

Hurricane Matthew Resilient Redevelopment Plan

Columbus County



May 2017

Version 1.2

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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 26 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) program 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.

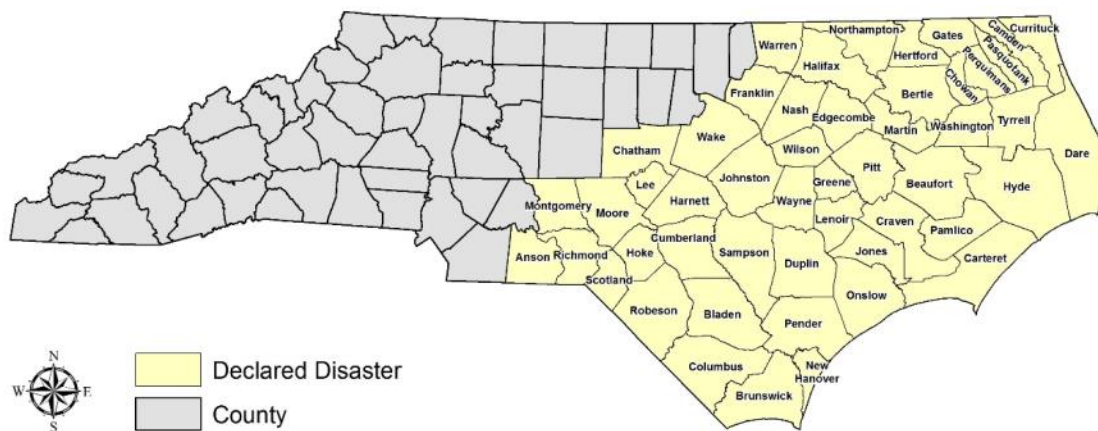


Figure 1: NCRRP Counties

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, Columbus County has identified 17 projects in four pillars: Housing, Infrastructure, Economic Development, and Environmental. Details of these projects can be found in Section IV of this plan.

Pillar	Project/Action Count
Housing	2
Economic Development	3
Infrastructure	9
Environment	3
Grand Total	17

Table 1. Columbus 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.

² *Governors McCrory’s Request for Federal Assistance for Hurricane Matthew Recovery, November 14, 2016*

- There were 81,832 individuals registered for FEMA/state assistance.
- 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) recommendations 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 program 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 process 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 process 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 NCCRP initiative. Three robust 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 for finalization of the 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 resilience 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. A map depicting Columbus County and surrounding counties is shown below.

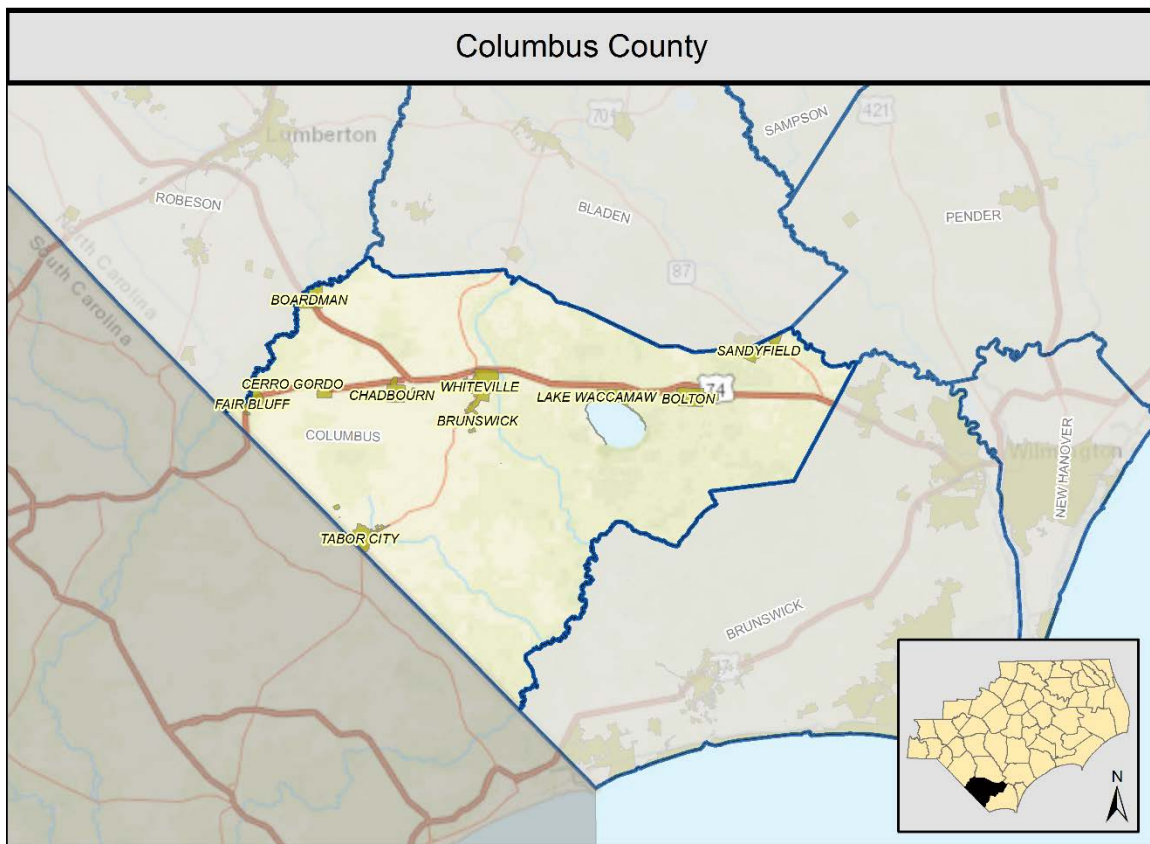


Figure 2: Columbus County and Neighboring Counties

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 brown color, submerging lawns, streets, and parts of the houses. Numerous trees are isolated in the water, some with only their tops visible. The houses are mostly two-story structures with light-colored siding and dark roofs. The flooding appears to be quite deep, reaching up to the second floors of some buildings in places. The overall scene depicts a significant natural disaster impact on a community.

2. County Profile

2. County Profile

Columbus County is located in southeastern North Carolina south of Fayetteville and west of Wilmington. It is comprised of fourteen census-designated places: Boardman, Bolton, Brunswick, Cerro Gordo, Chadbourne, Delco, Evergreen, Fair Bluff, Hallsboro, Lake Waccamaw, Riegelwood, Sandyfield, Tabor City, and Whiteville. Its current population is 57,230. This section provides a profile of housing, economics, infrastructure, environment, and administration within Columbus County.

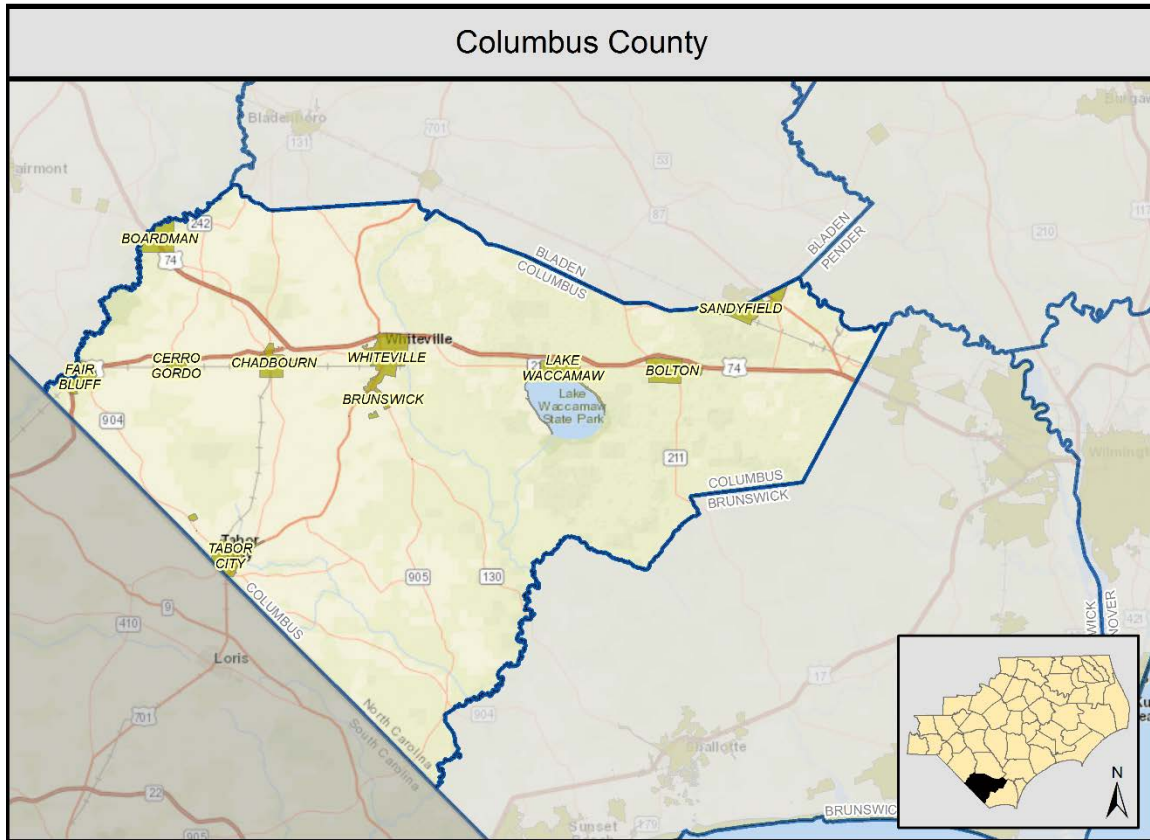


Figure 3: Columbus Base Map

Demographic Profile

Demographics for Columbus 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

Columbus County has a population of 57,230. Whiteville is the most populous place within Columbus County with a population of 5,512 and Cerro Gordo is the least populous place with a population of 154.³

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

Population Change (2000 to 2010)

The Columbus County population increased slightly between the 2000 and 2010 Census. In 2000 the population was 54,749 and in 2010 it was 58,098. The population increased by 3,349 people, about 6 percent. In comparison, North Carolina grew by 19 percent from 8,049,313 people in 2000 to 9,535,483 in 2010.⁴

Age

The median age in Columbus County is 42, which is the same for North Carolina. Within Columbus County, the Fair Bluff population has the oldest median age, 55, and the Sandyfield population has the youngest median age, 28.⁵

Race and Ethnicity

Columbus County is mostly White (62 percent) and African American (30 percent) with other races constituting the remaining 8 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. Refer to the table below.

Within Columbus County, Boardman, Cerro Gordo, Delco, Evergreen, and Lake Waccamaw are predominantly White while Bolton, Brunswick, Chadbourne, Fair Bluff, Hallsboro, and Sandyfield are majority African American. In Boardman, 16 percent of the population identifies as Some Other Race. In Riegelwood, 9 percent of the population identifies as American Native/Alaska Native Alone.

The Latino population in Columbus County is 5 percent compared to 9 percent for North Carolina. Delco has the largest Latino population (42 percent) while Cerro Gordo, Evergreen, Fair Bluff, and Hallsboro do not have Latino populations according to the census data.

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
Boardman	57.3%	27.1%	0.0%	0.0%	0.0%	15.6%	0.0%	42.7%
Bolton	41.0%	50.1%	5.3%	1.6%	0.0%	1.5%	0.5%	59.0%
Boardman	57.3%	27.1%	0.0%	0.0%	0.0%	15.6%	0.0%	42.7%
Bolton	41.0%	50.1%	5.3%	1.6%	0.0%	1.5%	0.5%	59.0%
Brunswick	28.2%	64.2%	3.5%	0.0%	0.0%	1.9%	2.1%	71.8%
Cerro Gordo	72.7%	24.0%	0.0%	0.0%	0.0%	0.0%	3.2%	27.3%
Chadbourne	31.0%	62.1%	1.8%	0.0%	0.0%	2.4%	2.7%	69.0%
Delco	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Evergreen	86.5%	13.5%	0.0%	0.0%	0.0%	0.0%	0.0%	13.5%
Fair Bluff	31.3%	66.0%	1.2%	0.0%	0.0%	0.0%	1.5%	68.7%
Hallsboro	42.3%	57.7%	0.0%	0.0%	0.0%	0.0%	0.0%	57.7%
Lake Waccamaw	82.3%	12.1%	4.6%	0.1%	0.0%	0.0%	1.0%	17.7%

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 B01001, "Sex by Age."

Riegelwood	48.7%	42.6%	8.7%	0.0%	0.0%	0.0%	0.0%	51.3%
Sandyfield	11.6%	83.7%	2.5%	0.0%	0.0%	0.0%	2.1%	88.4%
Tabor City	47.5%	41.1%	3.0%	0.2%	0.0%	4.9%	3.2%	52.5%
Whiteville	47.5%	39.9%	3.2%	2.2%	0.0%	5.6%	1.6%	52.5%

Table 2: Columbus 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 Columbus County, most of individuals identified as LEP speak Spanish while others speak Indo-Euro, Asian/Pacific, or other languages. Similarly, the primary language group for LEP individuals in North Carolina is Spanish. Within Columbus County, Delco has the largest LEP population. The primary language group for LEP populations in Columbus County is Spanish. Cerro Gordo, Evergreen, Fair Bluff do not have LEP populations according to census data.⁶

Poverty

In Columbus County, 23 percent of the population is below the poverty level compared to 17 percent of the North Carolina population. In Tabor City 45 percent of the populations is below the poverty level, 40 percent in Whiteville and Boardman, 38 percent in Hallsboro, 35 percent in Riegelwood, 33 in Bolton and Chadbourne, 29 in Fair Bluff, and 4 percent in Delco.⁷

Low and Moderate Income Individuals

In Columbus County, 40.4 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 \$40,000 in Columbus County and \$53,000 in North Carolina. Sandyfield as the highest median household income for this age group, \$43,000, and Whiteville has the lowest: \$27,000. Median household income was not available for Brunswick, Delco, Evergreen, Fair Bluff, Hallsboro, Lake Waccamaw, Riegelwood, and Tabor City.⁹

Zero Car Households

In Columbus County, 8 percent of households do not have a vehicle available compared to 7 percent of North Carolina households. Within Columbus County, Tabor City has the highest percentage of households without access to a vehicle, 24 percent, while Hallsboro has the lowest percentage: 4.8 percent.¹⁰

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."

