

Hurricane Matthew Resilient Redevelopment Plan Bertie County



May 2017

Version 1.2

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Contents

Change Log	iii
Executive Summary	iv
1. Background	1-1
Summary of Hurricane Matthew Storm Damage	1-1
State/Legislative Response	1-1
Resilient Redevelopment Planning	1-2
Scope of the Plan	1-2
Local Participation and Public Engagement	1-3
Data, Assumptions, and Methodologies	1-4
2. County Profile.....	2-1
Demographic Profile	2-1
Population	2-1
Population Change (2000 to 2010)	2-1
Age	2-2
Race and Ethnicity	2-2
Limited English Proficiency	2-2
Poverty	2-3
Low and Moderate Income Individuals	2-3
Median Household Income	2-3
Zero Car Households	2-3
Commuting: Travel Time to Work, Means of Transportation	2-4
Housing Profile	2-5
Economic/Business Profile	2-6
Labor Force	2-6
Major Employers	2-7
Economic Development	2-8
Infrastructure Profile	2-8
Transportation	2-9
Health	2-9
Education	2-9
Water	2-9
Power	2-9
Environmental Profile	2-9
Water Resources	2-9
Natural and Managed Areas	2-9
Biodiversity and Wildlife Habitat	2-10
Parks and Recreation	2-10
Administrative Profile	2-10

3. Storm Impact 3-1

 Rainfall Summary..... 3-1

 Riverine Flooding Summary..... 3-2

 Housing 3-2

 Economics / Business / Jobs 3-4

 Infrastructure 3-5

 Ecosystems / Environment 3-6

4. Strategies for Resilient Redevelopment..... 4-1

 Housing Strategies..... 4-2

 High Priority Housing Strategies 4-3

 Medium Priority Housing Strategies..... 4-5

 Economic Development Strategies..... 4-7

 High Priority Economic Development Strategies 4-7

 Medium Priority Economic Development Strategies..... 4-11

 Low Priority Economic Development Strategies..... 4-15

 Infrastructure Strategies..... 4-21

 High Priority Infrastructure Strategies 4-21

 Medium Priority Infrastructure Strategies 4-33

 Environmental, Ecosystem and Agricultural Strategies..... 4-47

 High Priority Environmental Strategies 4-47

 Low Priority Environmental Strategies 4-49

 Summary..... 4-53

Change Log

Version	Date	Summary of Changes
1.1	6/15/17	Minor Revisions
1.2	8/25/17	Labor and unemployment data updated

Executive Summary

In October 2016, Hurricane Matthew caused widespread destruction in the Caribbean and up the Eastern Seaboard of the United States. In North Carolina, at least 25 people lost their lives, and 100,000 homes, businesses, and government buildings sustained damage estimated at \$4.8 billion.¹ At the storm's peak, 3,744 individuals fled to 109 shelters across the region. More than 800,000 households lost power and 635 roads were closed, including the major east-west and north-south corridors.

In December 2016, the North Carolina General Assembly established the North Carolina Resilient Redevelopment Planning (NCRRP) initiative as part of the 2016 Disaster Recovery Act (*Session Law 2016-124*). The purpose of the program is to provide a roadmap for community rebuilding and revitalization assistance for the communities that were damaged by the hurricane. The program empowers communities to prepare locally driven recovery plans to identify redevelopment strategies, innovative reconstruction projects, and other needed actions to allow each community not only to survive but also to thrive in an era when natural hazards are increasing in severity and frequency.

The NCRRP consists of planning and implementation phases and is managed through North Carolina Emergency Management.



Figure 1. NCRRP Counties

This document is a snapshot of the current needs of the County regarding holistic recovery and redevelopment. The plan will evolve as the county analyzes the risk to its assets, identifies needs and opportunities, determines the potential costs and benefits of projects, and prioritizes projects. As projects are more fully defined, the potential impact on neighboring communities and the region may lead to modifications.

Implementation of the proposed projects and actions described in this plan is subject to applicable federal, state, and local laws and regulations. Proposed projects or actions may be eligible for state or federal funding, or could be accomplished with municipal, nonprofit, or private investments. However, inclusion of a project or action in this plan does not guarantee that it will be eligible for recovery funding.

¹ State of North Carolina Supplemental Request for Federal Assistance Hurricane Matthew Recovery, <https://governor-new.s3.amazonaws.com/s3fs-public/documents/files/Hurricane%20Matthew%20Relief--2017%20Federal%20Request%20%28002%29.pdf>.

After multiple public meetings, Bertie County has identified 25 projects in four pillars: Housing, Economic Development, Infrastructure, and Environment. Details of these projects can be found in Section 4 of this plan.

Pillar	Project/Action Count
Housing	2
Economic Development	7
Infrastructure	13
Environment	3
Grand Total	25

Table 1. Bertie County Summary of Projects by Pillar



1. Background

1. Background

Summary of Hurricane Matthew Storm Damage

Hurricane Matthew was an extraordinarily severe and sustained event that brought record-level flooding to many areas in eastern North Carolina's coastal plain, sound, and coastal communities. Hurricane Matthew hit North Carolina on October 8, 2016, as a Category 1 storm. Communities were devastated by this slow-moving storm primarily by widespread rainfall. During a 36-hour period, up to 18 inches of heavy rainfall inundated areas in central and eastern North Carolina.

Riverine flooding began several days after Hurricane Matthew passed and lasted for more than 2 weeks. New rainfall records were set in 17 counties in the Tar, Cape Fear, Cashie, Lumber, and Neuse River watersheds. Entire towns were flooded as water levels throughout eastern North Carolina crested well beyond previously seen stages.

During the peak of the hurricane, 800,000 households lost power and 635 roads were closed, including a section of I-40 West in Johnston County that was closed for 7 days, and sections of I-95 North and South in Robeson and Cumberland Counties that were closed for 10 days.

Approximately 88,000 homes were damaged and 4,424 were completely destroyed. Losses totaled more than \$967 million, representing an economic loss as high as 68% of the damages, or \$659 million, not expected to be covered by insurance or FEMA assistance.

North Carolina Governor McCrory requested FEMA assistance on October 9, 2016, and FEMA subsequently declared a major disaster (DR-4285) for North Carolina on October 10, 2016, for 48 counties encompassing approximately 325 cities, towns, townships, and villages.

Preliminary estimates indicate more than 30,000 businesses suffered physical or economic damage, and 400,000 employees were affected as a result. Hurricane Matthew also had a significant impact on the agriculture and agribusiness economy in eastern North Carolina. The nearly 33,000 agricultural workers and 5,000 agricultural-support workers hit by the storm account for more than half of the state's agriculture and agriculture-support workforce.

Initial economic analysis of the impacts of crop and livestock losses caused by Hurricane Matthew estimated the loss of more than 1,200 jobs and roughly \$10 million in state and local income and sales tax revenue.²

State/Legislative Response

North Carolina's response to Hurricane Matthew included 2,300 swift-water rescues using 79 boats and more than 90 air rescues. North Carolina also deployed over 1,000 National Guard and State Highway Patrol to assist with rescue and sheltering missions. There were 3,744 individuals transported to 109 shelters across central and eastern North Carolina during the storm's peak.

FEMA's disaster declaration made 50 counties eligible for FEMA assistance, 45 of which are eligible for Individual Assistance and Public Assistance and 5 of which are eligible for Public Assistance only.

- There were 81,832 individuals registered for FEMA/state assistance.

² Governor McCrory's Request for Federal Assistance for Hurricane Matthew Recovery, November 14, 2016

- Federal/state financial assistance in the amount of \$92.5 million was approved to help flood survivors recover.
- Small Business Administration (SBA) loans approved for individuals after Hurricane Matthew totaled \$65.6 million.
- SBA loans approved for businesses after Hurricane Matthew totaled \$23.2 million.

After the immediate response period, North Carolina Governor McCrory and the North Carolina General Assembly took the steps summarized below to obtain and allocate long-term funding for Hurricane Matthew.

November 1: The Hurricane Matthew Recovery Committee is established. Preliminary damage assessments are completed, and the State Emergency Response Task Force continues to administer programs and identify needs unmet by existing federal programs.

November 14: Governor McCrory formally submits North Carolina’s request for supplemental federal disaster assistance to the delegation as Congress returns to work.

Late November/Early December: Congress appropriates supplemental disaster assistance for North Carolina. After the supplemental federal disaster recovery assistance package is received, Governor McCrory submits a supplemental state disaster assistance package (House Bill 2) recommendation to the General Assembly and calls a special session. Governor McCrory then signs the Hurricane Matthew Recovery Act to fund disaster recovery efforts.

This supplemental federal assistance was to focus on housing, infrastructure, economic development, and the environment. These four pillars were to be funded through the following programs and agencies: The U.S. Department of Housing and Urban Development’s Community Development Block Grant–Disaster Recovery (CDBG-DR) program, Army Corps of Engineers Operations and Maintenance, the FEMA National Dam Safety Program, the Federal Highway Administration’s Emergency Highway Funding, and the U.S. Department of Agriculture’s Emergency Conservation and Watershed Protection programs.

Resilient Redevelopment Planning

The purpose of the NCRRP initiative is to provide a roadmap for communities in eastern North Carolina to rebuild and revitalize after being damaged by Hurricane Matthew. The program empowers communities to prepare locally driven, resilient redevelopment plans to identify redevelopment strategies, innovative reconstruction projects, and other actions to allow each community not only to survive, but also to thrive in an era when natural hazards are increasing in severity and frequency.

The NCRRP initiative employs a holistic approach to planning that includes four pillars: housing, infrastructure, economic development, and the environment. Redevelopment strategies and reconstruction projects for each of the four pillars is included in each plan.

The NCRRP initiative consists of planning and implementation phases and is managed through North Carolina Emergency Management (NCEM).

Scope of the Plan

This document is a snapshot of the County’s current needs for achieving holistic recovery and redevelopment. The plan will evolve as the County analyzes the risk to its assets, identifies needs and opportunities, determines

the potential costs and benefits of projects, and prioritizes the projects. As projects are more fully defined, the potential impact on neighboring communities and the region may lead to modifications.

Planning objectives are to (1) develop strategic, resilient redevelopment plans and actions, and (2) to define any unmet funding needed to implement such actions after taking into account other funding sources.

The resulting resilient redevelopment plans will be the foundation for any supplemental funding received through Congress, the North Carolina General Assembly, and other funding sources. These plans will also be the basis for the state's Recovery Action Plan, which is required by the U.S. Department of Housing and Urban Development before the state can expend funds received from the CDBG-DR program.

Local Participation and Public Engagement

Stakeholder engagement and public involvement was an essential component of the NCRRP initiative. Four rounds of discovery, analysis, collaboration, and interaction were held with each affected county. Each meeting had two components: an in-depth working session with county officials, subject matter experts, and planners from the affected counties and municipalities; and a public open house. The purpose of each meeting was as follows:

Meeting 1 – Initiated the planning process and validated the existing data pertaining to damage and impacts.

Meeting 2 – NCEM presented draft documentation of resilient redevelopment strategies and received feedback from community leaders and the public.

Meeting 3 – NCEM presented refined resilient redevelopment strategies based on feedback from Meeting 2 and received additional feedback.

Meeting 4 – NCEM presented actions developed during the course of the planning process and allowed the county to rank actions; apply High, Medium, or Low Prioritization; and approve inclusion of the actions in the final plan.

Each of the 50 counties that were declared a major disaster by the President of the United States as a result of Hurricane Matthew under the Stafford Act (P.L. 93-288) participated in the resilient redevelopment planning process. Each municipality in those counties, as well as the five economic development regions that sustained damage from Hurricane Matthew, were also invited to participate. The counties impacted by the storm cover the eastern half of North Carolina and occupy parts of the piedmont, sand hills, and coastal areas of the state.

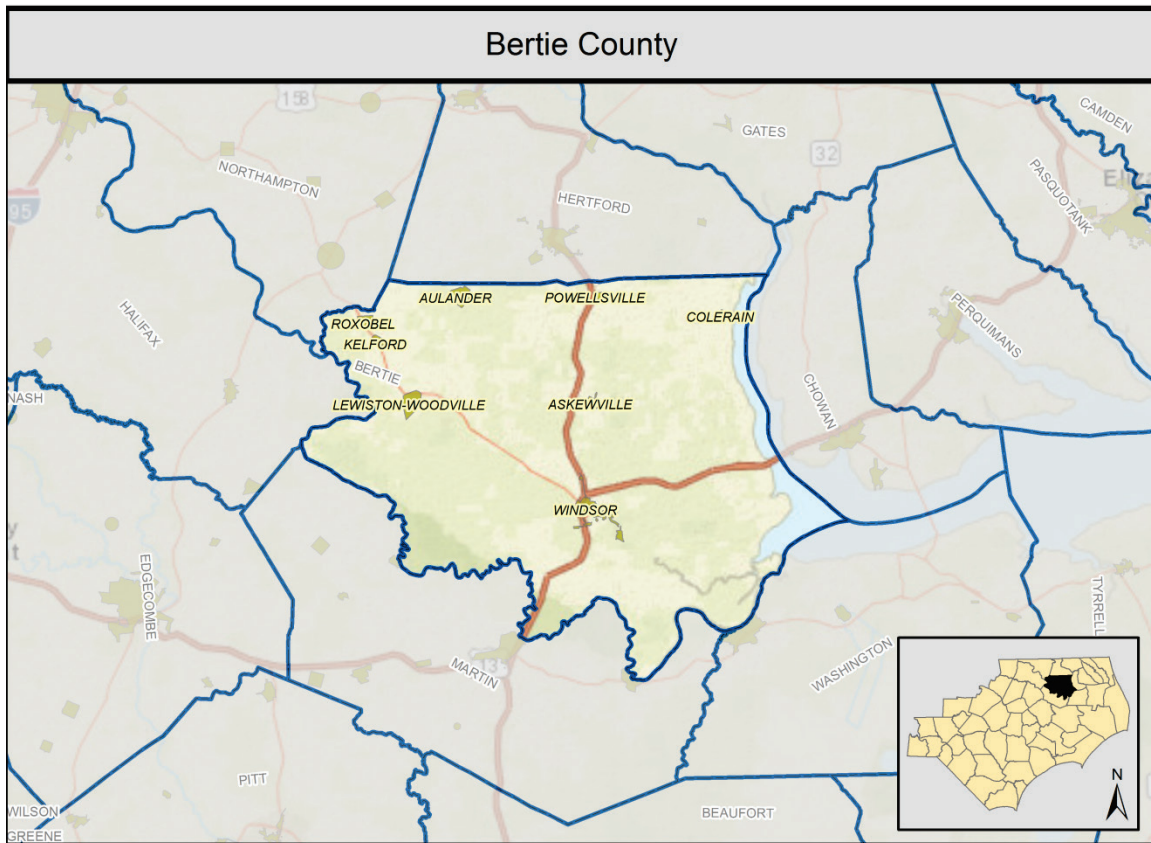


Figure 2. Bertie County and Neighboring Counties

Data, Assumptions, and Methodologies

NCEM has assembled a wealth of data, resources, and technical expertise from state agencies, the private sector, and the University of North Carolina system to support the development of innovative best practice strategies.

Implementation of the proposed projects and actions described in this plan is subject to applicable federal, state, and local laws and regulations. Inclusion of a project or action in this plan does not guarantee that it will be eligible for recovery funding. However, proposed projects or actions may be eligible for state or federal funding or could be accomplished with municipal, nonprofit, or private investment.

An aerial photograph showing a residential neighborhood severely affected by flooding. The water is a murky, brownish-yellow color, submerging large areas of the landscape. In the upper half of the image, a large body of water has inundated a wooded area, with only the tops of many trees visible. Below this, a residential street with several houses is shown. The houses are mostly two-story structures with light-colored siding and dark roofs. Some houses are partially submerged, with water reaching up to their first floors. The surrounding area is a mix of green trees and flooded fields. The overall scene depicts a significant natural disaster impact on a community.

2. County Profile

2. County Profile

Bertie County is located in eastern North Carolina between Martin and Hertford Counties. It is comprised of eight census-designated places: Askewville, Aulander, Colerain, Kelford, Lewiston Woodville, Powellsville, Roxobel, and Windsor. Its current population is 20,518. This section provides a profile of housing, economics, infrastructure, environment, and administration within Bertie County.

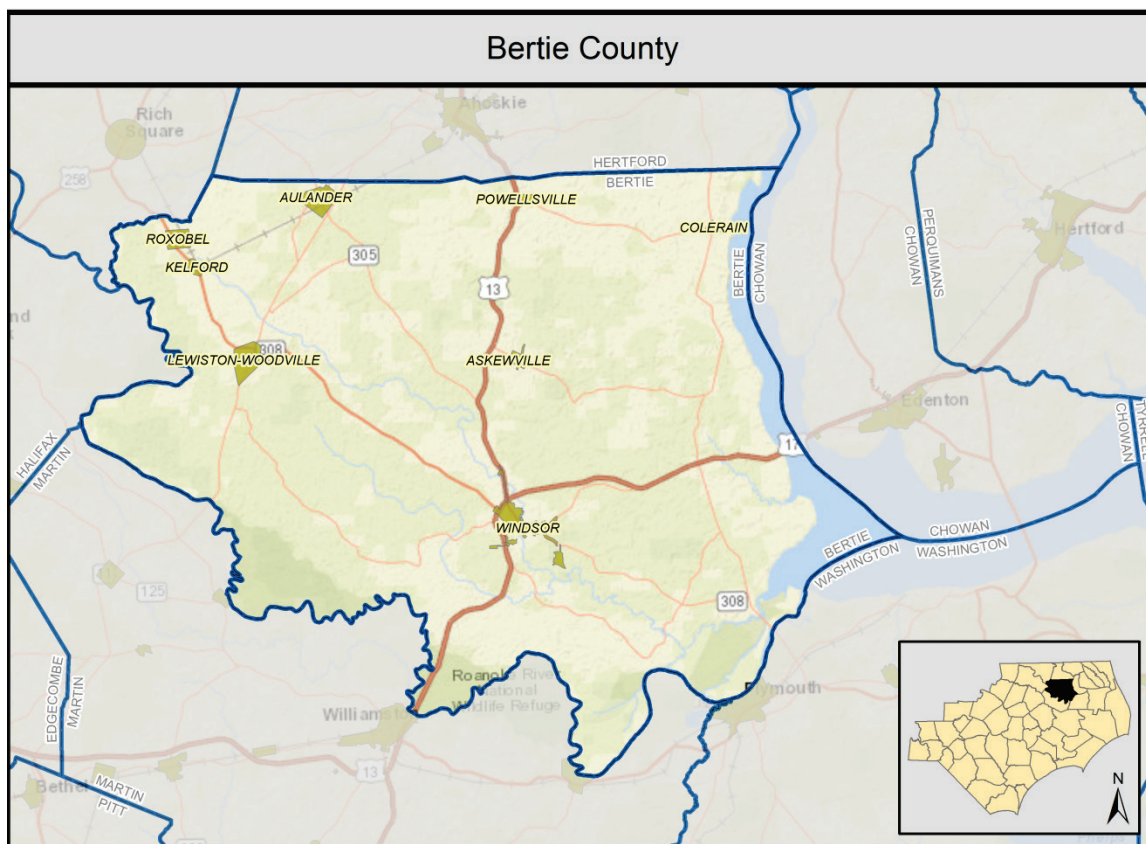


Figure 3. Bertie Base Map

Demographic Profile

Demographics for Bertie County and census-designated places within the county are summarized and compared to statewide averages in this profile. The demographic data is from the 2000 Census, 2010 Census, and 2011-2015 American Community Survey five-year estimates.

Population

Bertie County has a population of 20,518. Windsor is the most populous place within Bertie County with 3,652 residents and Colerain is the least populous place with a population of 191.³

Population Change (2000 to 2010)

The Bertie County population grew slightly between the 2000 and 2010 Census. In 2000 the population was 19,773 and in 2010 it was 21,282. The population grew by 1,509 people, or 7.6 percent. In comparison, North Carolina grew by 19 percent from 8,049,313 people in 2000 to 9,535,483 in 2010.⁴

3 Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B01001, Sex by Age.

