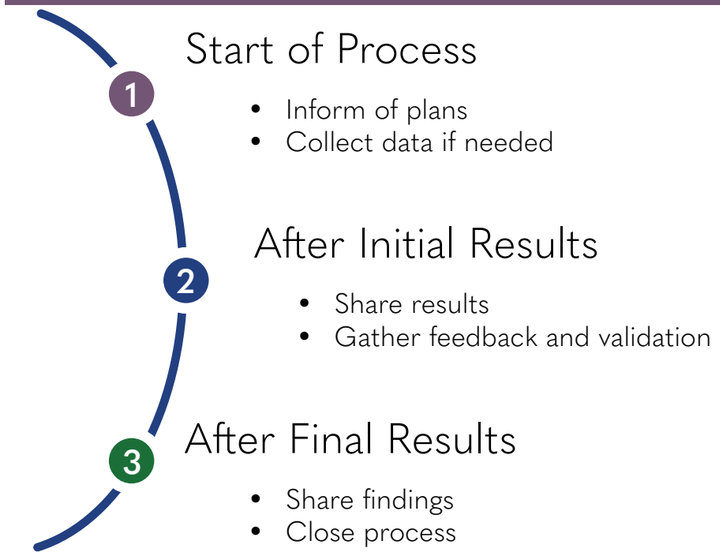
Planning for flood resilience works best when it is shaped by the people and communities who experience flooding firsthand. In the Tar-Pamlico River Basin, outreach and engagement were designed to make sure local voices, experiences, and priorities played a central role in developing the Tar-Pamlico River Basin Action Strategy.

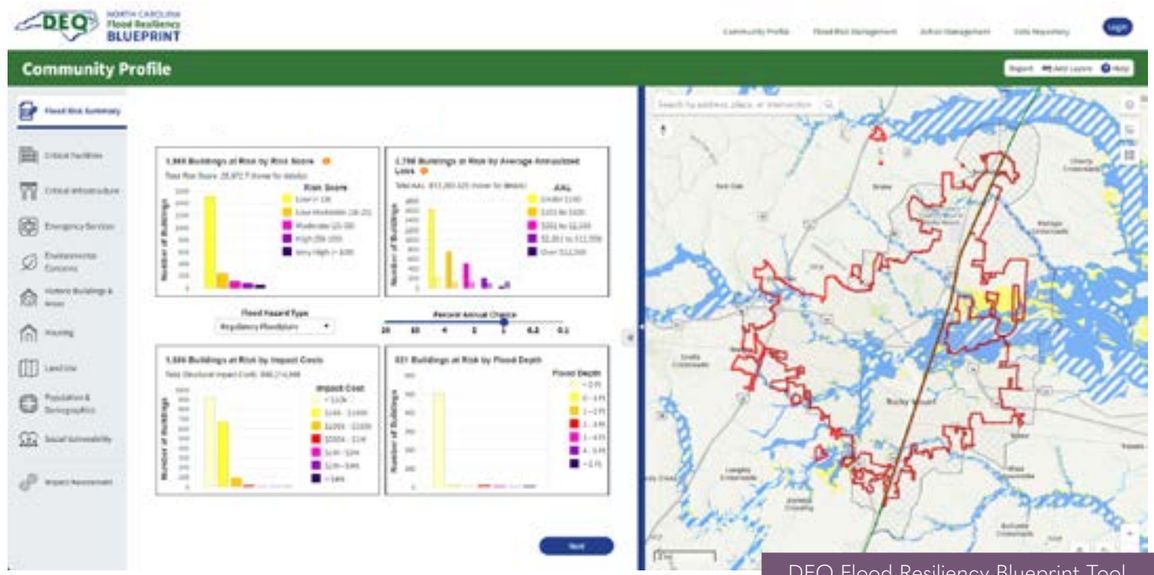
During the development of the River Basin Action Strategy, engagement efforts focused on regional and basin-wide planning, and included communities, local governments, and tribal representatives, along with nonprofit and regional organizations across the basin. A structured Outreach and Engagement Plan guided this work, establishing a coordinated approach to sharing information, gathering feedback, and building partnerships (**Figure 8**). A strong focus was placed on reaching and including vulnerable, under-resourced, and underserved communities to ensure their perspectives helped shape the process.

Central to this approach was the commitment to two-way communication. Regular meetings, training sessions, and accessible "office hours" provided opportunities for stakeholders to learn, ask questions, and offer feedback. Continuous one-on-one support ensured that participants could engage at a level appropriate to their needs. As the process progressed, stakeholder input directly informed improvements to tools, data, and planning methods.

Through these sustained engagement efforts, the Action Strategy reflects a collaborative, data-informed approach to reducing flood risk. By integrating technical analysis with local expertise and community perspectives, the Blueprint process supports decision-making that is both regionally coordinated and responsive to on-the-ground needs.

Figure 8. River Basin Action Strategy data analysis engagement cycle.





DEQ Flood Resiliency Blueprint Tool

Blueprint Tool Trainings

To ensure the success of the Flood Resiliency Blueprint, stakeholders across the river basin were given multiple opportunities to become familiar with the Flood Resiliency Blueprint Tool, understand the planning process, and apply it to strengthen their community's flood resilience. DEQ encouraged stakeholders to use the Tool and planning framework and committed to providing training and ongoing technical support to maximize project impact. Partners who become Blueprint Tool users can share information within their agencies or neighborhoods and help train others. Some Partners may not use the Tool directly but can still contribute valuable community knowledge relevant to flood resiliency.

The Blueprint Tool training process began with a kickoff meeting introducing the Tool, its purpose within the broader Blueprint process, and available training options. Regular email updates kept stakeholders informed about Tool developments, planning progress, and meeting activities, while also offering a structured way to submit questions, concerns, and suggestions.

The Blueprint Tool is just one step within a structured planning and decision-making process. Stakeholder trainings and communications help to explain how users move from an initial vulnerability analysis to identifying potential actions, comparing multiple options, including cost-benefit considerations, and finally selecting an action or project concept for submission as a formal proposal.

Virtual office hours and one-on-one meetings provided Partners with additional opportunities to ask about Tool registration and strengthen community networks. Stakeholders were also invited to review and provide feedback on community guidance materials and the effectiveness of the overall use of the Blueprint Tool, with the process being continuous such that changes can continue to be incorporated.

River Basin Action Stakeholders

Several main groups were involved in developing the Action Strategy: the Blueprint Partners, River Basin Advisory Group, and the general public, including collaborations outside of regularly scheduled meetings. These groups met from March 2025 through July 2026 and were structured to include a diverse range of participants, including municipal and county staff, watershed experts, nonprofit leaders, and community representatives. The result is a network of individuals at varying levels of involvement that will continue to engage and grow after the action strategy is complete. Detailed information on the network of stakeholders and meeting summary notes can be found in **Appendix B**. The roles of Additional Collaborators and Councils of Government Participation in the process are included in the appendix.

Geographical representation of the basin was also a key consideration as stakeholder groups were formed. To create inclusive and effective groups, DEQ staff selected a diverse set of representatives from local and tribal municipalities, as well as regional and statewide resilience groups.

Blueprint Partners

Blueprint Partners are community leaders and end users who are interested in the Blueprint Tool and can assist with training and communication to other members of their community and the broader river basin. Partners had several opportunities to learn about the Blueprint process and Tool at information and hands-on training sessions. Details about this group and meeting summary notes are included in **Appendix B**.

Tar-Pamlico Blueprint Partners meeting in Rocky Mount

River Basin Advisory Group

Advisory Group members come from local and tribal governments, community and faith-based organizations, and other groups involved in flood-related issues across the basin.

RBAG members provided guidance on how to effectively engage with and use information from the NC Flood Resiliency Blueprint at the regional scale. They reviewed summaries of existing flood mitigation plans, flood risk and vulnerability analyses, and potential actions to strengthen regional flood resilience. They also helped prioritize these actions and offered feedback on DEQ's community guidance for using the Blueprint Tool and planning process.

Engagement with the General Public

Throughout the development of the River Basin Action Strategy, DEQ Basin Leads connected with community-focused individuals and organizations interested in the Blueprint Tool and planning process. While these groups wanted to stay informed, they were not identified as Blueprint Partners or Advisors due to limited capacity, roles that did not align with intended tool users, or commitments in other Blueprint river basins.

This two-way relationship building, which took place outside specific stakeholder meetings, enabled DEQ to share information and learn from communities. Participants shared their organization's priorities, challenges and on-the-ground experiences, many of which were in vulnerable, underserved, and under-resourced communities. Basin Leads provided updates and resources that could be shared with networks. These partnerships gave DEQ a clearer understanding of local needs and strengthened DEQ's engagement approach. They also ensured that the Blueprint Tool and planning process better supported DEQ's goal of making all of North Carolina's communities more resilient to flooding.

These additional collaborators include, but are not limited to:

- The Association of Mexicans in North Carolina (AMEXCAN)
- North Carolina Black Alliance (NCBA)
- NC Statewide Independent Living Council (SILC)
- Southern Coalition for Social Justice (SCSJ)
- North Carolina Budget & Tax Center (NCB&TC)
- North Carolina Conservation Network (NCCN)
- North Carolina Inclusive Disaster Recovery Network (NCIDR)
- Carolina Wetlands Association (CWA)
- Upper Coastal Plain Council of Governments
- Mid-East Commission
- North Carolina Department of Environmental Quality Division of Coastal Management
- NC State Coastal Dynamics Design Lab
- Jay Leggette (The Stimulus)

The NC Flood Resiliency Blueprint Program also hosted a public information session in March 2026. The session recording can be viewed on DEQ's YouTube page.

Tar-Pamlico RBAG meeting in Rocky Mount

Engagement with Under-Resourced Communities

To help ensure engagement efforts included the basin communities most affected by flooding, DEQ and project partners used a data-driven approach to identify areas with higher flood risk and greater social and economic challenges. This analysis combined national and state data with local knowledge to better understand where support and engagement were most needed.

Using mapping and analysis tools, the project team reviewed data on flood risk, economic conditions, and community vulnerability across the basin and identified and ranked areas based on overall vulnerability and flood risk. The initial findings were presented to the Basin Lead and the engagement team who work in these communities. Based on their input, additional communities and counties were identified for outreach.

DEQ then contacted representatives from these communities and invited them to take part in the engagement process, including Blueprint Partners and RBAG meetings. Stakeholders were also encouraged to meet one-on-one with the Basin Lead for more personalized conversations about the community's interest and ability to be involved in the Blueprint process. In some cases, outreach resulted in community representatives inviting the Basin Lead to present information about the Blueprint Tool and process to their local government.

This approach helped ensure outreach was fair and reached the communities most impacted by flooding. It also created new connections and strengthened existing relationships.

Detailed information on the data inputs used, findings, and additional outreach completed, are included in **Appendix B**.

Cape Hatteras Lighthouse

Village on Ocracoke Island, NC, near Pamlico Sound

FLOOD RISK PLANNING & ANALYSIS

A basin-scale risk and vulnerability analysis was completed to identify vulnerable areas within the basin and develop up to 20 new regional or multi-jurisdictional resiliency actions that mitigate the risk of flooding. The regional actions, however, may not mitigate all the risk within the basin. Local actions were selected to mitigate the residual risk, after the regional actions were in place.

The flood risk analysis estimated the potential damage to buildings and other infrastructure from flooding. The vulnerability analysis identified the areas that exhibit the highest levels of risk density across the basin. Where possible, regional or multi-jurisdictional resiliency actions were developed for the areas that exhibited the highest levels of risk density.

To develop a comprehensive list of areas vulnerable to flooding and potential mitigation actions, the risk and vulnerability analysis was completed separately for the combined riverine, rainfall-driven, coastal, and urban and stormwater flooding sources, and for the dam and levee breach flooding source. The combined riverine, rainfall-driven, coastal, and urban & stormwater flood risk was assessed under existing climate conditions and future climate conditions.

Explore Flood Data in the Blueprint Tool

Detailed flood maps and risk data can be explored through the Blueprint Tool (see the Tool's quick start guide). The Tool also includes impact assessments and community-scale vulnerability information for communities throughout the Tar-Pamlico River Basin. This data can be viewed within the Tool for local governments and organizations to explore, craft, analyze, and evaluate flood resilience actions.

Flood Risk Analysis

Riverine, Rainfall-Driven, Coastal, and Urban and Stormwater Flood Risk Analysis - Current Conditions

A part of the Blueprint process was the development of 2D Base-Level Engineering (BLE) deliverables, which included building-level risk data for current land use and precipitation conditions, reported as risk scores, for all impacted buildings in the Tar-Pamlico River Basin. A risk score provides an estimate of the likelihood that a structure would experience damage during a flood event using an annualized loss estimate (ALE) value and the building's replacement value (DEQ, 2025a).

Of the 263,866 total buildings within the basin, 19,926 had a risk score greater than zero based on current conditions modeling (**Figure 9**). Additional details can be found in **Appendix E**.

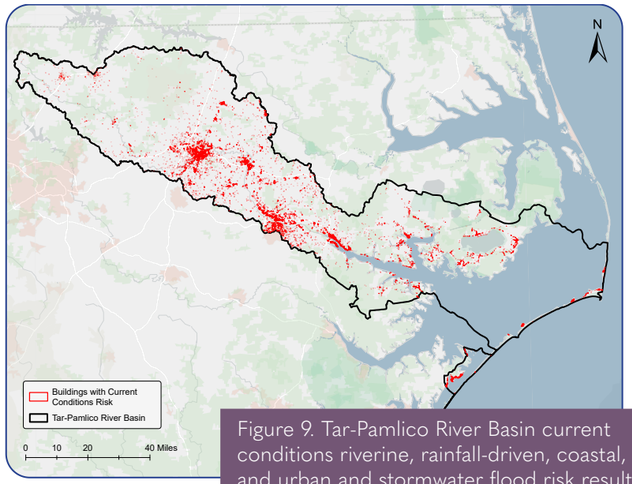


Figure 9. Tar-Pamlico River Basin current conditions riverine, rainfall-driven, coastal, and urban and stormwater flood risk results.

Riverine, Rainfall-Driven, Coastal, and Urban and Stormwater Flood Risk Analysis - Future Conditions

The NCEM 2D BLE models incorporated future land use and precipitation conditions for five climate scenarios (Mid Century Lower (MCL), Mid Century Higher (MCH), End of Century Lower (ECL), End of Century Higher (ECH), and the End of Century Severe (ECS) and two buildout conditions scenarios that incorporate future land use (2050 Buildout and 2100 Buildout). The MCL and MCH scenarios represent estimated future conditions for the year 2050. The ECL, ECH, and the ECS scenarios represent estimated future conditions for the year 2100. The future land use dataset is created by the US Environmental Protection Agency (EPA) and utilizes future population data to create scenarios that predict the land use through 2100 (US EPA, 2025). Further information on the modeling of the future and buildout conditions can be found in **Appendix E.**

To understand the total losses in relation to each future event, the ratio of the total losses relative to the total building replacement value was calculated, referred to here as the "damage ratio." The ratio was then scaled to make the possible range 0 to 100. A damage ratio value of zero indicates the flood depth would not cause any damage at that building and 100 indicates that the total losses were equal to the total building replacement value.

The future flood risk analysis indicates that there are 26,071 buildings impacted by at least one of the seven future or buildout condition scenarios (**Figure 10**). The results of the future flood risk analysis point to increased flood risk in the future. More information on the future conditions flood risk analysis can be found in **Appendix E**.

Figure 10. Tar-Pamlico River Basin future conditions riverine, rainfall-driven, coastal, and urban and stormwater flood risk results.

Dam and Levee Breach Risk

Within the Tar-Pamlico River Basin, there are 306 dams and four levee embankment systems: the Princeville Dike, Merita Bakery Levee, Deep Creek FDRP, and Swan Quarter Dike.

Four key criteria were summarized at the dam level to provide a comprehensive view of dam risk: the average building damage ratio, total building losses, maximum Annual Average Daily Traffic (AADT) disrupted (NCDOT, 2025), and impacts to other critical infrastructure. Levee breach risk analysis was performed on the four levee systems utilizing information from the National Levee Database (NLD) (USACE, n.d.), NCEM 2D BLE modeling, NC Statewide building footprints, and terrain data provided by NCEM (NCEM, 2026).

The risk levels for the 306 dams show a picture of dam breach flood risk. In total, 44 dams were identified as high risk, 13 moderate risk, and 249 low risk (**Figure 11**).

The Princeville Dike, Merita Bakery, and the Swan Quarter Dike levee systems were observed as high risk and the Deep Creek FDRP levee was observed as moderate risk based on the flood risk analysis. **Figure 12** identifies the area that would be impacted if each levee were to breach and floodwater is not held back.

Further information on the dam and levee breach flood risk analysis can be found in **Appendix E**.

Figure 11. Tar-Pamlico River Basin dam breach risk analysis results.