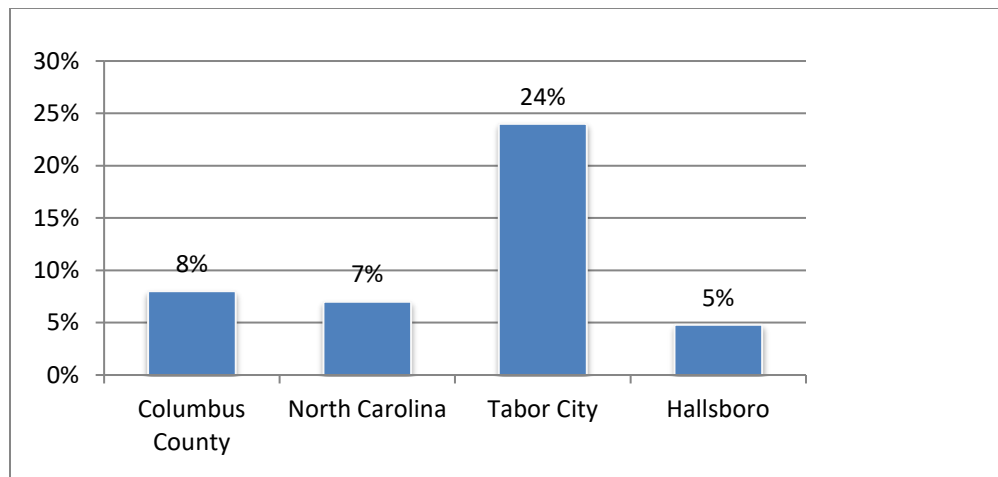


Figure 4. Zero Car Households by Percentage

Commuting: Travel Time to Work, Means of Transportation

The majority of Columbus County residents commute alone to work by vehicle, 88 percent, which is higher than the North Carolina average of 81 percent. Within Columbus County, Evergreen and Riegelwood have the largest percentage of commuters commuting alone, 100 percent, and Boardman has the least: 52 percent.

Boardman has the largest percentage of residents commuting by carpool, 42 percent. In comparison, 10 percent of North Carolina commuters commute. A greater percentage of Chadbourn and Hallsboro residents commute by walking, bike, or motorcycle than the North Carolina average of 2 percent.

The mean commute time to work for Columbus County residents is 24.1 minutes. In comparison, the North Carolina mean commute time is 24.7 minutes. Within Columbus County, Whiteville has the shortest mean commute time at 16.7 minutes while Sandyfield has the longest at 33.8 minutes.¹¹

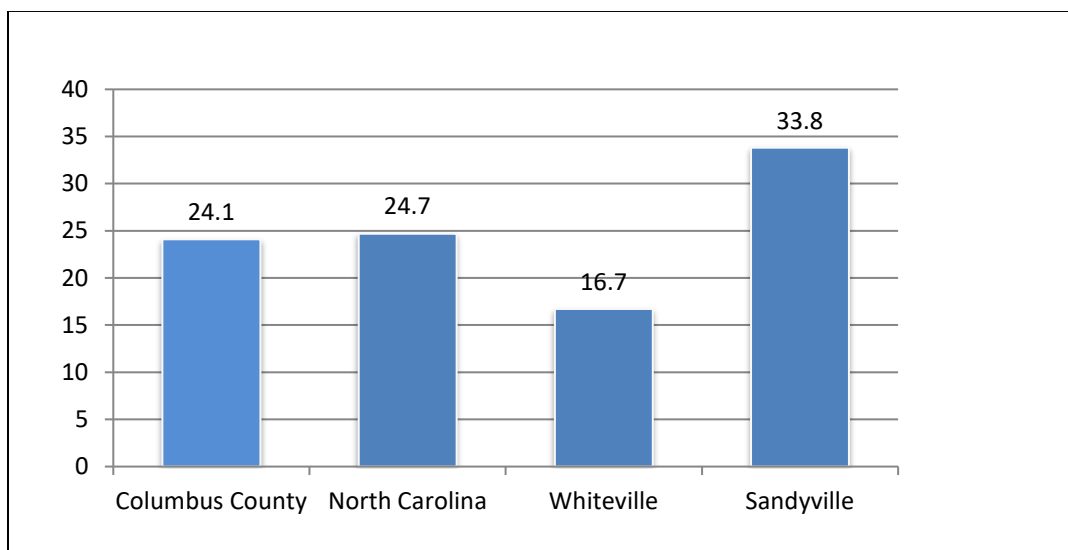


Figure 5. Mean Commute Time to Work in Minutes

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 Profile

Columbus County has over 25,000 housing units, 61 percent of which are single-family homes, 7 percent multi-family units, and 32 percent manufactured housing.

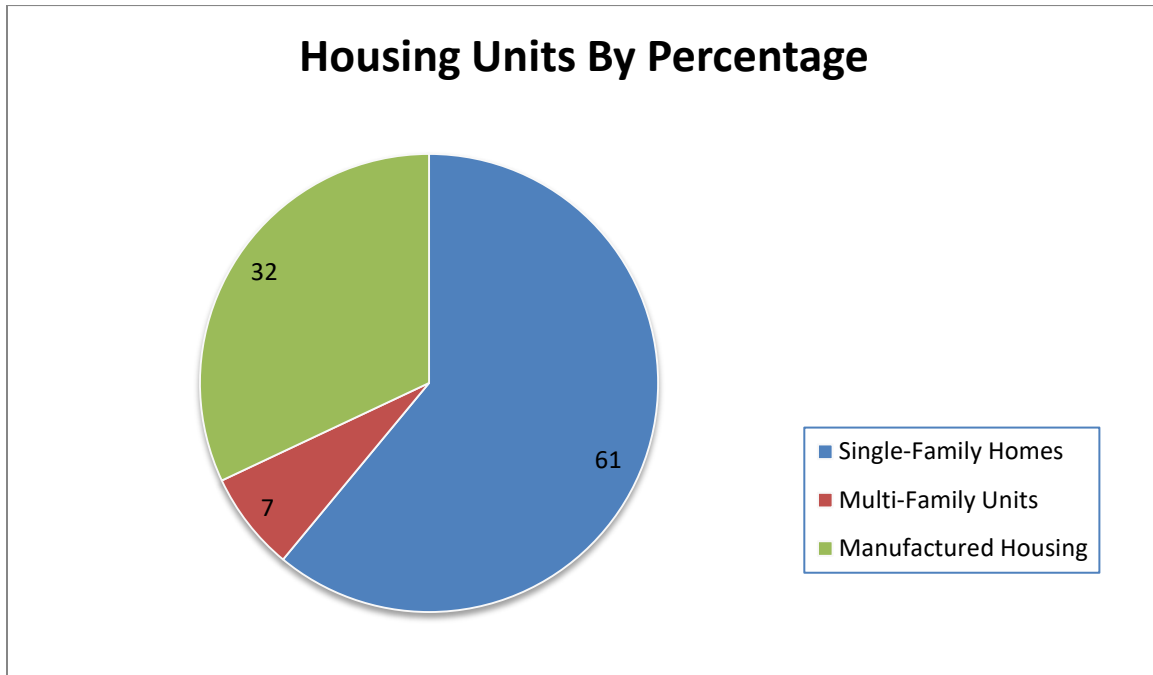


Figure 6. Housing Units by Percentage

In Columbus County 15 percent of housing units are vacant, which is the same percentage for North Carolina. Within Columbus County, Lake Waccamaw has the largest percentage of vacant housing units, 46 percent, while Evergreen and Riegelwood have the least: 0 percent.

Of the occupied housing units, 70 percent are owner-occupied compared to 65 percent in North Carolina; 30 percent are renter-occupied compared to 35 percent in North Carolina.

The median housing value in Columbus County is \$84,000. In comparison, the median housing value in North Carolina is \$140,000. Within Columbus County, Lake Waccamaw has the highest median housing value: \$248,000. Boardman has the lowest median housing value: \$65,000.

According to the National Housing Preservation Database, Columbus County has 1,879 affordable housing units. Most of the affordable housing is located within Whiteville. Other units are located in Fair Bluff, Tabor City and Chadbourn.¹²

Economic / Business Profile

Columbus County has employment types across many sectors including health and educational services, manufacturing, retail trade and waste management. According to the US Census Bureau's Longitudinal-

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

Employer Household Dynamics Program, the largest concentrations of jobs within Columbus County are in downtown Whiteville, Tabor City, along US-74 and between Whiteville and Brunswick.¹³

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 Columbus County is 22,777.¹⁴ Within Columbus County, Sandyfield has the largest percentage of residents 16 years or over in the labor force, 62 percent, while Brunswick has the smallest: 14 percent.

The civilian unemployment rate in Columbus County is 6.4 percent. In comparison, the North Carolina civilian unemployment rate is also 5.1 percent.¹⁴ Within Columbus County, Cerro Gordo, Delco, and Hallsboro have the smallest civilian unemployment rate of 0 percent while Sandyfield has the largest: 32 percent.¹⁵

Major Employers

The top ten employers in Columbus County represent the manufacturing, public administration, education and health service industries, and are listed in order of total employees:¹⁶

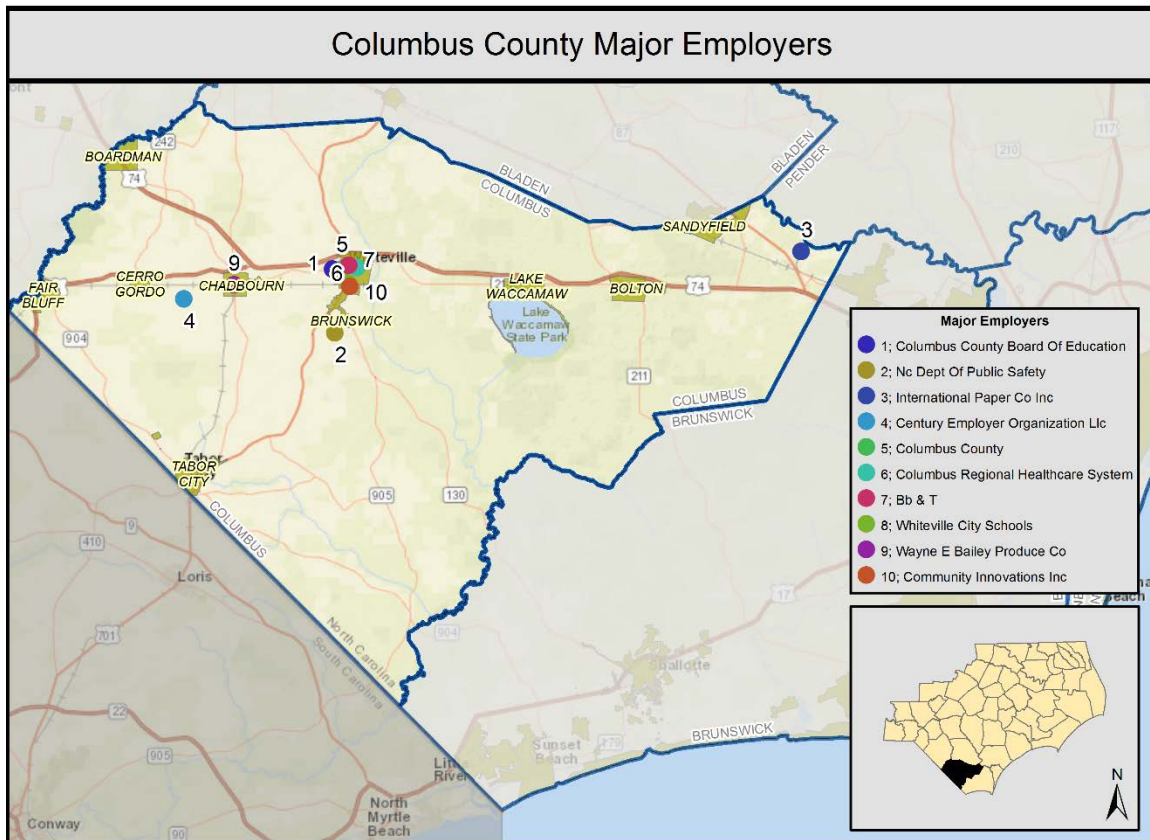


Figure 7: Major Employers by Number of Employees

¹³ Source: US Census Bureau Longitudinal-Employer Household Dynamics Program

¹⁴ 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>

¹⁵ Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B23025, "Employment Status For The Population 16 Years And Over."

¹⁶ Sources: NC Department of Commerce

Economic Development

Columbus County Economic Development Commission is an organization that aims to “promote our area as an excellent place for business relocation and expansion.” The organization has established goals, which include providing information to prospective businesses.

Southeastern Community College, located in Chadbourn, offers employment, training, and job placement services.¹⁷

Infrastructure Profile

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

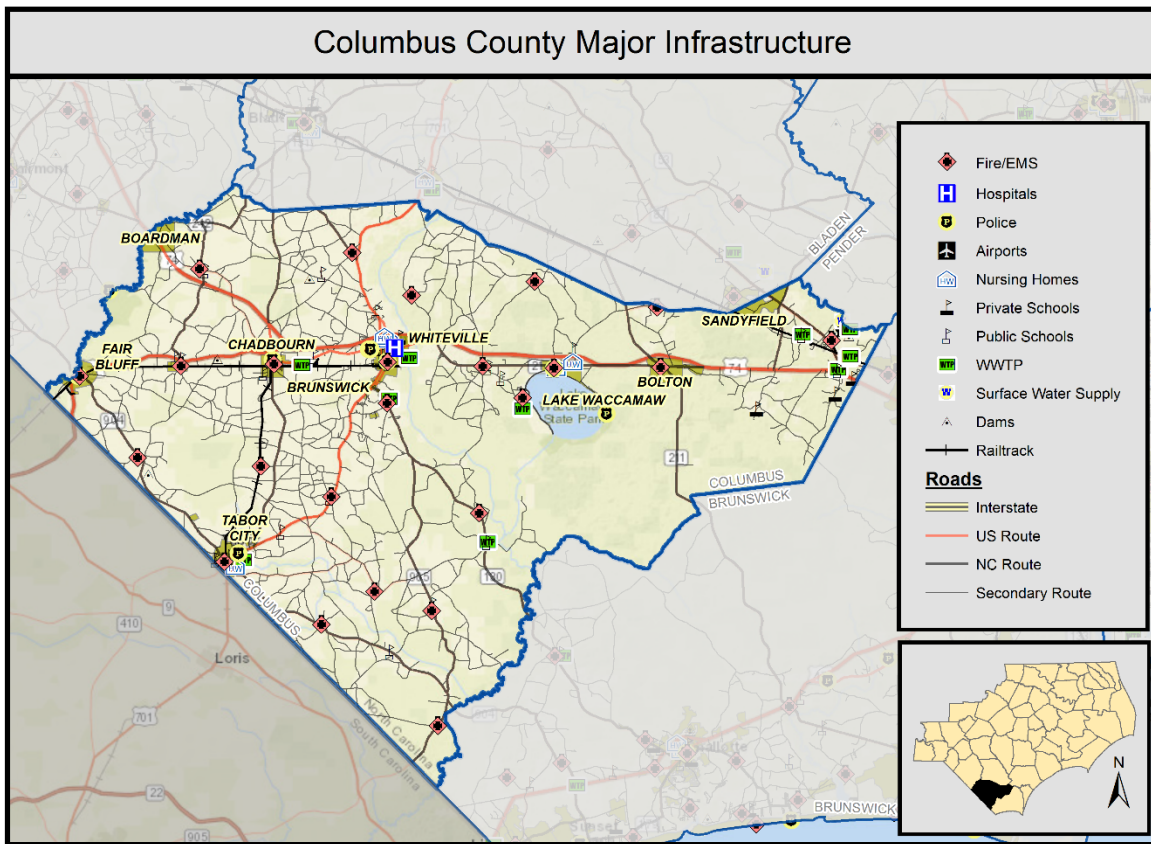


Figure 8: Columbus County Major Infrastructure

Transportation

Columbus County is connected to the region by US 74 and US 701. US 74 is an east-west highway that provides Columbus County with access to Wilmington and deep water ports to the east. US 701 is a north-south highway connecting the county with Myrtle Beach to the south. Columbus County is also served by rail from CSX which runs through the north of the county and provides access to Wilmington and Charlotte. In terms of air travel, the county is home to the Columbus County Airport; and Fayetteville Regional Airport, Wilmington International, and Myrtle Beach International Airport are all within 50 miles.