Age

The median age in Bertie County is 45, which is higher than the North Carolina median age of 42. Within Bertie County, the Askewville population has the oldest median age, 55, and the Lewiston Woodville population has the youngest median age, 32.³

Race and Ethnicity

Bertie County is mostly African American (62 percent) and White (36 percent) with other races constituting the remaining 2 percent. In comparison, North Carolina is 70 percent White, 22 percent African American, 1 percent American Indian and Alaska Native, 3 percent Asian, less than 1 percent Native Hawaiian/Pacific Islander, 3 percent Some Other Race, and 2 percent Two or More Races.⁵

Within Bertie County, Askewville and Colerain are predominantly White while Lewiston Woodville, Kelford, Aulander, and Windsor are majority African American. In Colerain, 3 percent of the population identifies as American Indian or Alaska Native.

The Latino population in Bertie County is 1.7 percent compared to 9 percent for North Carolina. Roxobel has the largest Latino population (4.5 percent) while Kelford, Askewville, and Powellsville do not have Latino populations according to the census data. Windsor has a Latino population of 2 percent and Colerain has a Latino population of 3.1 percent.

Geography	White	Black or African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian/Pacific Islander	Some Other Race	Two or More Races	Total Non-White
Askewville town	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Aulander town	31.6%	68.3%	0.1%	0.0%	0.0%	0.0%	0.0%	68.4%
Colerain town	94.8%	1.0%	3.1%	0.0%	1.0%	0.0%	0.0%	5.2%
Kelford town	26.0%	74.0%	0.0%	0.0%	0.0%	0.0%	0.0%	74.0%
Lewiston Woodville town	9.2%	85.1%	0.0%	0.8%	0.0%	0.9%	3.9%	90.8%
Powellsville town	45.2%	54.8%	0.0%	0.0%	0.0%	0.0%	0.0%	54.8%
Roxobel town	42.1%	53.4%	0.0%	0.0%	0.0%	4.5%	0.0%	57.9%
Windsor town	31.2%	64.7%	0.9%	2.4%	0.0%	0.2%	0.6%	68.8%
Bertie County	36.2%	62.0%	0.6%	0.5%	0.0%	0.2%	0.6%	63.8%
North Carolina	69.5%	21.5%	1.2%	2.5%	0.1%	3.0%	2.4%	30.5%

Table 2. Bertie County Race and Ethnicity

Limited English Proficiency

Limited English Proficiency (LEP) is defined as populations 18 years or older that speak English less than very well. In Bertie County, most of individuals identified as LEP speak Spanish while others speak Asian/Pacific, or other languages. Similarly, the primary language group for LEP individuals in North Carolina is Spanish. Within Bertie County, Windsor has the largest LEP population. The primary language group for LEP populations in

4 Source: Minnesota Population Center. National Historical Geographic Information System: Version 11.0 [Database]. Minneapolis: University of Minnesota. 2016. <http://doi.org/10.18128/D050.V11.0>. Census 2000/Census 2010 Time Series Tables Geographically Standardized.

5 Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B02001, Race and Table B03002, Hispanic or Latino Origin by Race.

Lewiston Woodville, Roxobel, and Windsor is Spanish. In Aulander, the primary language group is Other while Askewville, Colerain, Kelford, and Powellsville do not have a LEP population according to census data.⁶

Poverty

In Bertie County, 22 percent of the population is below the poverty level compared to 17 percent of the North Carolina population. In Askewville, 3.5 percent of the populations are below the poverty level, 28 percent in Aulander, 16 percent in Colerain, 35 percent in Kelford, 23 percent in Lewiston Woodville, 16 percent in Powellsville, 10 percent in Roxobel, and 28 percent in Windsor.⁷

Low and Moderate Income Individuals

In Bertie County, 48 percent of the population is classified as low and moderate income (LMI) individuals based on the US Department of Housing and Urban Development's definition. In comparison, 39 percent of the North Carolina population is classified as LMI.⁸

Median Household Income

The median household income of the population 25 to 64 years old is \$34,127 in Bertie County and \$53,000 in North Carolina. Colerain as the highest median household income for this age group, \$63,438, and Aulander has the lowest: \$25,653. Median household income was not available for Kelford, Lewiston Woodville, or Roxobel.⁹

Zero Car Households¹⁰

In Bertie County, 10 percent of households do not have a vehicle available compared to 7 percent of North Carolina households. Within Bertie County, Roxobel has the highest percentage of households without access to a vehicle, 21 percent, while Kelford has the lowest percentage: 0 percent. Not having a car available directly impacts the ability to evacuate in an emergency.

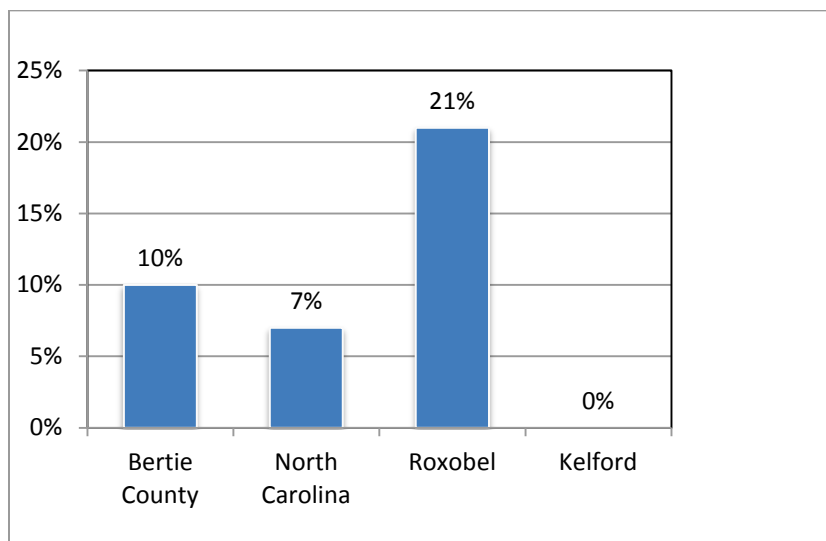


Figure 4. Zero Car Households by Percentage

6 Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B16004, Age by Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over.

7 Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table C17002, Ratio of Income to Poverty Level in the Past 12 Months.

8 Source: US Department of Housing and Urban Development, Estimate of Low and Moderate Income Individuals, <https://www.hudexchange.info/programs/acs-low-mod-summary-data/acs-low-mod-summary-data-block-groups-places/>

9 Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B19094, Median Household Income in the Past 12 Months.

10 Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B25044, Tenure by Vehicles Available.

Commuting: Travel Time to Work, Means of Transportation¹¹

The majority of Bertie County residents commute alone to work by vehicle, 81 percent, the same percentage as the North Carolina average. Within Bertie County, Kelford has the largest percentage of commuters commuting alone, 100 percent, and Colerain has the least: 61 percent.

Askewville has the largest percentage of residents commuting by public transportation: 4 percent. In comparison, 1 percent of North Carolina commuters use public transportation. A greater percentage of Askewville, Colerain, and Lewiston Woodville residents commute by walking, bike, or motorcycle than the North Carolina average of 2 percent.

The mean commute time to work for Bertie County residents is 24.5 minutes. In comparison, the North Carolina mean commute time is 24.7 minutes. Within Bertie County, Powellsville has the shortest mean commute time at 18.4 minutes while Askewville has the longest at 25.5 minutes.

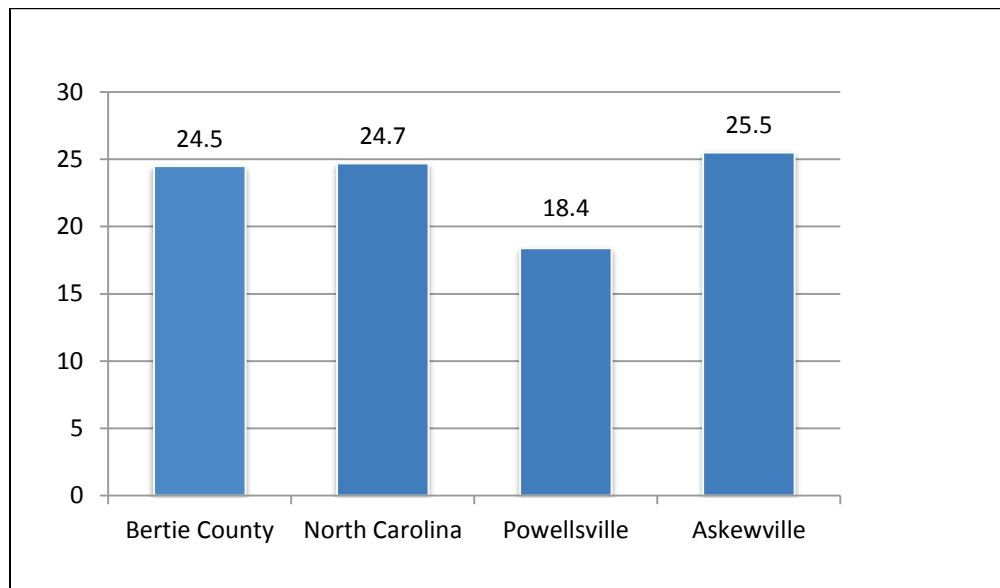


Figure 5. Mean Commute Time to Work in Minutes

¹¹ Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B08301, Means of Transportation to Work and Table GCT0801, Mean Travel Time to Work of Workers 16 Years and Over Who Did Not Work at Home (Minutes).

Housing Profile¹²

Bertie County has over 9,700 housing units, 63 percent of which are single-family homes, 4 percent multi-family units, and 33 percent manufactured housing.

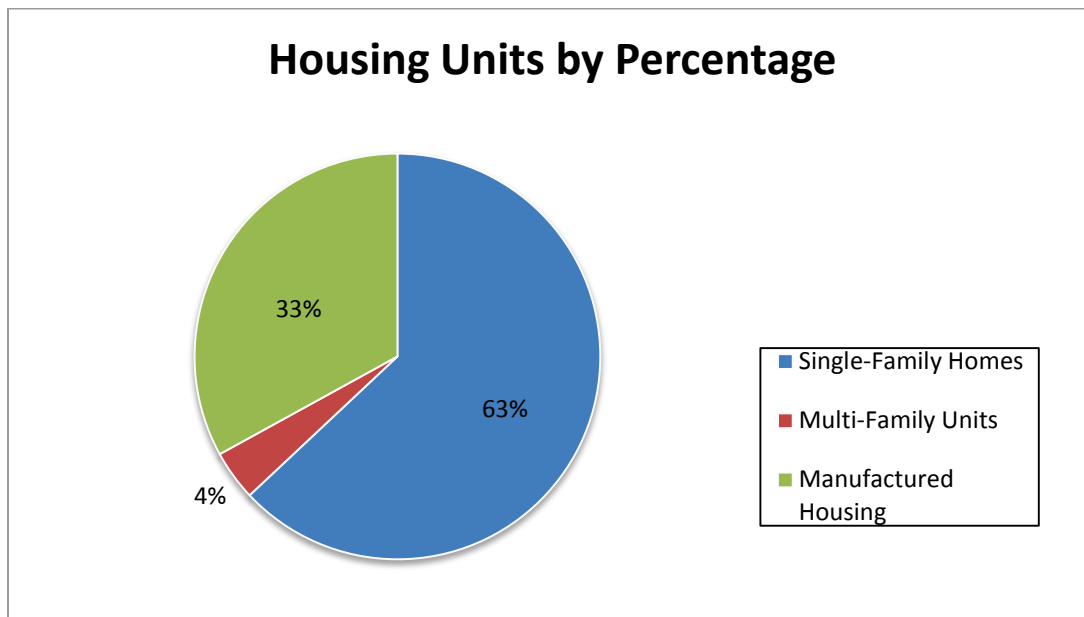


Figure 6. Housing Units by Percentage

In Bertie County 24 percent of housing units are vacant, which is the same percentage for North Carolina. Within Bertie County, Lewiston Woodville has the largest percentage of vacant housing units, 31 percent, while Askewville has the least: 6 percent.

Of the occupied housing units, 74 percent are owner-occupied compared to 65 percent in North Carolina; 27 percent are renter-occupied compared to 35 percent in North Carolina.

The median housing value in Bertie County \$78,400. In comparison, the median housing value in North Carolina is \$140,000. Within Bertie County, Windsor has the highest median housing value: \$93,800. Powellsville has the lowest median housing value: \$60,000.

According to the National Housing Preservation Database, Bertie County has 482 affordable housing units. The towns with the most affordable housing are Windsor, and Aulander.

¹² Sources: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B25002, Occupancy Status; Table B25003, Tenure; Table B25024 Units in Structure; Table B25077, Median Value (Dollars). National Housing Preservation Database

Economic/Business Profile

Bertie County is home to a diverse array of businesses from manufacturing and farming to healthcare and educational services.¹³

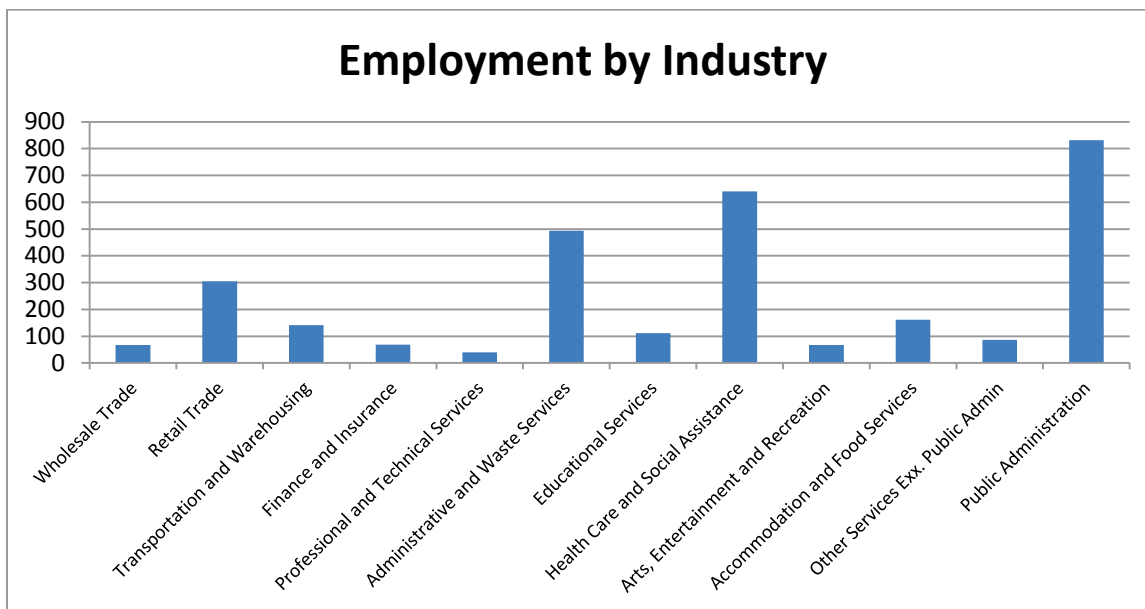


Figure 7. Employment by Industry

According to the US Census Bureau's Longitudinal-Employer Household Dynamics Program, the largest concentrations of jobs within Bertie County are in Windsor, just north of Windsor on US13, and in Colerain.¹⁴

Labor Force

According to the local area unemployment statistics (LAUS) from the Labor and Economic Analysis Division (LEAD) for the unadjusted data for all periods in 2016, the civilian labor force population of Bertie County is 8,537.¹⁵ Within Bertie County, Lewiston Woodville has the largest percentage of residents 16 years or over in the labor force, 72 percent, while Aulander has the smallest: 36 percent.¹⁶

The civilian unemployment rate in Bertie County is 6.7 percent. In comparison, the North Carolina civilian unemployment rate is 5.1 percent.¹⁵ Within Bertie County, Colerain has the smallest civilian unemployment rate at 3 percent while Kelford has the largest: 25 percent.¹⁶

13 Source: AccessNC – North Carolina Department of Commerce, April 2017:
<http://accessnc.nccommerce.com/DemoGraphicsReports/pdfs/countyProfile/NC/37015.pdf>

14 Source: US Census Bureau Longitudinal-Employer Household Dynamics Program

15 Source: Civilian Population and Unemployment Rate - Labor and Economic Division (LEAD) of North Carolina Department of Commerce – Local Area Unemployment Statistics <http://d4.nccommerce.com/LausSelection.aspx>

16 Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B23025, "Employment Status For The Population 16 Years And Over"

Major Employers

The top ten employers¹⁷ in Bertie County represent the manufacturing, public administration, education and health service industries, and are listed in order of total employees:

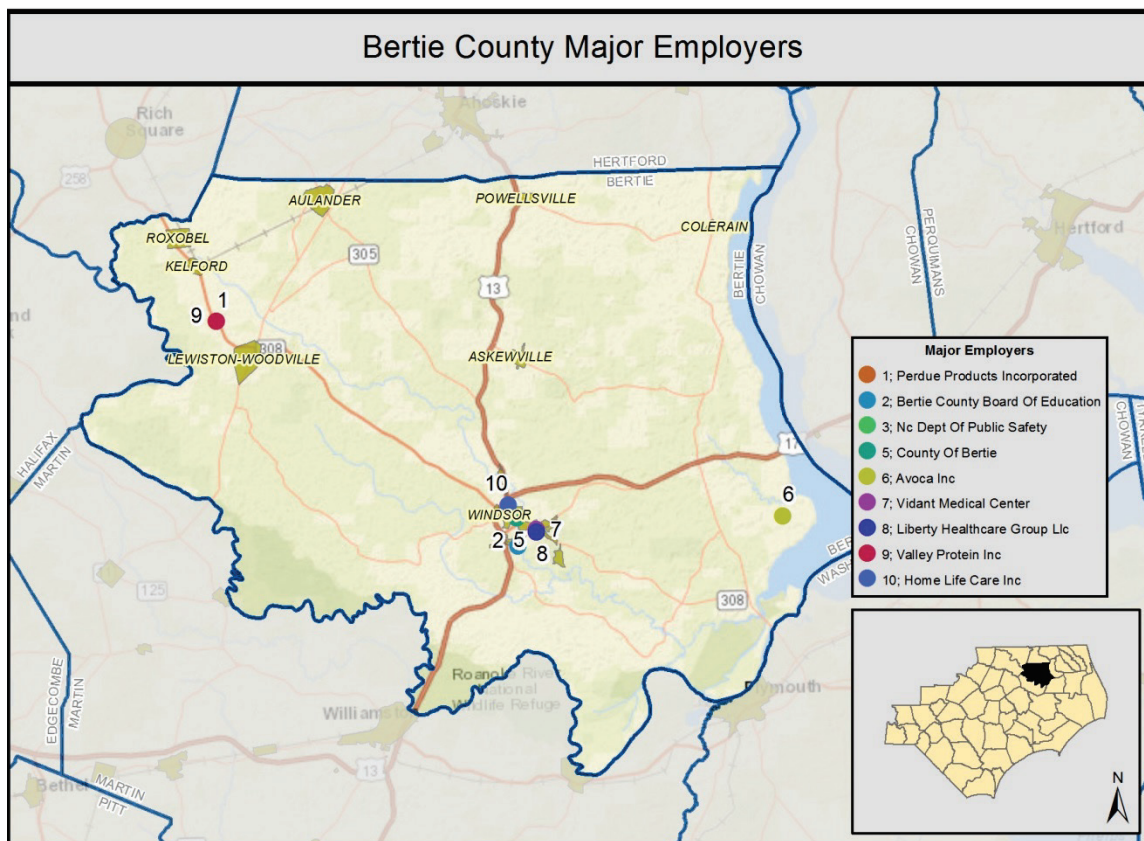


Figure 8. Major Employers by Number of Employees

17 Source: NC Department of Commerce

Economic Development¹⁸

Bertie County is an outstanding location for businesses that want to grow, with a strong, supportive economy, a labor force of more than 231,000 workers living within one hour, and 101 million consumers within a 500-mile radius. Bertie County Industrial Park is located in Windsor and has availability of 14 acres.

The people of Bertie County envision a bright future and tremendous opportunity for economic growth. This vision includes convenient retail options, wealth-generating job opportunities, better education outcomes, local entertainment and recreation, and a more close-knit sense of community.