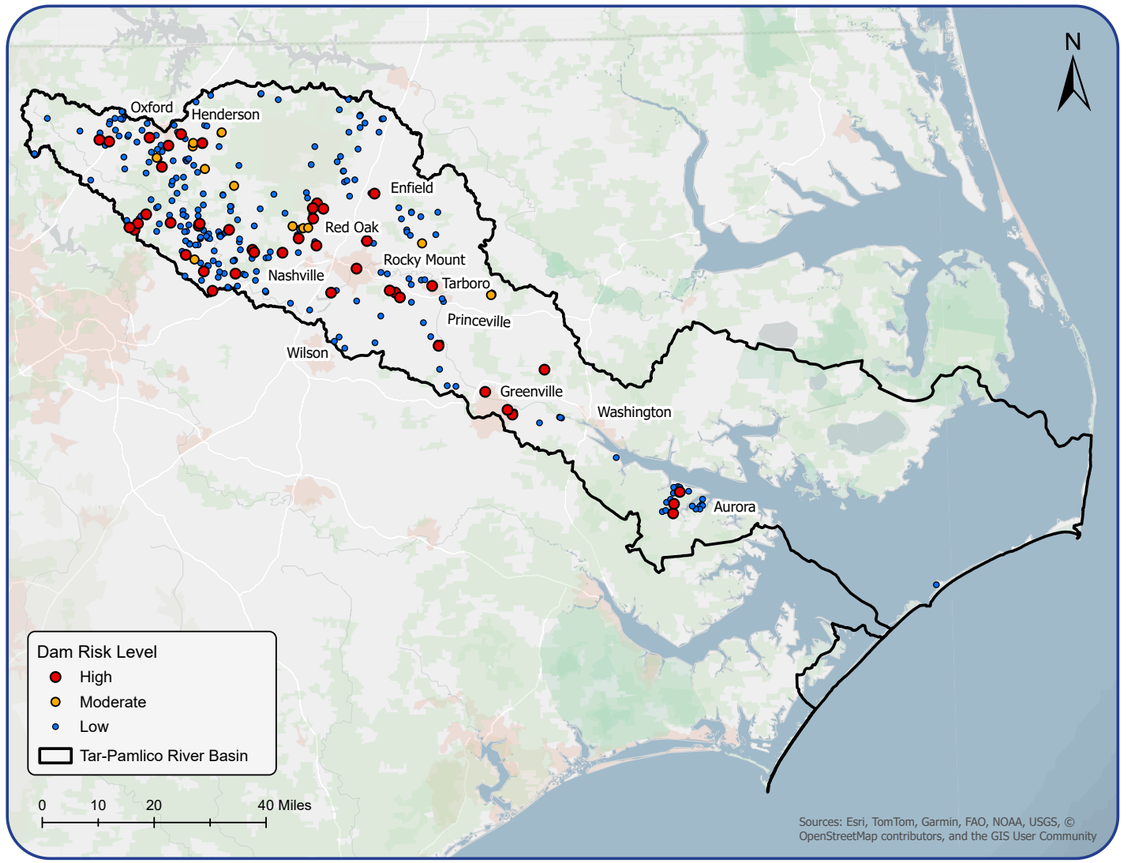
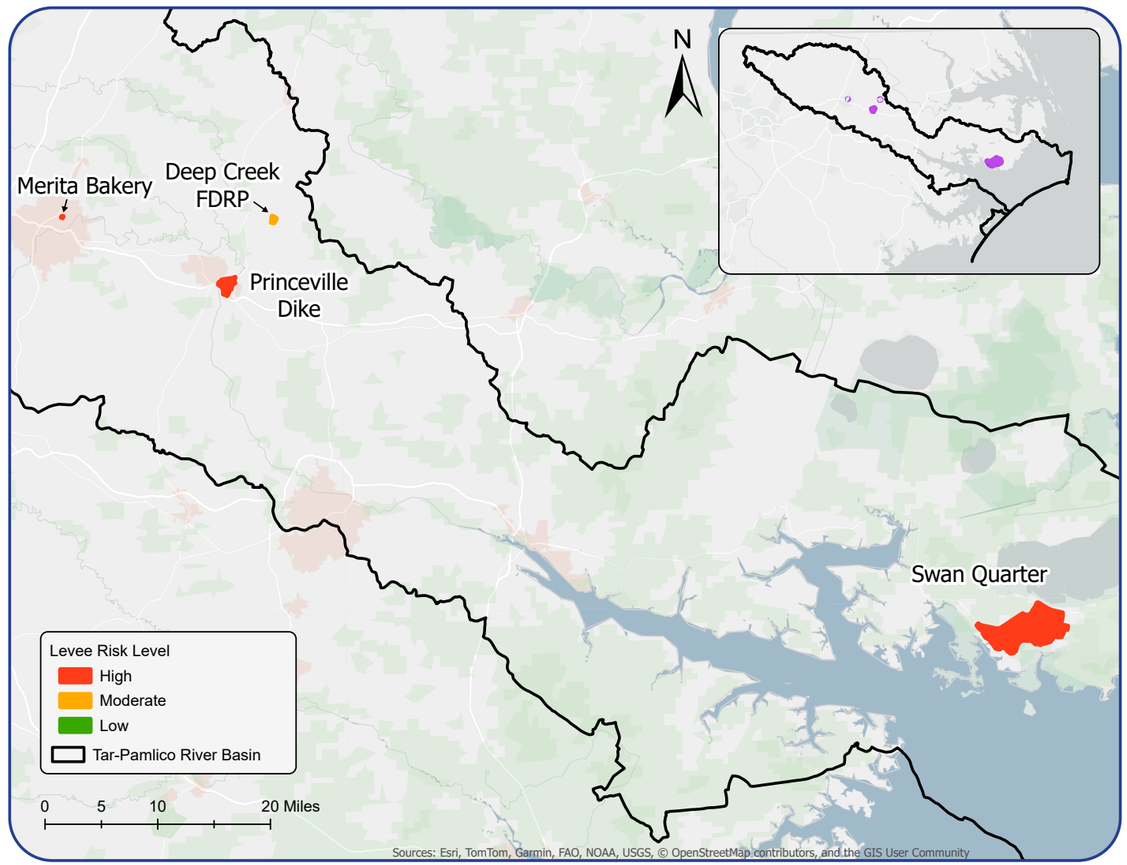


Figure 12. Tar-Pamlico River Basin Levee breach risk analysis results.



Flood Vulnerability Analysis

Riverine, Rainfall-Driven, Coastal, and Urban and Stormwater Vulnerability Analysis - Current Conditions

A cluster analysis was performed on the current conditions building risk results to delineate the regions with the highest risk density, denoting high vulnerability. Five concentrated areas of risk were identified as highly vulnerable within the Tar-Pamlico River Basin: the City of Rocky Mount and surrounding areas, the Town of Princeville and surrounding areas, the City of Greenville and surrounding areas, the City of Washington and surrounding areas, and Core Sound.

Riverine, Rainfall-Driven, Coastal, and Urban and Stormwater Vulnerability Analysis - Future Conditions

A cluster analysis was performed on the future conditions building risk results to delineate the areas with the highest risk density, indicating high vulnerability. The future conditions analysis indicates that the areas that are highly vulnerable under current conditions will be even more vulnerable in the future. There will also be new areas of vulnerability under future conditions: the Community of Lowland and surrounding areas, Lake Mattamuskeet and surrounding areas, and the Outer Banks. These results are elaborated further in **Appendix E**.

Dam and Levee Breach Vulnerability

Two factors that influence the likelihood of a dam breach are condition and age, with both metrics included in the NC Dam Inventory (DEQ, 2025b). A poor rating indicates that action may be necessary to reduce risk for realistic conditions, while an unsatisfactory rating indicates a deficiency that requires "immediate or emergency remedial action for problem resolution" (ASDSO, 2025). Therefore, the downstream impacted area of an identified high risk dam which is also noted as being in poor or unsatisfactory condition was classified as highly vulnerable.

The age of a dam is important because the quality and integrity of the structure itself can degrade over time. Older dams are also likely to have been designed using outdated design standards and may not be equipped to handle the same hydrologic loads as newer dams. As such, the downstream impacted area of an identified high risk dam which was also indicated as being over 50-years old was classified as highly vulnerable.

Overall, current analysis and available data identified 44 areas vulnerable to dam flooding. Of these, 22 of the areas were classified as highly vulnerable, as they are also downstream of dams with either an age greater than 50 years or in poor or unsatisfactory condition.

The National Levee Database (NLD) describes the condition and past performance of the levee, which provides context for the risk ratings. A levee with a history of overtopping or breaching may have remaining deficiencies that require mitigation. The Levee Safety Action Classification (LSAC) ratings and qualitative descriptions of condition, and history were gathered from the NLD. Taking these factors into consideration, areas protected by levees with high risk levels were considered vulnerable and high risk levees with noted condition issues or a history of failure were classified as highly vulnerable. Based on this classification, the Princeville Dike levee system was denoted as highly vulnerable and the other 3 levee systems within the basin (Merita Bakery, Deep Creek FDRP, and Swan Quarter Dike) were denoted as vulnerable.

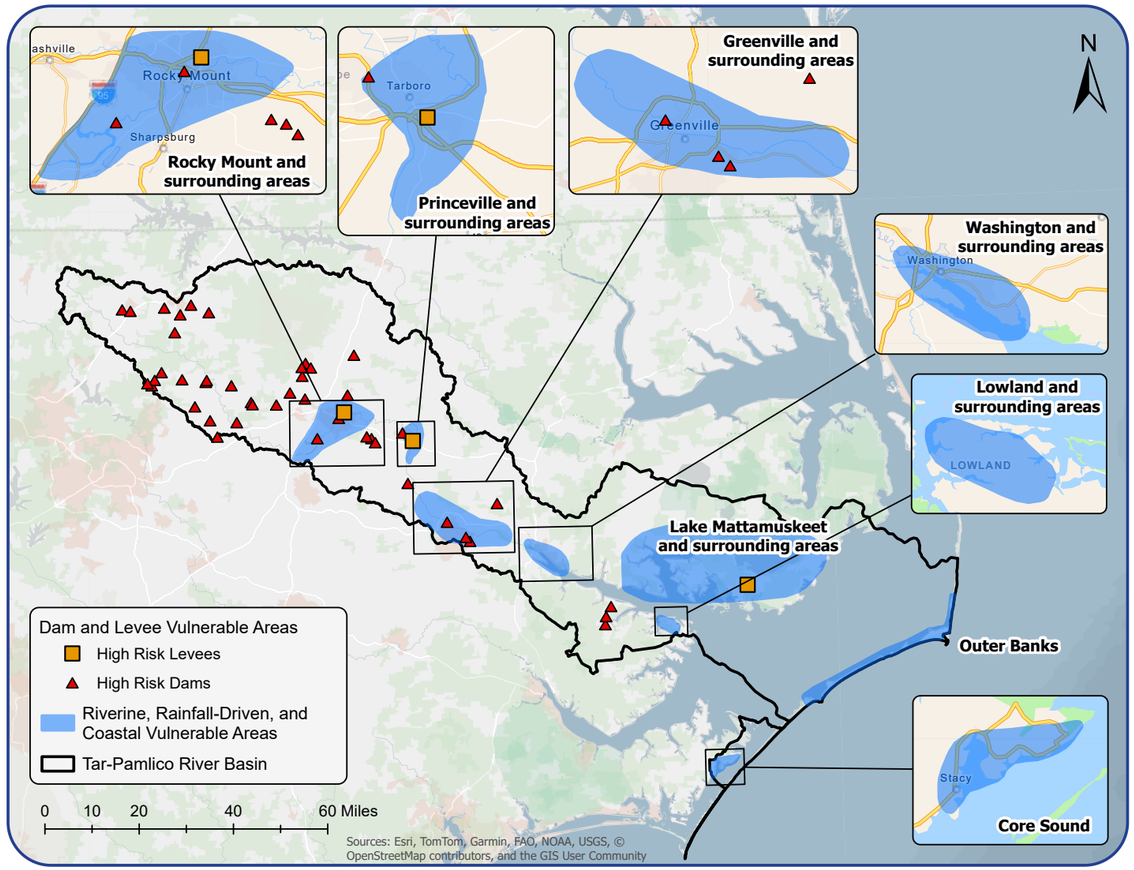
Detailed results of the vulnerability analysis can be found in **Appendix E**.

Bald cypress trees near Lake Mattamuskeet

Tar-Pamlico River Basin Flood Vulnerability Overview

The identified vulnerable areas for the Tar-Pamlico River Basin can be seen in **Figure 13**. The figure depicts the regions within the basin that are currently vulnerable or will become vulnerable to flooding in the future.

Figure 13. Riverine, rainfall-driven, and coastal vulnerable areas to flooding in the Tar-Pamlico River Basin.



Identification of Regional Resiliency Actions

The vulnerability analysis identified the regions or areas within the Tar-Pamlico River Basin that exhibit the highest flood risk for both future and current conditions. Regional actions were identified to mitigate flood risk within these vulnerable regions. If one action could not mitigate the flood risk within each vulnerable area, a group of actions was proposed that would mitigate the flood risk when implemented together. However, there were some areas where regional actions could not currently be identified to fully mitigate the identified flood risk. The proposed regional actions are:

1 **City of Rocky Mount and surrounding areas**
Floodplain Restoration, Stream and Drainage Maintenance System Program, and Dry Dam Construction

2 **Town of Princeville and surrounding areas**
Internal Drainage Improvements, Levee Construction in Shiloh Mills, Levee Construction in Tarboro, and Dry Dam Construction

3 **City of Greenville and surrounding areas**
Channel Widening and Floodplain Restoration

4 **City of Washington and surrounding areas**
No Identified Regional Actions

5 **Core Sound**
No Identified Regional Actions

6 **Community of Lowland and surrounding areas**
No Identified Regional Actions

7 **Lake Mattamuskeet and surrounding areas**
No Identified Regional Actions

8 **Outer Banks**
No Identified Regional Actions

9 **Basin-Wide Identified Dam Vulnerable Areas**
Regional Dam Inspections, Maintenance, and Modification or Removal

10 **Basin-wide Identified Levee Vulnerable Areas**
Levee System Inspection, Maintenance, Repairs, and Upgrades

11 **Residual Risk Areas**
Building Level Mitigation Program, Cleaning and Clearing Drainage Systems, and Roadway Upgrades

Specific details regarding all identified regional mitigation actions can be found in **Appendix E**.

ACTION REVIEW & SELECTION

This Tar-Pamlico RBAS translates flood vulnerability analyses and stakeholder engagement outputs into a set of flood resilience actions that can be advanced at the local, regional, or basin-wide scale. This RBAS documents a refined and prioritized action set, summarizes the evaluation of actions against metrics to identify high priority actions, and highlights key funding, capacity, and technical assistance needs to help move actions toward implementation.

The actions recommended in this RBAS were identified through two primary approaches: an inductive approach (locally prioritized actions) and a deductive approach (vulnerability assessment-based actions).

Locally Prioritized Actions

Locally Prioritized Actions reflect actions where local governments know that specific actions are needed. These actions were inductively collected from direct outreach to local government stakeholders and submitted as part of Local Action Plans in the Blueprint Tool.

Vulnerability Assessment Based Actions

Vulnerability Assessment Based Actions were compiled through a deductive process – they reflect recommended actions to mitigate flood risks identified through the Action Strategy's Vulnerability Assessment results. These actions:

1 Are pre-identified local actions from Hazard Mitigation Plans, North Carolina Resilient Redevelopment Plans, River Basin-wide Water Resources Management Plans, Comprehensive Transportation Plans, State Transportation Planning, and Local Plans & Projects (see **Appendix A**).

2 Are projects with potentially larger scale impacts (regional actions). The regional actions are modifications/adjustments to pre-identified (see **Appendix A**) or proposed conceptual actions.

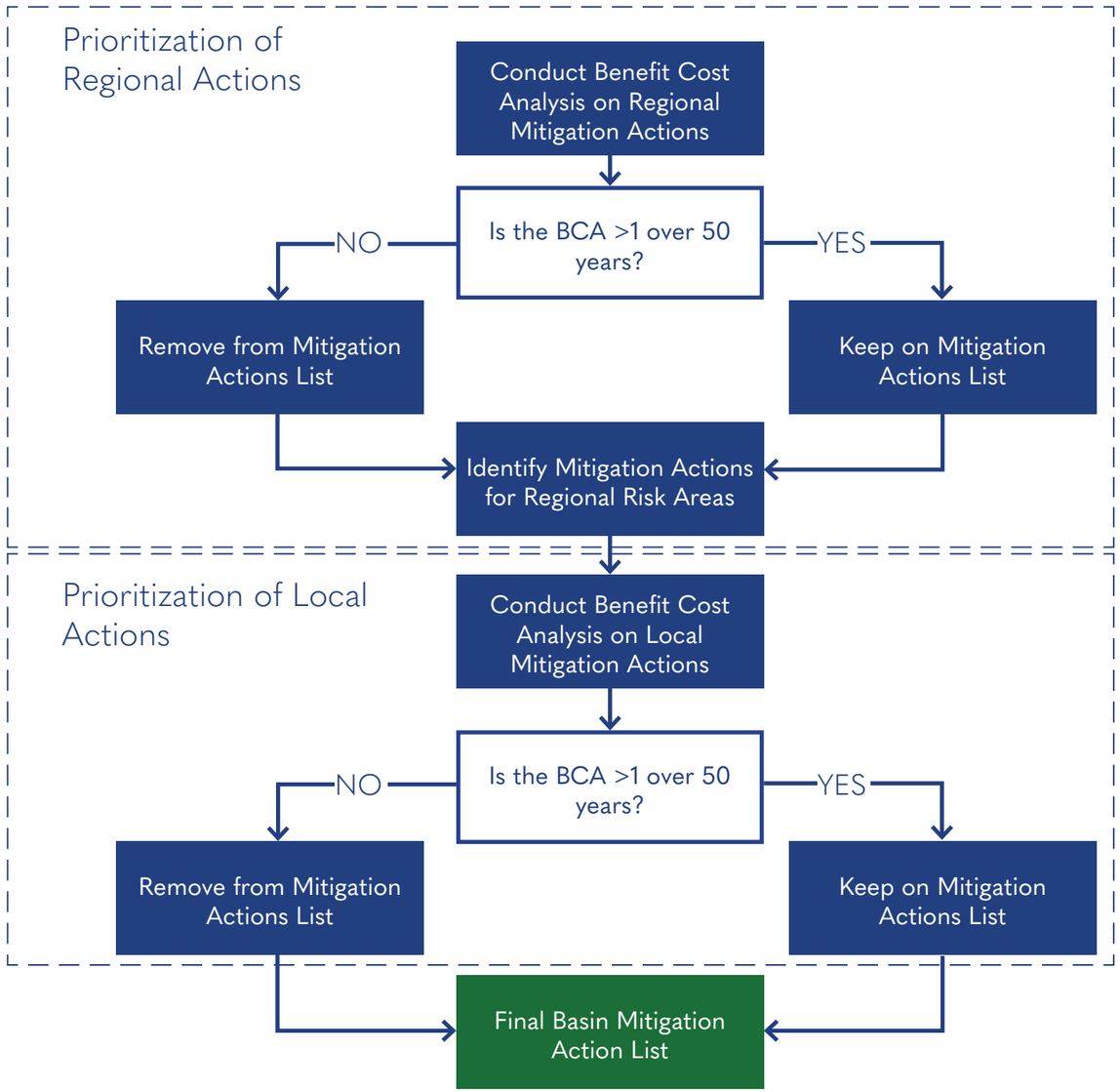
3 May address future vulnerability in addition to current flooding concerns.

Tar River, Greenville, NC

Vulnerability Assessment Based Actions were prioritized based on the workflow shown below. A benefit-cost analysis (BCA) approach was developed to prioritize the regional and pre-identified local resiliency actions. A BCA calculation divides the expected benefit of an action by the cost of an action. To account for the priorities of DEQ, communities, and stakeholders within the basin, a factored BCA was utilized. Actions with a benefit-cost ratio (BCR) of at least 1.0 over 50-years are considered cost-effective and were included in the final prioritized list.

All proposed regional actions and pre-identified local actions were considered for the prioritization workflow. To ensure that multiple actions that protect the same location were not selected, regional actions were analyzed first, followed by local actions. Refer to **Appendix F** for details about the BCA.

The flowchart below outlines the steps used in developing the prioritized mitigation actions list.