¹⁷ Sources: Columbus County Economic Development and Southeastern Community College

Health

Columbus Regional Healthcare is the only hospital in Columbus County. It is part of the Carolinas HealthCare System and is located in Whiteville.

Education

Columbus County Public Schools administers nine elementary, five middle, and five high schools. Southeastern Community College is located between Chadbourn and Whiteville and is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools.¹⁸

Water

Lake Waccamaw, Tabor City and Whiteville have municipal water supply plans, which provide drinking water to Columbus County. Municipal wastewater is treated at the Columbus County Wastewater Treatment Plant.¹⁹

Power

There are several solar farms located within Columbus County along US 76 and US 74. These power plants have a net summer capacity of about 5 megawatts each.²⁰

Environmental Profile

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

Water Resources

Lake Waccamaw is located in the eastern part of the state and covers 8,938 acres. The Waccamaw River flows from Lake Waccamaw south through the southeastern portion of Columbus County. Juniper Creek branches off of the Waccamaw River and runs east-west along the border with Brunswick County. Wetlands are present along the Waccamaw River and its tributaries. The most common wetland type in Columbus County is freshwater forested/shrub wetland.²¹

Natural and Managed Areas

According to the NC Natural Heritage Program, there are several natural areas of high, very high, or exceptional value in Columbus County. The Lake Waccamaw State Park area is marked as an area of exceptional value, along with the Waccamaw River and Juniper Creek outflows.

There are several managed areas under state ownership within Columbus 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 Columbus County include: Lake Waccamaw and the wetland area to the north of the lake, Juniper Creek, and Waccamaw River.²²

¹⁸ Sources: Columbus County Economic Development, Columbus Regional Healthcare, Columbus County Public Schools, and Southeastern Community College

¹⁹ Sources: NC Division of Water Resources, Local Water Supply Plans; and the Neuse Regional Water and Sewer Authority

²⁰ Source: US Department of Energy, US Energy Mapping System

²¹ Source: NC Natural Heritage Program

²² Source: NC Natural Heritage Program

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 around Lake Waccamaw and the wetland area to the north, along with the Waccamaw River and Juniper Creek outflows. 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.²³

Parks and Recreation

The Lake Waccamaw State Park is maintained by the North Carolina Division of Parks and Recreation. It features a boardwalk over the lake, seven miles of walking trails, fishing, camping, and boating.

The Columbus County Parks and Recreation Department maintains over 20 parks and community facilities in Columbus County. Amenities at these locations include recreational fields, picnic shelters, playgrounds, and walking trails.²⁴

Administrative Profile

The administrative capabilities of Columbus County and the municipalities within the County are discussed in great detail within Section 4 of the Bladen-Columbus Regional Hazard Mitigation Plan (2015). The assessment evaluates the capabilities of the County and municipalities to implement mitigation actions across the areas of planning and regulatory capabilities, administrative and technical capabilities, fiscal capabilities, and political capabilities. Many more details about the capabilities of Columbus County and the municipalities can be found in that document.

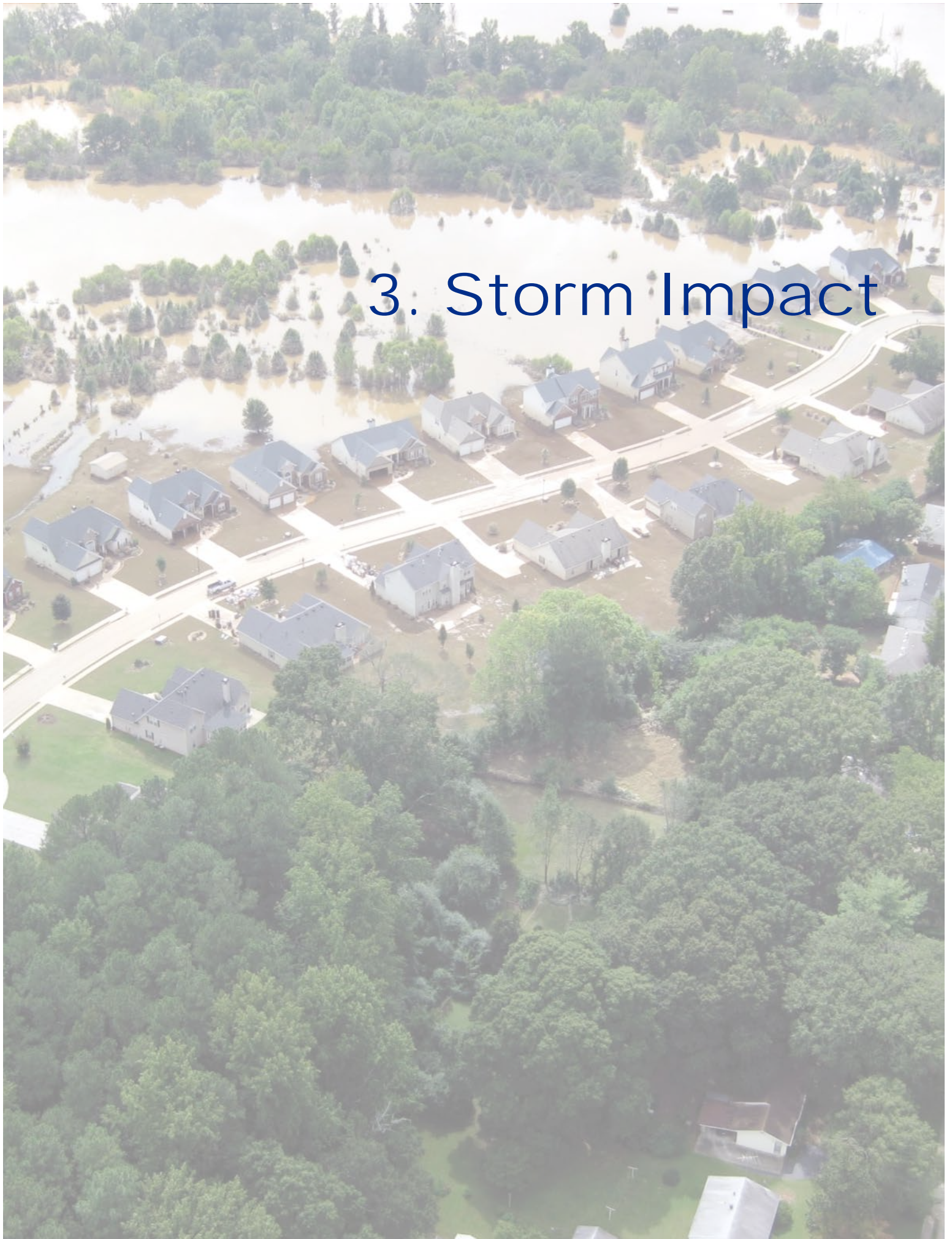
In terms of administrative capabilities, the County has many of the staff and the necessary plans, policies and procedures in place that are found in communities with “moderate-high” capabilities. Columbus County has Emergency Management and Planning departments with the capacities to assist in implementing the resilience strategies proposed in this plan. Some of the other indicators of capability for the County include the following: Comprehensive Land Use Plan, a Zoning Ordinance for portions of the County, Subdivision Regulations, and Floodplain Management Ordinance. These plans, policies and procedures help ensure that new development in the County will be managed in a responsible manner and will take place in non-hazardous areas.

Whiteville and Tabor City have “moderate-high capabilities” as well. They both have Planning departments that would likely be able to assist with implementing the strategies in this plan as well. In addition, they have the plans, policies and procedures in place that indicate higher capability. The Towns of Boardman, Bolton, Brunswick, Cerro Gordo, Chadbourn, Fair Bluff, Lake Waccamaw, and Sandyfield, would likely need support from other agencies in order to implement actions in this plan due to limited administrative capabilities.

²³ Source: NC Natural Heritage Program

²⁴ Sources: NC Natural Heritage Program, Columbus County Parks and Recreation Department

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 Columbus County is highlighted graphically in the figure below;

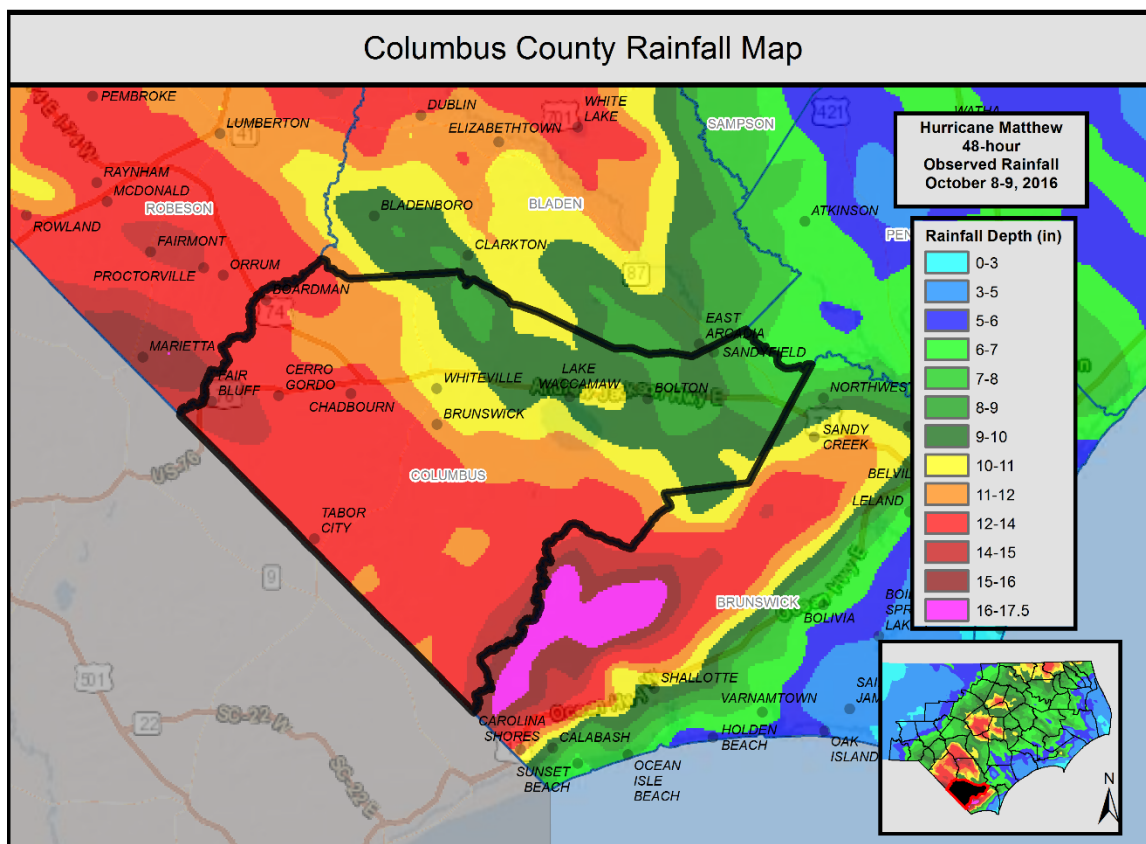


Figure 9: 48-hour Observed Rainfall Depth (October 8-9, 2016)

Riverine Flooding Summary

The effects of Hurricane Matthew on Columbus County were most pronounced along the Waccamaw River in and around the Town of Whiteville and south towards Brunswick County. USGS documented stream gage 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." Stream gage data from the USGS report for Columbus 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.)
02109500	Brunswick	Waccamaw River at Freeland, NC	680.0	19	19.3
02134500	Robeson/ Columbus	Lumber River at Boardman, NC	1,228.0	14.43	10.70

Table 3: Columbus County USGS Stream Gage Data

The USGS gage locations may not represent the flooding experienced in the most impacted areas of Columbus County but the data generally validates the record flooding experienced. It should be noted that the peak gage elevations along the Waccamaw River occurred several days after the peak rainfall in the area.

Riverine flooding in Columbus County occurred in many areas. The Lumber River caused extensive flooding along the western boundary of the County with Robeson County. Lake Waccamaw overflowed its banks and caused flooding in the areas around the lake. Additionally (and in the same area) Big Creek caused flooding in the area around Lake Waccamaw. In Whiteville, Mollie Branch, Soules Swamp caused major flooding. To a lesser extent, flooding along White Marsh was also experienced. Livingston Creek and the Waccamaw River caused flooding in the eastern part of the County. Minor areas of flooding occurred in Tabor City.

Other areas of Columbus County experienced localized riverine flooding (such as Juniper Creek and many others). Riverine flooding in Columbus County was essentially a county-wide event during and after Matthew impacting large areas of the population.

Coastal Flooding Summary

Columbus County has no coastline and thus did not experience coastal flooding during Hurricane Matthew.

Housing Impacts

According to FEMA Individual Assistance claims as of March 23, 2017, there were 5,189 registrations for Individual Assistance in Columbus County as a result of Hurricane Matthew. NFIP claims totaled 93 and SBA home loan applications totaled 470. Additional claims from Hurricane Matthew may still be pending, so these totals may not reflect the final claims data from the event.