Martin Community College, located in Windsor, offers employment, training, and job placement services through the Workforce Innovation and Opportunity Act.

Infrastructure Profile

Transportation, health, education, water, and power infrastructure are summarized for Bertie County in the sections that follow.

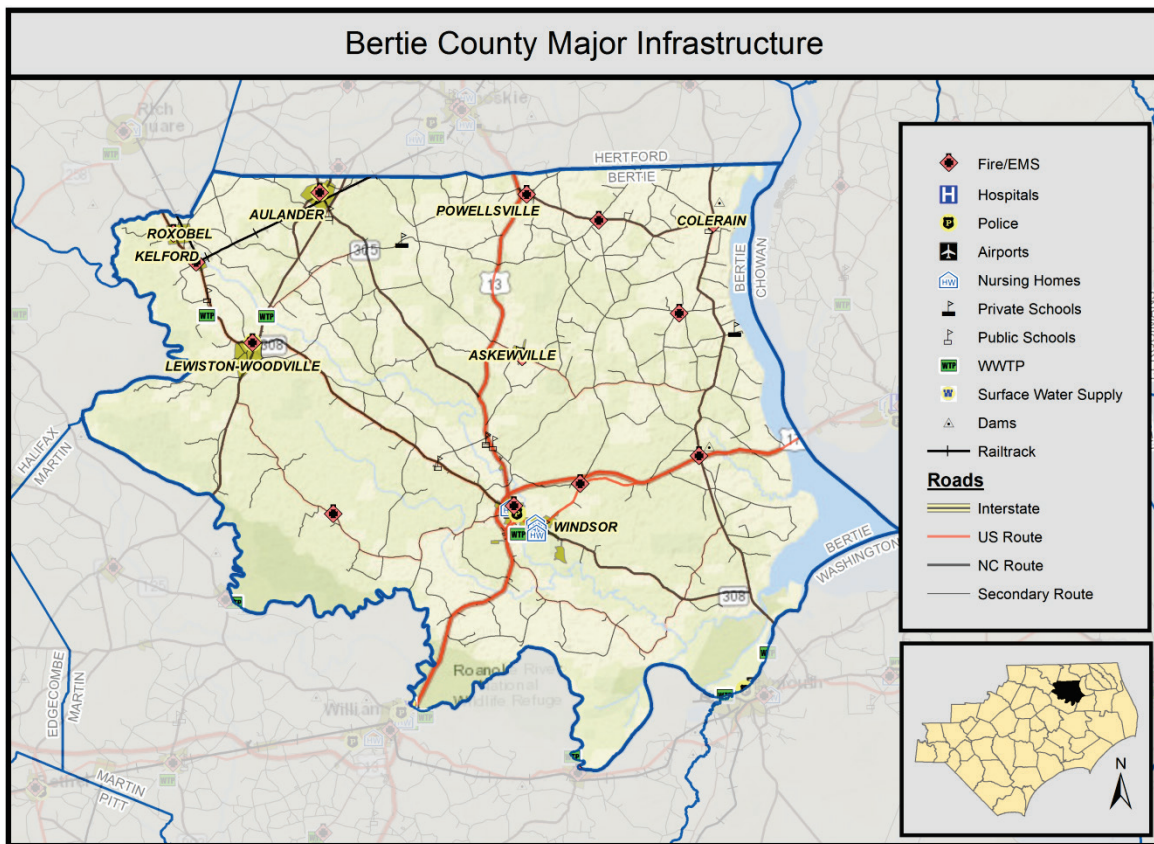


Figure 9. Bertie County Major Infrastructure

18 Sources: Bertie County Economic Development and MidEast Commission

Transportation

Bertie County is connected to the region by US 13, US 17, and NC308. US 17 is a major east-west highway that provides Bertie County and the rest of North Carolina with access to the east. US 13 is a north-south highway connecting the county and points south with Hertford County, the Tidewater of Virginia, and points north. Bertie County is also served by rail from Norfolk Southern, CSX, and smaller regional operators.

Health

Vidant Bertie Hospital is the only hospital located in Bertie County. Vidant Medical Group is a multi-specialty physician group that provides superior care for the health and wellness needs of eastern North Carolina's patients. With more than 350 primary and specialty care providers in more than 70 locations, Vidant Medical Center is affiliated with the Brody School of Medicine at East Carolina University.

Education

Bertie County Public Schools administers five elementary, one middle, and three high schools. Martin Community College has a satellite campus in Windsor and is a member of the North Carolina Community College System.¹⁹

Water

The Bertie County Regional Water and Sewer Authority provides drinking water to Bertie County. Its permitted capacity is 3.75 million gallons per day. Municipal wastewater is treated at the Windsor wastewater treatment plant and the Lewiston Woodville wastewater treatment plant.²⁰

Power

There are several solar farms located within Bertie County near Kelford and Windsor. These power plants have a net summer capacity of between 4.7 and 20 megawatts each for a total capacity of 39.7 megawatts.²¹

Environmental Profile

Water resources, natural areas, managed areas, biodiversity, wildlife habitat, and recreation are summarized for Bertie County in the sections that follow.

Water Resources

The Cashie River flows southeast through the middle of Bertie County, while the Chowan River makes up its eastern border. Wetlands are present along both rivers and their tributaries. The most common wetland type in Bertie County is freshwater forested/shrub wetland.²²

Natural and Managed Areas

According to the NC Natural Heritage Program, there are a number of natural areas of high, very high, or exceptional value in Bertie County. Those areas include exceptional value property near Lewiston Woodville in the Roquist Pocosin area and the Roanoke River Delta--Conaby Creek area between Windsor and Plymouth.

¹⁹ Sources: Bertie County Public Schools and Martin Community College

²⁰ Sources: NC Division of Water Resources, Local Water Supply Plans and the Bertie County Water and Sewer Authority

²¹ Source: US Department of Energy, US Energy Mapping System

²² Source: NC Natural Heritage Program

Very High value property is the Buzzard Point Floodplain Forests and the Cypress Swamp/Sandy Run Floodplain Forest near Kelford and the Salmon Creek Swamp in Merry Hill. High value properties include the Cashie River Swamp near Windsor, the Indian Woods/Broadneck Swamp, the Roanoke River/NC 11 Floodplain Forests, Big Swash, Coniott Ridge and the Chowan River Aquatic Habitat. Moderate value properties include the Roquist Creek Swamp off NC308, the Rascoe Millpond, and the Black Walnut Swamp near Merry Hill. There are several managed areas under state ownership within Bertie County. Managed areas are properties and easements where natural resource conservation is one of the current primary management goals, or are of conservation interest. These areas in Bertie County include: the Peanut Belt Research Station in Lewiston Woodville, Roanoke River Wetlands Game Lands off NC308, Bertie County Game Lands around Windsor, various wildlife mitigation and conservation easements around the county, and NC Department of Transportation mitigation sites throughout the county.²²

Biodiversity and Wildlife Habitat

The NC Natural Heritage Program produces a biodiversity and wildlife habitat assessment for the state. According to this assessment, areas with the highest rating for biodiversity and wildlife habitat are along the Roanoke River and its tributaries, the Cashie River and Chowan River, plus the Roquist Pocosin area near Lewiston Woodville. These areas rank between a 7 and 10, with 10 being the highest possible score. Other areas of the county rank 5 to 6. Most of the county is unrated.²²

Parks and Recreation

The Bertie County Recreation Department was established in October of 2001 and was the first recreational department for Bertie County. Soccer was the first sport to be brought to the county and has grown tremendously. They offer tackle football, T-ball, coach-pitch baseball, baseball and softball. During the summer the Parks and Recreation Department offers various summer camps and activities. They operate and maintain the first ever recreational complex in Bertie County which consists of a baseball field, softball field, football field, soccer field, playground area, restroom/concession building, picnic shelter, maintenance building and parking area. Currently a staff of three operates the department. Most of these facilities are located in Windsor.²³

Administrative Profile

Bertie County has the Northeastern North Carolina Regional Hazard Mitigation Plan in place, which was last updated in 2016. The county has emergency services and planning departments with the capacities to assist in hazard mitigation planning and disaster preparedness. The Town of Windsor has a planning department that would be able to assist as well. Smaller communities and towns within Bertie County may need assistance in the administration and implementation of projects due to their limited staff capacity.

²³ Sources: NC Natural Heritage Program, Bertie County Parks and Recreation Department

An aerial photograph showing a residential neighborhood severely impacted by flooding. The water is a murky, brownish-yellow color, covering large areas of the landscape. Numerous houses with grey roofs are visible, some partially submerged. A network of roads crisscrosses the area, with some sections completely underwater. Large green trees are scattered throughout, many of which are isolated in the floodwater. The overall scene depicts significant storm damage and inundation.

3. Storm Impact

3. Storm Impact

Rainfall Summary

Hurricane Matthew officially made landfall as a Category 1 storm southeast of McClellanville, South Carolina early on October 8, 2016. The track and speed of the storm resulted in nearly two days of heavy precipitation over much of North Carolina that caused major flooding in parts of the eastern Piedmont and Coastal Plain. The storm produced widespread rainfall of 3-8 inches in the central regions of North Carolina and 8 to more than 15 inches in parts of eastern North Carolina. A number of locations received all-time record, one-day rainfall amounts. Many locations in the Coastal Plain of North Carolina had received above normal rainfall in the month of September leading to wet antecedent conditions prior to Hurricane Matthew. Total rainfall depth for Bertie County is highlighted graphically in the figure below.

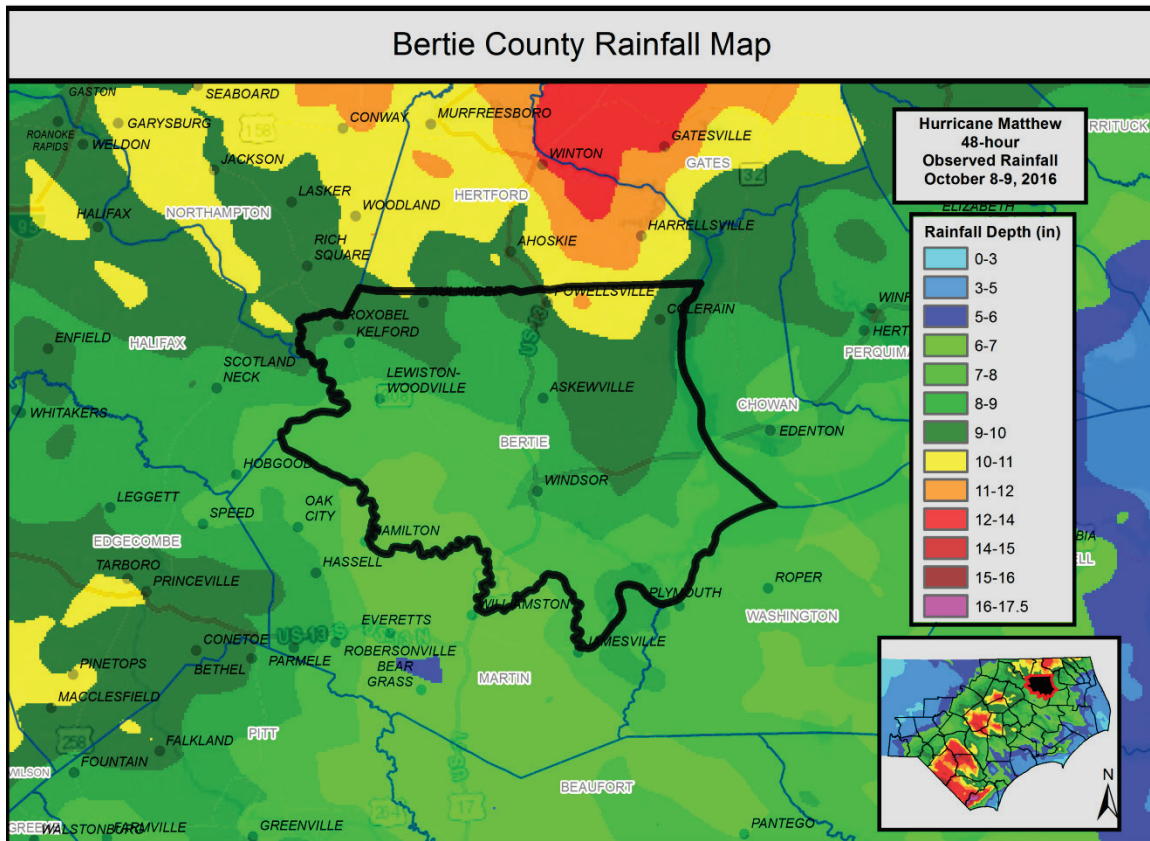


Figure 10. 48-hour Observed Rainfall Depth (October 8-9, 2016)

Riverine Flooding Summary

USGS documented streamgage data in the report “Preliminary Peak Stage and Streamflow Data at Selected Streamgaging Stations in North Carolina and South Carolina for Flooding Following Hurricane Matthew, October 2016”. Streamgage data from the USGS report for Bertie County and nearby gages is summarized below.

USGS Gage	County	River Name and Location	Drainage Area (sq mi)	Peak Matthew Elevation (ft)	Previous Record (ft)
02081094	Bertie	Roanoke River at Jamesville, NC	9250.0	4.96	5.87
02081054	Bertie	Roanoke River at Williamston, NC	9070.0	11.61	11.91
0208114150	Bertie	Roanoke River at NC 45 near Westover, NC	9660.0	4.97	6.49
02081028	Bertie	Roanoke River at Hamilton, NC	8890.0	17.56	18.17
02081022	Bertie	Roanoke River near Oak City, NC	8810.0	21.18	22.07
0208111310	Bertie	Cashie River at SR1257 near Windsor, NC	108.0	16.63	18.52
02081094	Bertie	Roanoke River at Jamesville, NC	9250.0	4.96	5.87
02081054	Bertie	Roanoke River at Williamston, NC	9070.0	11.61	11.91

Table 3. Bertie County USGS Stream gage Data

The USGS data validates what was experienced in the county. Hurricane Matthew had some significant impacts on Bertie County especially in the southeastern part of the county, near Windsor, which is where the Cashie River drains. Flooding also occurs in this part of the county during less severe events, which makes this a particular hot spot zone for flooding. Details of impacts categorized under housing, economic, infrastructure, and environment are included in the following sub-sections.

Housing

According to Individual Assistance claims as of February 11, 2017, there were 1,025 impacted houses in Bertie County as a result of Hurricane Matthew. It should be noted that additional claims from Hurricane Matthew might still be pending, so this number may not reflect the final claims data from the event. This also does not take into account other historic impacts to the county or other areas of concern for flooding that may not have occurred during this storm. With that in mind, the planning team attempted to take a comprehensive look at both Hurricane Matthew impacts and any historic impacts that local officials felt would validate areas that should be considered at high risk to future flooding.

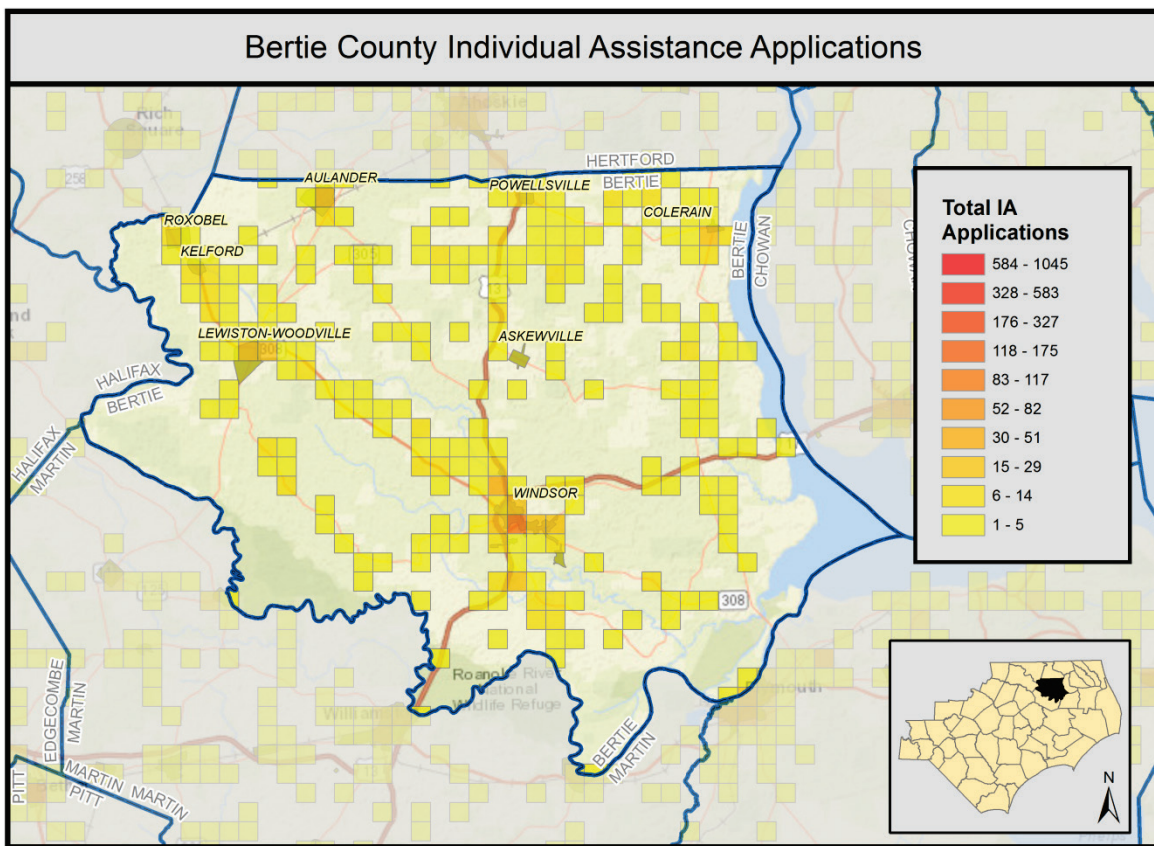


Figure 11. Bertie County IA Applications by Area

Housing was certainly impacted in Bertie County as a result of Hurricane Matthew as there were several homes damaged, especially in the southeast part of the county. The bullets below summarize some of the major impacts to housing that were identified by local officials from the event.

- **Ghent Street / Gatling Street:** Water crosses US 17 and drains into a residential area. Poor drainage and the location of a canal caused eight houses to flood. The arrangement of the neighborhood and its relationship to US 17 presents poor drainage options and stormwater mitigation.
- **Homes Flooded from Hurricane Matthew:** There is a countywide need for additional assistance with homes that have been flooded from Hurricane Matthew, including the Town of Colerain. Based on historic flooding information, these communities include a significant amount of repetitive loss properties.

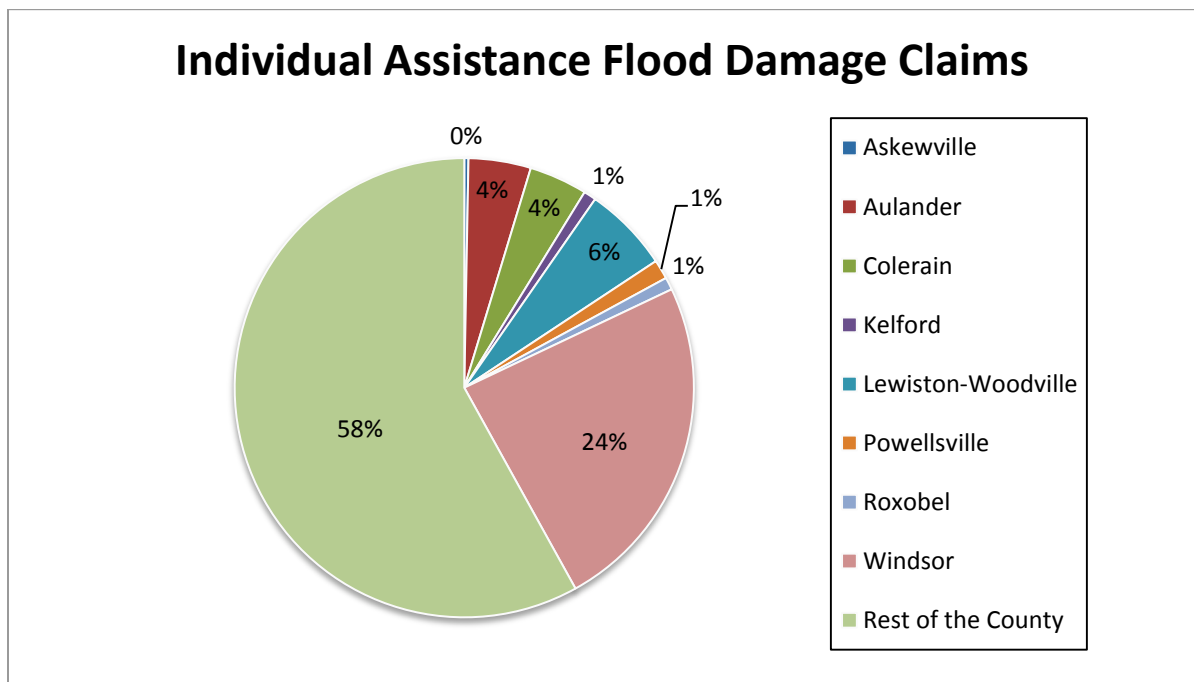


Figure 12. IA Flood Damage Claims by Area

Economics / Business / Jobs

There were major impacts to the economy in Bertie County from Hurricane Matthew compared to some of the other impacts the county experienced. The bullets below summarize some of the impacts to the economy/businesses/jobs that were identified by local officials from the event.

