

Hurricane Matthew Resilient Redevelopment Plan

Harnett County



May 2017

Version 1.2

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Change Log

Version	Date	Summary of Changes
1.1	6/16/17	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.

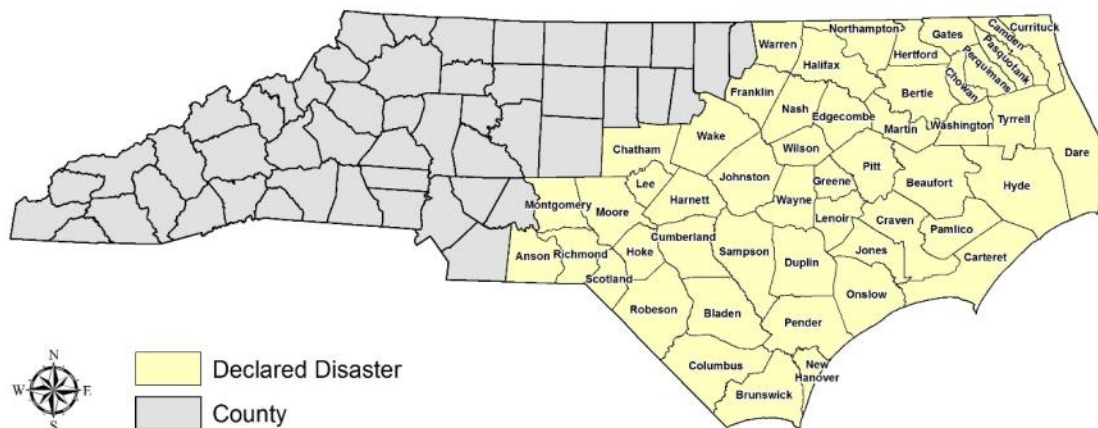


Figure 1. NCRRP Counties

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, Harnett County has identified 10 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	3
Environment	2
Grand Total	10

Table 1. Harnett County Summary of Projects by Pillar

An aerial photograph showing a residential neighborhood severely affected by flooding. The water is a murky brown color, inundating the yards and streets between houses. The houses are mostly two-story structures with light-colored siding and dark roofs. Some trees are partially submerged, with only their tops visible above the water. The overall scene depicts a significant natural disaster impact on a community.

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. 2.²

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 NCRRP 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 Harnett County and surrounding counties is shown below.