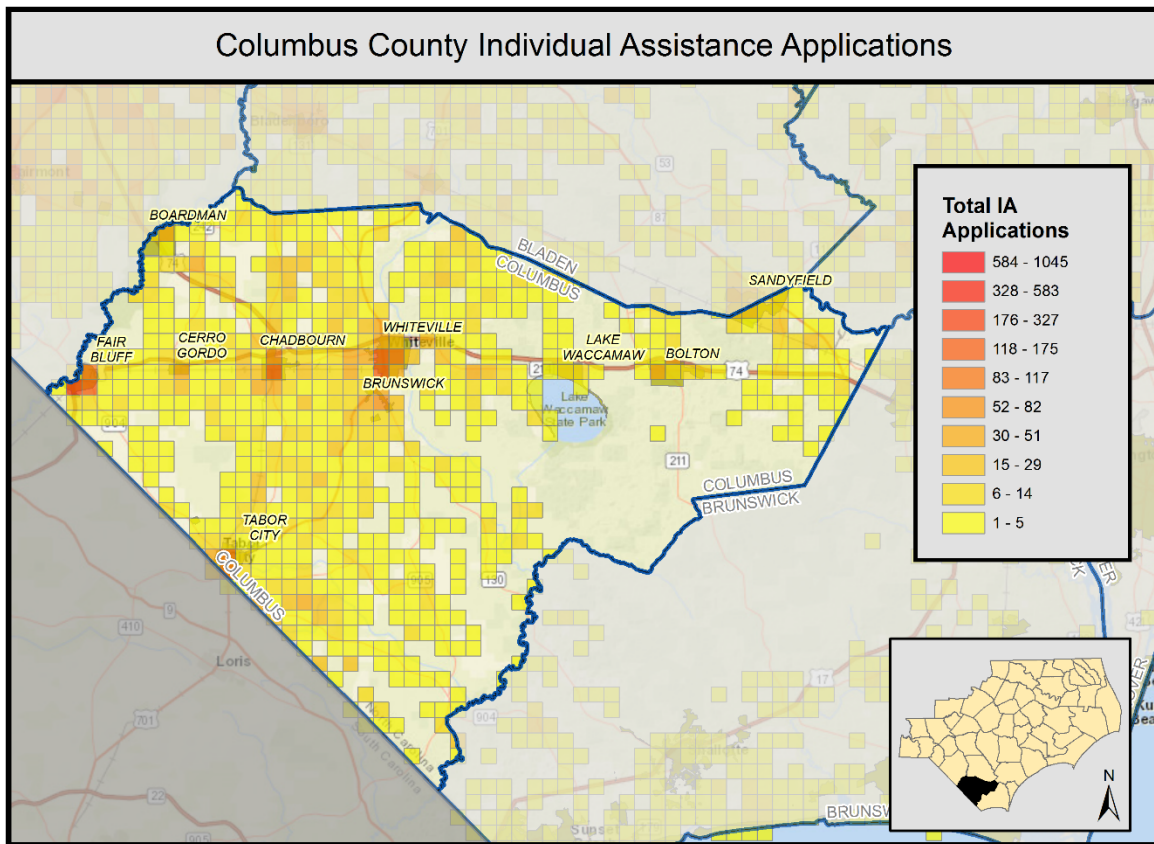


Figure 10: Columbus County IA Applications by Area

Based on meetings with County personnel and representatives from several of the towns in Columbus County, impacts to housing from Hurricane Matthew were substantial.

Based on a review of Individual Assistance Claims, NFIP Claims, and SBA home applications, it seems that housing was significantly impacted in Columbus County as a result of Hurricane Matthew. Actual payouts and loans helped verify these impacts, revealing that damage to housing was as widespread as the claims data would indicate. The bullets below summarize some of the major impacts to housing that were identified.

- Homes damaged from Hurricane Matthew:** In Columbus County, NFIP claims were found across the County, although primarily concentrated in the central and eastern parts of the County, which reflects where most of the heavy rains from Matthew fell. along coastal areas. Preliminary damage assessment results provided by the County indicated 1098 structures with damage ranging from minimal damage to destroyed.

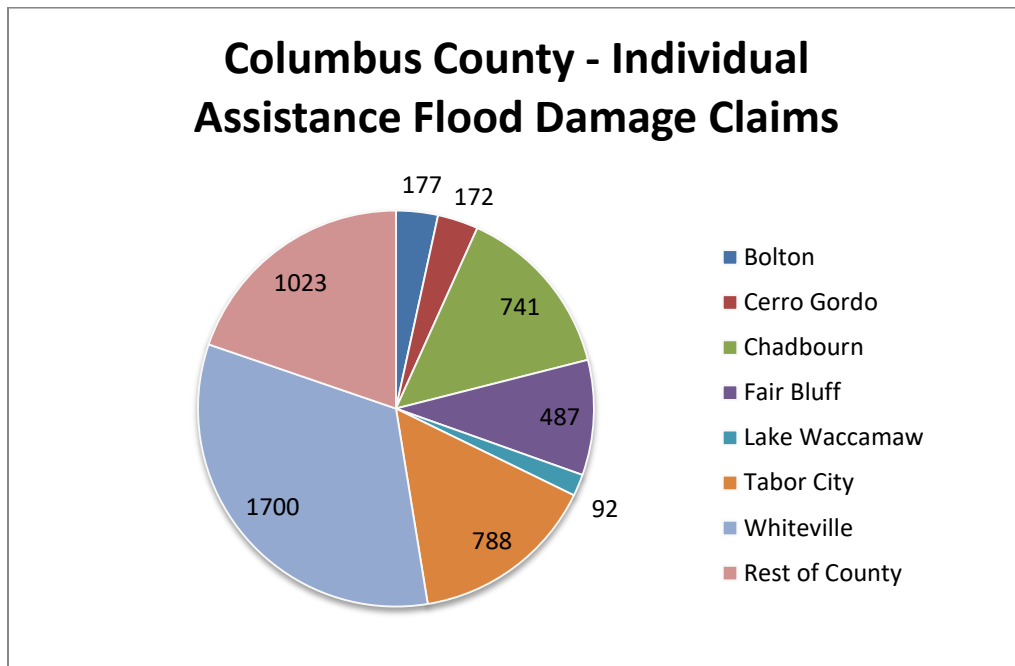


Figure 11: Number of IA Flood Damage Claims by Area

- **Homes At-Risk of Future Flooding:** Concentrations of structures in the SFHA are found in the following locations:
 - In Fair Bluff, along the Lumber River,
 - On Princess Ann Rd in the western part of the county,
 - In Boardman, along the Lumber River,
 - On Chauncey Town Rd along the Reedy Branch near Slap Swamp,
 - Around Lake Waccamaw on Waccamaw Shores Rd and Bella Coola Rd
 - Along Red Hill Rd around White Marsh,
 - In Whiteville around Mollie Branch and Soules Swamp and in the eastern part of the City around the Columbus County Regional Healthcare System,
 - Along Lebanon Church Road in the southeastern part of the County,
 - Various locations around Tabor City.

Other smaller pockets of localized flooding occur across the County in areas such as Crusoe Island Rd and others.

Based on an analysis of claims data, there are approximately 113.4 miles of unstudied streams in Columbus County that may have experienced flooding during Hurricane Matthew. It is not known if flooding of these unmapped streams caused flooding of homes in Columbus County.

Economics / Business / Jobs

There were major impacts to the economy in Columbus County from Hurricane Matthew. As of March 20, 2017, there were 601 business applications for loans from the SBA. Impacts to the economy/businesses/jobs that were identified by local officials from the event are summarized below.

- **Downtown Areas Impacted:** Local officials reported extensive damages to downtowns of Fair Bluff and Whiteville. The entire downtown of Fair Bluff was inundated. A significant portion of the southern part

of downtown Whiteville was also impacted. Many of the businesses in Whiteville are located outside of the SFHA and therefore did not have flood insurance. Many of the businesses in Fair Bluff were uninsured or underinsured. According to local officials, only 7 businesses were insured in Fair Bluff.

- **Identified Economic Development Zones:** There are several economic development areas identified for Columbus County. They are as follows:
 - 50,000 sf building in Fair Bluff,
 - Chadbourn business incubator (former church),
 - Umbro building (Fair Bluff),
 - International Logistics Park,
 - Cronley Bluffs,
 - former Georgia Pacific building.

Some of the locations experienced damage from Matthew (Chadbourn business incubator) but the majority of these are identified as areas that, with infrastructure upgrades, could become more attractive locations for businesses looking to locate to the County.

- **Employment:** According to the North Carolina Department of Commerce, the unemployment rate in Columbus County before Matthew (in September of 2016) was 5.8%. In January of 2017, that rate increased to 7%.

Infrastructure

According to Public Assistance claims, which are often closely tied to infrastructure, as of March 20, 2017 there were \$231,145 of approved claims in Columbus County as a result of Hurricane Matthew. Additional claims from Hurricane Matthew may still be pending, so this number does not reflect the final claims data from the event.

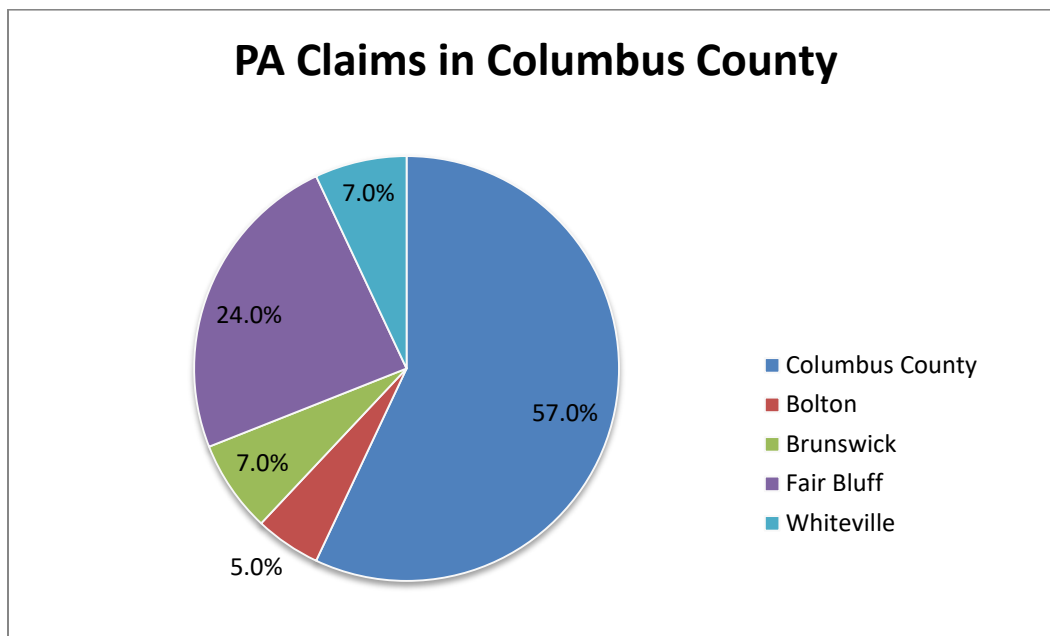


Figure 12: Columbus County PA Claims by Area and Percentage

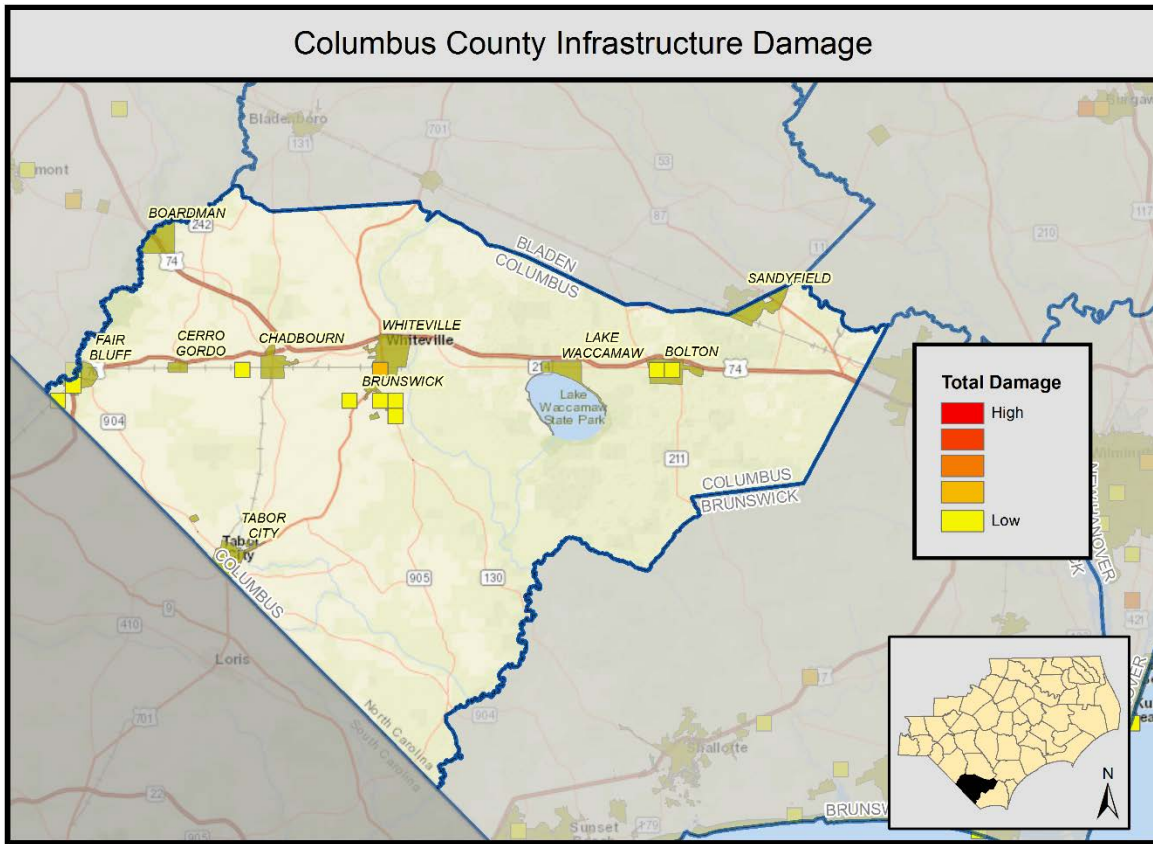


Figure 13: Columbus County Infrastructure Damage

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. The bullets below summarize some of the major impacts to infrastructure that were identified by local officials from the event.