- Bertie County Emergency Services Headquarters:** The Bertie County HQ for EMS services was rendered unusable due to high floodwaters and was located in a poor location regarding future flood protection. The absence of this facility impacts thousands of residents.
- Windsor Downtown Areas Impacted:** Downtown Windsor, centered on North King Street and Granville Street, contains multiple structures, including both commercial and residential, located in the flood zone. The area flooded at 6 feet, impacting 42 businesses and putting rendering many buildings unusable to this day.
- Bertie County Public Library:** The library building in Windsor was destroyed and rendered unfit for use. The lack of this facility impacts the entire county population and takes away key services such as community classes and access to the internet for job services and other critical broadband needs. A new location and building will need to be identified.
- Bertie County Cooperative Extension:** The facility was heavily damaged, affecting school programs, technical support for agriculture, 4H programs, and others. A new location and facility will need to be identified.
- Windsor Utility Operations Center:** The Town facility was heavily damaged due to floodwaters of the Cashie River. The operation of this facility impacts provision of water, sewer, power, and sanitation services to the Town of Windsor. A new location and facility will need to be identified.
- Windsor Community Building:** This hub of activity for the Town of Windsor was heavily affected by flooding at 3 feet. The building is regularly used by the community, Cooperative Extension, as a voting

precinct, and for other regular uses. It is developed on a concrete slab, which affects the ability to elevate. A new location and facility will need to be identified.

- **Freeman Hotel:** This is a National Register property that has been relocated to the town park and has continuously flooded. It has not been utilized since 2010 due to the poor condition, but is a tourist attraction.

Infrastructure

There were no Public Assistance (PA) claims made in Bertie County as a result of Hurricane Matthew; however, County infrastructure was one of the greatest areas of concern in the wake of Hurricane Matthew as there were several types of infrastructure that were damaged in multiple locations. In particular, the overall flood nature of the Cashie River basin due to elevation drops and proximity to population centers calls for specific countywide measures to reduce flood impacts. The bullets below summarize some of the major impacts to infrastructure that were identified by local officials from the event.

- **Windsor Flood Reduction Feasibility Study:** NCSU and East Carolina University have teamed to propose a study that will develop engineering options that will reduce water flow into Windsor and other affected properties from fast-moving water of the Cashie River basin. This study will inform and validate the need for a number of projects that can help reduce county-wide flooding.
- **NC 308 Cashie River Bridge:** The bridge, located in Windsor at the mouth of the Cashie River, gets completely inundated by water during flood events and does not span the entire floodway. The bridge is 150 feet long and the floodway extends another 3,850 feet.
- **CSX at 72 Siding Road:** This was the first upstream location in the Cashie River basin where water began to affect downstream property. There was a 20 foot wall of water in this area that washed out the railroad track and began moving downhill towards Windsor.
- **School Road:** The road was washed out by high water and stranded many people. The high school was cut off from access, which impacted shelter operations. This area of swampland of the Cashie River regularly floods.
- **Hoggards Mill:** This is the second major area where water flows and accumulates after the CSX location on 72 Siding Road before heading downstream to Windsor. An existing abandoned mill structure and levee wall are onsite that may be useful for future structural water storage. The potential water storage area may extend 3-5 miles.
- **Salmon Creek:** The Salmon Creek bridge was topped and the surrounding area was flooded during Hurricane Matthew. This is a very significant issue, because due to this bridge impact, US 17 was blocked and access for supplies east-west, northern routing, and the state evacuation route from the east was eliminated. Highway patrol lost 5 vehicles from this event.
- **Powellville Bridge:** This Ahoskie Creek bridge was washed out, which eliminated access to the hospital for residents.
- **Water/Wastewater Infrastructure:** Water and wastewater infrastructure is critical to maintaining health and well-being of the public in the wake of a storm event. Often this infrastructure is threatened due to

the necessity of placing it near water bodies, which naturally causes the risk to flooding. During Hurricane Matthew, a number of water/wastewater facilities were impacted in Bertie County.

- York Street wastewater lift station had major damage and was not functional due to flooding of the pump and inability to power the station.
- King Street wastewater lift station had major damage and was not functional due to flooding of the pump and inability to power the station.
- Elm Street wastewater lift station had major damage and was not functional due to flooding of the pump and inability to power the station.
- The Sutton Drive well house had major water damage and was not functional.

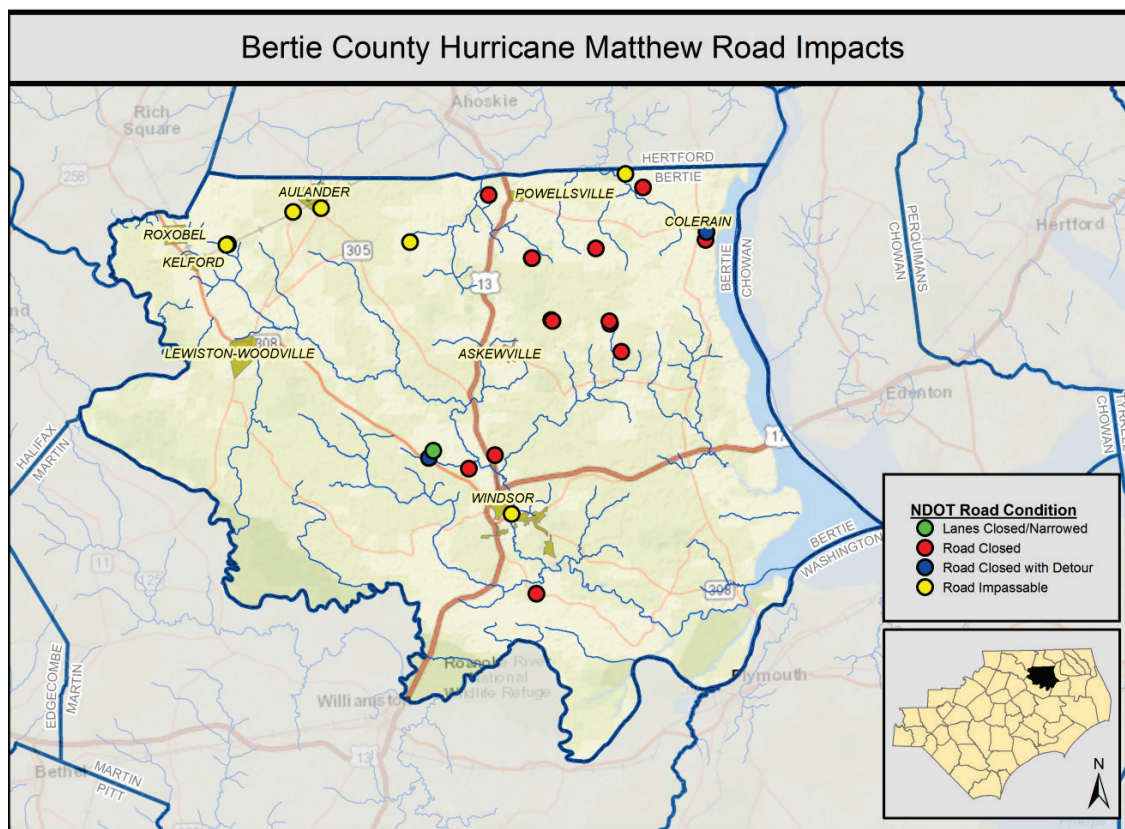


Figure 13. Impacted NCDOT Structures in Bertie County

Ecosystems / Environment

Overall, environmental impacts in Bertie County as a result of Hurricane Matthew were relatively minimal. However, there were some noteworthy incidents that may not have explicitly impacted the environment and ecosystems, but which brought to light some underlying issues related to maintenance of environmental features that the county faces recurrently.

- **Livermon Zoo:** This regional travel attraction in the Town of Windsor entirely flooded and experienced structural damage to animal enclosures. It is a unique tourist attraction that impacts school visitors, inter-county and regional tourism, and other environmental tourism.
- **Davis Park:** Ballfields flooded and residential structures were impacted. This park is one of the few organized recreation areas in Bertie County. The housing issues were mitigated by elevation.



4. Strategies for Resilient Redevelopment

4. Strategies for Resilient Redevelopment

This section provides details about the resilience and revitalization strategies and actions identified in Bertie County. These actions were identified and refined during three public meetings with local officials and county residents held in March and April 2017. The actions are tied to impacts from Hurricane Matthew and organized by the pillars of housing, economic development, infrastructure and environment. In addition to the public meetings, frequent coordination calls with County officials and data gathered from state agencies and organizations were utilized to formulate the actions listed below.

Meeting 1 was designed to introduce the community and County points of contact to the Resilient Redevelopment Planning process and goals. This meeting allowed the planning team to capture areas within the county that were damaged during Hurricane Matthew and to hear what potential mitigation actions had already been considered. Draft resilience actions were then presented at Meeting 2 of the planning process. This was done to garner general buy-in on the draft actions from the County-level planning teams and residents. More details on the actions were collected between Meetings 2 and 3 through research and follow-up phone calls and emails with the primary points of contact. Meeting 3 provided the opportunity to collect and finalize details for the draft actions. Meeting 4, scheduled in early May 2017, allowed the County points of contact to rank the identified actions, group them into High, Medium, and Low Priorities, and to approve their inclusion in the plan.

Pillar	Project/Action Count
Housing	2
Economic Development	7
Infrastructure	13
Environment	3
Grand Total	25

Table 4. Bertie County Summary of Projects by Pillar

The following table is ordered by the rankings and priorities provided by Bertie County during Meeting 4:

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Infrastructure Tier 1 Action 1: Windsor Flood Reductions Feasibility Study	High	1
Economic Development	Economic Development Action 2: Windsor Central Business District	High	2
Economic Development	Economic Development Action 1: Windsor EMS Facility	High	3
Housing	Housing Action 1: Countywide Housing Assistance	High	4
Infrastructure	Infrastructure Tier 2 Action 1: NC 308 Bridge	High	5
Infrastructure	Infrastructure Tier 2 Action 5: Salmon Creek Bridge	High	6
Infrastructure	Infrastructure Tier 2 Action 3: School Road Bridge	High	7
Infrastructure	Infrastructure Tier 2 Action 4: Hoggards Mill Water Storage	High	8
Infrastructure	Infrastructure Tier 2 Action 2: 72 Siding Road Water Storage and Diversion	High	9

Pillar	Action Name	Priority	Overall Ranking
Environment	Environment Action 3: Countywide Emergency Warning System	High	10
Infrastructure	Infrastructure Tier 3 Action 6: NC 308 and School Road Emergency Shelter	Medium	11
Economic Development	Economic Development Action 5: Windsor Utility Operations Center	Medium	12
Economic Development	Economic Development Action 3: Windsor Library	Medium	13
Housing	Housing Action 2: Ghent/Gatling Neighborhood	Medium	14
Infrastructure	Infrastructure Tier 2 Action 6: White Oak Drainage	Medium	15
Infrastructure	Infrastructure Tier 3 Action 1: York Street Pump Station	Medium	16
Infrastructure	Infrastructure Tier 3 Action 2: Water Street Pump Station	Medium	17
Infrastructure	Infrastructure Tier 3 Action 3: Elm Street Pump Station	Medium	18
Infrastructure	Infrastructure Tier 3 Action 4: Sutton Drive Well House	Medium	19
Infrastructure	Infrastructure Tier 3 Action 5: Ahoskie Creek Bridge	Medium	20
Economic Development	Economic Development Action 6: Windsor Community Building	Low	21
Economic Development	Economic Development Action 4: Cooperative Extension	Low	22
Environment	Environment Action 1: Livermon Zoo	Low	23
Environment	Environment Action 2: Davis Park Ballfields	Low	24
Economic Development	Economic Development Action 7: Freeman Hotel	Low	25

Table 5. Projects by Rank

On the following pages, we have organized the projects and actions by pillar. Within each pillar, the projects are grouped by county priority. Please note that maps are provided for all projects that have a specific location within the county. Projects without maps are county-wide projects that will benefit citizens throughout the county.

Housing Strategies

Although Bertie County as a whole suffered only moderate impacts with respect to housing from Hurricane Matthew, the Windsor neighborhood between Ghent and Gatling Streets was impacted by failing stormwater facilities. In addition to this area, it was identified that White Oaks was flooded due to poor drainage under US 17 and storm water backing up into the neighborhood. There were also multiple locations throughout the county where individual homes were impacted from flooding that need elevations and buyouts. As a result, in development of Bertie County's housing strategies, the planning team put their focus into the redevelopment and resiliency of the following specific areas.

High Priority Housing Strategies

Pillar	Action Name	Priority	Overall Ranking
Housing	Housing Action 1: Countywide Housing Assistance	High	4

Table 6. Bertie High Priority Housing Summary

The following project represents the housing strategies that Bertie County indicated is the highest priority to address. Additional detail on the project can be found below:

- **Acquisition/Elevation of Damaged Homes:** Develop a program to assess and identify best solution for widespread repetitive flooding of homes and continual flood risk in the Ghent/Gatling and White Oaks residential communities. In addition, there are numerous locations around the county where spot locations of repetitive flooding exist, including the area around Toby's Lane and Joyner Street north of Windsor. A full record of affected homes is on file with the county EMS office. The county would like to include the options of elevation, reconstruction, and/or acquisition as a part of this study.
- **This is a county-wide project, so no project area map has been included.**

Housing Action 1: Countywide Housing Assistance

County: Bertie

Priority Grouping: High Priority

Priority Ranking: 4

Project Timeframe: 0-5 years

Location: Countywide

Project Summary: Countywide need for additional assistance with uninhabitable homes and multiple flooding impacts

Project involves: Elevations and buyouts

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Unmet need if HMGP and CDBG-DR allocations cap out.	N/A
Consistent with existing plans (describe points of intersection/departure)		N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.		N/A
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	50-100 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	0	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	Agree
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?		N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Local	Agree

Medium Priority Housing Strategies

Pillar	Action Name	Priority	Overall Ranking
Housing	Housing Action 2: Ghent/Gatling Neighborhood	Medium	14

Table 7. Bertie Medium Priority Housing Summary

This project represents the housing strategy that Bertie County indicated is of a medium priority to address. Additional detail on the project can be found below:

- Stormwater Management Analysis and System Upgrades:** Perform an updated stormwater management analysis to determine how to address the flooding along around US 17 into neighborhoods, especially through Gatling Street to Ghent Street and in the White Oaks neighborhood. Integrate this analysis with the county’s strategy to provide upstream water storage along the Cashie River watershed during high rain events.

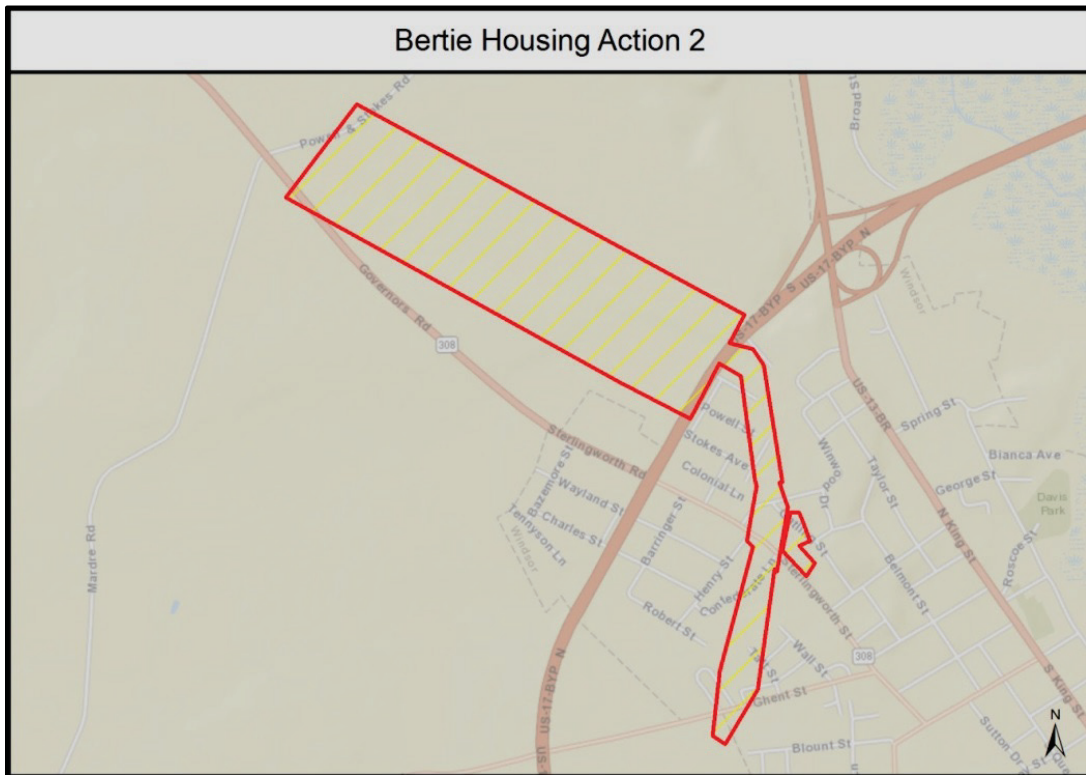


Figure 14. Housing Action 2: Ghent/Gatling Neighborhood

Housing Action 2: Gatling / Ghent Stormwater Improvements

County: Bertie

Priority Grouping: Medium Priority

Priority Ranking: 14

Project Timeframe: 5-10 years

Location: US 17 Bypass to Gatling Street and Ghent Street

Project Summary: Improve storm water drainage, berm canal. Need storm water improvements, open channel, causes flooding. No real storm water infrastructure, culverts failed at Ghent / Gatling Streets, causes flooding to homes in area; Food Lion in area; open canal area

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.		N/A
Consistent with existing plans (describe points of intersection/departure)		N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Assume there will be reduction of risk due to functional downtime of road being flooded as well as to housing stock.	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	0	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?		N/A
What is the capability of the local government to administer this project?	Unknown	Agree
What is the financial range of this project?	\$251K - \$500K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Between 51 and 75%	Agree
Who will administer this project?	Unknown	Agree

Economic Development Strategies

Due to major Hurricane Matthew impacts to Bertie County in terms of economic development, the planning team worked with local county officials to examine ways to increase resiliency for future storm events and encourage economic growth.

High Priority Economic Development Strategies

Pillar	Action Name	Priority	Overall Ranking
Economic Development	Economic Development Action 2: Windsor Central Business District	High	2
Economic Development	Economic Development Action 1: Windsor EMS Facility	High	3

Table 8. Bertie High Priority Economic Development Summary

These two projects represent the economic development strategies that Bertie County indicated are the highest priority to address. Additional detail on the projects can be found below:

- **Downtown Windsor Revitalization:** It is especially notable that there is significant potential for economic development to be integrated with redevelopment efforts in Bertie County. This project, which is aimed at economic development and redevelopment, focuses on downtown Windsor, NC. Businesses in downtown Windsor experience significant capital losses during flood events. They face structural damage, loss of inventory, and loss of business. The project would elevate the interior of the affected buildings, which is feasible with tall ceilings in older buildings. Flooding has reached 6 feet and affects 42 different businesses and the community building downtown. This has a direct impact on 250 employees and a broader population of 750.