Lake Mattamuskeet at sunset

Benefit Cost Analysis Factors

The RBAG provided feedback that was used to develop a list of factors that represented community priorities. Factors are qualities of a resiliency action that were viewed positively (Benefit) or negatively (Cost) by stakeholders. Benefit factors apply a percentage increase to the value of the benefit in the factored BCA, increasing the BCR for a given action, while cost factors apply a percentage increase to the value of the cost in the factored BCA, decreasing the BCR. The following factors were incorporated into the benefit cost analysis for the Tar-Pamlico River Basin:

Level of Protection (Benefit)

Level of protection is defined as the proportion of the flood risk mitigated by an action in the affected area. The most effective actions, mitigating 90-100% of the flood risk receive a weight of 30%. An example of a highly effective action would be levee construction. Less effective actions, like wet floodproofing, that mitigate approximately less than 90% of risk receive a 0% weight.

Environmental Benefits (Benefit)

This factor considers the contributions of flood resiliency actions to the health of the environment, which can include improving water quality, increasing biodiversity and ecosystem health, and reducing erosion. Nature-based solutions received the highest weight of 20% due to the core design elements benefiting the environment. The middle tier, receiving a 10% weight, is for non-nature-based solutions that provide secondary environmental benefits. An example could include floodproofing at a wastewater plant that prevents pollutants from entering the environment during a flood event. Actions that do not have an environmental benefit beyond flood resilience are given a weight of 0%.

Aerial view from the top of Hatteras Lighthouse

Capital Cost (Cost)

A high capital cost can be a significant obstacle to implementing an action. Based on the range of estimates in the final action list, three tiers were created at natural break points after identifying clusters in the distribution of costs. The highest tier is for actions greater than $200 million and receives the full 20% weight. The middle tier is for projects with an implementation cost between $50 million and $200 million and receives a 10% weight. The lowest tier is for projects less than $50 million and receives no weight.

Risk of Failure (Cost)

The risk of failure reflects the severity of the consequences resulting from the failure of an action. The factor is separated into high risk actions, which receive a weight of 20%, moderate risk actions at 10%, and low risk actions at 0%. Examples of high risk of failure actions include new large dams and levees which have the potential to breach and severely damage protected areas. Examples of low risk actions include nature-based solutions and upgrading existing infrastructure. Moderate risk actions include channel modification and new non-high-hazard dams that introduce some failure risk to protected areas.

Maintenance Requirements (Cost)

Maintenance requirements include the frequency and cost of the upkeep necessary to ensure the implemented projects mitigate flooding as intended. Projects with a significant level of requirements received a weight of 20%, like floodgate construction, due to the specialized expertise requirement to operate and maintain the structure. Actions with a standard or regular level of maintenance requirements, like roadway upgrades, receive a weight of 10%, because they require consistent maintenance activities that would be more common in a community. A weight of 0% is given to project types with insignificant or minor maintenance requirements, like riparian buffers, which should not need significant additional work following implementation.

It is important to note that the BCA framework used in this study has been specifically tailored to reflect the priorities and objectives of this basin. While it is based on methodologies similar to those used by other agencies, such as FEMA, the customized approach and assumptions applied in this analysis may produce results that differ from those generated using the standard BCA methods employed by those agencies.

TAR-PAMLICO RIVER BASIN PRIORITIZED ACTIONS

Lake Mattamuskeet Lighthouse, NC

What is an Action?

An action is a proactive flood mitigation or resilience measure implemented to minimize an area's vulnerability and risk of flooding and associated disruptions and damages. The Blueprint Tool organizes actions into five main categories: Building Level Mitigation, Channel Modification, Infrastructure & Control Structures, Nature Based Solutions, Policy & Planning, and Other. A selected action may be implemented on a local, regional, or basin-wide scale. The action type will determine the level of coordination required.

Building Level Mitigation

A building level mitigation action focuses on the physical changes that can be implemented on an individual structure to reduce flood risk. Action types within this category include Acquisition/Demolition (purchasing and/or removing flood-prone structures), Dry Floodproofing (making structure watertight to prevent floodwaters from entering), Mitigation Reconstruction (rebuilding or updating a structure to improved standards and codes), Relocation (moving a structure out of flood-prone areas), Structural Elevation (raising the structure first-floor elevation above predicted flood levels), Utility Elevation (raising critical mechanical, electrical, and plumbing systems), and Wet Floodproofing (designing a structure to allow water to enter certain areas while minimizing damage and protecting critical infrastructure).

Building level mitigation allows for small-scale targeted resiliency actions from an individual property to a neighborhood-scale based on specific needs. While implementation only impacts the specific residents and structure, these actions serve to protect property and life. Since these actions operate at the individual structure scale, they can sometimes be faster to implement but may face funding and property ownership challenges. Acquisition of at-risk properties shall be undertaken exclusively on a voluntary, property-by-property basis. Participation by property owners is entirely optional and the State does not intend to pursue involuntary acquisition or the use of eminent domain for these properties.

Action Types

- **Acquisition/Demolition**
- **Dry Floodproofing**
- **Mitigation Reconstruction**
- **Relocation**
- **Structural Elevation**
- **Utility Elevation**
- **Wet Floodproofing**

Channel Modification

Channel modification actions involve natural or engineered solutions to alter waterways and improve the water storage capacity and functionality. Action types within this category include Channel Dredging, Widening, and Diversion which entails deepening, expanding, or changing the flow path of the channel to increase capacity or Debris Removal where any natural or artificial debris blockages in the channel are removed such that the channel can more closely perform as normal during flooding events. These actions target improving the flow of water through channels which can minimize the risk of flooding to surrounding buildings, roadways, and critical infrastructure. Depending on the waterway and flooding event intensity these actions may need to be repeated to maintain optimal channel performance.

Action Types

- **Channel Dredging**
- **Widening**
- **Diversion**
- **Debris Removal**

Infrastructure & Control Structures

Infrastructure and control structure actions focus on structure implementation to divert water from vulnerable areas. Action types for this category include Critical Infrastructure protection (to protect utilities and essential services), Levee/Dike/Berm construction (to contain, divert, or control water flow), New and Existing Dam Structures (to control water flow and storage), Quarries (repurposed to serve as temporary flood water storage), Roadway Elevation/Road Crossing Modification (raising or modifying roadways to improve accessibility during floods), and Storm Water Management Activities (planning, design, and implementation of stormwater infrastructure to reduce flood risk). These actions are generally implemented within communities and are key to protecting the residents, structures, and critical infrastructure during flooding events and minimizing disruptions to communities.

Action Types

- **Critical Infrastructure**
- **Levee/Dike/Berm**
- **New and Existing Dam Structures**
- **Quarries**
- **Roadway Elevation/Road Crossing Modification**
- **Storm Water Management Activities**

Coastal Trail in Washington, NC

Nature Based Solutions

Nature based solutions (NBS) actions utilize sustainable planning, design, environmental management, and engineering practices that focus on natural processes and features to reduce flood risk. Action types include Afforestation (planting forest vegetation to reduce flow velocity), Bioretention (using soil and vegetation to promote infiltration and storage of flood waters), Flood Storage Wetlands (engineered or restored wetlands designed to capture, store, and gradually release flood waters), Floodplain Preservation (protecting floodplains to maintain natural ability to absorb and reduce flood waters and mitigate erosion), Floodplain Restoration (rehabilitating degraded floodplains to enhance their ability to perform as intended), Green Roofs (incorporates vegetation on rooftops to intercept rainfall and reduce runoff), Living Shorelines (use of native materials to stabilize a shoreline and enhance wildlife habitat), Permeable Pavement (infiltrate runoff to reduce flood risk in the implemented traffic areas), Raingardens/Sand Filters/Bioswales (engineered green infrastructure to capture runoff and promote infiltration), and Riparian Buffers (areas of healthy vegetation from grasses to woody shrubs that reduce runoff speed and promote infiltration). Implementing an NBS action can assist in flood risk mitigation while also offering additional benefits of promoting biodiversity and wildlife habitat, improved aesthetic value, and public green space.

Action Types

- **Afforestation**
- **Bioretention**
- **Flood Storage Wetlands**
- **Floodplain Preservation**
- **Floodplain Restoration**
- **Green Roofs**
- **Living Shorelines**
- **Permeable Pavement**
- **Raingardens/Sand Filters/ Bioswales**
- **Riparian Buffers**

Policy & Planning

Policy and planning actions focus on regulations that will impact land use, management, and future development to manage and mitigate flood risk. Action types include Advanced Regulations, focusing on GIS capacity building, land use and impervious surface restrictions, and enhanced zoning (adopts stricter standards such as higher freeboard requirements, not allowing certain construction, and stricter rules for critical facilities), Multi-use Floodplains (restored or managed floodplains that provide flood storage and infiltration along with secondary benefits such as community green space or wildlife habitats), and Stormwater, Water Quality, and Floodplain Regulations (polices and regulations to control stormwater volume and flow, reduce pollutants in waterways, and preserve or restore floodplains). The policies and planning will build more long-term flood resilient communities and infrastructure.

Action Types

- **Advanced Regulations (GIS Capacity Building)**
- **Advanced Regulations (Land Use and Impervious Surface Restrictions)**
- **Advanced Regulations (Enhanced Zoning)**
- **Multi-use Floodplains, and Stormwater, Water Quality, and Floodplain Regulations**

Other

There are some actions that do not fit into the defined categories and designated as 'Other'. These include Beaver Management (allows for the restoration of waterways to remove flood risk from artificial dams), Coastal-Building Mitigation (building level mitigation actions focused on structures impacted by coastal flooding including tidal flooding, storm surge, and sea level rise), and Coastal-Road Elevation/Modification (infrastructure improvements to raise or modify roadways to endure coastal and tidal conditions and sustain transportation). These actions, although more individualized, provide critical flood resilience to communities.

Action Types

- **Beaver Management**
- **Coastal – Building Mitigation**
- **Coastal – Road Elevation/ Modification**

Where and Why are these Actions Needed?

Resiliency actions are needed to mitigate flooding risk within the basin and to build more long-term resilient communities. Without these actions, the basin and its population will continue to be vulnerable to flood risk. The identified flood hazard type and vulnerability and risk of an identified area along with the area's characteristics including population, properties at risk, geographical limitations, and infrastructure will determine which action category and type is most applicable.

Buxton, NC Outer Banks

PRIORITIZED RESILIENCY ACTIONS

The prioritized or selected resiliency actions for the Tar-Pamlico River basin are the vulnerability assessment-based actions with calculated benefit cost ratios (BCR) of at least one over a 50-year project life period, and locally prioritized actions by communities.

As previously noted, locally prioritized actions reflect actions where local governments know that specific actions are needed. These actions were inductively collected from direct outreach to local government stakeholders and submitted as part of Local Action Plans in the Blueprint Tool. BCRs were not calculated for locally prioritized actions as they do not yet have detailed cost estimates.

Local governments are strongly encouraged to maintain current flood resilience actions in their Local Action Plans through the Blueprint Tool. This enables communities to track the status of planned and implemented projects, identify potential co-benefits, and provide DEQ with greater visibility into basin-wide technical and financial needs. Projects identified as priorities in Local Action Plans qualify for consideration for Blueprint funding.

The prioritized resiliency actions for the Tar-Pamlico River basin are shown in **Figure 14** and **Table 2**.

Figure 14. Tar-Pamlico River Basin prioritized resiliency actions.

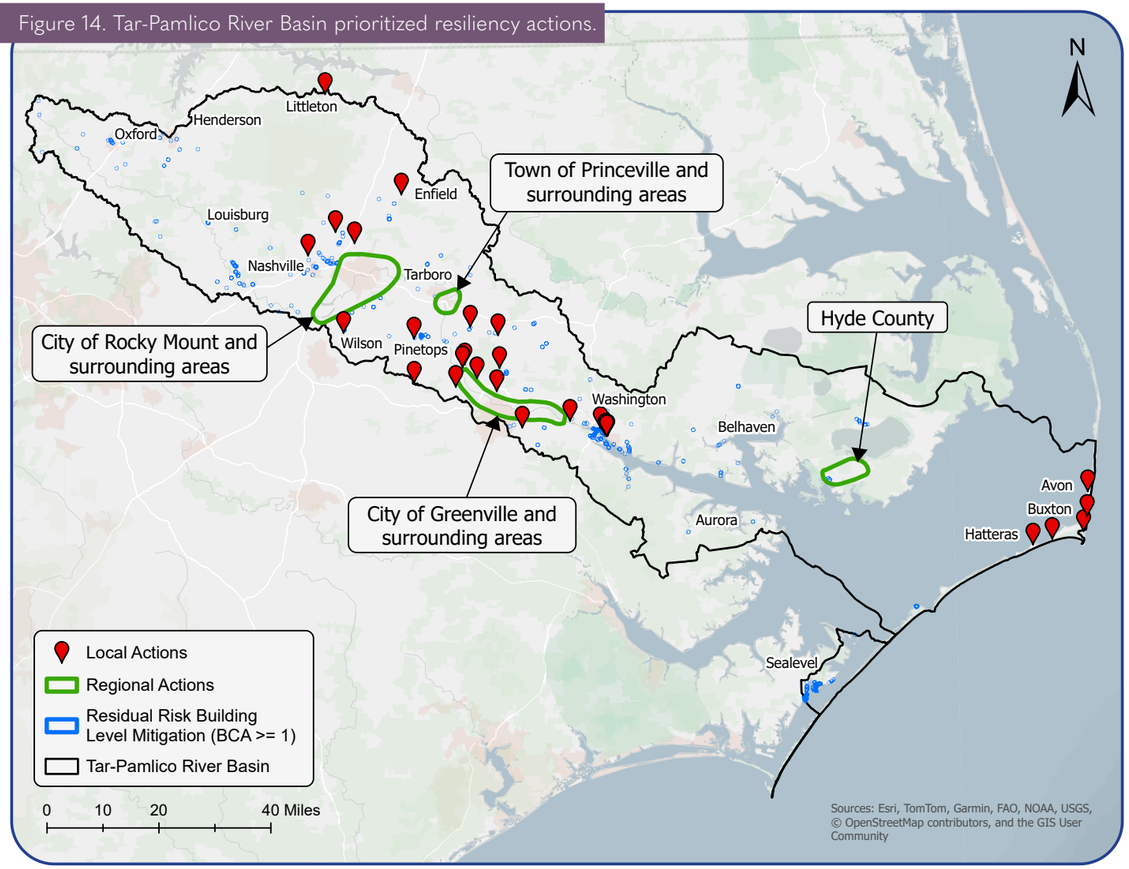


Table 2. Prioritized Resiliency Actions List for the Tar-Pamlico River Basin

Resiliency Action Name	Jurisdictions	Regional, Local, or Building Level?	Action Descriptions	Action Type(s)	BCR
Littleton Butterwood Creek Drainage Improvements	Town of Littleton	Local	Drainage improvements to improve flow of stormwater to Butterwood Creek; including culvert replacements on Ferguson Street; grading improvements along E Warren St; and ditch cleanout between Ferguson Street and Butterwood Creek to prevent recurring flooding on adjacent residential properties; including those along Habitat Way.	Critical Infrastructure	-
Emergency Shelter Feasibility Study within the Upper Coastal Plain COG	Town of Nashville; Town of Enfield; and City of Wilson	Local	Emergency shelter Feasibility Study--conduct a feasibility analysis for identifying a large (400+ person) regional facility that could be utilized as a shelter during disasters and emergencies.	Critical Infrastructure	-
Prioritization of Critical Facilities Vulnerable to Flooding in the Upper Coastal Plain COG	Town of Nashville; Town of Enfield; and City of Wilson	Local	This project identifies critical facilities that are accessible by road that tend to flood during storm events. The report notes locations in Wilson; Enfield; Edgecombe County; and Nashville.	Critical Infrastructure	-
Flood-Resilient Roadways for Critical Facilities in the Upper Coastal Plain Region COG	Town of Nashville; Town of Enfield; and City of Wilson	Local	Project D Flood-Resilient Roadways for Critical Facilities: create a prioritized list of regionally significant critical facilities that are vulnerable to flooding. In addition; the project will apply for funding to prevent flooding in priority locations that experienced inundations in previous storms (e.g.; Hurricanes Matthew; Florence; Floyd).	Critical Infrastructure	-

Resiliency Action Name	Jurisdictions	Regional, Local, or Building Level?	Action Descriptions	Action Type(s)	BCR
Enfield Drainage Improvements	Town of Enfield	Local	Downtown Enfield, NC has experienced localized flooding issues that have put several homes and the downtown library at risk of flood damage. This action, originally proposed in the Halifax County Hurricane Matthew Resilient Redevelopment Plan, is for upgrades to drainage structures and the improvement of the drainage system within historic downtown Enfield.	Storm Water Management Activities	2.72
City of Rocky Mount and surrounding areas Regional Action	City of Rocky Mount and surrounding areas	Regional	• Floodplain Restoration • Stream and Drainage Maintenance System • Levee System Inspection, Maintenance, Repair, and Upgrades (Merita Bakery Levee System)	Multiple	5.70
Elm City Emergency Generator Replacement for Critical Facilities	Town of Elm City	Local	Obtain a mobile emergency power generator for critical town facilities. The unit will replace an old and undersized generator that does not meet needs. New unit will be utilized during flood and disaster events for power at Emergency Spaces being detailed in town's Emergency Response Plan - Town Hall, Police Sub-station, and/ or Train Depot depending on flood water location(s), evacuation, and community need.	Critical Infrastructure	-
Pinetops Wastewater Treatment Facility	Town of Pinetops	Local	This project will assist the Pinetops WWTP with their susceptibility to flood during storms. Barriers would be provided, whether it is a berm or another structure, to keep the flood waters out of the plant, while keeping the untreated water in.	Critical Infrastructure	-

Resiliency Action Name	Jurisdictions	Regional, Local, or Building Level?	Action Descriptions	Action Type(s)	BCR
Town of Princeville and surrounding areas Regional Action	Town of Princeville and surrounding areas	Regional	• Internal Drainage Improvements • Levee Construction (Shiloh Mills) • Levee Construction (Tarboro), • Levee System Inspection, Maintenance, Repair, and Upgrades (Princeville Dike)	Multiple	3.13
Fountain Stormwater Project	Town of Fountain	Local	Stormwater Action Plan for a property in Fountain, NC. The drainage ditch next to the property is not functioning properly, preliminary assessment reveals the drain line is lower than the outlet. Engineering and reconstruction is anticipated to remedy this flood risk.	Storm Water Management Activities	-
Conetoe Community Park Drainage Improvements	Town of Conetoe	Local	Drainage Improvements and detention/infiltration area installation at Conetoe Community Park to improve flooding at Conetoe Station Community Center (201 Dawson St) and surrounding residential neighborhood.	Storm Water Management Activities	-
NC-33 New Bridge over Conetoe Creek	Pitt County	Local	The project will construct a bridge along NC-33 over Conetoe Creek near Greenville, NC. The 4,400 square foot bridge will span 12,264 feet of roadway and increase the hydraulic capacity of the structure.	Roadway Elevation/ Road Crossing Modification	-
Holland Road Bridge Replacement	Pitt County	Local	Conduct a bridge replacement along Holland Road near Bud Parker Road in Greenville, NC. The new concrete bridge will span 6,181 ft in roadway and have an area of 2,100 square feet. The bridge replacement will increase the hydraulic capacity of the structure.	Roadway Elevation/ Road Crossing Modification	-