- **Dam Issues:** Columbus County has 5 high hazard dams and 3 low hazard dam. The Lake Tabor Dam was the only dam mentioned as being of any real concern for the County but it did not breach during Hurricane Matthew.
- **Road/Bridge Flooding:** Numerous Columbus county roads and bridges experienced flooding during Hurricane Matthew. Many of these locations have a history of flooding and are often affected by heavy rainfall events. For example:
 - NCDOT reported several roads closed due to flooding. NC-410, NC-904, SR-1001, SR-1002, SR-1004, SR-1005, SR-1515, SR-1566, SR1920, US-701, US-74 and US-76 were impassable during the peak of the storm. These road closures impacted access to most areas of the County. Fair Bluff, Whiteville, Boardman Chadbourne Tabor City were all significantly impacted.
 - Highway 74 flooded east of Whiteville flooded and at Boardman – this flooding caused significant impacts in the County including making access to the hospital in Whiteville a challenge.

Many private roads and roads owned and maintained by the municipalities in Columbus County experienced flooding for some period of time during the storm.

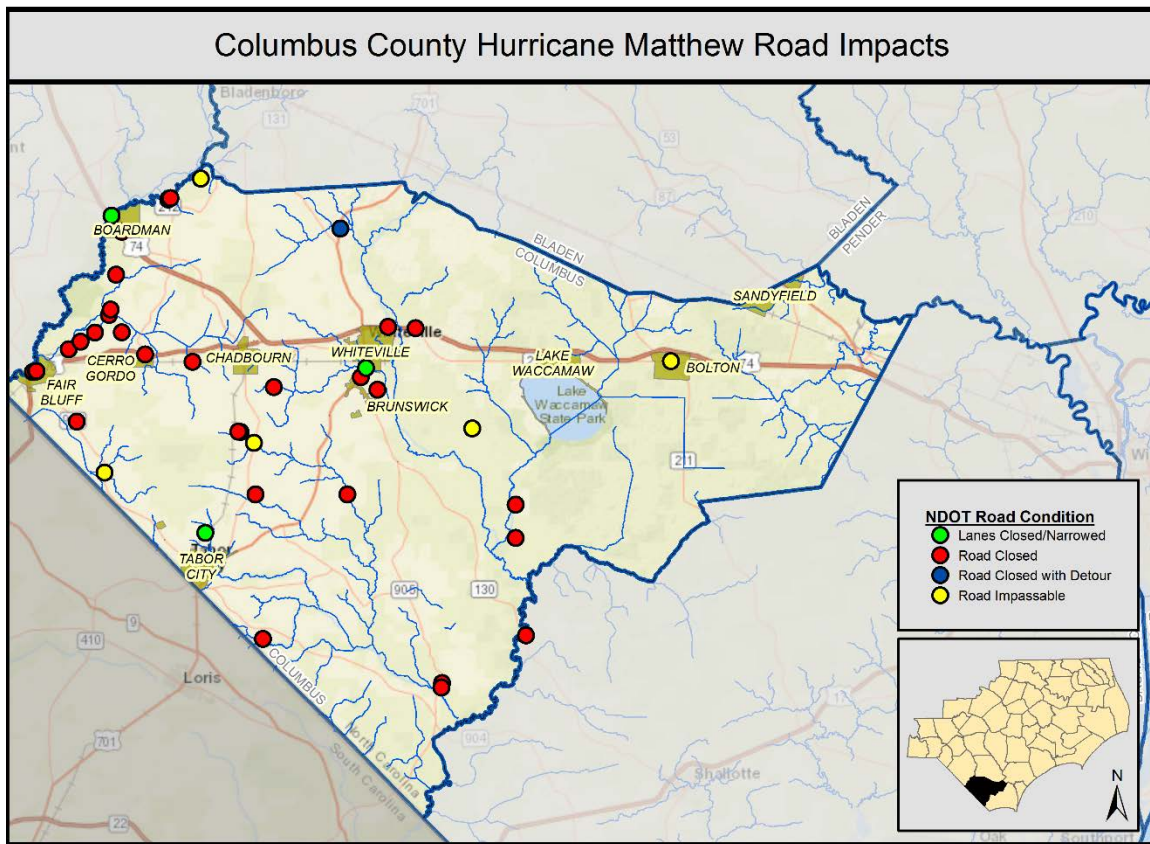


Figure 14: Impacted NCDOT Structures in Columbus County

- **Water/Wastewater Infrastructure:** Water and wastewater infrastructure is critical to maintaining the 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 Columbus County.
 - Fair Bluff's water supply – W. Goodman shut down.
 - 3 Fair Bluff lift stations were broken.
 - Boardman's water supply under the Lumber River collapsed and a sewer pump station on Old Boardman Church Rd was flooded. This also impacted supply into Robeson County.
 - Cerro Gordo's well and pump house on Bulloch St were severely impacted.
 - Tabor City's wastewater treatment plant was flooded.
 - Lift stations in Whiteville flooded.
 - Lake Tabor drain pipe is inoperable.
- **Public Facilities:** Many public facilities in Columbus County were impacted by Hurricane Matthew. These include the following:
 - Fair Bluff Public Works had 3.5 – 4 ft. of water.
 - Fair Bluff Visitor's Center
 - Fair Bluff Riverwalk

- Fair Bluff Senior Center
- Fair Bluff Fire and Rescue
- Fair Bluff Police Department
- Nakina Fire Station was badly flooded

Ecosystems / Environment

- **Stream Restoration and Maintenance.** As a result of Hurricane Matthew, many trees and other debris litter waterways across the County. During heavy rains, this debris will continue to dam up water and impede natural flows. These changes in the water flow puts more properties at risk to future flooding.
- **Stormwater Management.** Hurricane Matthew has demonstrated that stormwater management plans need re-evaluating. Even though the principles of smart environmental growth are deeply imbedded in almost every plan and policy drafted by the planners for the County, Municipalities and the City, the impact of rapid urban growth and subsequent additional impervious surface is stressing the ability of watercourses to perform their natural functions. Stormwater infrastructure is being designed to handle normal flows but fails under extreme flooding conditions. Flooding occurred the week before without the dam breaches.

Industrial farming contamination was spread across prime preservation lands and into neighborhoods.

The increase of urban development over time has increased impervious cover and altered the hydrology of the County. Many of the flood losses occurred outside the Special Flood Hazard Area.

Streambed restoration is needed to reinforce slopes that were damaged along several rivers. Slope damage included loss of natural compaction, loss of rip-rap and sink holes.



4. Strategies for Resilient Redevelopment

4. Strategies for Resilient Redevelopment

This section describes the resilience and revitalization needs and opportunities in Columbus County that were identified during meetings with local officials on February 28, March 21, and April 13, 2017 and the public engagement events held on those same days. The identified needs are based on Columbus County's observations of Hurricane Matthew's impacts on its critical assets that were identified during these meetings and in comments posted on the North Carolina Emergency Management website. The identification of opportunities was based on information from county officials, the public gathered at the three meetings and from the state.

Draft resilience strategies and actions were first presented at Meeting 2 of the planning process. This was done to garner general buy-in on the draft strategies and actions from the County level planning teams. More details on the strategies and actions were collected between Meetings 2 and 3 through research and follow-up phone calls and emails with the primary points of contact assigned to each strategy or action. The purpose of Meeting 3 was to collect and finalize details for the draft strategies and actions. Meeting 4 allowed the county 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	3
Infrastructure	9
Environment	3
Grand Total	17

Table 4. Columbus County Summary of Projects by Pillar

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

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Back Up Generators for Public Facilities	High	1
Infrastructure	Repair and/or Replace Damaged Critical Facilities	High	2
Infrastructure	Stormwater Improvement Projects	High	3
Environment	Stream Restoration and Debris Removal	High	4
Economic Development	Implement Downtown Rehabilitation/Revitalization Projects for Fair Bluff, Whiteville and Chadbourn	High	5
Economic Development	Advance Previously Identified Economic Development Projects	High	6
Economic Development	Establish Assistance Programs for Businesses Impacted by Matthew with No Insurance or Under Insured	High	7
Housing	Provide Affordable Housing	High	8
Infrastructure	Install Flood Warning Gages	High	9
Infrastructure	Upgrade County Emergency Communications System (VIPER)	High	10
Infrastructure	Upgrade Vulnerable Roads and Bridges	High	11
Infrastructure	Mitigate Other Infrastructure Against Future Damages	High	12
Infrastructure	Fund Unmet Public Assistance Needs	High	13
Housing	Acquisition or Elevation of Floodprone Homes	High	14
Environment	Conduct Detailed Studies of Unmapped Flood Areas	Medium	15
Infrastructure	Mitigate Potential Impacts from Dams	Low	16

Pillar	Action Name	Priority	Overall Ranking
Environment	Expansion of Recreational Land/Preservation of Floodplain	Low	17

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

High Priority Housing Strategies

Pillar	Action Name	Priority	Overall Ranking
Housing	Provide Affordable Housing	High	8
Housing	Acquisition or Elevation of Floodprone Homes	High	14

Table 6. Columbus High Priority Housing Summary

Preliminary damage assessments results provided by the County indicated over 1,000 structures with damage ranging from minimal damage to destroyed. Residents displaced by the storm have found it difficult to locate both short-term and long term housing solutions. As a result, in development of Columbus County's housing strategies, the planning team focused on redevelopment and resiliency in these specific areas:

- **Provide Affordable Housing:** The County had over 300 people on a waiting list for affordable housing before the storm, and that number has increased dramatically since October 2016. As Hurricane Matthew displaced residents, many have found it very difficult to locate affordable short-term and permanent housing options. This action will build additional units of affordable housing to be provided as options for residents of Columbus County displaced by Hurricane Matthew.
- **This is a county-wide project, so no project area map has been included.**

Provide Affordable Housing

County: Columbus

Priority Grouping: High

Priority Ranking: 8

Project Timeframe: 1-3 years

Location: Columbus County

Project Summary: The County had over 300 people on a waiting list for affordable housing before the storm, and that number has increased dramatically since October 2016. As Hurricane Matthew displaced residents, many have found it very difficult to locate affordable short-term and permanent housing options. This action will build additional units of affordable housing to be provided as options for residents of Columbus County displaced by Hurricane Matthew.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Hurricane Matthew displaced many residents of Columbus County. Even before the hurricane there were over 300 people on a waiting list for affordable housing. Construction of new affordable housing units will address this un-met need.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with 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.	Construction of affordable housing may provide a positive short term boost to the economy. This action will provide residents with local housing choices allowing them to remain in Columbus County.	Agree
For how long will this solution be effective?	Between 11 and 30 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?	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?	This action is not expected to negatively affect the environment.	N/A
What is the capability of the local government to administer this project?	Medium	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?	County	Agree

- **Acquisition/Elevation of Flood Prone Homes:** This strategy will focus on reducing risk by acquiring and removing homes from flood prone areas or elevating structures above the base flood elevation. The following number of applications have been submitted (by jurisdiction) for consideration for acquisition or elevation;
 - Unincorporated Columbus County - 36
 - Town of Whiteville - 24
 - Town of Boardman - 7
 - Town of Fair Bluff – 100
- **This is a county-wide project, so no project area map has been included.**

Acquisition or Elevation of Floodprone Homes.

County: Columbus

Priority Grouping: High

Priority Ranking: 14

Project Timeframe: This project will take many years to complete.

Location: Unincorporated Columbus County and the Towns of Whiteville, Boardman, and Fair Bluff

Project Summary: The following number of applications have been submitted (by jurisdiction) for consideration for acquisition or elevation

Columbus County 36; Town of Whiteville 24; Town of Boardman 7; Town of Fair Bluff 100

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	If all of these projects are funded there is no unmet need. Otherwise unfunded projects become unmet needs.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	If people leave the County as a result of acquisition there could be negative impacts.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Less than 25%	N/A
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%	N/A
What impacts to the environment of the county will result from this project?	This project could add green space to the impacted communities.	N/A
What is the capability of the local government to administer this project?	Medium	N/A
What is the financial range of this project?	\$1M+	N/A
What is the level of public support for this project?	Unknown	N/A
What is the technical feasibility of this project?	Between 51 and 75%	N/A
Who will administer this project?	County	N/A

Economic Development Strategies

High Priority Economic Development Strategies

Pillar	Action Name	Priority	Overall Ranking
Economic Development	Implement Downtown Rehabilitation/Revitalization Projects for Fair Bluff, Whiteville and Chadbourn	High	5
Economic Development	Advance Previously Identified Economic Development Projects	High	6
Economic Development	Establish Assistance Programs for Businesses Impacted by Matthew with No Insurance or Under-Insured	High	7

Table 7. Columbus High Priority Economic Development Summary

Hurricane Matthew caused extensive damage in the downtown areas of Fair Bluff and Whiteville. The entire downtown area of Fair Bluff was inundated and all but 7 of the businesses there were uninsured or under insured. Significant impacts to businesses in the southern part of downtown Whiteville were reported and since parts of the area are not located in the SFHA business there did not have flood insurance. The planning team worked with local county officials to examine ways to increase resiliency for future storm events and encourage economic growth and revitalization of the towns in Columbus County.

- Implement Downtown Rehabilitation/Revitalization Projects for Fair Bluff and Whiteville:**
 Rehabilitation and revitalization projects are vital to the recovery of these struggling communities. Downtown areas of Fair Bluff and Whiteville experienced significant flooding as a result of Hurricane Matthew. Businesses in both towns are struggling to recover as many were under or uninsured.