Figure 15. Economic Development Action 2: Windsor Central Business District

Economic Development Action 2: Windsor Central Business District

County: Bertie

Priority Grouping: High Priority

Priority Ranking: 2

Project Timeframe: 5-10 years

Location: Downtown Windsor Business District - North King Street at Granville Street (NC308)

Project Summary: Flood protection and elevation. Windsor historic area, businesses have been in the same location for years, not willing or able to afford relocation as this is the primary service area for the County offices and related functions. Flooding has reached 6 feet and affects multiple businesses and the community building downtown.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Businesses in downtown Windsor experience significant capital losses during flood events. They face structural damage loss of inventory and loss of business.	N/A
Consistent with existing plans (describe points of intersection/departure)	Yes	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Downtown values hold high economic value and keeping businesses operational downtown is a high priority. This project would reduce capital losses for business.	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	50-100 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	4-6	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	N/A	N/A
What is the capability of the local government to administer this project?	Unknown	N/A
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	State	Agree

- Bertie Emergency Services Headquarters:** The previous location for EMS headquarters was completely inundated and deemed unfit for continued use due to the susceptibility for future flooding. As a critical community facility, the extreme need for coordination of emergency services improves the effectiveness of emergency services, which helps protect the county's underlying economic resources. This project would develop a new EMS facility on a site identified by the County. This is a critical community facility that impacts 10,000 residents. It impacts 21 employees directly and 60 people indirectly.



Figure 16. Economic Development Action 1: Windsor EMS Facility

Economic Development Action 1: Windsor EMS Facility

County: Bertie

Priority Grouping: High Priority

Priority Ranking: 3

Project Timeframe: 0-5 years

Location: Windsor - EMS Facility

Project Summary: Building rendered unusable due to high floodwaters – poor location regarding future flood protection. Not having the facility impacts 10,000 residents

Project involves: Locate new site and construct replacement EMS facility

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The building was rendered unusable due to high floodwaters and its poor location makes it at risk for future floods.	N/A
Consistent with existing plans (describe points of intersection/departure)	Not in conflict with any existing plans but not called out specifically.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	As a critical community facility the extreme need for coordination of emergency services improves the effectiveness of emergency services which helps protect the county's underlying economic resources.	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$251K - \$500K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

Medium Priority Economic Development Strategies

Pillar	Action Name	Priority	Overall Ranking
Economic Development	Economic Development Action 5: Windsor Utility Operations Center	Medium	12
Economic Development	Economic Development Action 3: Windsor Library	Medium	13

Table 9. Bertie Medium Priority Economic Development Summary

These two projects represent the economic development strategies that Bertie County indicated are of a medium priority to address. Additional detail on the projects can be found below:

- Windsor Utility Operations Center:** The utility center was completely inundated and deemed unfit for continued use due to the susceptibility for future flooding. This center would assist the Town of Windsor in adequately responding to utility calls and quickly providing a response. The facility affects 5,000 residents. It employs 40 people directly and impacts approximately 120 indirectly.

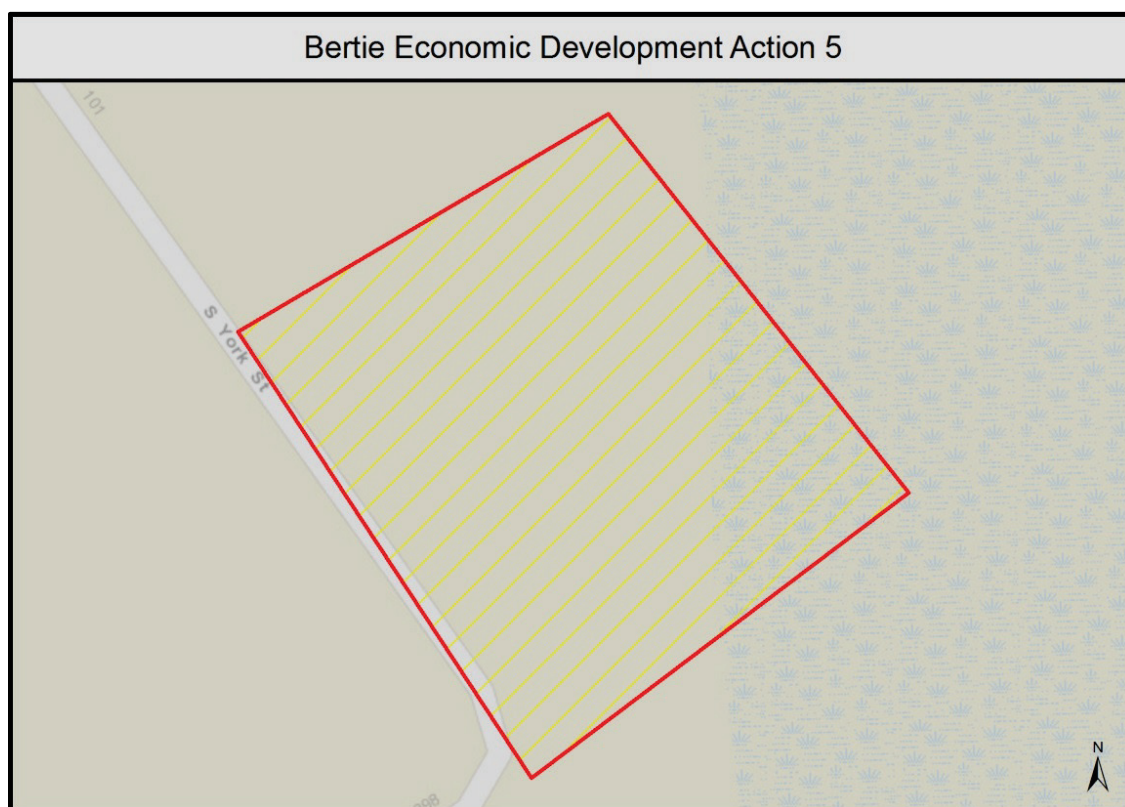


Figure 17. Economic Development Action 5: Windsor Utility Operations Center

Economic Development Action 5: Windsor Utility Operations Center

County: Bertie

Priority Grouping: Medium Priority

Priority Ranking: 12

Project Timeframe: 0-5 years

Location: S York Street / Dundee Street

Project Summary: Develop a new facility for the Windsor Utility Operations Center at a new location to maintain water, sewer, power, and sanitation. Assists the Town of Windsor in adequately responding to utility calls and quickly providing a response. The County has identified a suitable location for a new facility.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The facility was heavily damaged and requires a new building in a new location to protect it from future flooding.	N/A
Consistent with existing plans (describe points of intersection/departure)	Not specifically mentioned in plans but consistent with goals of community.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	This center would assist the Town of Windsor in adequately responding to utility calls and quickly providing a response.	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Minimal to low confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	N/A	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$251K - \$500K	Agree
What is the level of public support for this project?	Medium	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Local	Agree

- **Windsor Public Library:** The library was completely inundated and deemed unfit for continued use due to the susceptibility for future flooding. This project would locate the library on a new site and construct a new building including the stocking of new library resources. The library is used as a center for residents to access computers to learn skills, build resumes, and apply for work. The library serves population without access to home computers or the Internet. The library affects 21,000 residents across Bertie County and is used by the education system and employment sector. It is a key resource for Internet access. It impacts 5 employees directly and approximately 20 indirectly.

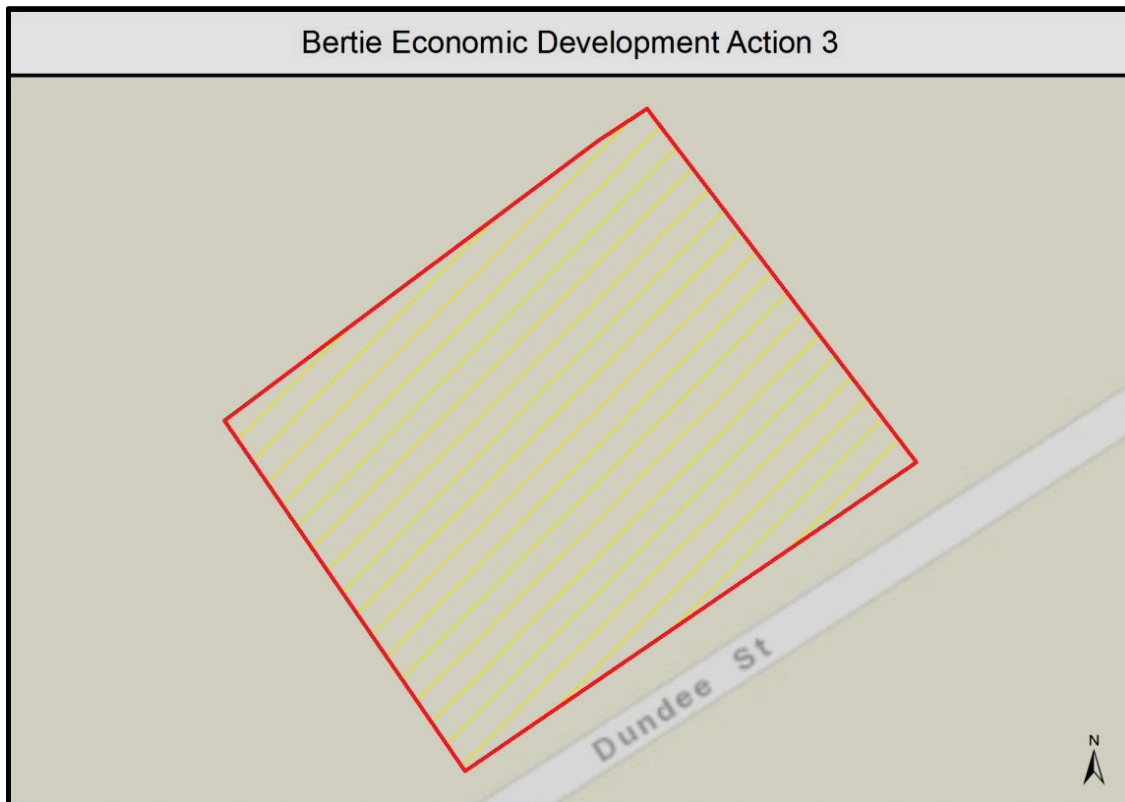


Figure 18. Economic Development Action 3: Windsor Public Library

Economic Development Action 3: Windsor Library

County: Bertie

Priority Grouping: Medium Priority

Priority Ranking: 13

Project Timeframe: 0-5 years

Location: Downtown Windsor

Project Summary: Locate the library to a new site and construct a new building including the stocking of new library resources. Facility destroyed and rendered unusable. Affects 21,000 residents across Bertie County – impacts to education system, employment sector. Key resource for internet access.

Project involves: Location of new site and construction of new building including stocking new library resources

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The facility was destroyed and rendered unusable.	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with the goals of the community to restore community resources.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	The library is used as a center for residents to access computers to learn skills build resumes and apply for work. The library serves population without access to home computers or the Internet.	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Minimal to low confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree
What impacts to the environment of the county will result from this project?	N/A	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$501K - \$1M	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

Low Priority Economic Development Strategies

Pillar	Action Name	Priority	Overall Ranking
Economic Development	Economic Development Action 6: Windsor Community Building	Low	21
Economic Development	Economic Development Action 4: Cooperative Extension	Low	22
Economic Development	Economic Development Action 7: Freeman Hotel	Low	25

Table 10. Bertie Low Priority Economic Development Summary

- Windsor Community Building:** The community building was impacted by 3 feet of water and is at risk for repeated flooding due to its location and the susceptibility for future flooding. It needs to be elevated. The Community Building is the primary gathering location for any significant community event. Keeping the facility near downtown Windsor promotes the economic viability of the downtown area. The facility has regular use by the community, cooperative extension, and voting precinct. The Community Building affects 21,000 residents. It sits on a concrete slab, and the building can be elevated effectively.



Figure 19. Economic Development Action 6: Windsor Community Building

Economic Development Action 6: Windsor Community Building

County: Bertie

Priority Grouping: Low Priority

Priority Ranking: 21

Project Timeframe: 0-5 years

Location: S Queen St / Nichols Street - Community Building

Project Summary: Flooding at 3 feet affecting regular use by community, cooperative extension, voting precinct, etc. On concrete slab. Affects 21,000 residents

Project involves: Elevation

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The facility flooded up to 3 feet and affected regular use by the community cooperative extension and voting precinct.	N/A
Consistent with existing plans (describe points of intersection/departure)		N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	The Community Building is the primary gathering location for any significant community event. Keeping the facility near downtown Windsor promotes the economic viability of the downtown area.	N/A
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	100-200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	N/A	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$501K - \$1M	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Between 51 and 75%	Agree
Who will administer this project?	County	Agree

- Bertie County Cooperative Extension:** The cooperative extension office was completely inundated and deemed unfit for continued use due to the susceptibility for future flooding. This project would develop a new facility, possibly co-locating at a site with a new library. Providing a more suitable location and better facilities to the Cooperative Extension would enable the institution to work more effectively with the agriculture industry. The Cooperative Extension offers school programs, technical support for agriculture, and the 4H. Agriculture is the largest industry in Bertie County, and providing support is critical. The Cooperative Extension affects 21,000 residents. It employs approximately 10 people and indirectly impacts 20 more people.



Figure 20. Economic Development Action 4: Bertie County Cooperative Extension

Economic Development Action 4: Cooperative Extension

County: Bertie

Priority Grouping: Low Priority

Priority Ranking: 22

Project Timeframe: 0-5 years

Location: Cooperative Extension Building

Project Summary: Locate to a new site and construct a new building. Possibly co-locate with the new library.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The facility was heavily damaged and is at risk of future flooding.	N/A
Consistent with existing plans (describe points of intersection/departure)	This is consistent with overall economic and hazard mitigation plans.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	The Cooperative Extension offers school programs technical support for agriculture and the 4H. Agriculture is the largest industry in Bertie County and providing support is critical.	N/A
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree
What impacts to the environment of the county will result from this project?	N/A	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$251K - \$500K	Agree
What is the level of public support for this project?	Medium	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Regional	Agree

- **Freeman Hotel:** The hotel building was completely inundated and due to location has a high susceptibility for future flooding. It needs to be relocated to a new site. The Freeman Hotel is a unique historic property that can generate visitor interest. It has not been utilized since 2010 because of its condition. The Freeman Hotel is on the National Register. The State of North Carolina is supportive of its relocation.

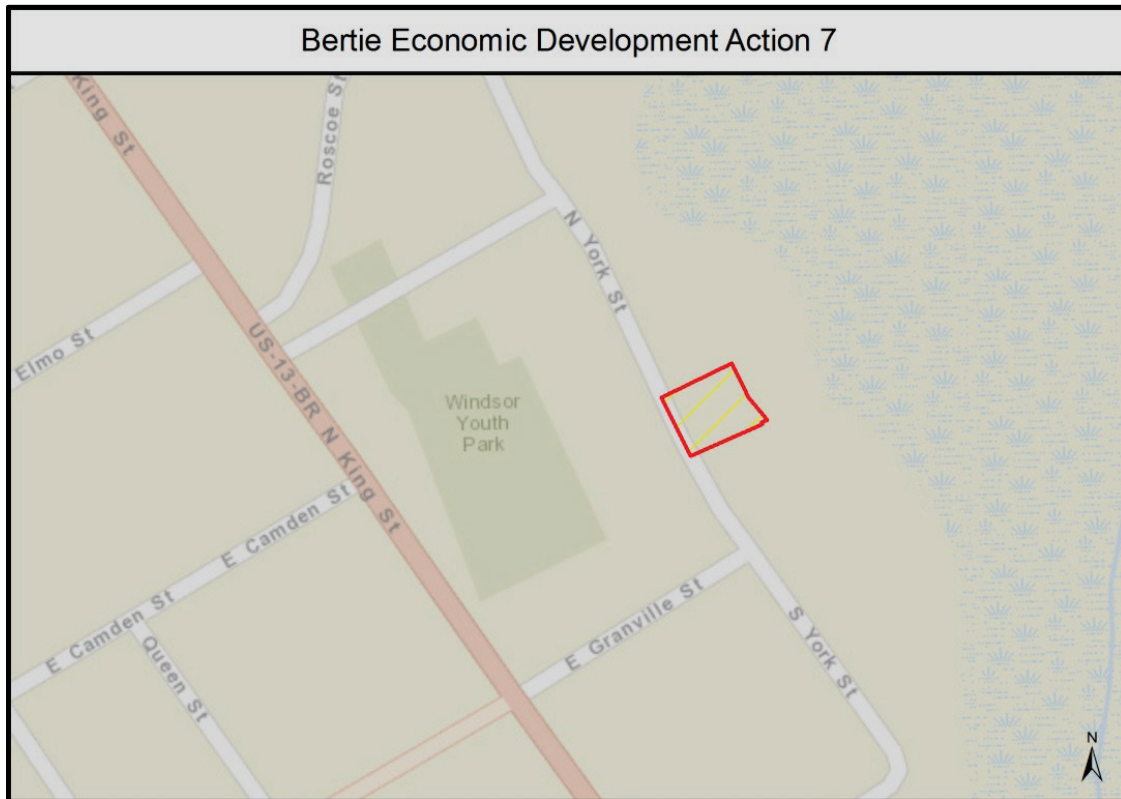


Figure 21. Economic Development Action 7: Freeman Hotel

Economic Development Action 7: Freeman Hotel

County: Bertie

Priority Grouping: Low Priority

Priority Ranking: 25

Project Timeframe: 5-10 years

Location: S York Street / Greenville Street - The Freeman Hotel

Project Summary: National Register property that was moved to park and then continuously flooded. Not utilized since 2010 due to condition. Tourist attraction

Project involves: Relocation to suitable location

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The Freeman Hotel has not been utilized since 2010 because of its condition. It has been flooded multiple times since it was moved to the park.	N/A
Consistent with existing plans (describe points of intersection/departure)	Not in conflict with any plans.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	The Freeman Hotel is a unique historic property that can generate visitor interest. It has not been utilized since 2010 because of its condition.	N/A
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Minimal to low confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree
What impacts to the environment of the county will result from this project?	N/A	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$51K - \$100K	Agree
What is the level of public support for this project?	Medium	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Local	Agree

Infrastructure Strategies

The purpose of the strategies related to Bertie County’s infrastructure is to protect critical facilities and key routes needed to foster community resiliency, sustainability, and safety before, during, and after disasters. These strategies are essential in protecting citizen and community well-being, while augmenting an effective recovery from a potential future storm like Hurricane Matthew. In working with local officials, the planning team developed the following infrastructure strategies.

High Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Infrastructure Tier 1 Action 1: Windsor Flood Reductions Feasibility Study	High	1
Infrastructure	Infrastructure Tier 2 Action 1: NC 308 Bridge	High	5
Infrastructure	Infrastructure Tier 2 Action 5: Salmon Creek Bridge	High	6
Infrastructure	Infrastructure Tier 2 Action 3: School Road Bridge	High	7
Infrastructure	Infrastructure Tier 2 Action 4: Hoggards Mill Water Storage	High	8
Infrastructure	Infrastructure Tier 2 Action 2: 72 Siding Road Water Storage and Diversion	High	9

Table 11. Bertie High Priority Infrastructure Summary

These projects represent the infrastructure strategies that Bertie County indicated are the highest priority to address. Additional detail can be found below:

- **Windsor Flood Reduction Feasibility Study:** Conduct a joint ECU/NCSU Study to develop engineering options that will reduce water flow into Windsor and other affected properties from fast-moving water of Cashie River basin. The project involves development of river models, mitigation options, and cost-benefit analysis. This project establishes the framework for many of the other recommendations in the plan and is critical to complete as soon as possible. This project affects 21,000 residents.
- **This is a countywide project for which there is no map.**

Infrastructure Tier 1 Action 1: Windsor Flood Reductions Feasibility Study

County: Bertie

Priority Grouping: High Priority

Priority Ranking: 1

Project Timeframe: Immediately (12 months)

Location: Cashie River Basin

Project Summary: Windsor Flood Reduction Feasibility Study. Project detail: Joint ECU / NCSU Study to develop engineering options that will reduce water flow into Windsor and other affected properties from fast-moving water of Cashie River basin. Project involves: Development of river models, mitigation options, and cost-benefit analysis.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This project sets the framework for all other projects so this is critical. It informs the feasibility for many of the regional projects.	N/A
Consistent with existing plans (describe points of intersection/departure)	consistent with intent to protect critical infrastructure	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	increased resilience to disaster impact and corresponding economic disruption	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	>6	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Higher than 75%	Agree
What impacts to the environment of the county will result from this project?	limited impacts from reduced flooding	N/A
What is the capability of the local government to administer this project?	Minimum	Agree
What is the financial range of this project?	\$101K - \$250K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Local	Agree

- **Cashie River Bridge, NC 308:** Replacement of a bridge that was completely inundated by water and does not span the entire floodway of the river. The existing bridge is 150 feet long but the floodway is 4,000 ft wide. The project involves rebuilding the existing bridge over entire floodway and buy privately owned land near bridge to protect from future development. This bridge is a key connection to Windsor and related county services. This project affects 10,000 residents.