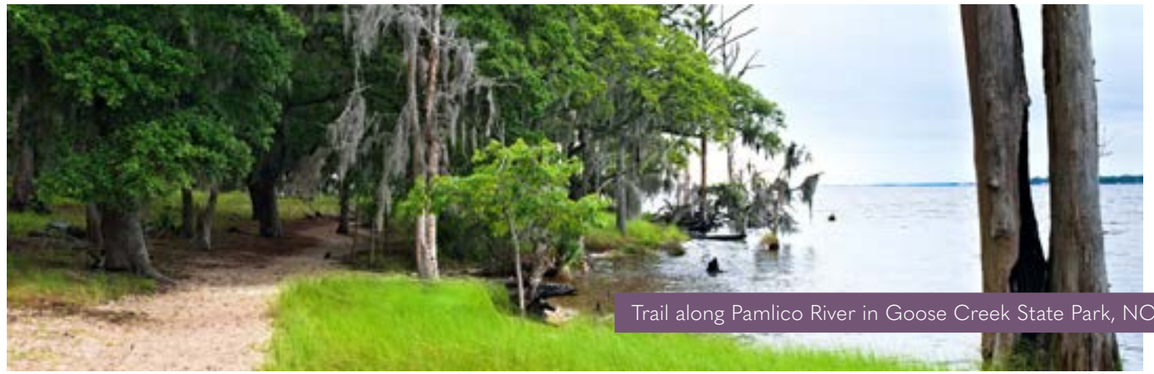
Resiliency Action Name	Jurisdictions	Regional, Local, or Building Level?	Action Descriptions	Action Type(s)	BCR
NC-121 - New Bridge over Lawrence Run	Pitt County	Local	The project will construct a bridge along NC-121 over Lawrence Run near Greenville, NC. The 4,757 square foot bridge will span 8,250 feet of roadway and increase the hydraulic capacity of the structure.	Roadway Elevation/ Road Crossing Modification	-
North US-13/NC-11 Business New Bridge/Culvert	Pitt County	Local	This project constructs a raised bridge across Grindle Creek along North US-13/ NC-11 in Greenville, NC. The 4,100 sqft bridge will span 15,338 feet of roadway and increase the hydraulic capacity of the structure.	Roadway Elevation/ Road Crossing Modification	-
Briley Road Culvert Upsizing	Pitt County	Local	Conduct an upsize of the culvert across Briley Road near the intersection of Gum Swamp Road. Upsizing the culvert will increase the capacity of the crossing and reduce the overflow impacting the nearby buildings.	Roadway Elevation/ Road Crossing Modification	-

Island Town of Hatteras in the Outer banks, NC

Resiliency Action Name	Jurisdictions	Regional, Local, or Building Level?	Action Descriptions	Action Type(s)	BCR
NC-11 Bridge Raising	Pitt County	Local	This project constructs a raised bridge across Grindle Creek along NC-11 in Greenville, NC. The 8,200 square foot bridge will span 12,919 feet of roadway and increase the hydraulic capacity of the structure.	Roadway Elevation/ Road Crossing Modification	-
City of Greenville and surrounding areas Regional Action	City of Greenville and surrounding areas	Regional	• Channel Widening • Floodplain Restoration	Multiple	5.40
Greenfield Terrace - Multi Use Flooding Response Hub	City of Greenville	Local	This action will develop a multi use floodplain which would include the opportunity for educational programs; walking trail up to the boys and girls club; would install a gymnasium which would provide recreation during blue sky scenarios. During flooding events this would be a disaster resource warehouse location for the first responder and disaster relief organization staging.	Multi-Use Floodplains	-
Tar-Pamlico Tributary Snag and Drag	Pitt County	Local	Conduct debris removal along tributaries of the Tar River within Pitt County. 130,038 feet of stream would be cleared to allow the channels to flow more smoothly.	Debris Removal	-
Tar River Main Channel Snag and Drag	Pitt County	Local	Conduct debris removal along the Tar River reach within Pitt County. 186,276 feet of stream would be cleared in order to allow the channel to flow more smoothly.	Debris Removal	-

Resiliency Action Name	Jurisdictions	Regional, Local, or Building Level?	Action Descriptions	Action Type(s)	BCR
Jack's Creek Flood Resiliency Project	City of Washington	Local	The action will complete infrastructure projects identified from recent community planning processes that upsize current infrastructure in flooding hotspots. The actions to be completed provide considerable stormwater volume storage (on city-owned lands); a floodplain restoration project already completed; impoundment dredging of 55;000 cubic yards of material from the Jack's Creek impoundment area; automated trash screens to protect the stormwater pump station; and an ongoing monitoring and education program to ensure long-term viability of the project.	Floodplain Preservation	-
Washington Park Green Stormwater Infrastructure	Town of Washington Park	Local	This project looks to incorporate green infrastructure into the current stormwater system along Riverside Drive and West Isabella Avenue in Washington Park, NC, Bioretention ponds, permeable pavement, or a submerged gravel wetland have been proposed as solutions for drainage issues.	Storm Water Management Activities	2.51
Washington Park Stormwater Action Plan	Town of Washington Park	Local	This project will complete a stormwater ground assessment and surface hydrology analysis that will be incorporated into an online mapping system that can submit real-time data to analyze; prioritize and take action on potential problem areas. The plan will also incorporate a maintenance plan.	Stormwater; Water Quality; Floodplain Regulations	-

Resiliency Action Name	Jurisdictions	Regional, Local, or Building Level?	Action Descriptions	Action Type(s)	BCR
Washington Park Tributary Improvements	Town of Washington Park	Local	This project looks to increase flood capacity along the tributary running east of Isabella Avenue and Shorewood Drive. Improving this tributary would allow the channel to hold more water during high storm events; thus reducing flooding within the town. Specific improvements could include bioswales; stream restoration; floodplain restoration and/or wetland creation.	Roadway Elevation/ Road Crossing Modification	-
Washington Park Flood Attenuation Park	Town of Washington Park	Local	This project looks to create a park along Riverside Drive in Washington Park, NC that would be used as the first barrier from flooding. Rain gardens and stormwater wetlands will be implemented to achieve this goal, and the recreational aspects of the park will be upgraded and maintained for the residents of Washington Park to enjoy.	Storm Water Management Activities	1.06
Hyde County Regional Action	Hyde County (Swan Quarter Dike)	Regional	The action involves increasing the level of protection of the Swan Quarter Dike to protect from flooding. The action also supports the inspection, maintenance, and repairs for the dike.	Multiple	1.33



Trail along Pamlico River in Goose Creek State Park, NC

Resiliency Action Name	Jurisdictions	Regional, Local, or Building Level?	Action Descriptions	Action Type(s)	BCR
Hatteras Village Storm Drainage Study and Improvement	Community of Hatteras Village	Local	Dare County has conducted a storm drainage study and recommends improvement for areas of Hatteras Village that were called out by a citizen survey as flooding hot spots within the village. The study identifies swales, existing culvert structures, and grading at these locations and provides recommendations on how to combat the flooding in these areas. Dare County has received most of the funding for these projects, and it needs additional funding to move to implementation.	Storm Water Management Activities	23.63
Frisco Fire Station & Community Resilience Hub	Dare County	Local	Replace critical facility built before FEMA Flood Ordinance adopted. Building sits (4ft) below FEMA (6ft) and Local (9ft) Flood Elevation Standards. Existing Fire Station is frequently exposed to flooding. The proposed project will allow for uninterrupted emergency response capability during flood events; reduce long term disaster costs; and protect essential emergency apparatus.	Mitigation Reconstruction	-
Buxton Storm Drainage Study and Improvement	Town of Buxton	Local	Dare County has conducted a storm drainage study and recommends improvement for areas of Buxton that was called out by a citizen survey as flooding hot spots within the village. The study identifies swales, existing culvert structures, and grading at these locations and provides recommendations on how to combat the flooding in these areas.	Debris Removal	-

Resiliency Action Name	Jurisdictions	Regional, Local, or Building Level?	Action Descriptions	Action Type(s)	BCR
NC HWY 12 Long Term Transportation Improvements	Dare County	Local	Construct bridge to address vulnerable section of NC HWY 12 between Avon and Buxton.	Roadway Elevation/ Road Crossing Modification	-
Avon Stormwater Improvements	Dare County	Local	Construct and install stormwater infrastructure improvements and roadside swales to reduce flooding caused by rainfall and ocean overwash.	Storm Water Management Activities	-
Building Level Mitigation	Tar-Pamlico River Basin Residual Risk Areas	Building Level	At-risk buildings outside the areas of impact of the regional mitigation actions were analyzed to determine the cost effectiveness of implementing building level mitigation techniques. Acquisition, relocation, elevation, dry floodproofing, and wet floodproofing were analyzed as potential mitigation actions across impacted buildings in the basin.	Miscellaneous Building Level Mitigation Actions	-
Seek Funding to Facilitate Implementation of Flood Mitigation Alternatives and Water Quality Recommendations	City of Greenville	Local	Continue to proactively seek out funding through NCEM, FEMA, and other sources to facilitate implementation of the Flood Mitigation Alternatives and Water Quality Recommendations of the most recent adopted City of Greenvile Watershed Master Plans.	Stormwater Management Activities	-

Additional details on the prioritized vulnerability assessment-based actions with benefit-cost ratios are provided below. Locally prioritized actions that were submitted to the Blueprint Tool do not necessarily have a BCR due to lack of information. However, they have robust evaluation and descriptions, which are included in the Blueprint Tool outputs in Appendix H.

The vulnerability assessment-based actions are either proposed or pre-identified actions. Proposed actions are actions that were developed through Step 3 of the Blueprint Process based on the results of the flood risk and vulnerability analysis. These actions are conceptual and would require future feasibility studies to determine effectiveness. Pre-identified actions are actions that have been identified through the research performed in Step 1 of the Blueprint Process. These actions have been previously proposed in existing studies, plans, and programs.

City of Rocky Mount and surrounding areas Regional Action

Jurisdiction:	City of Rocky Mount and surrounding areas
Cost:	$153,186,006
Status:	Proposed

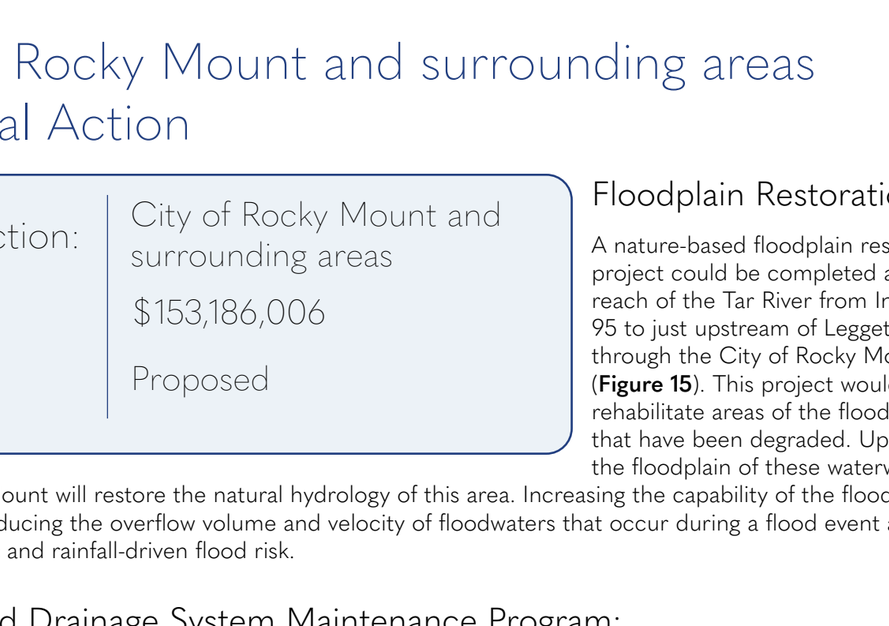
Floodplain Restoration:

A nature-based floodplain restoration project could be completed along the reach of the Tar River from Interstate 95 to just upstream of Leggett Road through the City of Rocky Mount (**Figure 15**). This project would rehabilitate areas of the floodplain that have been degraded. Updating the floodplain of these waterways within Rocky Mount will restore the natural hydrology of this area. Increasing the capability of the floodplains can assist in reducing the overflow volume and velocity of floodwaters that occur during a flood event and reduce riverine and rainfall-driven flood risk.

Stream and Drainage System Maintenance Program:

Clogged streams and drainage systems within the City of Rocky Mount will cause flooding during a storm event, putting infrastructure, buildings, and residents at risk. These areas should be inspected regularly and before major storms to determine if they would benefit from cleaning and clearing to improve overall function (**Figure 16**). Any location within the stormwater drainage system that is clogged can result in ponding and increase the risk of rainfall-driven flooding. Inspection and cleaning of the network ensures that rainfall-driven flood waters within the protected area are efficiently diverted away, mitigating risk.

Figure 15. City of Rocky Mount and surrounding areas floodplain restoration location.



Levee System Inspection, Maintenance, Repair, and Upgrades (Merita Bakery Levee System):

This action supports the inspection, maintenance, repair, and upgrades for the Merita Bakery levee system near the intersection of North Church Street and Airport Road within the Tar-Pamlico River Basin (**Figure 17**). Currently, USACE indicates that levees that are under their jurisdiction should be inspected every 5 years (USACE, 2024). Regardless of jurisdiction, inspections on this system should be conducted more frequently, particularly after severe flood-loading events to ensure potential overtopping or breaching or any structural deficiencies are identified and addressed early. This could include standard repairs and upgrades and adaptations to the system to evolve the protection with changing conditions and community needs. Regular and routine maintenance should also be done on this system to extend the life cycle. It should be noted that the private ownership of the system presents additional challenges that may affect both the funding and implementation of this action.

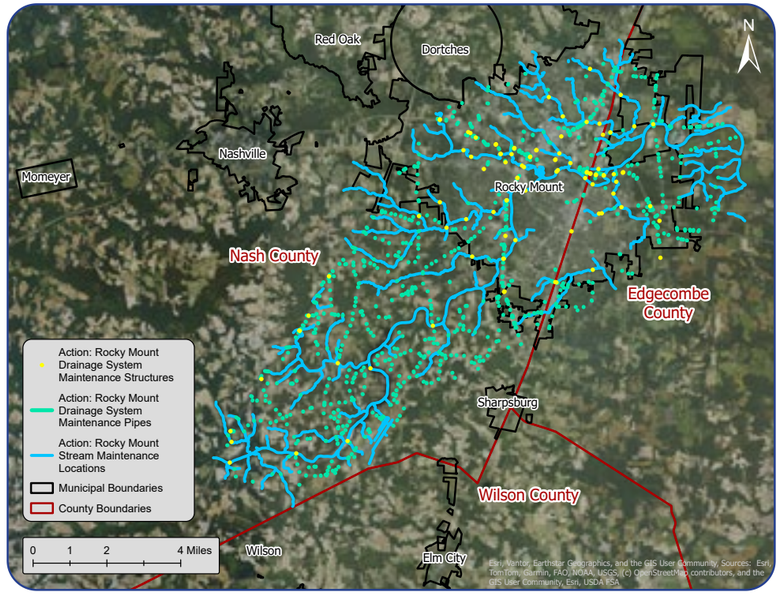


Figure 16. City of Rocky Mount and surrounding areas stream and drainage system maintenance program location.

Figure 17. Merita Bakery Levee System inspection, maintenance, repair, and upgrades extent.

Town of Princeville and surrounding areas Regional Action

Jurisdiction:	Town of Princeville and surrounding areas
Cost:	$68,673,662
Status:	Proposed

Figure 18. Town of Princeville and surrounding areas internal drainage improvements location.

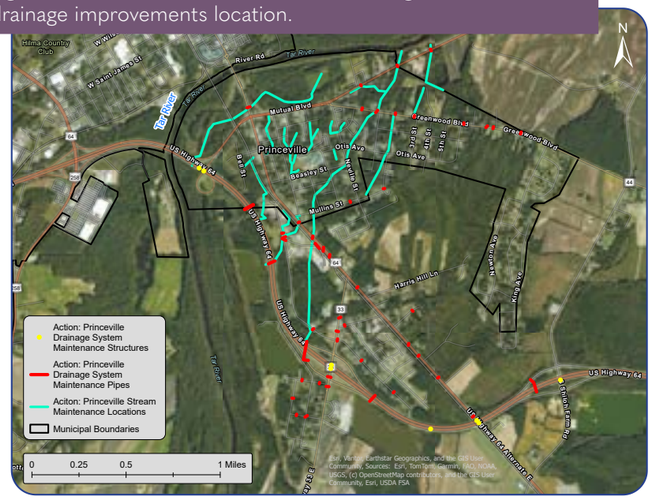
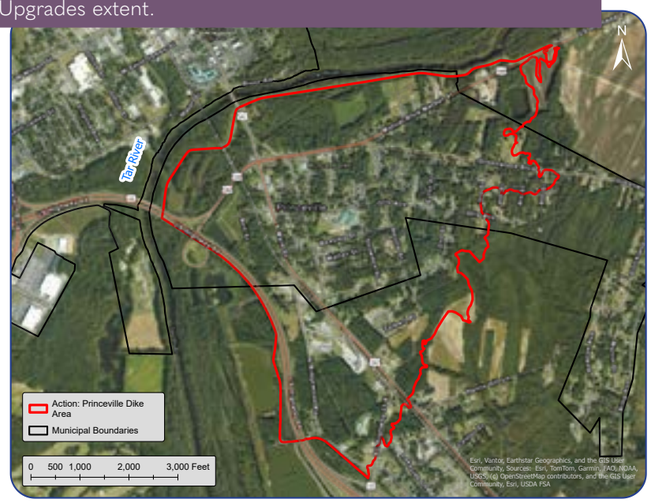


Figure 19. Princeville Dike Inspection, Maintenance, Repair, and Upgrades extent.