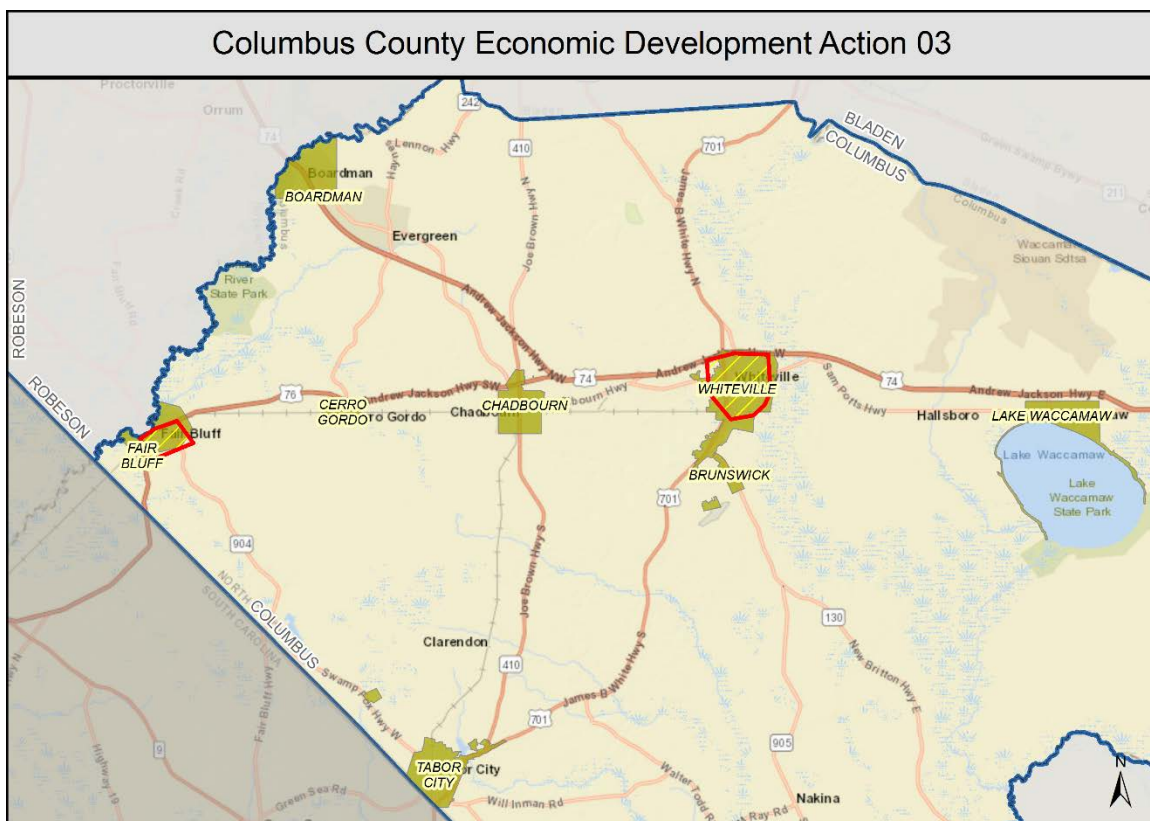


Figure 15. Economic Development Strategy – Implement Downtown Rehabilitation/Revitalization Projects for Fair Bluff and Whiteville

Implement Downtown Rehabilitation/Revitalization Projects for Fair Bluff and Whiteville

County: Columbus

Priority Grouping: High

Priority Ranking: 5

Project Timeframe: 3-5 years

Location: Downtown Fair Bluff and Whiteville

Project Summary: Rehabilitation and revitalization projects are vital to the recovery of these struggling communities. Downtown areas of Fair Bluff and Whiteville experienced significant flooding as a result of Hurricane Matthew. Businesses in both towns are struggling to recover as many were under or uninsured.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Businesses in both downtowns are still struggling to reopen or recoup losses from Matthew.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Revitalization of these downtowns could have extensive positive impacts on the local economies.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
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?	Higher than 75%	N/A
What impacts to the environment of the county will result from this project?	This action will not significantly impact the environment.	N/A
What is the capability of the local government to administer this project?	Low	N/A
What is the financial range of this project?	\$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **Advance Previously Identified Economic Develop Projects Across the County:** The following sites have been previously identified for economic development projects along the US Hwy 74 corridor:
 - Umbro Building (former)
 - Chadbourne Business Incubator - former Church Building
 - Former GA Pacific Main Building
 - Manufacturing Site – Whiteville
 - Land Purchase north of Bolton NC
 - Cronley Bluffs Farm
 - International Logistics Park (in Brunswick County). This is a joint effort with Brunswick County.

Advancing these economic development projects could help offset some of the jobs lost as a result of Hurricane Matthew and could provide a much-needed economic boost to the County and municipalities.

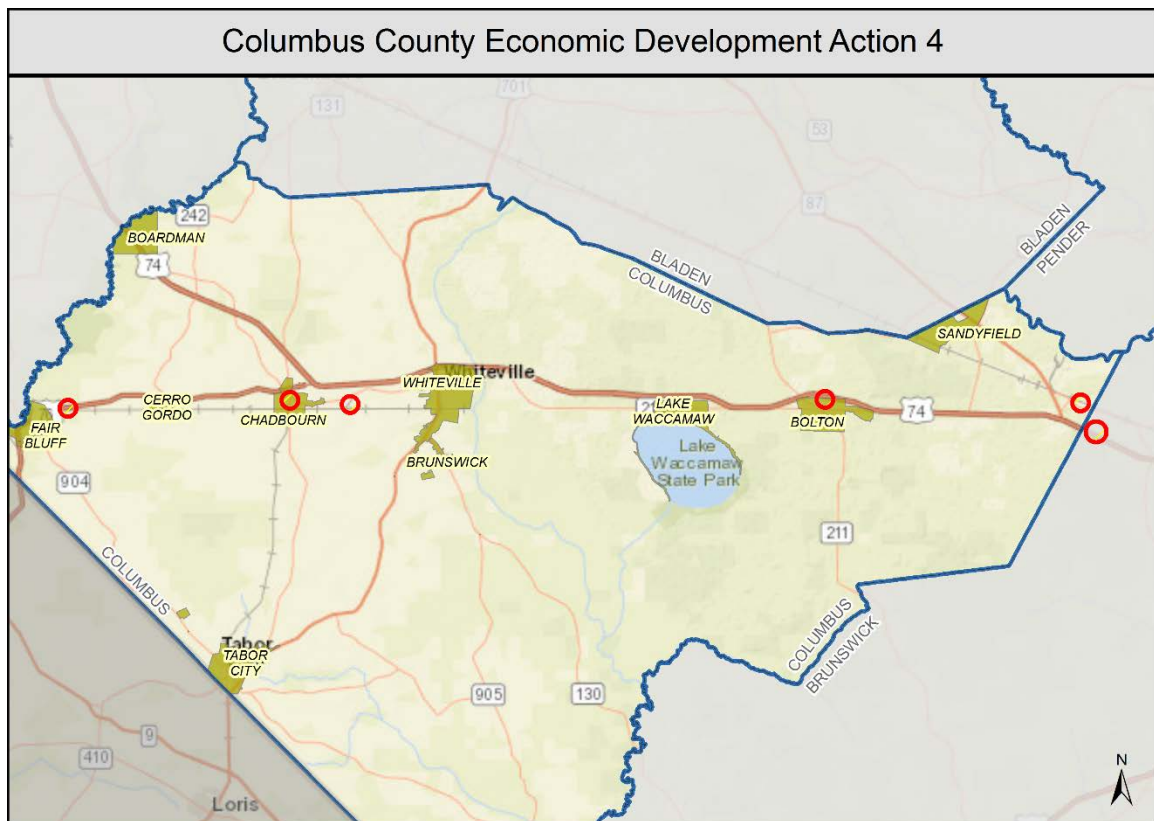


Figure 16. Economic Development Strategy – Advance Previously Identified Economic Development Projects

Advance Previously Identified Economic Develop Projects Across the County

County: Columbus

Priority Grouping: High

Priority Ranking: 6

Project Timeframe: 3-5 years

Location: Columbus County

Project Summary: Utility service needs to be extended and/or repairs need to be made at the locations below in order to foster economic development in the area and provide a consistent source of gas/water/sewer to this important facility/area. With these modifications, these sites would help offset losses from other areas within the County as a result of Matthew. The following sites have been previously identified for economic development projects:

- Umbro Building (former)
- Chadbourne Business Incubator - former Church Building - repairs needed
- Former GA Pacific Main Building
- Manufacturing Site – Whiteville
- Land Purchase north of Bolton NC
- Cronley Bluffs Farm - needs infrastructure
- International Logistics Park. This is a joint effort with Brunswick County.

Advancing these economic development projects could help offset some of the jobs lost as a result of Hurricane Matthew and could provide a much-needed economic boost to the County and municipalities. More details about each specific project can be provided by County Economic Development.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Hurricane Matthew devastated local businesses in Columbus County. This action will address the need to bring in new businesses creating jobs and expanding the tax base.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Development of these sites will increase employment tax revenue and the overall well-being of the community.	N/A
For how long will this solution be effective?	Between 11 and 30 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	N/A
Is coordination with other communities/counties needed to complete this project?	Yes	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
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%	N/A
What impacts to the environment of the county will result from this project?	Any impacts to the environment will be negligible compared to the economic benefits these projects could provide.	N/A
What is the capability of the local government to administer this project?	Low	N/A

What is the financial range of this project?	\$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Between 26 and 50%	N/A
Who will administer this project?	County	N/A

- **Establish Assistance Programs for Businesses Impacted by Matthew with No Insurance or Under-insured:** Many businesses impacted by Hurricane Matthew were small, local business. Many were uninsured or under-insured and do not have adequate cash to rebuild their businesses. Direct assistance programs other than SBA loans are needed to reopen these businesses.
- **This is a county-wide project, so no project area map has been included.**

Establish Assistance Programs for Businesses Impacted by Matthew with No Insurance or Under-insured

County: Columbus

Priority Grouping: High

Priority Ranking: 7

Project Timeframe: 1-3 years

Location: Columbus County

Project Summary: Many businesses impacted by Hurricane Matthew were small, local business. Many were un-insured or under-insured and do not have adequate cash to rebuild their businesses. Direct assistance programs other than SBA loans are needed to reopen these businesses.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This action will establish programs to provide direct assistance to displaced and/or closed businesses directly affected by flooding and damage caused by Hurricane Matthew.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	This action will allow businesses to reopen rehire and contribute to the economy of the County.	N/A
For how long will this solution be effective?	Less than 10 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
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%	N/A
What impacts to the environment of the county will result from this project?	This action is not expected to effect the environment.	N/A
What is the capability of the local government to administer this project?	Low	N/A
What is the financial range of this project?	\$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Between 26 and 50%	N/A
Who will administer this project?	State	N/A

Infrastructure Strategies

High Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Back-Up Generators for Critical Facilities	High	1
Infrastructure	Repair and/or Replace Damaged Critical Facilities	High	2
Infrastructure	Stormwater Improvement Projects	High	3
Infrastructure	Install Flood Warning Gages	High	9
Infrastructure	Upgrade County Emergency Communication System (VIPER)	High	10
Infrastructure	Upgrade Vulnerable Roads and Bridges	High	11
Infrastructure	Mitigate Other Infrastructure Against Future Damages	High	12
Infrastructure	Fund Unmet Public Assistance Needs	High	13

Table 8. Columbus High Priority Infrastructure Summary

The purpose of the strategies related to Columbus 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:

- **Back-Up Generators for Critical Facilities:** Overall, back-up, supplemental and redundant power is needed to create better energy assurance post-disaster and to make sure that critical facilities have sufficient power to maintain operations. Facilities that need backup power include:
 - Columbus County EOC
 - Columbus County Backup 911 Center – Department of Aging
 - Sheriff's Department
 - County Facility of Bill Hooks Rd (small generator needed, runs County SCADA system)
 - Whiteville PD and FD building
 - Whiteville City Hall
 - Schools/Shelters: West Columbus, Columbus Career, Whiteville, Edgewood Middle
- **This is a county-wide project, so no project area map has been included.**
- **Repair and/or Replace Damaged Critical Facilities:** The following critical public facilities were damaged by Hurricane Matthew. Any of these that are not repaired and/or mitigated through federal programs will be unmet needs:

Fair Bluff Town Hall, Fair Bluff Public Works, Tabor City Waste Water Treatment Plant, Nakina Fire Station, Fair Bluff Senior Center, Fair Bluff Fire and Rescue, Fair Bluff Police Department

- **This is a county-wide project, so no project area map has been included.**

Repair and/or Replace Damaged Critical Facilities

County: Columbus

Priority Grouping: High

Priority Ranking: 2

Project Timeframe: 1-3 years

Location: Columbus County

Project Summary: The following critical public facilities were damaged by Hurricane Matthew. Any of these that are not repaired and/or mitigated through federal programs will be unmet needs:

Fair Bluff Town Hall, Fair Bluff Public Works, Tabor City Waste Water Treatment Plant, Nakina Fire Station, Fair Bluff Senior Center, Fair Bluff Fire and Rescue, Fair Bluff Police Department

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Any of these that are not repaired and/or mitigated through federal programs will be unmet needs.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	None	N/A
For how long will this solution be effective?	Less than 10 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Some of these facilities are located in flood hazard areas.	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	High confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	N/A
What impacts to the environment of the county will result from this project?	This action is not expected to affect the environment.	N/A
What is the capability of the local government to administer this project?	Low	N/A
What is the financial range of this project?	\$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Between 26 and 50%	N/A
Who will administer this project?	County	N/A

- **Stormwater Improvement Projects:** Implement stormwater improvement projects to increase capacity of ditches, culverts and storm drainage systems in the Towns of Whiteville and Fair Bluff. Increase culvert size on Old Lumberton Road at West Prong Creek to safely pass the 100-yr storm event.
- **This is a county-wide project, so no project area map has been included.**

Storm Water Improvement Projects

County: Columbus

Priority Grouping: High

Priority Ranking: 3

Project Timeframe: 2-5 years

Location: Columbus County

Project Summary: Implement stormwater improvement projects to increase capacity of ditches, culverts and storm drainage systems in the Towns of Whiteville and Fairbluff. Increase culvert size on Old Lumberton road over West Prong Creek to safely pass the 100-yr storm event.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Hurricane Matthew flooding in Columbus County was devastating. In some areas improved storm drainage may have prevented or reduced flooding.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Improved stormwater drainage may prevent flooding of businesses allowing them to reopen for business following large storm events.	N/A
For how long will this solution be effective?	Between 11 and 30 years	N/A
How effective is the risk reduction?	<50 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
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	N/A
What impacts to the environment of the county will result from this project?	Improved storm drainage could increase stormwater volume and velocity in receiving streams. However incorporating BMP's into the project may improve water quality and reduce volume discharged into receiving streams.	N/A
What is the capability of the local government to administer this project?	Medium	N/A
What is the financial range of this project?	\$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Between 51 and 75%	N/A
Who will administer this project?	County	N/A

- **Install Flood Warning Gages:** Install 5 new stream gages for the FIMAN network; White Marsh at Whiteville, White Marsh at Hallsboro Road, Big Creek at Lake Waccamaw, Lake Tabor Dam, and Livingston Creek at Water Tank Road for inclusion in the FIMAN network. 3 existing USGS gages in Columbus County should be added to the FIMAN network as part of this action. Existing gages are the Lumber River at Fair Bluff, Lumber River at Boardman, and Waccamaw River at Freeland.