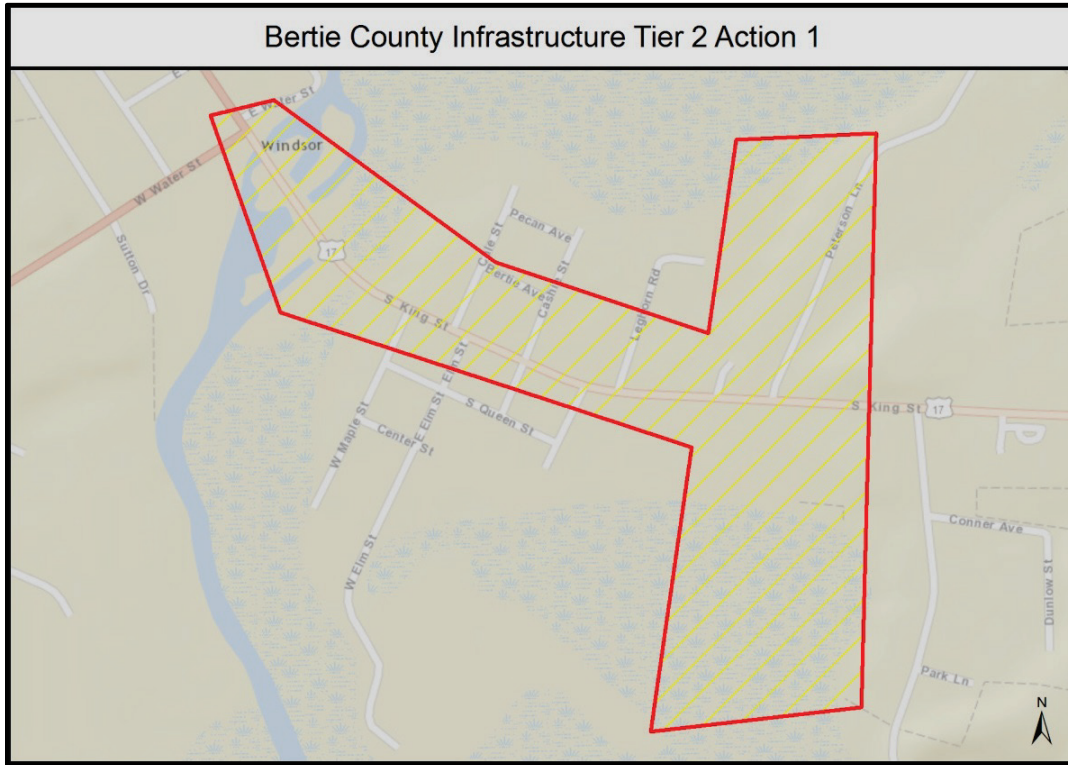


Figure 22. Infrastructure Tier 2 Action 1: NC 308 Bridge

Infrastructure Tier 2 Action 1: NC 308 Bridge

County: Bertie

Priority Grouping: High Priority

Priority Ranking: 5

Project Timeframe: 5-10 years

Location: NC 308, Windsor

Project Summary: Cashie River Bridge on 308: Bridge completely inundated by water and does not span the entire floodway. Project involves: Rebuilding existing bridge over entire floodway. Buy privately owned land near bridge to protect.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The actual floodway for this area of the Cashie River is 4000 feet wide and the bridge structure is only 150 feet long. The inundation here is dramatic and long-lasting when the Cashie is high.	N/A
Consistent with existing plans (describe points of intersection/departure)	Unknown	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	This is a major connection to the economic driver for the county Windsor. The entire county uses this facility to access jobs business services retail government services and other economic resources	N/A
For how long will this solution be effective?	Between 31 and 50 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	Higher than 75%	Agree
What impacts to the environment of the county will result from this project?	The mouth of the Cashie River is improved environmentally by further separating the functional bridge structure from the underlying river resources.	N/A
What is the capability of the local government to administer this project?	Minimum	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	State	Agree

- Salmon Creek:** Salmon Creek Bridge was topped and the surrounding area flooded. Impacts from this flooding include blockage of US17, no access for supplies to east and west counties, and elimination of access to five counties north of Bertie County. The State Highway Patrol lost 5 vehicles and the flooding here cut off the state evacuation route from the east. The project involves mitigation of flooding upstream according to findings from the Windsor Flood Reduction Feasibility Study and regular maintenance of debris before it reaches this location. This project affects residents of Chowan, Perquimans, Dare, Pasquotank, Camden, and Currituck Counties as well as major east-west traffic along US 17.

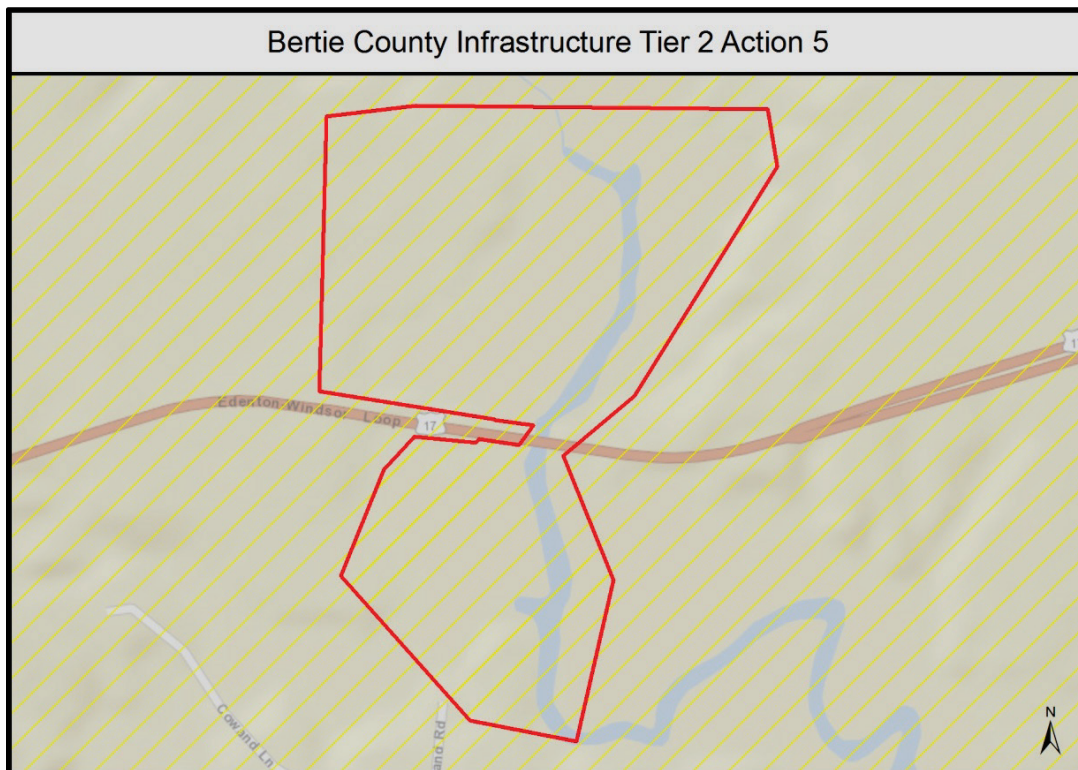


Figure 23. Infrastructure Tier 2 Action 5: Salmon Creek Bridge

Infrastructure Tier 2 Action 5: Salmon Creek Bridge

County: Bertie

Priority Grouping: High Priority

Priority Ranking: 6

Project Timeframe: 0-5 years

Location: US 17 - Salmon Creek Bridge

Project Summary: Salmon Creek bridge was topped and the surrounding area flooded – blocks US 17, no access for supplies east-west, cut off 5 counties north of Bertie County, Highway patrol lost 5 vehicles, cut off state evacuation route from east..

Project involves: Mitigating flooding upstream and regular maintenance of debris. Will facilitate water movement under the bridge without impacts to transportation services. Salmon Creek was approved as a State Park by legislature. Flood mitigation will improve the property. The state plans to put a lot of money here. Dig for Lost Colony happening in this area. Future I-87 is in a flood zone.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The storm event highlights the potential for impacts at the neighborhood/town level and provides a footprint for the extent of stormwater mitigation and structural improvement in this neighborhood and around US 17.	N/A
Consistent with existing plans (describe points of intersection/departure)	Yes	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	N/A	N/A
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree
What impacts to the environment of the county will result from this project?	Reduce overtopping of canals and preserve local stormwater facilities	N/A
What is the capability of the local government to administer this project?	Unknown	Agree
What is the financial range of this project?	\$501K - \$1M	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Unknown	Agree

- **School Road Bridge:** School Road washed out and stranded many people and the High School (shelter operations) was cut off. This Cashie River swamp area floods regularly. The project involves construction of a higher bridge over the swamp area to maintain better access, and development of a water control process according to findings from the Windsor Flood Reduction Feasibility Study. This project affects 17,000 residents.

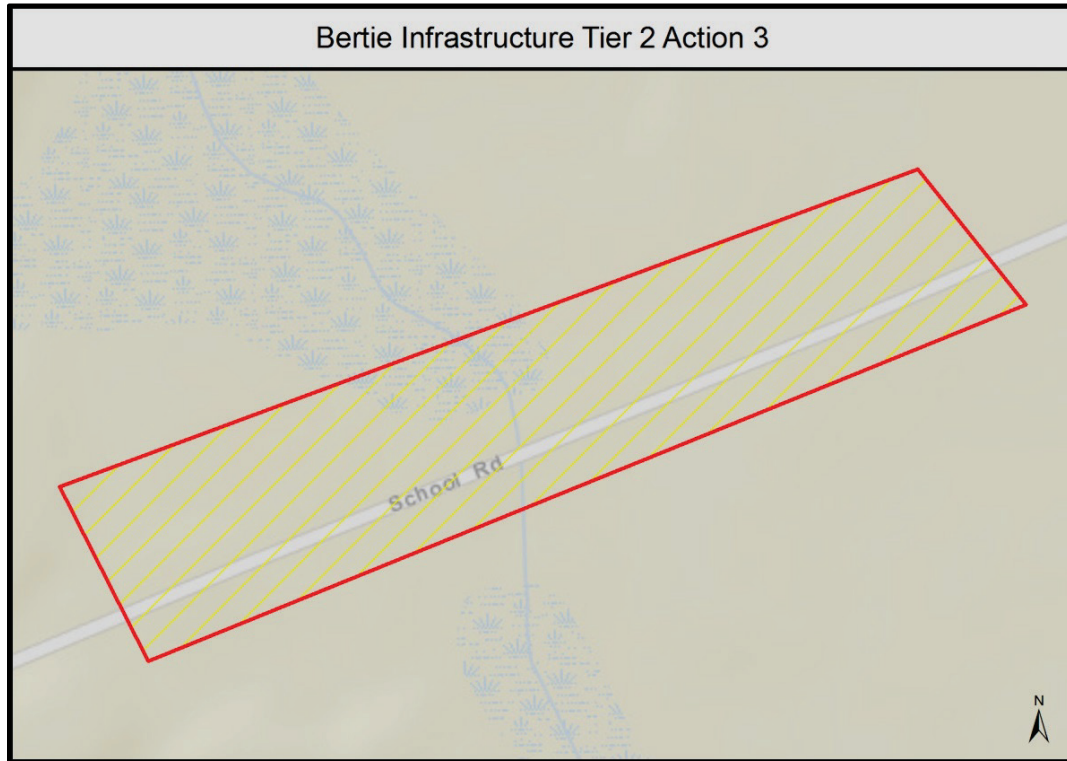


Figure 24. Infrastructure Tier 2 Action 3: School Road Bridge

Infrastructure Tier 2 Action 3: School Road Bridge

County: Bertie

Priority Grouping: High Priority

Priority Ranking: 7

Project Timeframe: 5-10 years

Location: School Road

Project Summary: School Road inundated and cut of access to emergency shelter at High School. Area flooded causing transportation problems, part of larger Cashie River excess water running to Windsor, slow flow large openings in culverts and bridges allow water to drain too quickly, causes issues downstream. Swamp area floods regularly.

Project involves: Construction of higher bridge over swamp area to maintain better access, water control process to slow down flow downstream.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The Cashie River continues to cause major negative impacts from regional and localized flooding throughout its basin. As the creation of water storage areas continues to develop this impacts will be reduced to manageable sizes.	N/A
Consistent with existing plans (describe points of intersection/departure)	Unknown	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	N/A	N/A
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	Agree
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	This is the location of the first flood gauge that measures impacts from the Cashie River. If flooding is going to happen in Windsor this is where the County first finds out.	Agree
What is the capability of the local government to administer this project?	Minimum	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	State	Agree

- **Hoggards Mill Water Storage:** There is an opportunity through an existing dam structure to impound approximately 3-5 miles of water and reduce downstream impacts on developed areas, including Windsor. The project involves redevelopment of the existing dam structure and fortification of the levee wall according to findings from the Windsor Flood Reduction Feasibility Study. The potential downstream water reduction from this project alone is roughly 30%. This project affects 12,000 residents.

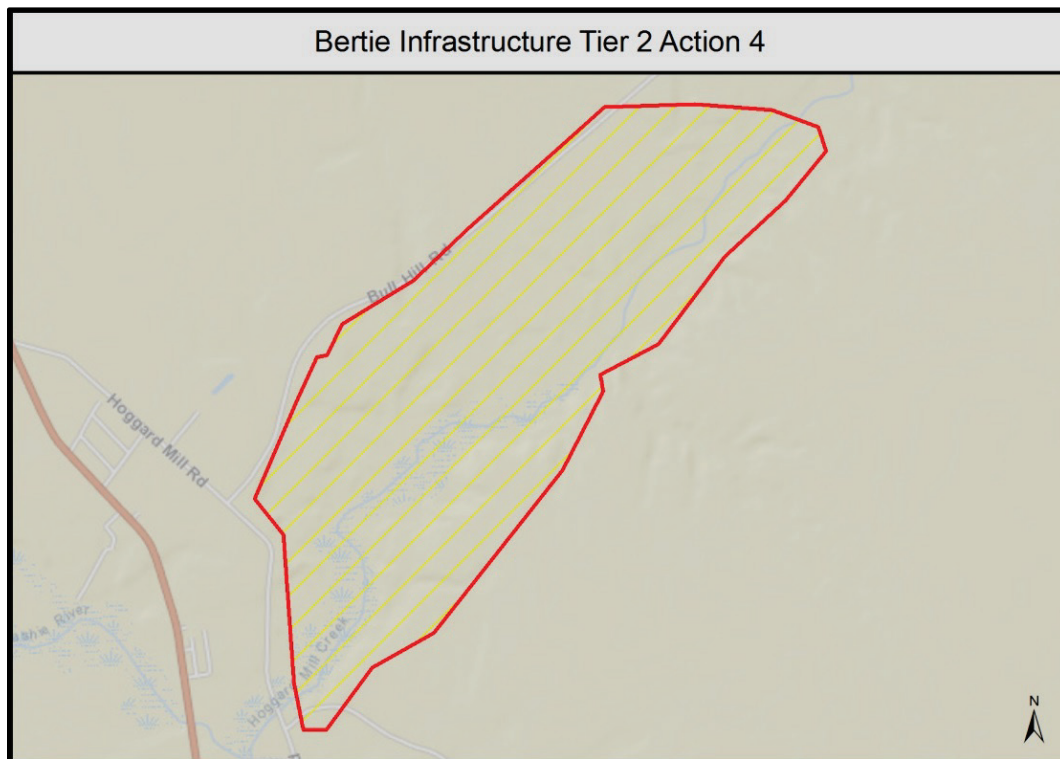


Figure 25. Infrastructure Tier 2 Action 4: Hoggards Mill Water Storage

Infrastructure Tier 2 Action 4: Hoggards Mill Water Storage

County: Bertie

Priority Grouping: High Priority

Priority Ranking: 8

Project Timeframe: 0-5 years

Location: Hoggards Mill

Project Summary: Dam washed out, 31% of water that drains to Windsor comes through area, causes flooding. Opportunity through existing dam structure to impound major amounts of water and reduce downstream impacts on developed areas. Use dam to slow water, 385 acres in area to help store flood waters, (have study from NC State to help mitigate flooding), part of area that drains to Windsor. Slow water down stair step approach. Project involves: Redevelopment of dam structure and fortification of levee wall

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The Cashie River continues to cause major negative impacts from regional and localized flooding throughout its basin. As the creation of water storage areas continues to develop this impacts will be reduced to manageable sizes.	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with the desire to improve critical infrastructure.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	No specific economic benefits beyond increased flood resiliency.	N/A
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	Agree
What impact will this action have on the local economy/tax base?	Between 51 and 75%	Agree
What impacts to the environment of the county will result from this project?	Widespread flooding would be reduced greatly through creation of regional water storage lands	Agree
What is the capability of the local government to administer this project?	Unknown	N/A
What is the financial range of this project?	\$501K - \$1M	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Unknown	N/A

- **72 Siding Road Water Storage and Diversion:** This is the first location in Bertie County where water began to affect downstream property along the Cashie River basin. A twenty foot wall of water washed out the railroad track and parallel roadway before beginning to move downhill. The project involves the location and fortification of a primary water storage area and construction of diversion mechanism, according to findings from the Windsor Flood Reduction Feasibility Study. This project affects 17,000 residents.