Internal Drainage Improvements:

The inspection of internal drainage networks and stream pathways could increase the resiliency within the Town of Princeville behind the Princeville Dike (**Figure 18**). Blockages within the stormwater drainage system can result in ponding and increase the risk of rainfall-driven flooding. Inspection, cleaning, and modification of the network ensures that rainfall-driven flood waters within the protected area are efficiently diverted away, mitigating risk.

Levee System Inspection, Maintenance, Repair, and Upgrades (Princeville Dike Levee System):

This action supports the inspection, maintenance, repair, and upgrades for the Princeville Dike levee system within the Tar-Pamlico River Basin (**Figure 19**). Currently, USACE indicates that levees that are under their jurisdiction should be inspected every 5 years (USACE, 2024). Regardless of jurisdiction, inspections on this system should be conducted more frequently, particularly after severe flood-loading events to ensure potential overtopping or breaching or any structural deficiencies are identified and addressed early. This could include standard repairs and upgrades and adaptations to the system to evolve the protection with changing conditions and community needs. Regular and routine maintenance should also be done on this system to extend the life cycle.

Levee Construction in Tarboro:

Based on the future climate conditions scenarios, Tarboro will be susceptible to riverine and rainfall-driven flooding. Knowing that the Town of Princeville incorporated a levee system for flood protection on the south bank of the Tar River gives confidence that the north bank of the Tar River can greatly benefit from a levee system as well. The levee system would tie into US-64 and extend along the Tar River overbank until it ties back into the high ground just north of East Northern Boulevard. A needed barrier would be created to protect the infrastructure, buildings, and residents within Tarboro from future Tar-River flooding (**Figure 20**).

Levee Construction in Shiloh Mills:

Based on the future climate conditions scenarios, Shiloh Mills will be susceptible to riverine and rainfall-driven flooding. Knowing that the Town of Princeville incorporated a levee system for flood protection gives confidence that Shiloh Mills can greatly benefit from a levee system as well. The levee system would tie into the existing Princeville Dike and extend along US-258 until it ties back into high ground just north of East Northern Boulevard. A needed barrier would be created to protect the infrastructure, buildings, and residents within Shiloh Mills from future Tar-River flooding (**Figure 21**).

Figure 20. Levee Construction in Tarboro location.

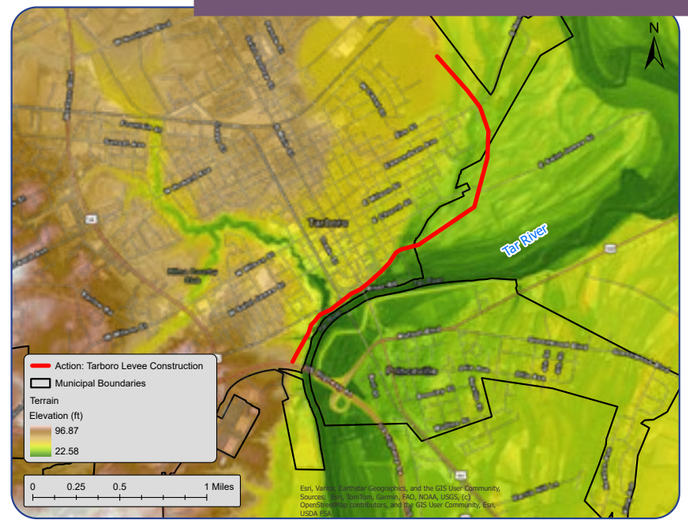
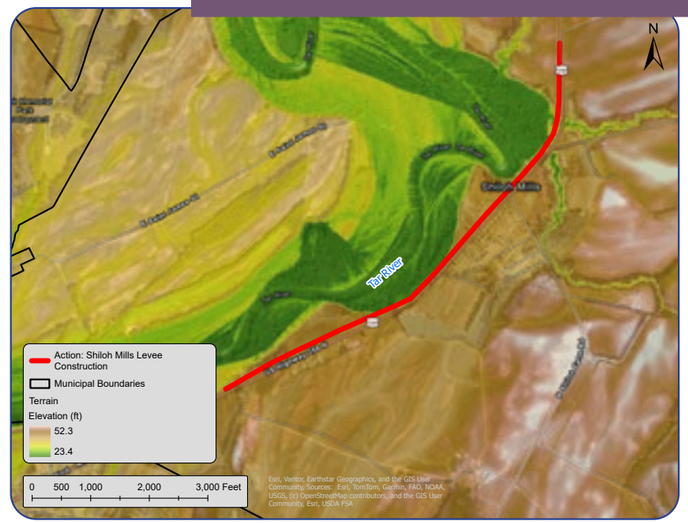


Figure 21. Levee Construction in Shiloh Mills location.



City of Greenville and surrounding areas Regional Action

Jurisdiction:	City of Greenville and surrounding areas
Cost:	$136,137,674
Status:	Proposed

Channel Widening:

A channel widening project could be completed along the reach of the Tar River from 8,500 feet upstream of NC-222 to approximately 5,000 feet upstream of the confluence of Grindle Creek through the City of Greenville (**Figure 22**). This project would assist in increasing the capacity of the Tar River, which will reduce the amount of overbank flooding. Localized flooding due to the Tar River would be reduced in areas adjacent to the river.

Floodplain Restoration:

A nature-based floodplain restoration project could be completed along the reach of the Tar River from 8,500 feet upstream of NC-222 to just upstream of US-264 and just downstream of US-264 to approximately 5,000 feet upstream of the confluence of Grindle Creek (**Figure 22**). This project would rehabilitate areas of the floodplain that have been degraded. Updating the floodplain of this waterway within Greenville will restore the natural hydrology of this area. Increasing the capacity of the floodplain can assist in reducing the overflow volume and velocity of floodwaters that occur during a flood event and reduce riverine and rainfall-driven risk.

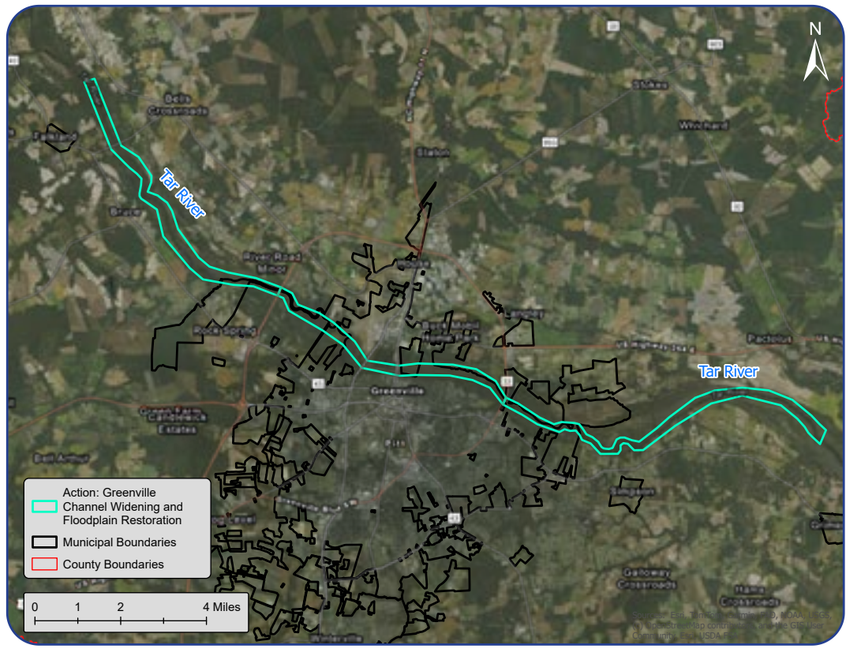


Figure 22. Channel widening and floodplain restoration extent in Greenville location.

Hyde County Regional Action

Jurisdiction:	Hyde County
Cost:	$2,490,840
Status:	Proposed

Levee System Inspection, Maintenance, Repair, and Upgrades (Swan Quarter Dike Levee System):

This action supports the inspection, maintenance, repair, and upgrades for the Swan Quarter Dike levee system within the Tar-Pamlico River Basin (**Figure 23**). Currently, USACE indicates that levees that are under their jurisdiction should be inspected every 5 years (USACE, 2024). Regardless of jurisdiction, inspections on this system should be conducted more frequently, particularly after severe flood-loading events to ensure potential overtopping or breaching or any structural deficiencies are identified and addressed early. This could include standard repairs and upgrades and adaptations to the system to evolve the protection with changing conditions and community needs. Regular and routine maintenance should also be done on this system to extend the life cycle.

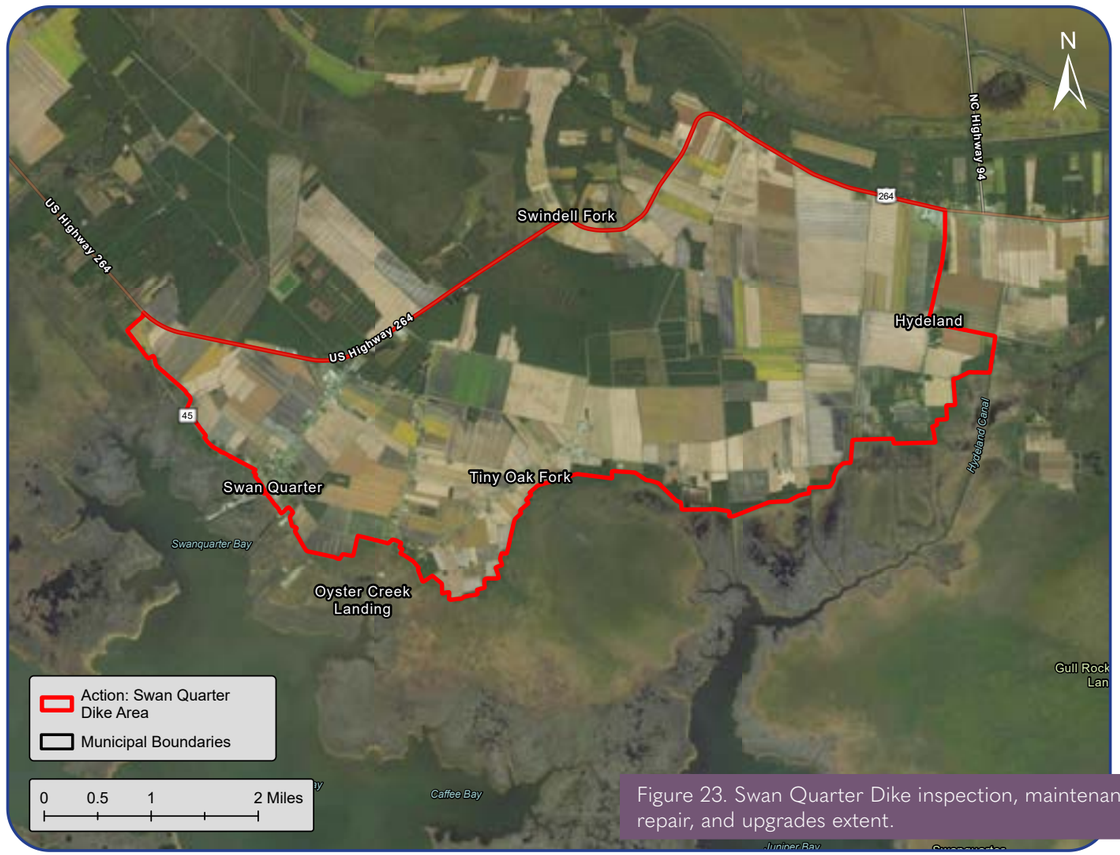


Figure 23. Swan Quarter Dike inspection, maintenance, repair, and upgrades extent.

Hatteras Village Storm Drainage Study and Improvement

Jurisdiction:	Community of Hatteras Village
Cost:	$525,000
Status:	Pre-Identified

Hatteras Village Storm Drainage Study and Improvement:

Dare County has conducted a storm drainage study and recommends improvement for areas of Hatteras Village that were called out by a citizen survey as flooding hot spots within the village. Originally identified in the Dare County Resilient Coastal Communities Program Project Portfolio, NC-12, Eagle Pass Road, and adjacent roads create safety hazards to the population during a flooding event (**Figure 24**). These areas are particularly susceptible to significant flooding from ocean overwash and rainfall, impacting homes, roadways, and emergency response. The study identifies swales, existing culvert structures, and grading at these locations and provides recommendations on how to combat the rainfall-driven and coastal flooding in these areas. Dare County has received most of the funding for these projects, and it needs additional funding to move to implementation (DEQ, 2022).

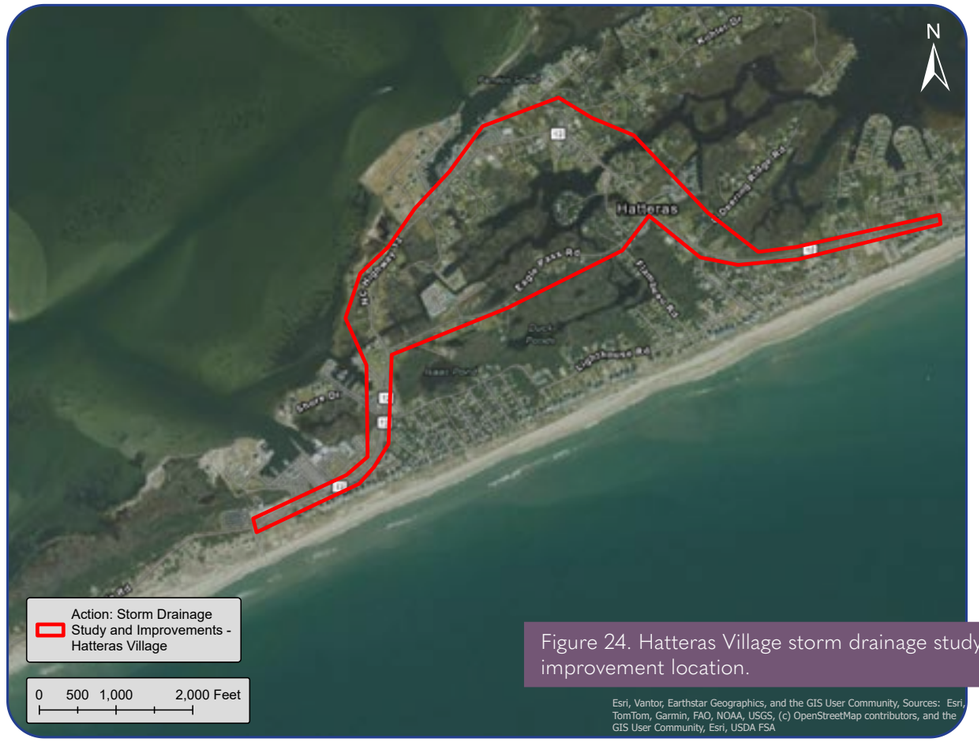


Figure 24. Hatteras Village storm drainage study and improvement location.

Buxton Storm Drainage Study and Improvements

Jurisdiction:	Town of Buxton
Cost:	$525,000
Status:	Pre-Identified

Buxton Storm Drainage Study and Improvement:

Dare County has recommended a storm drainage study and improvement for areas of Buxton that were called out by a citizen survey as flooding hot spots within the town. Originally identified in the Dare County Resilient Coastal Communities Program Project Portfolio, this location is a known safety hazards to the population during a flooding event. Old Lighthouse Road is particularly susceptible to significant flooding from ocean overwash and rainfall, impacting homes, roadways, and emergency response (**Figure 25**). The study identifies swales, existing culvert structures, and grading at these locations and provides recommendations on how to combat the rainfall-driven and coastal flooding in these areas. Dare County has received most of the funding for these projects, and it needs additional funding to move to implementation (DEQ, 2022).

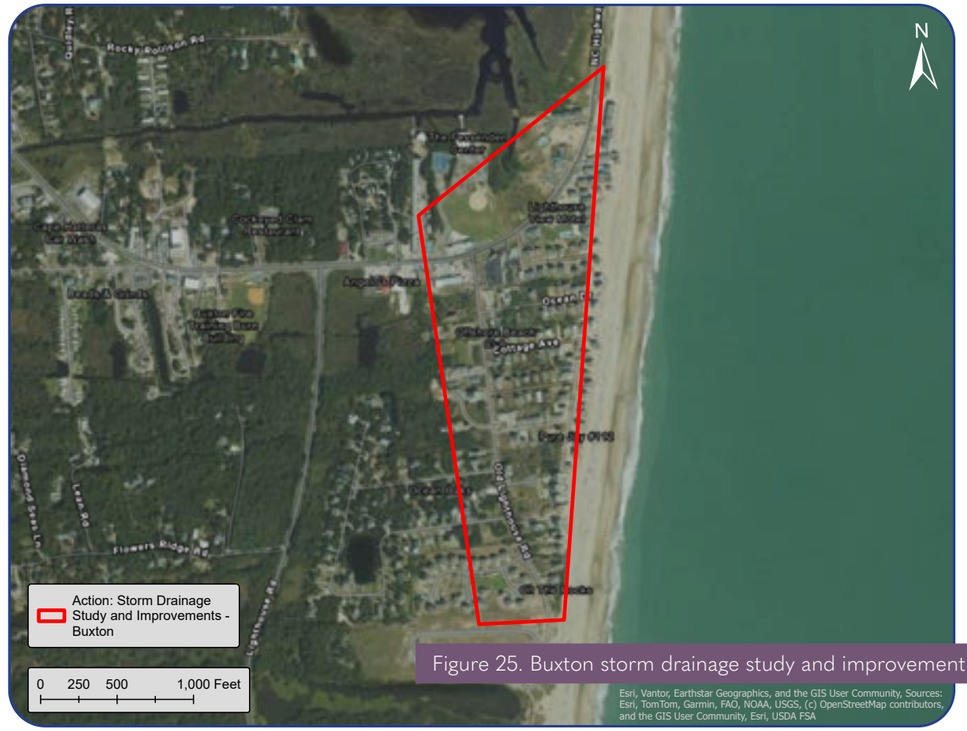


Figure 25. Buxton storm drainage study and improvements location.

Enfield Drainage Improvements

Jurisdiction:	Town of Enfield
Cost:	$750,000
Status:	Pre-Identified

Enfield Drainage Improvements:

Downtown Enfield, NC has experienced localized flooding issues that have put several homes and the downtown library at risk of rainfall-driven flood damage (**Figure 26**). This action, originally proposed in the Halifax County Hurricane Matthew Resilient Redevelopment Plan, is for upgrades to drainage structures and the improvement of the drainage system within historic downtown Enfield.

Figure 26. Enfield drainage improvements location.

Washington Park Green Stormwater Infrastructure

Jurisdiction:	Town of Washington Park
Cost:	$690,000
Status:	Pre-Identified

Town of Washington Park Green Stormwater Infrastructure:

This project looks to incorporate green infrastructure into the current stormwater system along Riverside Drive and West Isabella Avenue in Washington Park, NC (**Figure 27**). Originally from the Washington Park Resilient Coastal Communities Program Project Portfolio, bioretention ponds, permeable pavement, or a submerged gravel wetland have been proposed as solutions for rainfall-driven flooding issues (DEQ, 2024b). Four total structures are estimated to be needed for this project, assuming two per road.