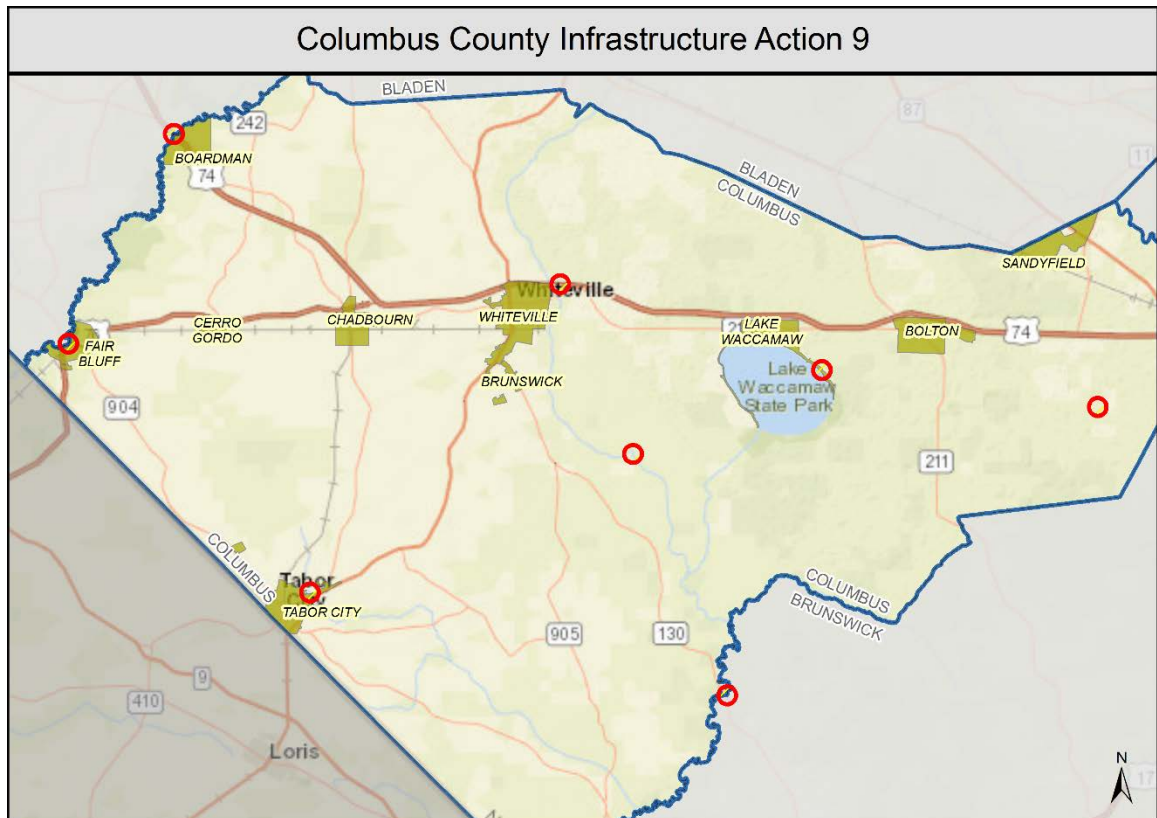


Figure 17. Infrastructure Strategy – Install Flood Warning Gages

Install Flood Warning Gages

County: Columbus

Priority Grouping: High

Priority Ranking: 9

Project Timeframe: 1-3 years

Location: Columbus County

Project Summary: Install 5 new stream gages; White Marsh at Whiteville, White Marsh at Hallsboro Road, Big Creek at Lake Waccamaw, Lake Tabor Dam, and Livingston Creek at Water Tank Road for inclusion in the FIMAN network. 3 existing USGS gages in Columbus County should be added to the FIMAN network as part of this action. Existing gages are the Lumber River at Fair Bluff, Lumber River at Boardman, and Waccamaw River at Freeland.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	There are currently no active gages in FIMAN from Columbus County. This action will provide advanced flood warning and mapping for residents businesses and emergency response.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	The economy could benefit from advanced flood warning by allowing businesses to prepare for flood events better. Resilient businesses will directly affect the economy of Columbus County.	N/A
For how long will this solution be effective?	Between 11 and 30 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
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%	N/A
What impacts to the environment of the county will result from this project?	This action should not affect the environment.	N/A
What is the capability of the local government to administer this project?	Low	N/A
What is the financial range of this project?	\$101K - \$250K	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	State	N/A

- **Upgrade County Emergency Communication System (VIPER):** Columbus County's emergency communication system proved to be ineffective during Hurricane Matthew. The General Assembly's Criminal Justice Information Network report of 1995 identified interoperable communications as a critical need for public safety agencies when responding to emergencies. This action proposes for Columbus County to partner with the State's VIPER network. Columbus County will have to acquire new radios for all emergency responders in the County.
- **This is a county-wide project, so no project area map has been included.**

Upgrade County Emergency Communication System (VIPER)

County: Columbus

Priority Grouping: High

Priority Ranking: 10

Project Timeframe: 1-2 years

Location: Columbus County

Project Summary: Columbus County's emergency communication system proved to be ineffective during Hurricane Matthew. Interoperable communications was identified in the General Assembly's Criminal Justice Information Network report of 1995 as a critical need for public safety agencies when responding to emergencies. This action proposes for Columbus County to partner with the State's VIPER network. Columbus County will have to acquire new radios for all emergency responders in the County.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Columbus County's emergency communication system proved to be ineffective during Hurricane Matthew. This action will upgrade the county's emergency communication system.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	This action will not affect the economy.	N/A
For how long will this solution be effective?	Between 11 and 30 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
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	N/A
What impacts to the environment of the county will result from this project?	This action will not affect the environment.	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	\$251K - \$500K	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	County	N/A

- **Upgrade Vulnerable Roads and Bridges:** Carry out structural improvements to roadways, bridges, culverts, and other infrastructure that have been damaged and upgrade to make more resilient. This may entail, among other actions, roadway/bridge elevations, culvert upsizes, etc. Roads to be considered include Highway 74 at Boardman, Highway 74 East of Whiteville, Water Tank Rd, Bella Coola Rd, Lake Waccamaw Shores Rd., River Rd, Pine Log Rd, and Slippery Log Rd.

In addition, it may be necessary to leverage existing data and studies to develop an updated assessment of the Bridge and Road Inventory impacted by Hurricane Matthew as well as structures identified at risk during more frequent (1-2/year) significant rain events affecting the county – many located in the SFHA. Prioritize the most at risk structures and develop an implementation plan to address deficiencies in current infrastructure through above techniques and develop a plan for future development needs to ensure integration of resiliency design measures and best practices to facilitate a reduced need for future upgrades as the county grows as well as offsetting potential future flood risk impacts.

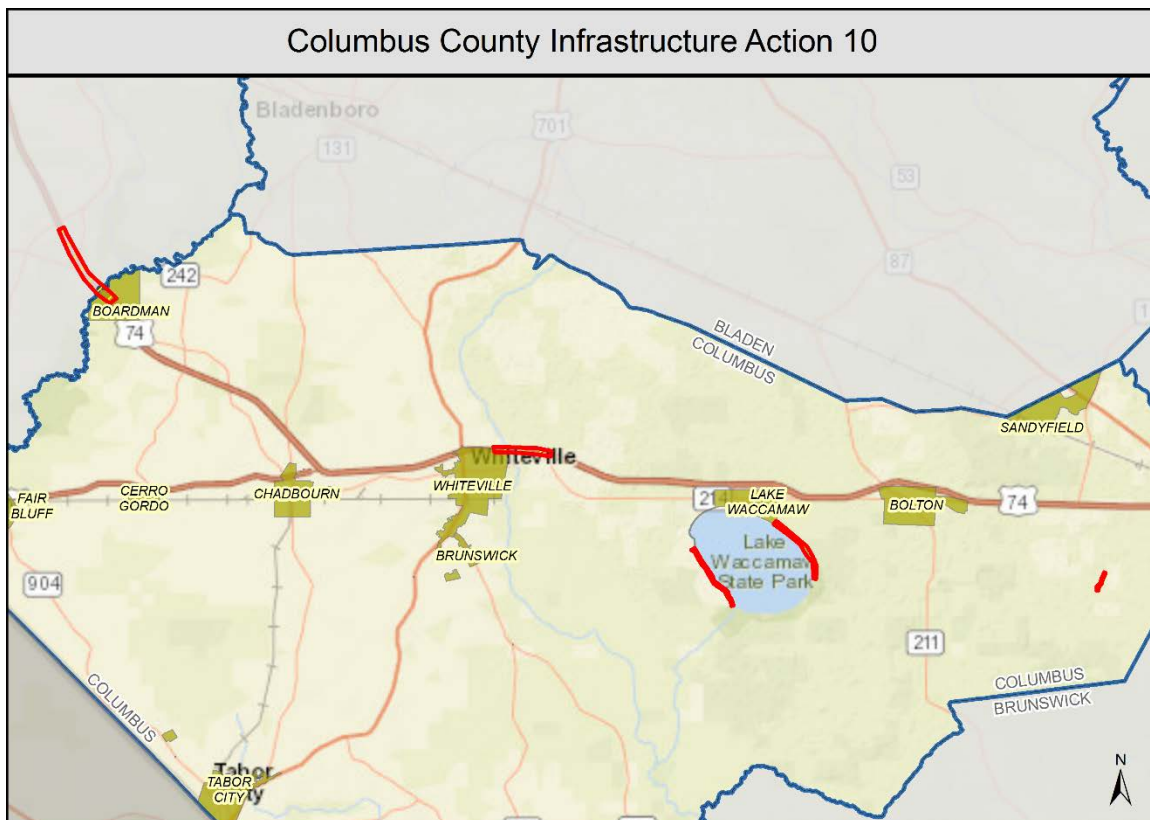


Figure 18. Infrastructure Strategy – Upgrade Vulnerable Roads and Bridges

Upgrade Vulnerable Roads and Bridges

County: Columbus

Priority Grouping: High

Priority Ranking: 11

Project Timeframe: >5years

Location: Columbus County

Project Summary: Carry out structural improvements to roadways, bridges, culverts, and other infrastructure that have been damaged and upgrade to make more resilient. This may entail, among other actions, roadway/bridge elevations, culvert upsizes, etc. Roads to be considered: Highway 74 at Boardman, Highway 74 East of Whiteville, Water Tank Rd, Bella Coola Rd, Lake Waccamaw Shores Rd., River Rd, Pine Log Rd, Slippery Log Rd.

In addition, it may be necessary to leverage existing data and studies to develop an updated assessment of the Bridge and Road Inventory impacted by Hurricane Matthew as well as structures identified at risk during more frequent (1-2/year) significant rain events affecting the county – many located in the SFHA. Prioritize the most at risk structures and develop an implementation plan to address deficiencies in current infrastructure through above techniques and develop a plan for future development needs to ensure integration of resiliency design measures and best practices to facilitate a reduced need for future upgrades as the county grows as well as offsetting potential future flood risk impacts.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Many major routes were severely flooded during Hurricane Matthew. Improvement of these major routes by elevation improved storm drainage or other action can improve the overall resiliency of Columbus County.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Improving roads bridges and culverts could limit flooding of major routes allowing businesses to reopen faster following large storm events.	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	50-100 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	Yes	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
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?	Roadway projects can impact the environment however many environmental impacts require compensatory mitigation as a condition of project approval.	N/A
What is the capability of the local government to administer this project?	Minimum	N/A
What is the financial range of this project?	\$1M+	N/A

What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Between 26 and 50%	N/A
Who will administer this project?	State	N/A

- **Mitigate other Infrastructure Against Future Damages:** The following infrastructure projects need to be mitigated to better withstand future flood events.
 - Large number of sewer lift stations across the County
 - Lake Tabor Spillway Outfall Pipe
 - Town of Boardman Water Supply
 - Town of Cerro Gordo, Bulloch Street Well and Pump House
 - Town of Fair Bluff Water System
 - Culverts repaired by farmers that need to be brought up to standards
 - Whiteville - 7 total lift stations
 - Whiteville - roofs - Rec Center, Gym Floor, Park Facilities
- **This is a county-wide project, so no project area map has been included.**

Mitigate other Infrastructure Against Future Damages

County: Columbus

Priority Grouping: High

Priority Ranking: 12

Project Timeframe: 1-5 years

Location: Columbus County

Project Summary: The following infrastructure projects need to be mitigated to better withstand future flood events.

- Large number of sewer lift stations across the County
- Lake Tabor Spillway Outfall Pipe
- Town of Boardman Water Supply
- Town of Cerro Gordo, Bulloch Street Well and Pump House
- Town of Fair Bluff Water System
- Culverts repaired by farmers that need to be brought up to standards
- Whiteville - 7 total lift stations
- Whiteville - roofs - Rec Center, Gym Floor, Park Facilities

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Much of the County's infrastructure was affected by Hurricane Matthew. Improving this infrastructure to withstand future flood events will in turn make the County more resilient to future storms.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	This action could potentially benefit the economy. Infrastructure that is upgraded to withstand future flood events could also be upgraded to increase capacity for future development and growth in the County.	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
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?	No Impact	N/A
What impacts to the environment of the county will result from this project?	This action is intended to have minimal environmental impacts. individual projects will need to be individually evaluated for their environmental impact.	N/A
What is the capability of the local government to administer this project?	Low	N/A
What is the financial range of this project?	\$1M+	N/A

What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Between 51 and 75%	N/A
Who will administer this project?	County	N/A

- **Fund Unmet Public Assistance Needs: The County and municipalities seek funding for the following “non-qualifying” PA projects:**
 - Town of Fair Bluff: \$3,000,000 - Lack of Flood Insurance. This is going to be an issue as the Town moves forward due to most of the Town being in a flood zone and having limited funds to pay for flood insurance. The Town Hall, Police Dept., Public Works and the Visitor center will be affected by this.
 - Town of Fair Bluff: \$4,500,000. The Town of Fair Bluff has 60% of their sewer lines that need to be replaced and upgraded. Due to the poor condition of the sewer lines prior to the storm this is ineligible for FEMA funding. The sewer lines can no longer handle larger amounts of rain and are potentially leaking and allowing excessive infiltration. The Town currently will be replacing the other 40% with a grant that they received from CDBG funding.
 - Boys and Girls Homes of NC: \$20,000. Wet well and valve boxes were flooded as they were 6” in elevation below a roadway that was flooded. The well site is currently elevated 5-feet above the 500-year flood plain. The unmet need is raising the wet well and associated equipment 18”-24” to prevent future flooding. Unsure at this time if this will be HMGP eligible or granted.
 - Town of Whiteville: \$20,000. Drainage ditches and Juniper Creek backed up due to storm debris and trees down. The state owns the jurisdiction of Juniper Creek and the applicant is not responsible for the clearing of the Creek. The applicant has applied for assistance with the removal of trees/debris in the area. Juniper Creek is the main drainage for Southeastern Community College, which is partially located in the floodplain.