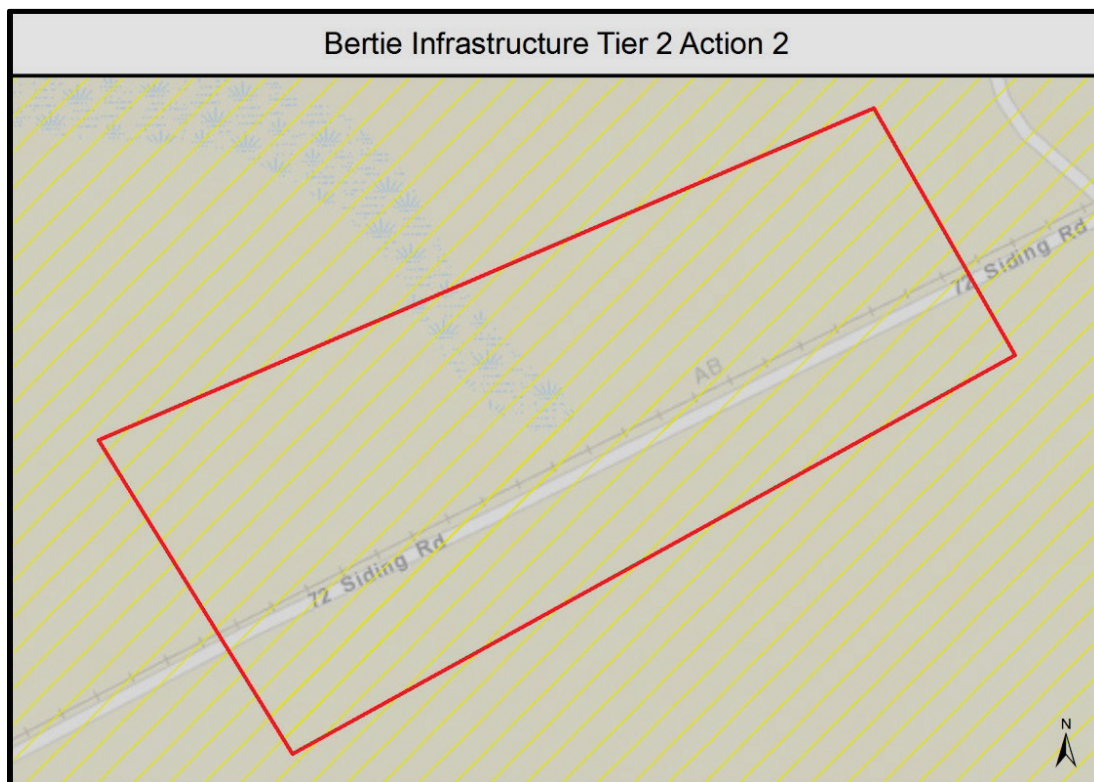


Figure 26. Infrastructure Tier 2 Action 2: 72 Siding Road Water Storage and Diversion

Infrastructure Tier 2 Action 2: 72 Siding Road Water Storage & Diversion

County: Bertie

Priority Grouping: High Priority

Priority Ranking: 9

Project Timeframe: 0-5 years

Location: 72 Siding Road near Harrells Siding Road

Project Summary: 20 foot wall of water built up behind RR trellis, acted as dam, terrain slopes down to Windsor so water, if released at once, could cause major flood. 2 pipes 36-48 inches, water overtopped railroad barrier and washed out berm, compacted soil so eroded slowly, could have been major event large openings in culverts and bridges allow water to drain too quickly, causes issues downstream. Project involves: ID and fortification of water storage area and construction of diversion mechanism.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This is the first location that can serve to reduce downstream impacts of flooding in the Cashie River watershed. In combination with other projects identified in this plan regional flooding can be greatly reduced through this effort.	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with flood mitigation and critical infrastructure protection aims.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Assess revenue for goods coming through railroad and the CSX project in Nash County (2000 jobs). Traffic that uses this railway is important. This is the only track to get from Nash to Bertie/Hertford. The railway through Bertie is a vital link for CSX.	N/A
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	0	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	Agree
What impact will this action have on the local economy/tax base?	Between 26 and 50%	Agree
What impacts to the environment of the county will result from this project?	N/A	N/A
What is the capability of the local government to administer this project?	Unknown	N/A
What is the financial range of this project?	\$501K - \$1M	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	State	Agree

Medium Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Infrastructure Tier 3 Action 6: NC 308 and School Road Emergency Shelter	Medium	11
Infrastructure	Infrastructure Tier 2 Action 6: White Oak Drainage	Medium	15
Infrastructure	Infrastructure Tier 3 Action 1: York Street Pump Station	Medium	16
Infrastructure	Infrastructure Tier 3 Action 2: Water Street Pump Station	Medium	17
Infrastructure	Infrastructure Tier 3 Action 3: Elm Street Pump Station	Medium	18
Infrastructure	Infrastructure Tier 3 Action 4: Sutton Drive Well House	Medium	19
Infrastructure	Infrastructure Tier 3 Action 5: Ahoskie Creek Bridge	Medium	20

Table 12: Bertie Medium Priority Infrastructure Summary

These projects represent the infrastructure strategies that Bertie County indicated are of a medium priority to address. Additional detail can be found below:

- NC 308 and School Road Emergency Shelter:** There is not a current shelter in Bertie County that meets Red Cross standards. This former school will be retrofitted to meet those standards. In addition to age and engineering of the building, the major improvement needed is to develop a generator resource and relay switches so that power and heat can be regularly supplied during an event. This project affects 15,000 residents.

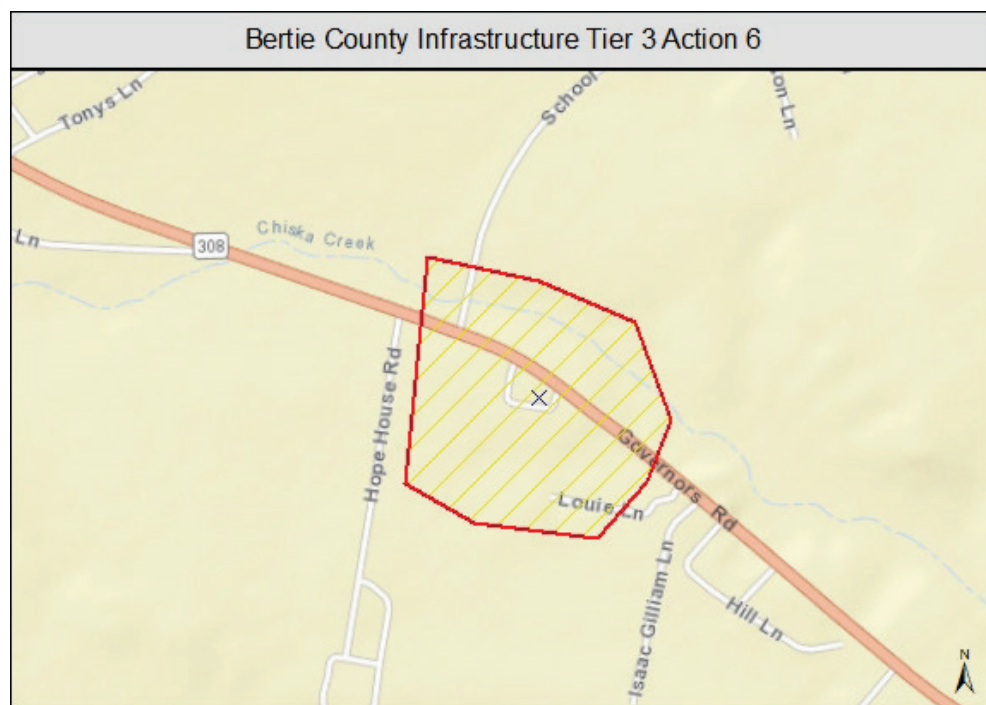


Figure 27. Infrastructure Tier 3 Action 6: NC 308 and School Road Emergency Shelter

Infrastructure Tier 3 Action 6: NC 308 and School Road Emergency Shelter

County: Bertie

Priority Grouping: Medium Priority

Priority Ranking: 11

Project Timeframe: 0-5 years

Location: NC 308 and School Road

Project Summary: Development of a primary shelter for evacuations and emergency needs.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	For shelter operations retrofitting to meet red cross standards. Primary shelter in the county. 2 other shelters in the county but they don't meet our needs. Red Cross won't fund it. We need to retrofit all 3.	N/A
Consistent with existing plans (describe points of intersection/departure)	Not in conflict with any existing plans.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	N/A	N/A
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	<50 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Minimal to low confidence	Agree
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	N/A	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$251K - \$500K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **White Oak Drainage:** Water is impounded by US 17 without a way to drain across to the south. The White Oak area receives that excess flood water and the neighborhood is inundated. US 17 needs to have additional drainage installed so that water will flow across and under the corridor for future events.

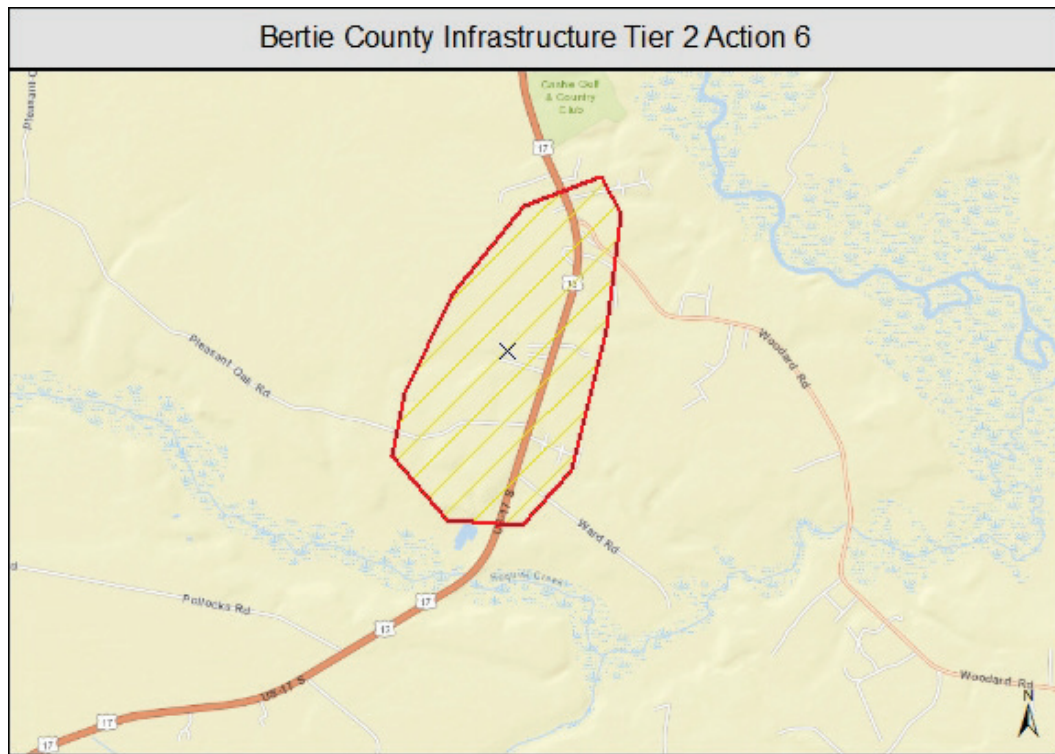


Figure 28. Infrastructure Tier 2 Action 6: White Oak Drainage

Infrastructure Tier 2 Action 6: White Oak Drainage

County: Bertie**Priority Grouping:** Medium Priority**Priority Ranking:** 15**Project Timeframe:** 0-5 years**Location:** US 17 - White Oak

Project Summary: Water is impounded by US 17 without a way to drain across to the south. The White Oak area receives that excess flood water and the neighborhood is inundated. US 17 needs to have additional drainage installed so that water will flow across and under the corridor for future events

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	US 17 currently has poor drainage across it and this was highlighted during Hurricane Matthew in this location as well as near Salmon Creek. As it continues to move towards establishment as an interstate corridor these problems need to be corrected.	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with overall flood protection and mitigation goals of the hazard mitigation plan.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	N/A	N/A
For how long will this solution be effective?	Between 31 and 50 years	Agree
How effective is the risk reduction?	50-100 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	No Impact	Agree
What impacts to the environment of the county will result from this project?	N/A	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$51K - \$100K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	State	Agree

- **Windsor Lift Stations:** Three wastewater lift stations had major water damage and were not functional. The projects involve replacement of existing pumps with submersible types (York Street only),

installation of wheeled generators that can be moved as needed to avoid damage, and elevation of control panels. The three locations for the lift stations are:

- York Street and East Granville Street. This project affects 3,000 residents.
- King Street and Water Street. This project affects 3,500 residents.
- The Cashie River RV Park & Campground. This project affects 2,500 residents.

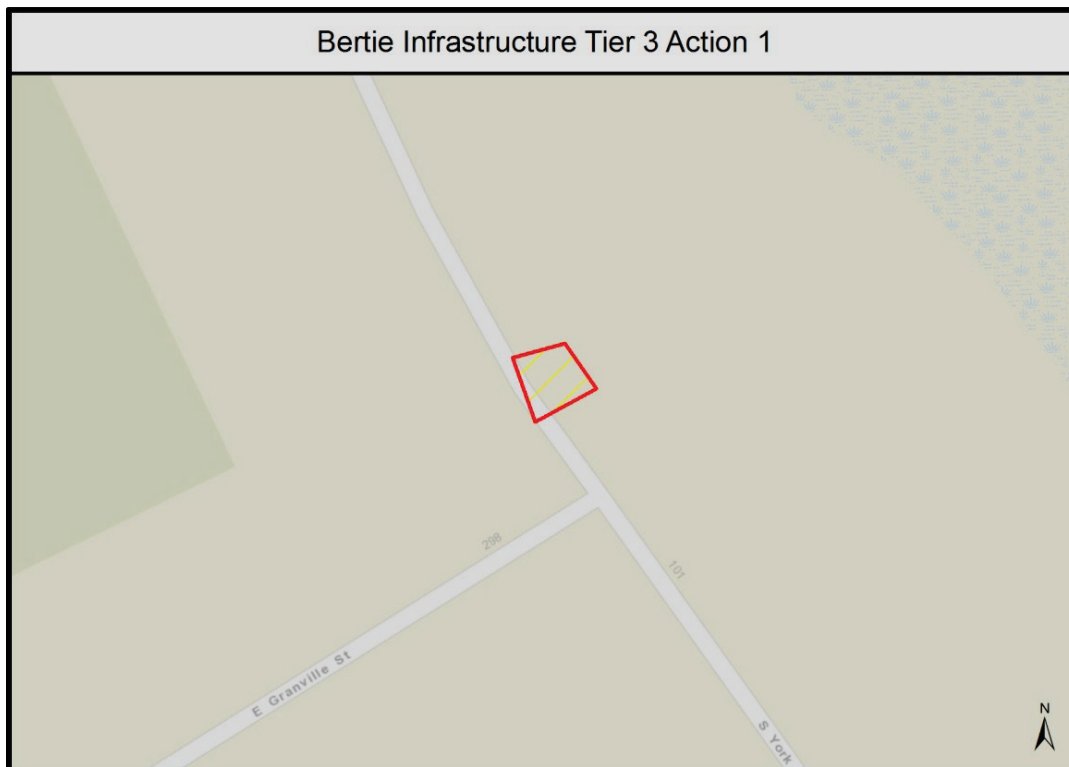


Figure 29. Infrastructure Tier 3 Action 1: York Street Pump Station

Infrastructure Tier 3 Action 1: York Street Pump Station

County: Bertie**Priority Grouping:** Medium Priority**Priority Ranking:** 16**Project Timeframe:** 0-5 years**Location:** E Granville Street / S York St**Project Summary:** Pump station had major water damage, was not functional. Project involves: Replacement of pump with submersible type, installation of wheeled generator that can be moved as needed to avoid damage. Elevate control panels

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The improvement if done earlier would have mitigated multiple instances of risk realized and thus require this funding to complete.	N/A
Consistent with existing plans (describe points of intersection/departure)	Unknown	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Unknown at this time potentially calculated at a later date.	N/A
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Higher than 75%	Agree
What impacts to the environment of the county will result from this project?	Unknown	N/A
What is the capability of the local government to administer this project?	Minimum	Agree
What is the financial range of this project?	\$0- \$50K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Unknown	N/A

- **Water Street Pump Station: refer to Windsor Lift Stations on page 4-37**

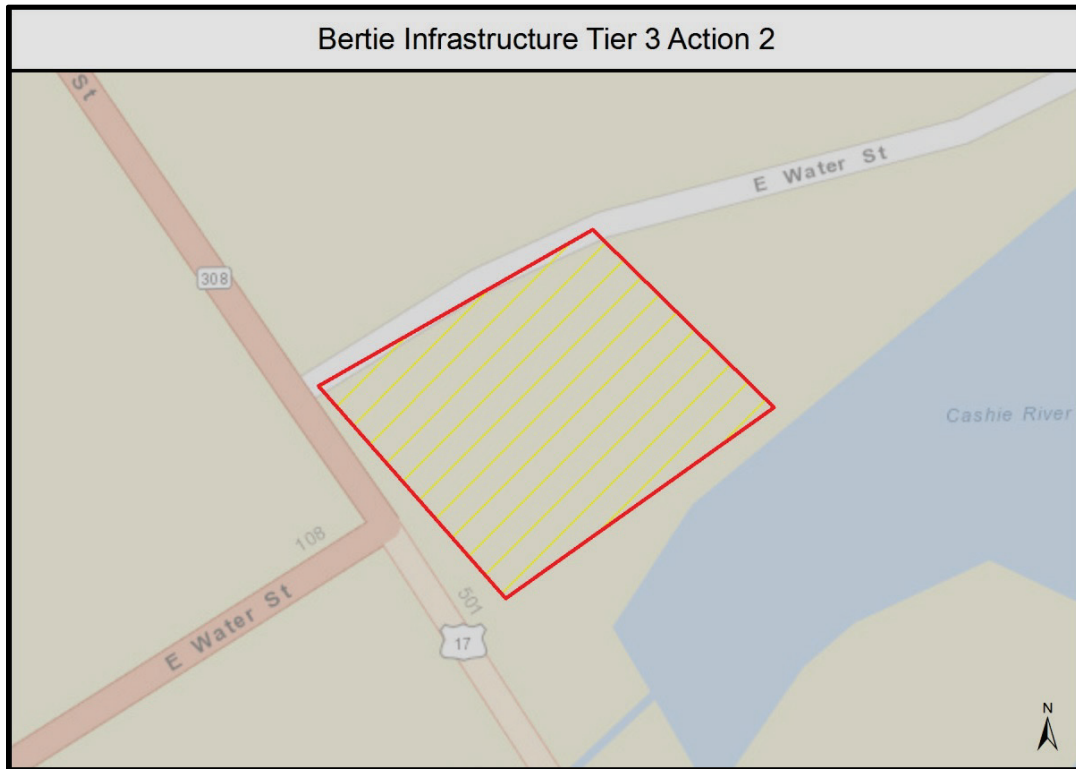


Figure 30. Infrastructure Tier 3 Action 2: Water Street Pump Station

Infrastructure Tier 3 Action 2: Water Street Pump Station

County: Bertie

Priority Grouping: Medium Priority

Priority Ranking: 17

Project Timeframe: 0-5 years

Location: E Water St / King Street

Project Summary: Pump station had major water damage, was not functional. Project involves: Installation of wheeled generator that can be moved as needed to avoid damage. Elevate control panels.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The damage sustained in Hurricane Matthew is an unmet need. Elevation of critical components will harden the facility and prevent future damage.	N/A
Consistent with existing plans (describe points of intersection/departure)	Yes	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	No economic impacts expected from this project.	N/A
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	Agree
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	None	Agree
What is the capability of the local government to administer this project?	Unknown	N/A
What is the financial range of this project?	\$0- \$50K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **Elm Street Pump Station: refer to Windsor Lift Stations on page 4-37**

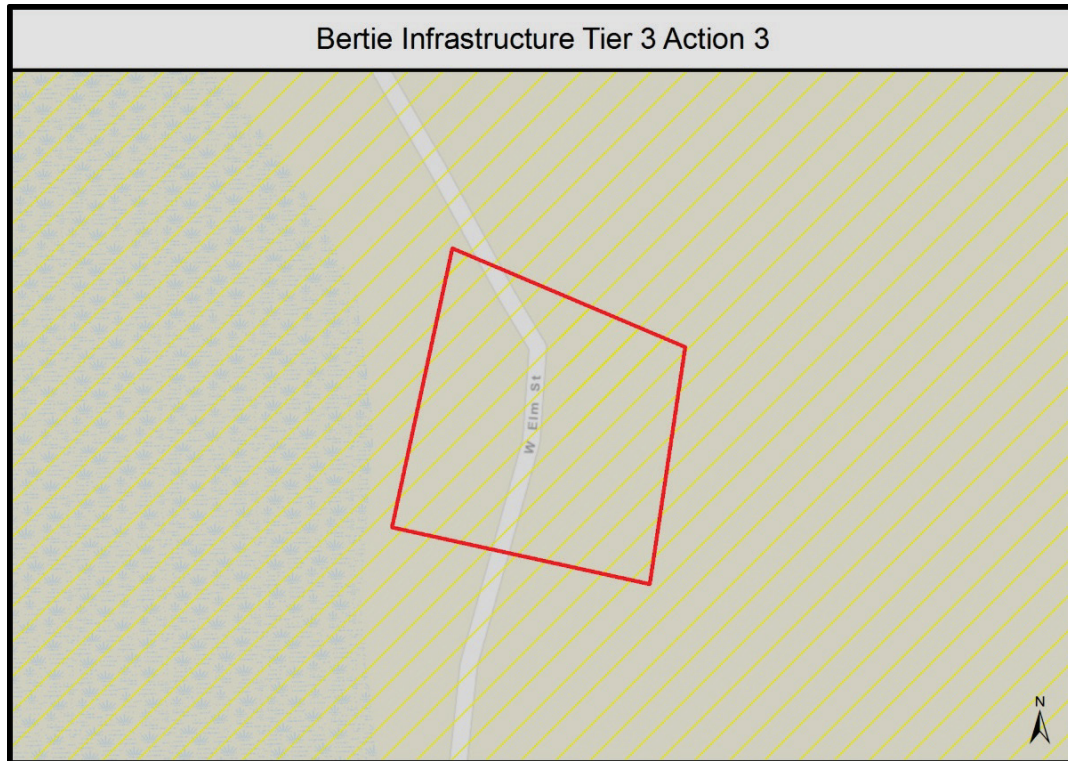


Figure 31. Infrastructure Tier 3 Action 3: Elm Street Pump Station

Infrastructure Tier 3 Action 3: Elm Street Pump Station

County: Bertie

Priority Grouping: Medium Priority

Priority Ranking: 18

Project Timeframe: 0-5 years

Location: W Elm St

Project Summary: Station had major water damage, was not functional. Project involves: Installation of wheeled generator that can be moved as needed to avoid damage. Elevate control panels.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The improvement if done earlier would have mitigated multiple instances of risk realized and thus require this funding to complete.	N/A
Consistent with existing plans (describe points of intersection/departure)	Unknown	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Not at this time	N/A
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	Unknown	N/A
What is the capability of the local government to administer this project?	Minimum	Agree
What is the financial range of this project?	\$0- \$50K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **Sutton Drive Well Station:** This well house had major water damage and was not functional. The project involves elevation of the entire pump station to withstand future storm events. This project affects 3,500 residents.