Figure 27. Town of Washington Park green stormwater infrastructure location.

Washington Park Flood Attenuation Park

Location:	Town of Washington Park
Cost:	$450,000
Status:	Pre-Identified

Town of Washington Park Flood Attenuation Park:

This project looks to create a park in Washington Park, NC that would be used as the first barrier from flooding (**Figure 28**). First proposed in the Hyde County Hurricane Matthew Resilient Redevelopment Plan, the park would be between the Pamlico River and the town, so it would be able to store riverine and rainfall-driven flood waters to prevent damage to properties (NCORR, 2017). Rain gardens and stormwater wetlands will be implemented to achieve this goal, and the recreational aspects of the park will be upgraded and maintained for the residents of Washington Park to enjoy.

Figure 28. Town of Washington Park flood attenuation park location.

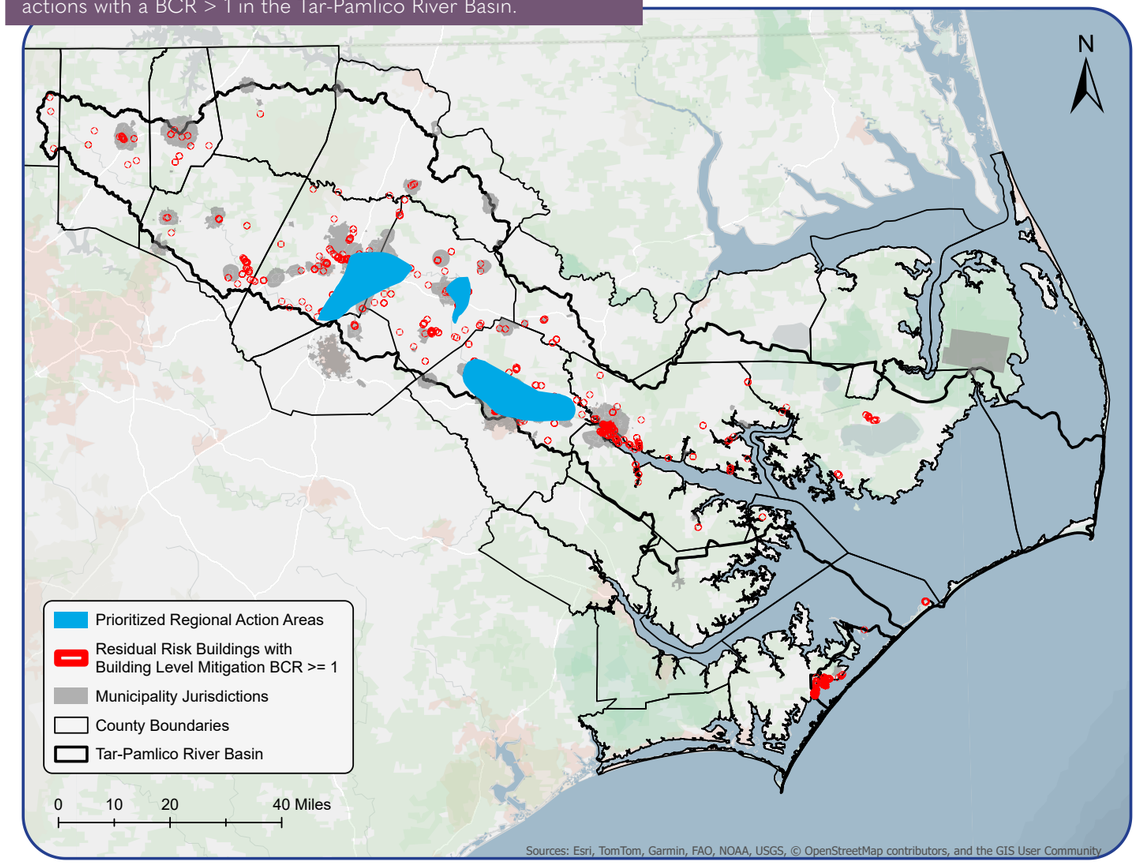
Residual Risk Building Level Mitigation

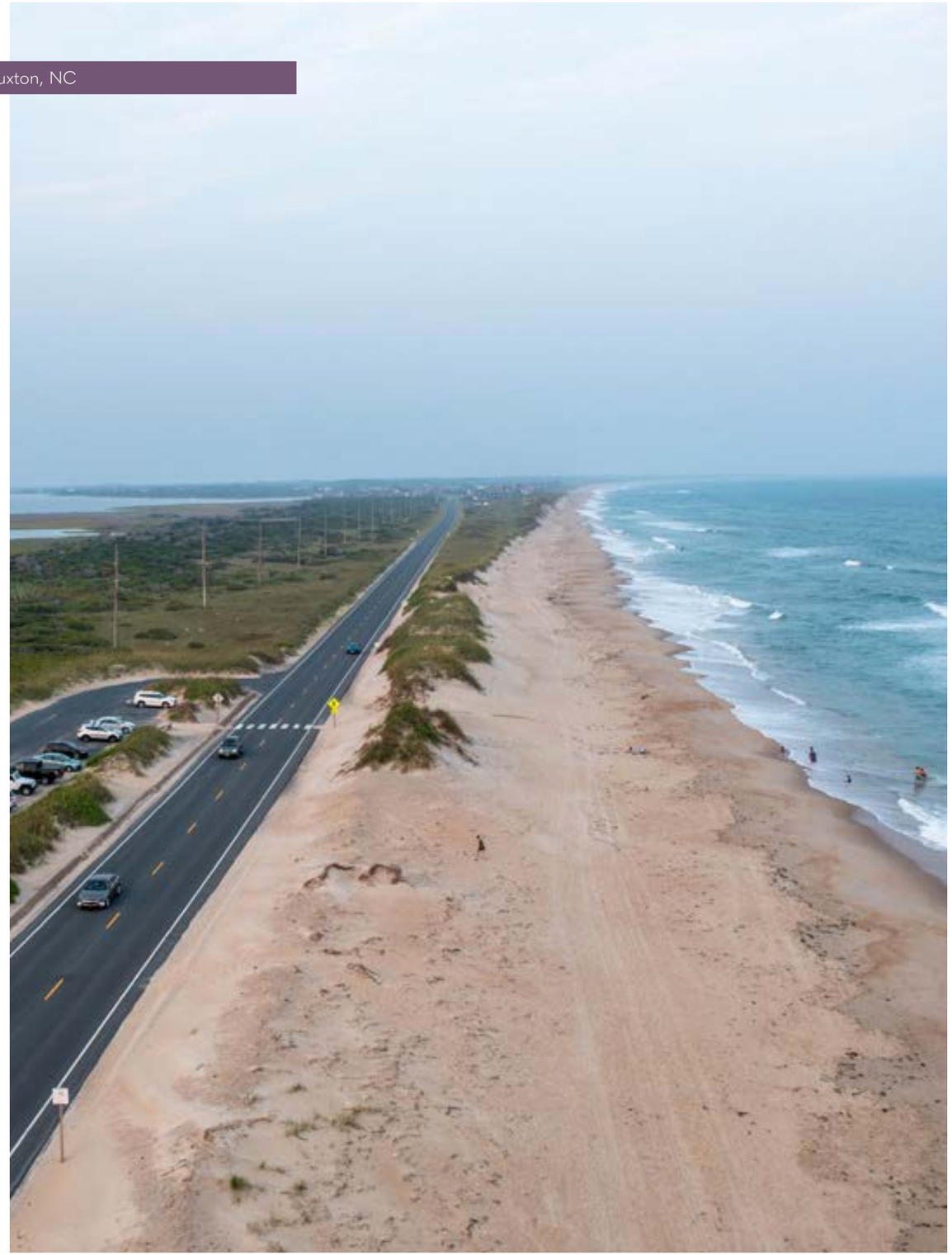
Jurisdiction:	Residual Risk areas of the Tar-Pamlico River Basin
Cost:	$17,329,544
Status:	Proposed

Residual Risk Building Level Mitigation:

At-risk buildings outside the areas of impact of the regional mitigation actions were analyzed to determine the cost effectiveness of implementing building level mitigation techniques to combat against riverine and rainfall-driven flooding. The NCEM building mitigation BCA methods were used to calculate the building level mitigation technique with the highest BCR between acquisition, relocation, elevation, dry floodproofing, and wet floodproofing. The residual risk buildings with mitigation options with a BCR greater than one are shown in **Figure 29**.

Figure 29. Residual risk buildings with building level mitigation actions with a BCR > 1 in the Tar-Pamlico River Basin.




Buxton, NC

REVIEW OF FUNDING SOURCES

North Carolina communities face growing challenges from flooding, aging infrastructure, rapid development, and climate driven extreme weather. To address these risks, a wide ecosystem of federal, state, regional, and private funding sources exists—but navigating this landscape is complex. **Appendix G** provides a comprehensive catalog of the programs available to support resilient infrastructure, watershed restoration, nature based solutions, disaster recovery, stormwater improvements, and long-range community planning.

This summary synthesizes **Appendix G**, highlighting the major categories of funding, core features of key programs, and strategic considerations for project selection, eligibility, and implementation. It is intended to support staff, local governments, and partners in identifying viable funding pathways and aligning resilience needs with the strongest opportunities.

Federal Funding Programs

Federal agencies administer a wide range of programs that support flood mitigation, disaster recovery, transportation resilience, water/wastewater infrastructure, land conservation, and ecosystem restoration. Many of these programs are competitive, require detailed benefit cost analysis, and operate on recurring annual cycles or disaster specific funding streams.

FEMA Programs

FEMA funds are among the most significant sources for hazard mitigation and flood resilience.

25%

Across all FEMA programs, eligible applicants in North Carolina include local governments, tribes, and state agencies. Projects generally require a 25% local match unless the community qualifies for disadvantaged or severe repetitive loss adjustments.

- **Building Resilient Infrastructure and Communities (BRIC)**
  Provides competitive funding for mitigation projects, with strong emphasis on shovel-ready infrastructure protection solutions, improved codes and code enforcement, and long-term resilience in the face of changing conditions.
- **Flood Mitigation Assistance (FMA)**
  Supports repetitive loss and severe repetitive loss properties through elevation, acquisition, and floodproofing, floodplain restoration and flood mitigation planning.
- **Hazard Mitigation Grant Program (HMGP)**
  Available after major disasters and supports a wide range of projects such as buyouts, structural mitigation, and infrastructure retrofits.

HUD Community Development Block Grants

HUD administers CDBG Disaster Recovery (CDBG DR) and CDBG Mitigation (CDBG MIT) programs following major disasters. These funds support:

Housing Reconstruction | **Long-term Recovery** | **Mitigation** | **Infrastructure Upgrades** | **Planning**

States manage allocation plans that define eligible activities and target low and moderate income communities.

USDA Programs

The U.S. Department of Agriculture supports agriculture focused and rural community water infrastructure:

- NRCS Watershed and Flood Prevention Operations (WFPO)
- Emergency Watershed Protection (EWP)
- Rural Development Water & Waste Disposal Loans and Grants

These programs fund watershed improvements, streambank restoration, emergency stabilization, and water/sewer infrastructure in rural communities.

EPA and Water Infrastructure Programs

EPA's major programs include:

- Clean Water State Revolving Fund (CWSRF)
- Drinking Water State Revolving Fund (DWSRF)
- Water Infrastructure and Innovation Act (WIFIA) Loans for large scale water infrastructure

These sources offer low interest loans and forgivable principal for eligible communities.

Department of Transportation (DOT) Resilience Programs

DOT's resilience programs—including Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT), Rebuilding American Infrastructure with Sustainability and Equity (RAISE), and other discretionary grants—support projects that improve resilience of transportation systems, culverts, roadways, and multimodal networks.

National Oceanic and Atomospheric Administration (NOAA) and Interior Programs

Environmental agencies support conservation, floodplain restoration, and nature based solutions. NOAA's funding for habitat restoration and coastal resilience and the U.S. Fish & Wildlife Service's programs for wetlands, rivers, and wildlife corridors offer opportunities for ecosystem based flood mitigation.

Congressional Spending

Legislative Pre-Disaster Mitigation (L-PDM) and Community Project Funding (CPF) are congressionally directed spending programs that can be used to mitigate against flooding. These funds are accessed directly through the local congressional representative.

State of North Carolina Funding Programs

North Carolina has one of the most diverse state level funding environments for water, land, flood, and resilience related projects. Many state sources provide match flexibility, technical assistance, or planning support not available from federal programs.

North Carolina Land & Water Fund (NCLWF)

NCLWF supports land acquisition, stream and floodplain restoration, innovative stormwater management, and planning for water quality and flood resilience. Programs include:

- Acquisition Grants for riparian buffers, wetlands, and floodplain conservation
- Restoration Grants for streams, wetlands, and natural infrastructure
- Innovative Stormwater Projects
- Planning Grants for long-range watershed and restoration strategies

NC Division of Water Resources (DWR)

DWR administers several programs including:

- Water Resources Development Grant Program (WRDG)
- State cost share support for flood mitigation and water-based recreation
- Planning assistance for hydrologic and watershed studies

These programs support construction and planning for flood reduction projects, stormwater controls, and water supply solutions.

State Revolving Funds (SRF)

North Carolina administers CWSRF and DWSRF with added benefits for disadvantaged communities. Funds include loan forgiveness, match assistance, and priority scoring for resilience and green infrastructure.

Coastal and Environmental Programs

For coastal communities, the state offers:

- Coastal Storm Damage Mitigation Fund
- Resilient Coastal Communities Program (RCCP)
- Coastal Area Management Act (CAMA) grants for shoreline, planning, and hazard mitigation

Other programs, such as the Environmental Enhancement Grant (EEG) and agricultural conservation programs, support habitat restoration, water quality enhancements, and preservation of natural lands.

Lake Mattamuskeet Lighthouse

Blueprint Project Implementation Funding

The North Carolina Flood Resiliency Blueprint represents one of the largest state investments in long term flood mitigation planning. Funded initially with $96 million and now operating with $76 million, the Blueprint aims to:

- Develop basin specific strategies for major river systems
- Identify priority flood mitigation projects
- Guide implementation of high value, multi-benefit projects
- Support interagency coordination and unified resilience planning

Blueprint implementation funds are designed to move high priority projects from concept to construction, particularly where solutions reduce community flood risks, restore natural systems, and provide durable watershed benefits. As strategies are finalized for each basin, these funds will act as a state-level catalyst for projects that align with Blueprint priorities.

Legislative Appropriations from the NC General Assembly

The North Carolina General Assembly (NCGA) can allocate funding for resilience and infrastructure through:

- Biennial state budgets
- Supplemental appropriations bills
- Local, regional, or project specific earmarks

Recent budgets have included substantial statewide investments in water, sewer, and stormwater infrastructure, as well as direct allocations to counties, municipalities, and utilities. Legislative appropriations are often strategic tools for addressing urgent needs or advancing major projects that do not fit traditional grant programs.
Local governments can work with legislators to elevate priority projects for potential inclusion in budget cycles, especially when projects align with statewide resilience, infrastructure, and economic development objectives.

Pamlico Sound, Outer Banks, NC

Local, Regional, and Nonprofit Funding Programs

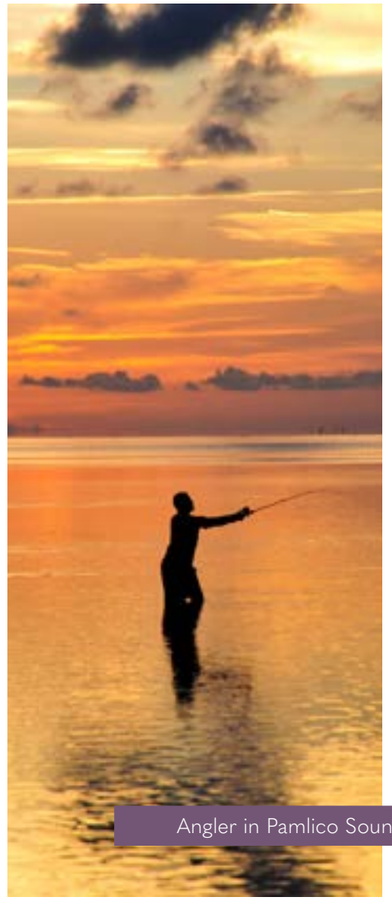
Local governments, regional planning organizations, and nonprofit partners provide essential complementary resources that can fill match requirements, support early-stage planning, or implement smaller scale resilience solutions.

Local and Utility Funding

Local sources include:

These funds can be used as match for federal or state programs or to advance preliminary engineering.

- **General funds**
- **Stormwater utility fees**
- **Water & sewer enterprise funds**
- **Local capital improvement plans (CIPs)**



Angler in Pamlico Sound

Regional Transportation Planning Funds

Metropolitan Planning Organizations (MPOs) and Rural Planning Organizations (RPOs) can incorporate resilience components into transportation improvement programs, often unlocking federal dollars for culverts, bridges, greenways, and road related stormwater improvements.

Nongovernmental Organizations (NGOs) and Philanthropy

Nonprofit organizations can serve as applicants, co-applicants, match partners, land stewards, or technical supporters. Key partners include:

- North Carolina Community Foundation
- National Fish & Wildlife Foundation (NFWF)
- The Nature Conservancy
- Conservation Trust for NC
- Local land trusts and conservation groups

These partners often bring additional capacity, volunteer support, specialized expertise, and access to philanthropic funding streams.

Strategic Considerations for Project Success

The document highlights several cross cutting considerations:

Eligibility and Governance

Eligibility differs across programs:

- Some require the applicant to be a unit of local government
- Others accept nonprofit organizations or special districts
- Utility authorities may be eligible for water infrastructure funds
- FEMA programs require state sponsorship and hazard mitigation planning compliance

Understanding institutional eligibility early in project development is critical.

Matching, Cost Share, and Funding Stacking

Most major programs require local match contributions, typically ranging from 0% to 25%, though disadvantaged community provisions may reduce this requirement. Many projects are financed through braided funding, combining:

- Federal grants
- State grants or loans
- Local funds
- Philanthropic contributions

Planning and Readiness

Competitive programs prioritize:

- Strong benefit cost analysis
- Permitting readiness
- Engineering feasibility
- Multi-benefit outcomes (e.g., water quality + flood reduction + recreation)
- Community engagement and social impact outcomes

Nature-Based Solutions

Many programs strongly encourage or explicitly prioritize nature based approaches such as:

- Floodplain reconnection
- Wetland restoration
- Stream restoration and buffer enhancement
- Green stormwater infrastructure

These solutions typically score well in competitive evaluations and provide durable long term benefits.