- **This is a county-wide project, so no project area map has been included.**

Fund Unmet Public Assistance Needs

County: Columbus

Priority Grouping: High

Priority Ranking: 13

Project Timeframe: 2-5yrs

Location: Columbus County

Project Summary: The County and municipalities seek funding for the following “non-qualifying” PA projects:

- Town of Fair Bluff: \$3,000,000 - Lack of Flood Insurance. This is going to be an issue as the Town moves forward due to most of the Town being in a flood zone and having limited funds to pay for flood insurance. The Town Hall, Police Dept., Public Works and the Visitor center will be affected by this.
- Town of Fair Bluff: \$4,500,000. The Town of Fair Bluff has 60% of their sewer lines that need to be replaced and upgraded. Due to the poor condition of the sewer lines prior to the storm this is ineligible for FEMA funding. The sewer lines can no longer handle larger amounts of rain and are potentially leaking and allowing excessive infiltration. The Town currently will be replacing the other 40% with a grant that they received from CDBG funding.
- Boys and Girls Homes of NC: \$20,000. Wet well and valve boxes were flooded as they were 6” in elevation below a roadway that was flooded. The well site currently sits at 5-feet above the 500-year flood plain. The unmet need is raising the wet well and associated equipment 18”-24” to prevent future flooding. Unsure at this time if HMGP will be eligible or granted.
- Town of Whiteville: \$20,000. Drainage ditches and Juniper Creek backed up due to storm debris and trees down. The state owns the jurisdiction of Juniper Creek and the applicant is not responsible for the clearing of the Creek. The applicant has applied for assistance with the removal of trees/debris in the area. Juniper Creek is the main drainage for Southeastern Community College, which is partially located in the floodplain.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	These PA claims were denied as non-qualifying. This action will fund those un-met PA needs.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Without this action local municipalities may have to increase taxes to pay for un-met needs which would hurt and already struggling economy.	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
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?	No Impact	N/A
What impacts to the environment of the county will result from this project?	This action is multi-part but in general the individual items will not have much of an effect on the environment.	N/A

What is the capability of the local government to administer this project?	Medium	N/A
What is the financial range of this project?	\$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Between 26 and 50%	N/A
Who will administer this project?	County	N/A

Low Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Mitigate Potential Impacts from Dams	Low	16

Table 9. Columbus Low Priority Infrastructure Summary

- **Mitigate Potential Impacts from Dams:** Develop a comprehensive dam safety program to address needs on small dams generally owned by neighborhood associations, farmers, utilities, or other private owners. The State should establish minimum standards for owners to follow. Funds and technical assistance will be made available to develop engineering designs for dams needing retrofit, repair and/or rebuild. Additional funds in the form of revolving loans will be made available to dam owners for construction. In exchange, dam owners will agree to comply with annual maintenance standards and set aside funds for it. Specific dams that need attention include a private dam in Boardman that failed after Matthew, a private dam in Cherry Grove that failed after Matthew, and Tabor City Dam.
- **This is a county-wide project, so no project area map has been included.**

Mitigate Potential Impacts from Dams

County: Columbus

Priority Grouping: Low

Priority Ranking: 16

Project Timeframe: 1-5 years

Location: Columbus County

Project Summary: Develop a comprehensive dam safety program to address needs on small dams generally owned by neighborhood associations, farmers, utilities, or other private owners. The State should establish minimum standards for owners to follow. Funds and technical assistance will be made available to develop engineering designs for dams needing retrofit, repair and/or rebuild. Additional funds in the form of revolving loans will be made available to dam owners for construction. In exchange, dam owners will agree to comply with annual maintenance standards and set aside funds for it.

Specific dams that need attention: private dam in Boardman that failed after Matthew, private dam in Cherry Grove that failed after Matthew, Tabor City dam

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Some small dams in Columbus County failed or were damaged during Hurricane Matthew. This action will establish standards and funding mechanisms for reconstitution of these dams.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Some dams may provide water or generate power for commercial uses.	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
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	N/A
What impacts to the environment of the county will result from this project?	Sedimentation water quality and empty lake beds are environmental hazards	N/A
What is the capability of the local government to administer this project?	Medium	N/A
What is the financial range of this project?	\$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	County	N/A

Environmental, Ecosystem and Agricultural Strategies

High Priority Environmental Strategy

Pillar	Action Name	Priority	Overall Ranking
Environment	Stream Restoration and Debris Removal	High	4

Table 10. Columbus High Priority Environmental Summary

Columbus County officials identified opportunities for enhancing environmental resources for that will increase resiliency. The following strategies will address local concerns related to resiliency and environmental concerns. Columbus County did not experience damage to agricultural resources during Hurricane Matthew.

- **Stream Restoration and Debris Removal:** Conduct streambed cleanup, rehabilitation, and restoration by removing debris and restoring channels to their proper depth and path. Specific locations identified by local county officials include the Lumber River, Livingston Creek, Molly Branch (Whiteville), Juniper Creek, and other locations as defined by Columbus County NRCS.

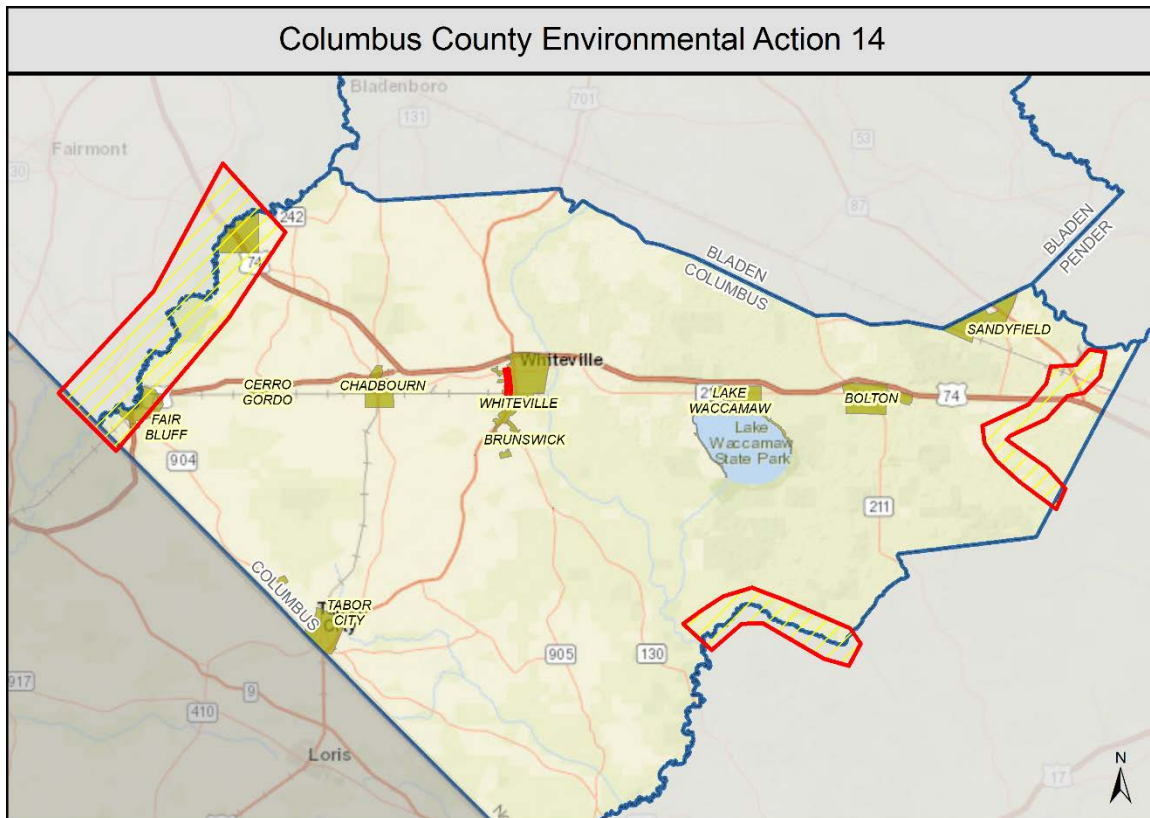


Figure 19. Environmental Strategy – Stream Restoration and Debris Removal

Stream Restoration and Debris Removal

County: Columbus

Priority Grouping: High

Priority Ranking: 4

Project Timeframe: 2-3 yrs

Location: Columbus County

Project Summary: Conduct streambed cleanup, rehabilitation, and restoration by removing debris and restoring channels to their proper depth and path.

Lumber River, Livingston Creek, Molly Branch (Whiteville), Juniper Creek , other locations as defined by Columbus County NRCS

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	As a result of Hurricane Matthew many trees and other debris litter waterways across the County. During heavy rains this debris will continue to dam up water and alter flows. These unnatural changes in the water flow puts more properties at risk to future flooding. In many cases the stream's natural channel has been degraded and is in need of restoration.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	This action may provide a short term boost in employment if local workers are hired to perform this work.	N/A
For how long will this solution be effective?	Less than 10 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
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%	N/A
What impacts to the environment of the county will result from this project?	Depending on the level of work required there may be short term impacts to streams and water quality due to heavy equipment operation.	N/A
What is the capability of the local government to administer this project?	Medium	N/A
What is the financial range of this project?	\$1M+	N/A
What is the level of public support for this project?	Unknown	N/A
What is the technical feasibility of this project?	Between 26 and 50%	N/A
Who will administer this project?	County	N/A

Medium Priority Environmental Strategy

Pillar	Action Name	Priority	Overall Ranking
Environment	Conduct Detailed Studies of Unmapped Flood Areas	Medium	15

Table 11. Columbus Medium Priority Environmental Summary

- Conduct Detailed Studies of Unmapped Flood Areas:** There are some areas within the county with identified flooding issues that are currently not mapped by FEMA. Approximately 125 miles of unmapped streams have been identified for detailed study. Local officials have also asked for a study of areas south of East Main Street in Whiteville that are not mapped but suffered extensive flooding in Hurricane Matthew.

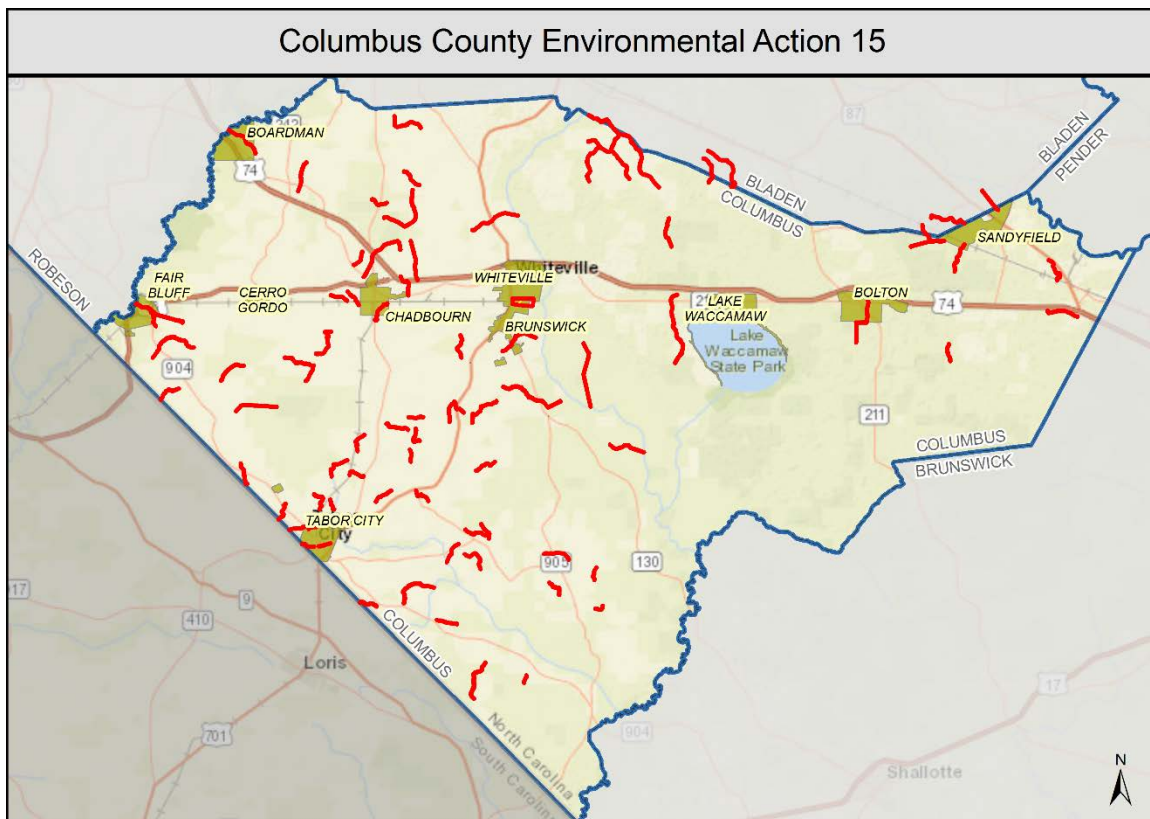


Figure 20. Environmental Strategy – Conduct Detailed Studies of Unmapped Flood Areas

Conduct Detailed Studies of Unmapped Flood Areas

County: Columbus

Priority Grouping: Medium

Priority Ranking: 15

Project Timeframe: 2-3 years

Location: Columbus County

Project Summary: There are some areas within the county with identified flooding issues that are currently not mapped by FEMA. Approximately 125 miles of unmapped streams have been identified for detailed study. Local officials have also asked for a study of areas south of East Main Street in Whiteville that are not mapped but suffered extensive flooding in Hurricane Matthew.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This action will determine if there is a need to update flood maps for Columbus County.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	This action will not affect the economy.	N/A
For how long will this solution be effective?	Between 11 and 30 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
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?	No Impact	N/A
What impacts to the environment of the county will result from this project?	This action will not affect the environment.	N/A
What is the capability of the local government to administer this project?	Low	N/A
What is the financial range of this project?	\$251K - \$500K	N/A
What is the level of public support for this project?	Unknown	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	State	N/A

Low Priority Environmental Strategy

Pillar	Action Name	Priority	Overall Ranking
Environment	Expansion of Recreational Land/Preservation of Floodplain	Low	17

Table 12. Columbus Low Priority Environmental Summary

- **Expansion of Recreational Land/Preservation of Floodplain:** Columbus County will identify opportunities to acquire or purchase land located in storm hazard areas to increase open space and preserve or enhance floodplain areas to reduce future flooding.
- **This is a county-wide project, so no project area map has been included.**

Expansion of Recreational Land/Preservation of Floodplain

County: Columbus

Priority Grouping: Low

Priority Ranking: 17

Project Timeframe: 1-5 years

Location: Columbus County

Project Summary: Columbus County will identify opportunities to acquire or purchase land located in storm hazard areas to increase open space and preserve or enhance floodplain areas to reduce future flooding.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This action will reduce potential flooding impacts in future events by removing high risk structures from the floodplain expanding undeveloped floodplain areas and enhancing riparian buffers.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with 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.	This action is not expected to have any effect on the economy.	Agree
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)?	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?	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?	Acquisition or protection of floodplain areas will limit loss of riparian buffer thus positively affecting water quality and offsetting the negative impacts of increased impervious areas.	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	Unknown	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.