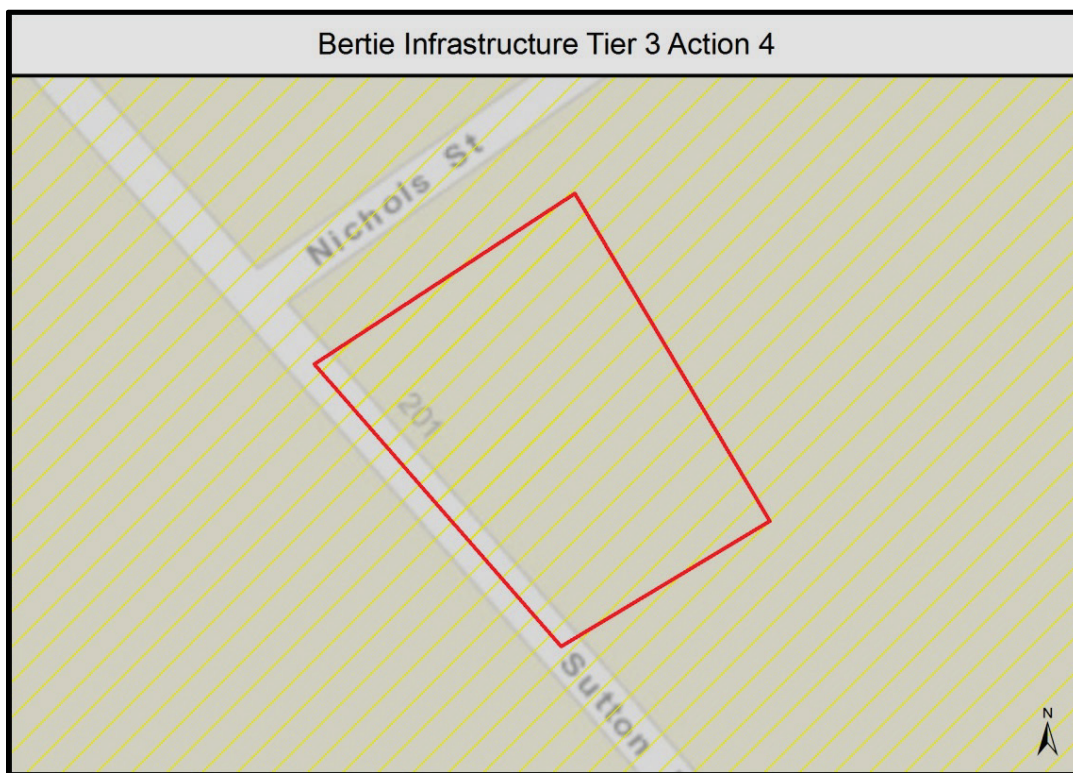


Figure 32. Infrastructure Tier 3 Action 4: Sutton Drive Well House

Infrastructure Tier 3 Action 4: Sutton Drive Well House

County: Bertie

Priority Grouping: Medium Priority

Priority Ranking: 19

Project Timeframe: 0-5 years

Location: Sutton Drive

Project Summary: Well house had major water damage, was not functional. Project involves: Elevation of entire pump station

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The improvement if done earlier would have mitigated multiple instances of risk realized and thus require this funding to complete.	N/A
Consistent with existing plans (describe points of intersection/departure)	Unknown	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Unknown at this time	N/A
For how long will this solution be effective?	Between 31 and 50 years	Agree
How effective is the risk reduction?	50-100 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	Unknown	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$51K - \$100K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **Ahoskie Creek Bridge:** This bridge over Ahoskie Creek routinely washes out, eliminating access to the local hospital for residents of both Bertie County and Hertford County. The project involves raising the bridge elevation and regular cleaning of debris underneath. This project affects 10,000 residents.

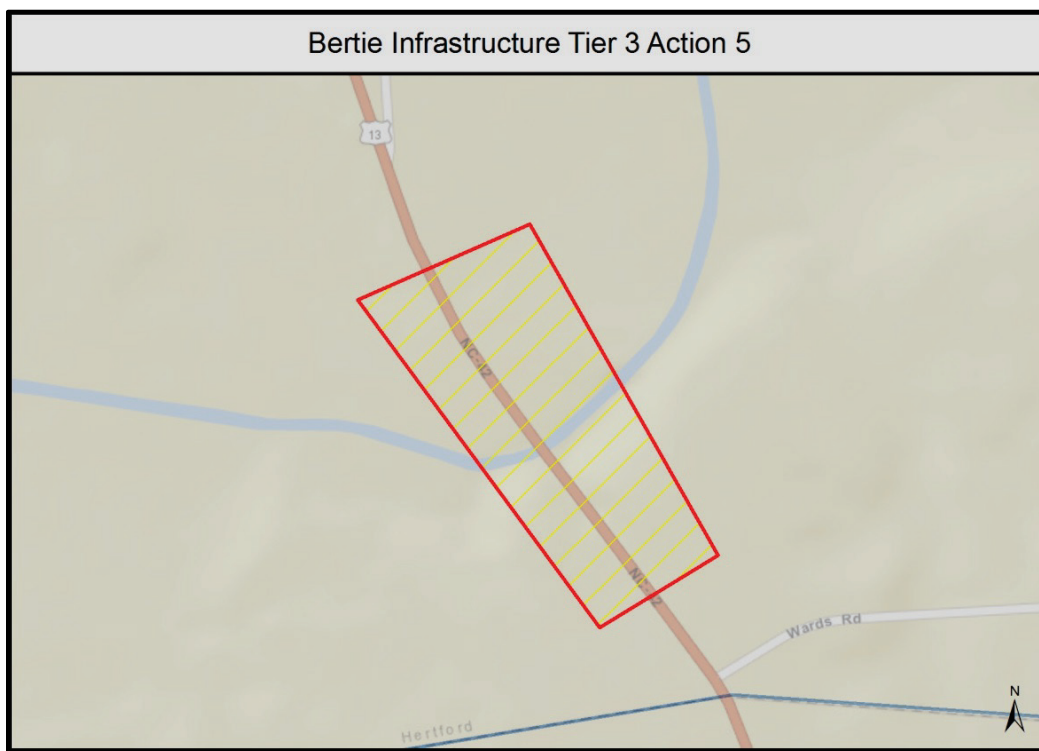


Figure 33. Infrastructure Tier 3 Action 5: Ahoskie Creek Bridge

Infrastructure Tier 3 Action 5: Ahoskie Creek Bridge

County: Bertie

Priority Grouping: Medium Priority

Priority Ranking: 20

Project Timeframe: 5-10 years

Location: US 13 at Ahoskie Creek - Powellsville

Project Summary: Ahoskie Creek bridge was washed out, eliminated access to hospital for residents. Project involves: Raising bridge and regular maintenance of debris underneath. Will facilitate water movement across the road without impacts to transportation services.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The roadway will not be usable without this repair and was rendered inoperable as a result of Matthew.	N/A
Consistent with existing plans (describe points of intersection/departure)	Unknown	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	The project will mitigate risk associated with losing access to the roadway following a rain event on the scale of Matthew thus commerce will continue to traverse the roadway and no longer be adversely impacted by a rain related closure of the thoroughfare.	N/A
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	Yes	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Between 51 and 75%	Agree
What impacts to the environment of the county will result from this project?		N/A
What is the capability of the local government to administer this project?	Minimum	Agree
What is the financial range of this project?	\$501K - \$1M	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	State	Agree

Environmental, Ecosystem and Agricultural Strategies

There are a number of opportunities for enhancing environmental resources for both resiliency and recreational purposes in Bertie County. These strategies, paired with the natural beauty already present in many areas, provide opportunities for Bertie County to become more resilient and attractive for locals and visitors.

High Priority Environmental Strategies

Pillar	Action Name	Priority	Overall Ranking
Environment	Environment Action 1: Livermon Zoo	Low	23
Environment	Environment Action 2: Davis Park Ballfields	Low	24

Table 13: Bertie High Priority Environmental Summary

This project represents the environmental strategy that Bertie County indicated is the highest priority to address. Additional detail can be found below:

- **Countywide Emergency Warning System:** This project would increase county awareness of environmental conditions at key locations around Bertie County. Data can be regularly collected and utilized by EMS officials, schools, state agencies, and other organizations. It will provide a more complete warning system for impending storm events and allow county personnel to more effectively deploy to strategic locations. The project involves purchase and installation of seven weather stations and seven flood gauges across the county. This project affects 21,000 residents.
- **This is a countywide project for which there is no map.**

Environment Action 3: Countywide Emergency Warning System

County: Bertie

Priority Grouping: High Priority

Priority Ranking: 10

Project Timeframe: 0-5 years

Location: Countywide

Project Summary: Bertie County is in need of an improved countywide warning system for the onset of flood events, especially given the topography related to the Cashie River and its impacts on the Town of Windsor. This project would install seven flood gauges and seven weather stations at strategic locations around the county to provide advanced warning of oncoming weather events.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Will provide an early warning system to allow for advanced preparation ahead of an oncoming storm event. The weather stations are \$15000 each and the flood gauges are \$20000 each for a total need of \$245000	N/A
Consistent with existing plans (describe points of intersection/departure)	Yes	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Will provide an early warning to allow for advanced preparation ahead of an oncoming storm event wildfire or other disaster	N/A
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	<50 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	>6	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	Will provide an early warning to allow for advanced preparation ahead of an oncoming storm event	Agree
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$101K - \$250K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

Low Priority Environmental Strategies

Pillar	Action Name	Priority	Overall Ranking
Environment	Environment Action 1: Livermon Zoo	Low	23
Environment	Environment Action 2: Davis Park Ballfields	Low	24

Table 14. Bertie Low Priority Environmental Summary

These projects represent the environmental strategies that Bertie County indicated are of a lower priority to address. Additional detail can be found below:

- Livermon Zoo:** The Zoo flooded during Hurricane Matthew and impacted animal pens and zoo infrastructure. This resource is a unique tourist area in Bertie County, and its closure impacts school visitors, inter-county and regional visitors. The project involves structural improvements to facilitate better evacuation of animals. This project affects 75,000 residents (including estimated visitors lost from surrounding areas).

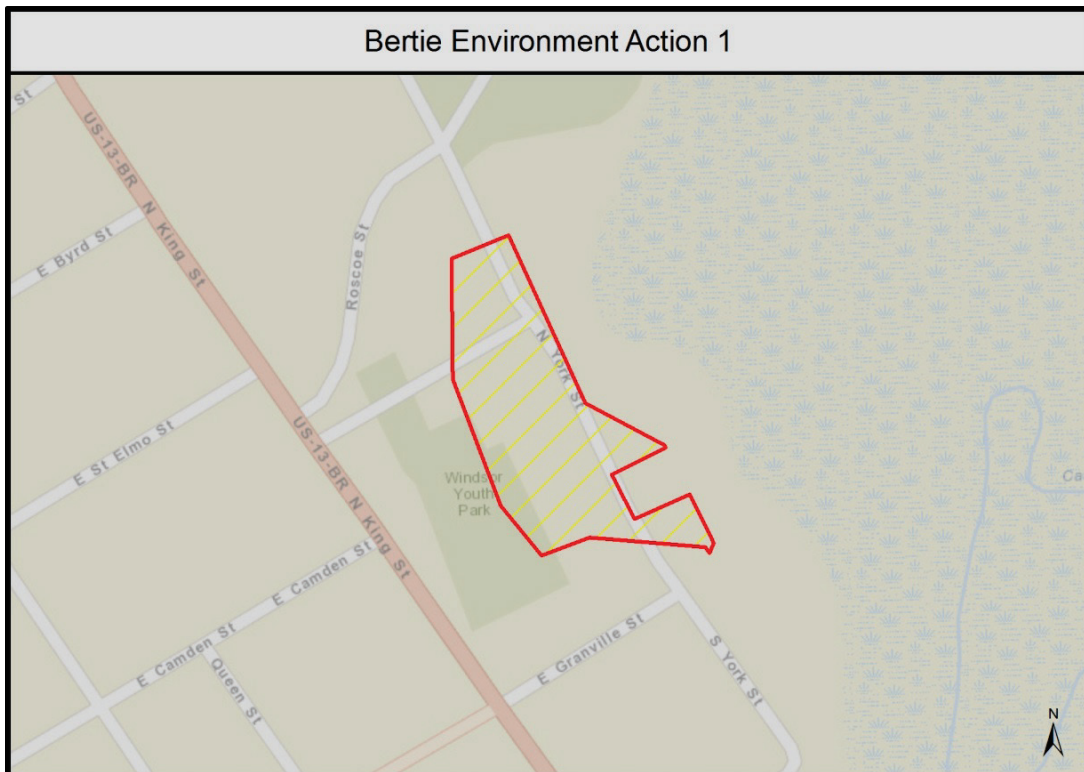


Figure 34. Environment Action 1: Livermon Zoo

Environment Action 1: Livermon Zoo

County: Bertie

Priority Grouping: Low Priority

Priority Ranking: 23

Project Timeframe: 0-5 years

Location: Windsor

Project Summary: Livermon Zoo flooded. This is one of the most unique tourist areas in the County. Impacts school visitors, inter-county and regional visitors, etc. Project involves: Structural improvements to facilitate better evacuation of animals and mitigation of flooding

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This is a very unique project in that it demands a way to safely evacuate zoo animals when their facility is flooded out due to the Cashie River rising over its banks near Windsor.	N/A
Consistent with existing plans (describe points of intersection/departure)	Yes	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Visitation is preserved and outside spending in Windsor and related services are able to be realized. Good economic use of a flood plain area by keeping it recreational.	N/A
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	50-100 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Minimal to low confidence	Agree
What impact will this action have on the local economy/tax base?	Between 26 and 50%	Agree
What impacts to the environment of the county will result from this project?	Preservation of a low impact recreational use which is easily recovered after a storm event if animals are safely relocated.	Agree
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$51K - \$100K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- Davis Park:** Ballfields were flooded and residential structures were impacted in this area. Davis Park is one of the few organized recreation areas in the County and provides a physical activity resource for a large portion of county residents. The project involves upstream measures, like regular maintenance of drainage waterways and water storage projects, to reduce large-scale flooding of the Windsor area. This project affects 21,000 residents.

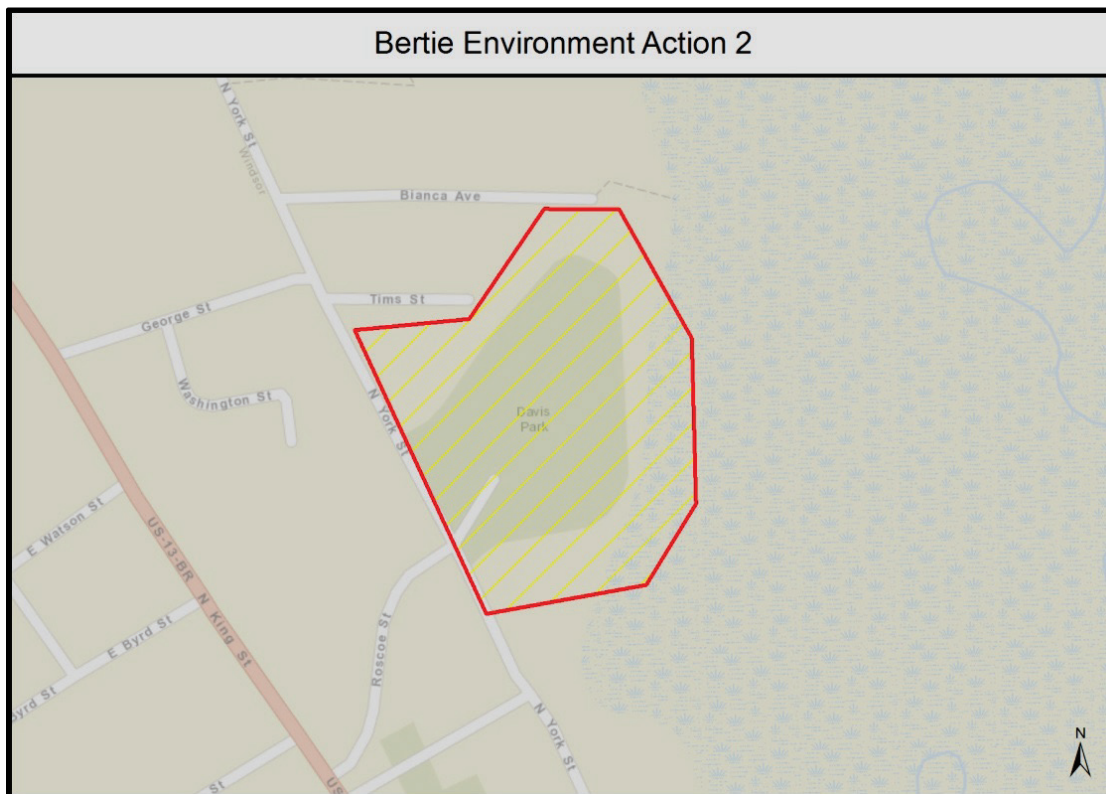


Figure 35. Environment Action 2: Davis Park Ballfields

Environment Action 2: Davis Park Ballfields

County: Bertie

Priority Grouping: Low Priority

Priority Ranking: 24

Project Timeframe: 5-10 years

Location: Windsor

Project Summary: Davis Park - Ballfields flooded and residential structures impacted. One of the few organized recreation areas in the County. Housing areas have been mitigated by elevation.

Project involves: Upstream measures, like regular maintenance of drainage waterways and water storage projects, to reduce large-scale flooding of Windsor area

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	One of the few recreational resources that Bertie County has this is important to remain viable for outside visitors and associated tax revenue.	N/A
Consistent with existing plans (describe points of intersection/departure)		N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Any economic benefits from recreation (related services food lodging etc) are not lost due to downtime after flooding	N/A
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	100-200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	Yes	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Between 26 and 50%	Agree
What impacts to the environment of the county will result from this project?	N/A	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$0- \$50K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

Summary

Implementation has already begun for some of these actions but for those that have not already been funded, the State of North Carolina will begin a process of prioritizing the actions and seeking to match a funding stream to each action. Those that are not matched with a funding source will be added to the State's Unmet Needs Report. Funding for Unmet Needs will be sought through additional funding from Congress and from the North Carolina General Assembly. Any action that cannot be matched to a funding source should be incorporated into the County's Hazard Mitigation Plan for consideration for future funding. It is important to seek to implement as many of these actions as feasible. Doing so will significantly contribute to helping improve the resiliency of North Carolina's communities.