North Carolina has access to one of the most diverse and strategically aligned funding environments for flood mitigation, watershed restoration, and resilience in the United States. The programs cataloged in **Appendix G** provide a broad spectrum of opportunities for planning, engineering, land conservation, stormwater improvements, resilient infrastructure, and long-term community capacity building.

Aligning local project needs with the right funding source—while leveraging multi agency partnerships and taking full advantage of the Flood Resiliency Blueprint—positions communities to make transformative progress in reducing flood risks and improving watershed health.

Funding Sources for RBAS Process Prioritized Actions

As a final step in developing the RBAS, federal, state, regional, and local funding programs were evaluated for possible fit with the identified Blueprint projects so that these projects can move toward implementation. Information about these programs was gathered in an organized manner and is available in **Appendix G**.

Many of the regional priority projects identified for their impact in mitigating risk were large projects with substantial cost estimates that would need success in large federal grant programs to complete the work. In many instances, the non-federal cost share that would be required of the community was prohibitively high for the small communities in which the action is proposed. To address this need, when the community is under-resourced and the project is large, the strategy also considers sources of cost-match from non-federal sources. For some actions, partnerships with state or federal agencies would likely aid in the success of the project, and these partnerships are identified.

Several factors were considered in making funding program matches, including routing projects to a variety of programs so that basin projects were not in competition for the same funding resources. Other factors included the purpose of the program, award size, previously funded projects, and eligibility. Two funding subject matter experts developed independent funding strategies for the priority basin actions, then met to discuss results to determine the best fit for each project component, the needs for cost-match assistance, and the necessary partnerships to implement each project. An overview is available in **Table 3** and each action is discussed below.

Table 3. Priority Project Funding Programs

Project Name	Program Match	Cost-matching Source	Partnerships
Littleton Butterwood Creek Drainage Improvements	USDA Emergency Watershed Protection	-	-
Emergency Shelter Feasibility Study within the Upper Coastal Plain COG	Emergency Management Performance Grant	Golden LEAF	-
Prioritization of Critical Facilities Vulnerable to Flooding in the Upper Coastal Plain COG	North Carolina Community Foundation	-	-
Flood-Resilient Roadways for Critical Facilities in the Upper Coastal Plain COG	USDOT Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT)	-	-
Enfield Drainage Improvements	Golden LEAF	Rural Infrastructure Program	-
City of Rocky Mount and surrounding areas Regional Action: Floodplain Restoration	USDOT Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT)	NCLWF: Acquisition Program	-

Project Name	Program Match	Cost-matching Source	Partnerships
City of Rocky Mount and surrounding areas Regional Action: Stream and Drainage Maintenance System	North Carolina Streamflow Rehabilitation Assistance Program (StRAP)	Stormwater Utility Fees	-
City of Rocky Mount and surrounding areas Regional Action: Levee System Inspection, Maintenance, Repair and Upgrades	EDA Disaster Supplemental: Implementation Path	Blueprint or Appropriations	NCEM Floodplain Mapping Program
Elm City Emergency Generator Replacement for Critical Facilities	FEMA Hazard Mitigation Grant Program	-	-
Pinetops Water Treatment Facility	DEQ Viable Utilities Reserve	-	-
Town of Princeville and surrounding areas Regional Action: Internal Drainage Improvements	USDA Emergency Watershed Protection	Asset & Inventory Assessment Grants	-
Town of Princeville and surrounding areas Regional Action: Levee Construction (Shiloh Mills)	FEMA Hazard Mitigation Grant Program	Blueprint or Appropriations	NCEM Floodplain Mapping Program
Town of Princeville and surrounding areas Regional Action: Levee Construction (Tarboro)	USACE Continuing Authorities Program	Blueprint or Appropriations	NCEM Floodplain Mapping Program
Town of Princeville and surrounding areas Regional Action: Levee System Inspection, Maintenance, Repair and Upgrades (Princeville Dike)	USACE Continuing Authorities Program	-	NCEM Floodplain Mapping Program
Fountain Stormwater Project	North Carolina Water Resources Development Grant: Flood Resiliency Grants	-	-
Conetoe Community Park Drainage Improvements	Community Conservation Assistance Program	-	-
NC-33 New Bridge over Conetoe Creek	USDOT Bridge Improvement Program	-	-
Holland Road Bridge Replacement	FEMA Building Resilient Infrastructure and Communities		-
NC-121-New Bridge over Lawrence Run	USDOT Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT)	-	-

Project Name	Program Match	Cost-matching Source	Partnerships
North US-13/NC-11 Business New Bridge/ Culvert	USDOT Better Utilizing Investments to Leverage Development (BUILD)	-	-
Briley Road Culvert Upsizing	National Culvert Removal, Replacement, and Restoration Grant Program	-	-
NC-11 Bridge Raising	USDOT Bridge Improvement Program	-	-
City of Greenville and surrounding areas Regional Action: Channel Widening	Blueprint or Appropriations	-	USACE-Charleston
City of Greenville and surrounding areas Regional Action: Floodplain Restoration	FEMA Building Resilient Infrastructure and Communities	North Carolina Wand and Water Fund: Restoration Program	-
Greenfield Terrace-Multi-Use Flooding Response Hub	National Coastal Resilience Fund	-	-
Tar-Pamlico Tributary Snag and Drag	North Carolina Streamflow Rehabilitation Assistance Program (StRAP)	-	-
Tar River Main Channel Snag and Drag	North Carolina Streamflow Rehabilitation Assistance Program (StRAP)	-	-
Jack's Creek Flood Resiliency Project	North Carolina Land and Water: Innovative Stormwater Program	-	-
Washington Park Green Stormwater Infrastructure	North Carolina Water Resource Development Grant Program: State and Local Projects	NC WRDG: Flood Resiliency Grants	-
Washington Park Stormwater Action Plan	North Carolina Land and Water: Planning Program	-	-
Washington Park Tributary Improvements	North Carolina Land and Water: Innovative Stormwater Program	-	-
Washington Park Flood Attenuation Park	Coastal Resilience Fund	NCLWF: Acquisition Program	-
Hyde County Levee System Inspection, Maintenance, Repair, and Upgrades (Swan Quarter Dike)	FEMA Pre-Disaster Mitigation	NC WRDG: Flood Resiliency Grants	NCEM Floodplain Mapping Program
Hatteras Village Storm Drainage Study and Improvement	Environmental Enhancement Grant	Live Oak Bank	-
Frisco Fire Station and Community Resilience Hub	FEMA Hazard Mitigation Grant Program	-	-
Buxton Storm Drainage Study and Improvement	USDOT Better Utilizing Investments to Leverage Development (BUILD)	Roads Funds	-

Project Name	Program Match	Cost-matching Source	Partnerships
NC-12 Long -Term Transportation Improvements	USDOT Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT)	-	-
Avon Stormwater Improvements	Local Assistance for Stormwater Infrastructure Investments	-	-
Building Level Mitigation	FEMA Flood Mitigation Assistance	-	-

Live oak trees along the Pamlico River

Littleton Butterwood Creek Drainage Improvements:

Due to a variety of actions to be implemented, including culvert replacement, grading, and cleanouts, the USDA Emergency Watershed Protection Program may be the best fit, as it allows for a variety of actions in disaster-impacted streams. Other programs matched in the tool include the Community Conservation Assistance Program, Local Assistance for Stormwater Infrastructure Investments, and the Streamflow Rehabilitation Assistance Program (StRAP).

Emergency Shelter Feasibility Study within the Upper Coastal Plain COG:

This is a planning project to pursue the development of identification of an emergency shelter suitable for 400 or more people in the Upper Coastal Plain area. North Carolina passes on the majority of Emergency Management Performance Grant (EMPG) funding through to local and regional entities to address needs for future emergencies, and this project fits within that program's purpose.

Prioritization of Critical Facilities Vulnerable to Flooding in the Upper Coastal Plain COG:

The North Carolina Community Foundation may be the best source of funds for a study the looks at past impacts of major flood events and identifies at-risk infrastructure. Projects that evolve from the initial study are likely candidates for scoping awards in the state's allocation of FEMA Building Resilient Infrastructure and Communities (BRIC).

Flood-Resilient Roadways for Critical Facilities in the Upper Coastal Plain COG:

The USDOT Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT) awards projects that improve the resilience of roadways in coastal areas, and therefore is a good program for a project with multiple flooding roadways such as this one, and it allows multi-jurisdictional applications. Due to its focus on flooded roadways, planning and scoping assistance could be funded with FEMA Flood Mitigation Assistance.

Wooded Pond in Goose Creek Park, NC

Enfield Drainage Improvements:

This project meets the guidelines and is within the priorities of Golden LEAF funding goals. Golden LEAF uses money from the tobacco settlements to improve communities that were once heavily reliant on tobacco production. Golden LEAF can fund smaller projects with economic benefits. For cost-match, the North Carolina Rural Infrastructure Program supports projects in rural areas that have economic development benefits, such as improving drainage in downtown Enfield.

City of Rocky Mount and surrounding areas: Floodplain Restoration:

Due to its mitigation of transportation infrastructure and coastal location, the USDOT Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT) program was selected as a viable option for this project. This program requires a 20 percent non-federal cost match, which could be funded through the North Carolina Land and Water Fund: Acquisition Program and put towards the acquisition of land.

As transportation is infrastructure, this project may also fit well into the FEMA Building Resilient Infrastructure and Communities (BRIC) program, that prioritizes hazard mitigation projects that protect infrastructure. Other alternatives include the Transformational Habitat Restoration program from NOAA, which includes a purpose of connecting waterbodies to their floodplains to improve habitat and mitigate flooding. Additionally, the National Fish & Wildlife Foundation National Coastal Resilience program could also be used for match funding if needed. This program also focuses on restoring coastal habitats.

City of Rocky Mount and surrounding areas: Stream and Drainage Maintenance System:

The North Carolina Streamflow Rehabilitation Assistance Program (StRAP) provides funding for maintenance projects. The program does not require cost match and could be used to get the drainage system in good working order.

Long-term drainage maintenance will need to be performed on a recurring basis. Rocky Mount should consider setting aside a portion of the Stormwater Utility funds for this purpose. The USDA Watershed Protection and Flood Prevention Operations (WFPO) program could be accessed to help develop an effective approach to establishing local maintenance program.

City of Rocky Mount and surrounding areas: Levee System Inspection, Maintenance, Repair and Upgrades (Merita Bakery Levee System):

The Economic Development Administration Disaster Supplemental: Implementation Path is a good fit for this project since jobs can be directly tied to the investment in resilience. A disaster declaration in the previous two years is required to access this funding. The application should describe the economic impact of the project. This program provides 80 percent funding which leaves a need for a partner program to raise the cost-match needed. Levee systems have limited funding options, likely leaving only Blueprint funding or legislative appropriations to address this need.

Alternative funding programs could include the HUD Community Development Block Grant-Mitigation (CDBG-MIT) funding after a disaster or possibly FEMA Hazard Mitigation Grant Program (HMGP) to help scope the project. This project could benefit from partnerships with the NCEM Floodplain Mapping division in planning for accreditation and any provisional map change letters needed for the project. The USACE Charleston District can be consulted in identifying useful data to develop the project.

Elm City Emergency Generator Replacement for Critical Facilities:

Generators are a common project under FEMA programs. Due to this, the FEMA Hazard Mitigation Grant Program or other FEMA programs are the best fit since it's use would be for flooding and other hazards.

Pinetops Water Treatment Facility:

This project seeks assistance to keep floodwaters from an existing water treatment plant that is prone to flooding. The DEQ Viable Utilities Reserve is designed to help distressed communities maintain viable water treatment systems, and thus is a good fit for this program. FEMA programs can also be used since projects that protect critical infrastructure from flooding are eligible for most FEMA programs.

Town of Princeville and surrounding areas: Internal Drainage Improvements:

The USDA Emergency Watershed Protection Program can be used to clear debris and improve stream banks in disaster impacted areas with or without a disaster declaration. This program could provide a funding alternative to improve Princeville's internal drainage. It requires a 25-percent cost-match, which is likely more than Princeville could set aside for this purpose. The Asset & Inventory Assessment grant could help close that gap. This funding helps water and wastewater authorities assess impacts to the system and could be used to identify and plan for priority risks to infrastructure.

Alternatives for funding this project would be the North Carolina StRAP program, which can be used for clearance activities and does not require cost-match.

Town of Princeville and surrounding areas: Levee Construction (Shiloh Mills):

The Shiloh Mills levee would protect a small community that lacks the resources to provide a cost match for the project. As levees go, it is a smaller project and thus likely fundable outside of the USACE process. It may be small enough to fit within the Hazard Mitigation Grant Program (HMGP) allocations from a larger disaster. Levee construction, repairs, and improvements qualify as eligible activities under this post-disaster program. Blueprint funding or legislative appropriations are the likely sources of cost-match funding because there are limited non-federal resources that can be used for levee construction.

As an alternative, levees are considered critical infrastructure under HUD Guidelines, and thus the project could be funded using CDBG-MIT allocations after a disaster. For a non-disaster alternative, the FEMA Pre-Disaster Mitigation program is accessed through the federally elected representative, and this project would fit well within its typical award size and scope. This project can also benefit from partnering with the NCEM Floodplain Mapping division as it likely involved compliance concerns with the NFIP and accreditation after construction.

Town of Princeville and surrounding areas: Levee Construction (Tarboro):

Similar to the Shiloh Mills levee construction project, the Tarboro levee protects a relatively small community with limited resources. As levees go, it is a relatively small project. This proposed levee would be across the river from the existing Princeville levee which makes the project best suited to remain under the authority of the USACE through their Continuing Authorities Program to ensure that the levees on both banks operate in a way that does not lead to increased risk. Blueprint funding or legislative appropriations will likely be needed to meet cost-match requirements.

Alternative funding sources include using post-disaster CDBG-MIT funding or applying for funding through the FEMA Flood Mitigation Assistance (FMA) program. FMA would require there to be a suitable number of NFIP properties to counteract the costs of the project to pass a FEMA-approved BCA. If there are Repetitive Loss or Severe Repetitive Loss properties, defined by the number of NFIP claims over time, the project may have a reduced or waived cost-match requirement under FMA. NCEM would need to to be included to verify the NFIP properties and claims in the protected area.

Town of Princeville and surrounding areas: Levee System Inspection, Maintenance, Repair, and Upgrades (Princeville Dike):

The USACE built and manages the Princeville Dike, and it has studied and identified the repairs and upgrades needed for this project, so keeping it in the USACE Continuing Authorities Program makes sense, especially with the proposed project in Tarboro across the river. This project is valued at more than $20 million, and thus would likely need assistance through a legislative appropriation to meet any cost-match needs. The USACE Floodplain Management Services (FPMS) will likely be involved in the development of project details. The NCEM Floodplain Mapping Division should also be involved to ensure that NFIP guidelines are followed.

Goose Creek, NC

Fountain Stormwater Project:

This project benefits a flood-prone property due to poor stormwater design that needs to be redesigned. As a low-cost project a state program such as the North Carolina Water Resources Development Grant: Flood Resiliency Grant Program may match well since the project is small and reduces flood risk.

Conetoe Community Park Drainage Improvements:

Drainage improvement projects fall within the purpose and eligible projects of the Community Conservation Program administered by the North Carolina Soil and Water Conservation Commission. Due to its impact to surrounding structures, FEMA programs such as Flood Mitigation Assistance may be a good fit if the impacted structures have claims to the NFIP.

NC-33 New Bridge over Conetoe Creek:

For a state road over a water body in a rural area, the USDOT Bridge Improvement Program may fit this project well. The program sets aside funding for rural areas and NCDOT will likely need to assist with cost-match. Another funding alternative is the USDOT Rural Surface Transportation Grant Program.

Holland Road Bridge Replacement:

As this road is not on the highway network but is at risk for flooding, a program that funds transportation infrastructure such as the FEMA Building Resilient Infrastructure and Communities program would be a good fit. The price of the project fits just outside the program cap by less than $250,000.

NC-121-New Bridge over Lawrence Run:

NC-121 is a designated coastal evacuation route, making it a great candidate for the USDOT Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT). PROTECT is for coastal areas and evacuation routes with the goal of ensuring safe passage.

North US-13/NC-11 Business New Bridge/Culvert:

The high cost of this project to build a new bridge or culvert on a US Highway makes it a good project to apply to the USDOT Better Utilizing Investments to Leverage Development (BUILD) program, especially as it is a business route. The project can be connected to maintaining and enabling further development, further linking the project and this program.

Briley Road Culvert Upsizing:

This project proposes upsizing a culvert that is currently not conveying stormwater effectively enough to avoid overflow impacts to nearby structures in Pitt County. The National Culvert Removal, Replacement and Restoration Grant Program administered by the Federal Highway Administration is a good fit if the project also has a benefit for spawning fish. If not, the FEMA Flood Mitigation Assistance Program is an option due to its impact on existing structures. If these structures are protected through a National Flood Insurance Program (NFIP) policy, the required local match could possibly be reduced to no match.

NC-11 Bridge Raising:

This high-cost bridge project in Pitt County would be competitive in the USDOT Bridge Improvement Program, which addresses bridge development and repair needs. Improving this bridge in a rural area would be eligible for funding in this program, which sets aside some funding for rural areas. Another alternative would be the Rural Surface Transportation Grant Program or the USDOT Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT).

City of Greenville and surrounding areas: Channel Widening:

With a larger more urbanized population in a growing community, a large cost, and a scope that many agencies do not accept as an eligible project, the Channel Widening project would likely need either Blueprint Funding or a state appropriation to lead this project to completion. The USACE-Charleston office has studied the area and can provide expertise in developing this scope.

City of Greenville and surrounding areas: Floodplain Restoration:

Improving floodplain performance in the Greenville area would protect the airport and other identified critical infrastructure, making this project a good fit for the FEMA BRIC program which prioritizes the protection of infrastructure. The National Fish & Wildlife Foundation's National Coastal Resilience Program may serve as a viable alternative. This project will likely need cost-match assistance and will likely need to access state funding through the North Carolina Land and Water Fund: Restoration Program to meet program funding requirements. This program could serve as a primary source for a pared down project or an incremental approach.

Greenfield Terrace-Multi-Use Flooding Response Hub:

The National Coastal Resilience Fund is designed to help coastal communities with a wide-array of activities designed to address resilience needs. This project would be a good fit because it incorporates education and the distribution of supplies for a wide range of disasters.

Tar-Pamlico Tributary Snag and Drag:

This project funds debris clearing activities in tributaries which improves drainage performance. The North Carolina Streamflow Rehabilitation Assistance Program (StRAP) addresses debris clearance. The USDA Emergency Watershed Protection Program would be another program that funds debris clearance in flooded waterways.

Tar River Main Channel Snag and Drag:

This project funds debris clearing activities in main channels which improves drainage performance. The North Carolina Streamflow Rehabilitation Assistance Program (StRAP) addresses debris clearance. The USDA Emergency Watershed Protection Program would be another program that funds debris clearance in flooded waterways.

Jack's Creek Flood Resiliency Project:

This project proposes eight distinct nature-based solutions on city-owned lands to improve stormwater performance in a low-income community along with a variety of structural projects. Something this complex would be appealing to the reviewers of the North Carolina Land and Water Fund: Innovative Stormwater Program due to its incorporation of several activities in a systematic approach.

Washington Park: Green Stormwater Infrastructure:

The North Carolina Water Resources Development Grant Program: State and Local Projects can assist in Washington Park's plan to alleviate ponding through the incorporation of permeable pavement, bioretention ponds and submerged gravel wetlands. Alternative programs for this project include mixing funding from the North Carolina Section 205(j) Water Management Planning Grant to assist with design and funding from the Five Star Urban Water Restoration Grant to assist with bioretention and/or wetland features. This project would require bringing on partners. Suggested partners include the North Carolina Audubon Society and the North Carolina Community Foundation. Each of these partners could bring resources or funding to help meet gaps and to engage the community with this space.

Washington Park Stormwater Action Plan:

While funding has been obtained for this project, the North Carolina Land and Water Fund: Planning Program may be a good fit for additional funding. Other alternatives are FEMA programs such as the Hazard Mitigation Grant Program and the National Coastal Resilience Fund.

Washington Park Tributary Improvements:

The project looks to strategically deploy nature-based solutions such as rain gardens, sand filters and bioswales to more effectively rainfall events that currently create problems in the community. The North Carolina Land and Water Fund: Innovative Stormwater Program would likely find the systematic approach and deployment of a variety of methods competitive for award.

Washington Park: Flood Attenuation Park:

To develop this riverside park with wetlands and rain gardens, the National Coastal Resilience Fund through the National Fish & Wildlife Foundation would be an ideal target. This program promotes nature-based solutions and restored habitat in coordination with changing conditions. The park would also provide a site for continuing education and capacity building. This program does not have a cost-match requirement.

Alternatives include the NCLWF: Acquisition Program to assist with land assembly and the North Carolina WRDGP: State and Local Projects, which is flexible enough to allow to park development. Parks projects can also attract investment from the private sector through the purchase of benches, gazebos or other features. Large employers can sometimes assist with even larger features as an opportunity to give back to the community in lasting ways.

Hyde County: Levee System Inspection, Maintenance, Repair, and Upgrades (Swan Quarter Dike):

This is another project with a prohibitively high cost in a smaller community at regular risk of flooding. As levee projects go, this is a relatively low-cost project. Targeting FEMA Pre-Disaster Mitigation through the area's federally elected representative would fit in traditional project scopes and awards and there are likely sufficient population and infrastructure protected to pass a FEMA-approved BCA. To reach cost-match requirements, Swan Quarter and partners would likely need to access state funding programs. The North Carolina Water Resources Development Grant: Flood Resiliency Grants would help, since its purpose is to provide cost-assistance for shovel-ready flood resilience projects. Alternatives for funding this project include CDBG-MIT after a disaster of the Safeguarding Tomorrow Revolving Loan Fund through FEMA, which would require repayment.

Other funding programs that may be available for this project include FEMA programs such as HMGP or the Clean Water State Revolving Fund. HMGP also requires cost-match and CWSRF would require repayment over time.

Hatteras Village: Storm Drainage Study and Improvement:

This project includes the addition of swales, culverts and grading to improve stormwater drainage. This small rural community could partner with a non-profit entity to access the Environmental Enhancement Grant, which is a program to improve the air, water, and land quality in underserved areas. This fund exists as the result of an agreement with the state and Smithfield Foods and is designated for specific basins including the Tar-Pamlico. No cost-share is required for this program.

Alternatives include the CWSRF, which would require payback over time and may be more suitable for cost-share for other sources such as PROTECT and BUILD, which are programs focused on projects protecting transportation infrastructure.

Sunset in Buxton, NC

Frisco Fire Station and Community Resilience Hub:

This is a mitigation reconstruction project designed to make the siting of the existing Frisco Fire Station more compliant with modern building requirements related to flood risk. Projects like this that address the capabilities of first responders and critical facilities are common in the FEMA Hazard Mitigation Grant Program and other FEMA programs, including Flood Mitigation Assistance. This is a project identified in the local hazard mitigation plan, making it eligible for funding through FEMA.

Buxton: Storm Drainage Study and Improvement:

Buxton is trying to fund the implementation of needed swales, culvert upgrades, and grading to manage stormwater. Because this project would improve roadway conditions in the community, a USDOT Better Utilizing Investments to Leverage Development (BUILD) grant may be a good fit for this project. This project is considered a small request for a BUILD grant. Since it is also in a rural area, it would make a competitive application. Similarly, the Rural Surface Transportation grant may be a solid USDOT alternative. County road funds should be considered as a potential cost-match source.

NC-12 Long -Term Transportation Improvements:

This coastal highway is prone to flooding, ocean overwash and erosion, but is also the main route in this coastal area and necessary for evacuation. The necessity and location of this roadway make it a strong candidate for the USDOT Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT).

Avon: Stormwater Improvements:

This project adds drainage features such as swales to reduce ocean overwash and is thus likely small enough to fit in the Local Assistance for Stormwater Infrastructure Investments program, overseen by DEQ. The program provides up to $400,000 for planning and $5 million for projects and does not require a local match.

Building Level Mitigation:

For building-level mitigation, an umbrella organization, a consortium of counties, or each county should apply for funding from the FEMA FMA program, which allows funding to create buyout and elevation programs for NFIP properties. This funding could be used for outreach and program materials to identify interested parties so that when additional FEMA programs such as Public Assistance or HMGP become available, there is a roster of properties with willing parties that can move quickly to access these resources.

ACTION STRATEGY TAKEAWAYS

The Tar-Pamlico RBAS is intended to support local governments, regional partners, state agencies, and other organizations in identifying and advancing flood resilience actions that are appropriate to different conditions across the basin. The vulnerability assessments identified several areas of particular concern, including Rocky Mount, Princeville, Greenville, Washington, and coastal communities, where future modeling indicates expanded flood exposure and increased damages, especially in low-lying and coastal areas. These and other findings support the need for an action strategy that can guide both near-term risk reduction and longer-term flood resilience planning across the basin.

The Tar-Pamlico RBAS identified 347 resilience actions across the basin, including 33 priority actions selected for focused implementation. These priority actions are distributed throughout the watershed, ranging from drainage improvements in the Town of Littleton near the basin's headwaters to long-term enhancements of NC Highway 12 along the Dare County coastline. The prioritized actions reflect the diverse flood risks, vulnerabilities, and local implementation conditions present across the Tar-Pamlico River Basin. While some projects are designed to reduce flood damages in more developed and densely populated areas, others focus on protecting critical infrastructure and maintaining access to essential services. Additional actions support long-term adaptation strategies in communities where flooding is extensive, recurring, or expected to persist over time.

Successful implementation of the RBAS will require ongoing collaboration among federal, state, regional, tribal, and local partners. The strategy outlines a variety of potential funding opportunities, including federal hazard mitigation and watershed programs, state grant initiatives, and local financing mechanisms. Given the scope and complexity of many of the recommended projects, successful implementation will depend on coordinating multiple funding sources, cultivating strategic partnerships with agencies such as FEMA, the U.S. Army Corps of Engineers, and state agencies, and helping communities meet local matching fund requirements.

Strengthening local capacity will be essential to ensuring that all communities, particularly those with limited staff and financial resources, can meaningfully participate in and benefit from the Blueprint process. DEQ River Basin Leads, Councils of Governments, and other regional partners can play a critical role in providing technical assistance, fostering collaboration, and helping bridge capacity gaps.

Through coordinated implementation, the Tar-Pamlico River Basin Action Strategy serves as a long-term framework for reducing flood risk, enhancing community resilience, and supporting sustainable growth throughout the basin. Continued investment, partnership, and institutional support will be necessary to maintain momentum and advance the Blueprint's vision of a more resilient future for the people, communities, and natural resources of the Tar-Pamlico River Basin.

Washington, NC

Current Limitations

The analysis, results, and recommendations in this report are subject to the following limitations:

1. Utilizing existing BLE data as the main source of riverine and rainfall-driven flooding data provides a strong baseline for flood extents within the Tar-Pamlico River Basin. However, the BLE modeling does not incorporate detailed terrain or detailed survey data in the analysis, which can provide refined results. Creating updated hydraulic modeling for the highly vulnerable areas can provide more detailed and accurate data to develop more specific mitigation options per area.

2. The updated BLE modeling data does account for sea level rise (SLR), which gives further insight into coastal flooding, which can be used for mitigation action selection. However, there are many other dynamics involved with coastal modeling including storm surge, wave run-up, overtopping, propagation, storm-induced erosion, and tides, all of which can change the coastal landscape. Currently there are datasets available for only storm surge and overland wave modeling, however these were created as early as 2012. Using these potentially out of date datasets can limit the level of actions selected and the potential success of these actions, so updated coastal modeling data is needed for all coastal dynamics.

3. Riverine and rainfall-driven flood risk was only conducted on a building-level. The data used was developed in recent modeling efforts and provided building-level damage across the basin. However, there are many other components with associated risk including transportation infrastructure damage and limited access to critical infrastructure. Data on these systems across the basin could provide refined high-risk and vulnerable areas and more detailed actions.

4. There was a lack of dam breach modeling through State Emergency Response Application (SERA) or any other data source for most of the dams within the Tar-Pamlico River Basin. 256 of the 306 total dams do not have existing breach modeling, so the potential risk level of the properties downstream of these dams, including AADT and buildings at risk, had to be estimated.

5. The NC Dam Inventory had information missing on the status of some dams about hazard level and structure condition or may not be up to date. It was observed in the data from the NC Dam Inventory that the listed inspection dates for certain dams went back to 1970, with some not having an inspection date listed. Over the period since that listed inspection, the condition and hazard class could have potentially changed based on downstream updates as well as natural degradation. However, without this information accurate risk categorization could not occur.

6. Breach data was not available for the levees within the Tar-Pamlico River Basin. The levee risk and vulnerability analysis utilized the latest 2D BLE modeling, but these models were not developed with the levee system as a main component, nor does the modeling include any natural valley analysis or breach analyses. As such, some levee systems could have a higher risk than estimated in this report.

7. Simplifying assumptions were made for the urban and stormwater, and coastal flooding sources, and compound flooding due to lack of data. Additionally, there were gaps in analyses for each flooding source which are reviewed below.

8. Capacity challenges can prevent some local communities from developing local action plans and locally prioritized actions. Further engagement and capacity building are needed to meaningfully prioritize local actions and ensure all are able to participate.

NEXT STEPS & IMPLEMENTATION

DEQ Program and Project Accountability

Through the development of the River Basin Action Strategies, local governments, Councils of Government, and other partners have used the Blueprint Tool and staff support to develop local resilience plans. River Basin Advisory Groups and Blueprint Teams have further evaluated and prioritized actions for inclusion in the RBAS. These planning efforts are a critical part of building a more resilient state, but they must be matched with funding and implementation.

The completion of the River Basin Action Strategies is not an endpoint. The Blueprint team will continue working with local governments and other partners to support flood resilience planning and will collaborate with basin partners to help identify funding for prioritized mitigation actions. As of April 2026, DEQ has received funding for RBAS development in six basins, as well as an additional $96 million (later reduced to $76 million) for project implementation in those basins. To implement projects, DEQ has used a range of funding mechanisms, including direct partnerships with local governments, funding private firms for full-delivery flood mitigation projects, and collaboration with fellow state agencies and programs, including NCEM, the North Carolina Land and Water Fund (NCLWF), the North Carolina Department of Agriculture and Consumer Services (NCDA&CS), the Division of Water Resources (DWR), and the North Carolina Department of Transportation (NCDOT). These partnerships support the efficient implementation of priority projects and help address gaps in current mitigation efforts. The RBAS process has also identified a need for funding to support engineering and design, in addition to construction. Moving forward, this is an area where the Blueprint can be especially impactful.

Additional funding is needed to complete RBAS development, identify projects, and support project implementation in the remaining eleven river basins. In addition, the RBAS process will identify areas where data improvements are needed, allowing those needs to be prioritized to ensure that the most accurate data is used to inform these critical decisions.

Overall, DEQ is committed to making the state more flood resilient by providing local governments, state agencies, and other partners with the data, tools, and support needed to guide investments that reduce the cost and disruption of future flooding.

Louisburg, North Carolina

Blueprint Tool Next Steps

The Blueprint Tool is available statewide, but its functionality is limited outside the initial six basins. With additional funding, improved flood mapping and expanded data development will be completed for the rest of the state, allowing the Blueprint Tool to effectively support all communities across North Carolina. Continued investments to improve and refine the Blueprint Tool will better serve North Carolina's residents and ensure the state remains a leader in data-driven flood resilience planning.

Blueprint staff and COG partners will continue working with local governments in the initial six basins to identify, evaluate, and prioritize resilience actions using the Blueprint Tool. Developing local action plans through the tool helps communities focus resources on key flood resilience investments and identify and access funding opportunities. This approach will enable local entities and basins to continue applying the Blueprint process beyond the initial RBAS effort.

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ACKNOWLEDGEMENTS

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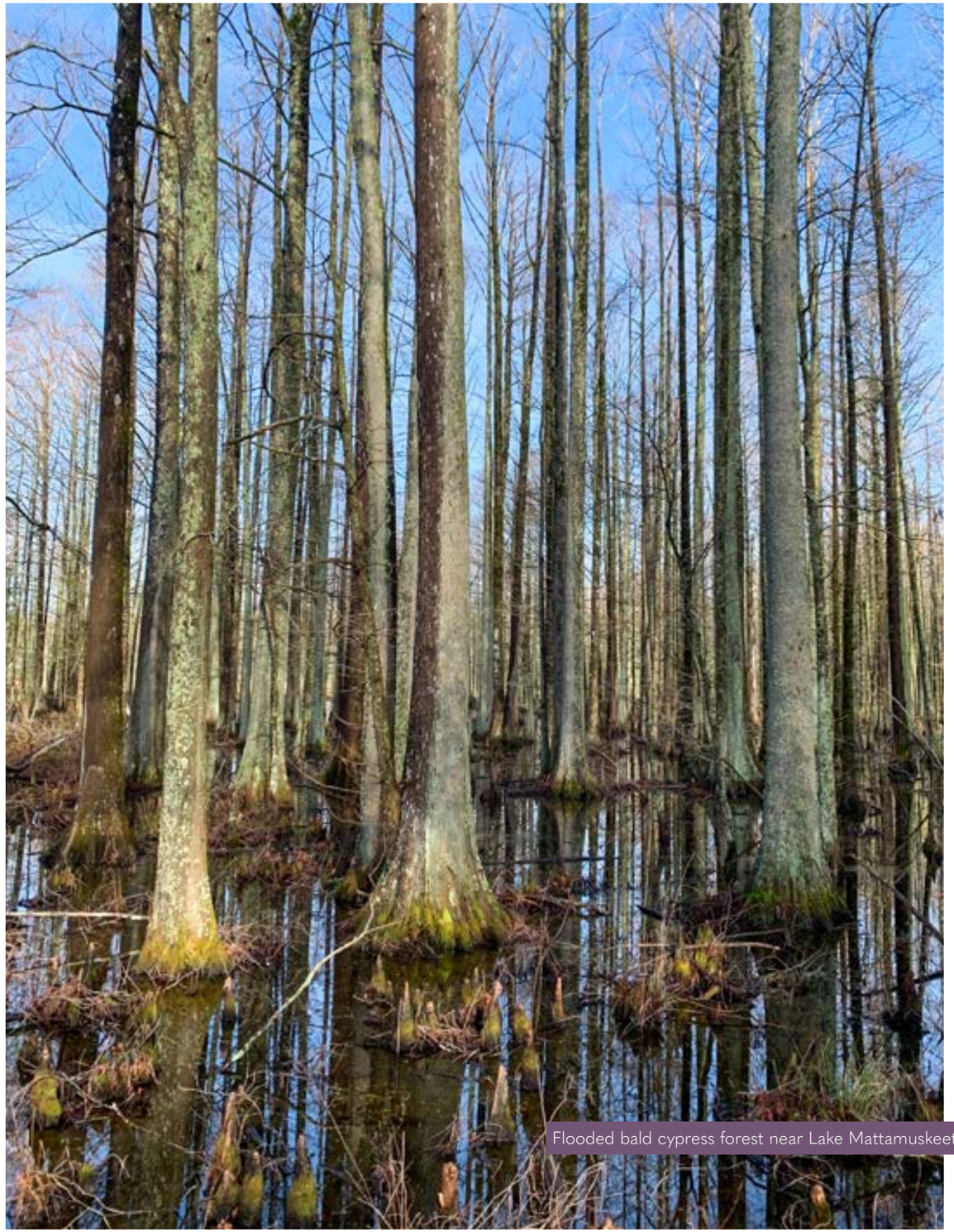
COLLABORATING ENTITIES

The Association of Mexicans in North Carolina (AMEXCAN)
North Carolina Black Alliance (NCBA)
NC Statewide Independent Living Council (SILC)
Southern Coalition for Social Justice (SCSJ)
The Conservation Fund (TCF)
North Carolina Budget & Tax Center (NCB&TC)
North Carolina Conservation Network (NCCN)
North Carolina Inclusive Disaster Recovery Network (NCIDR)
Carolina Wetlands Association (CWA)
Upper Coastal Plain Council of Governments
Mid-East Commission
North Carolina Department of Environmental Quality Division of Coastal Management



Flooded bald cypress forest near Lake Mattamuskeet

This report was developed by AtkinsRéalis for DEQ.

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Lake Mattamuskeet at Sunrise

APPENDICES

APPENDIX A:

TAR-PAMLICO RIVER BASIN DATA INVENTORY REPORT

APPENDIX B:

PUBLIC ENGAGEMENT PLAN

TAR-PAMLICO RIVER BASIN ACTION STRATEGY B-2

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BLUEPRINT CAPACITY RESULTS

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GAP ANALYSIS REPORT

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FLOOD RISK AND VULNERABILITY ANALYSIS REPORT

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APPENDIX H:

BLUEPRINT TOOL REPORTS FOR LOCALLY PRIORITIZED ACTIONS

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