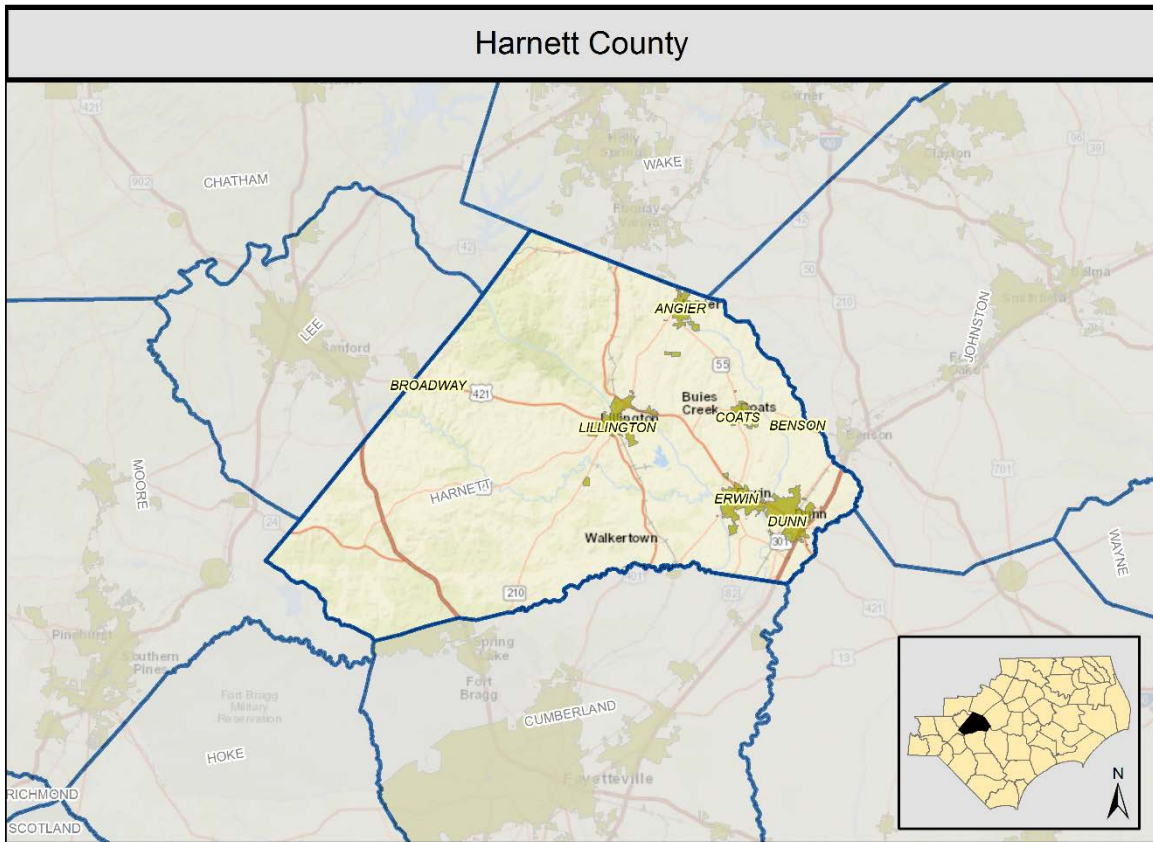


Figure 2. Harnett County and Neighboring Counties

Data, Assumptions, and Methodologies

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

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

An aerial photograph showing a residential neighborhood severely affected by flooding. The water is a murky, brownish-yellow color, covering large areas of the landscape. Numerous houses with grey roofs are visible, some partially submerged. The surrounding area is densely wooded with green trees, many of which are also partially underwater. The text "2. County Profile" is overlaid in a large, blue, serif font in the upper-middle portion of the image.

2. County Profile

2. County Profile

Harnett County is located in eastern North Carolina along Interstate 95 (I-95) between the cities of Rocky Mount and Fayetteville. It is comprised of eight census-designated places (CDPs): Town of Angier, Buies Creek CDP, Bunnlevel CDP, Town of Coats, City of Dunn, Town of Erwin, Town of Lillington, and Mamers CDP. Its current population is 124,320. This section provides a profile of housing, economics, infrastructure, environment, and administration within Harnett County.

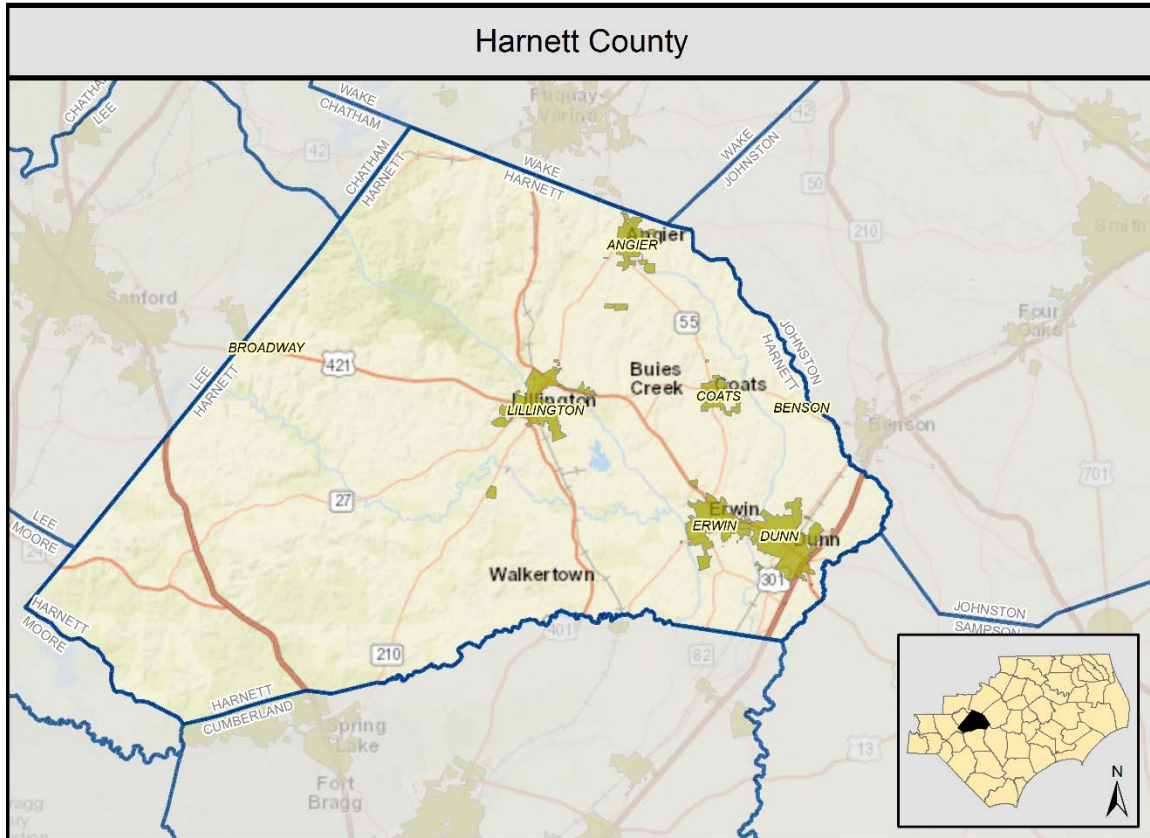


Figure 3. Harnett Base Map

Demographic Profile

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

Population

Harnett County has a population of 124,320. Dunn is the most populous place within Harnett County, with a population of 9,654; Bunnlevel is the least populous place, with a population of 770.³

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

Population Change (2000 to 2010)

The Harnett County population increased between the 2000 and 2010 Census. In 2000, the population was 91,111 and in 2010 it was 114,678. The population increased by 23,567 people, or 25.9 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 Harnett County is 33.6 years old, which is lower than average for North Carolina (41.6 years old). Within Harnett County, the Dunn and Erwin populations have the oldest median age at 42.8 years old, and the Buies Creek population has the youngest median age at 20.8 years old.⁵

Race and Ethnicity

Harnett County is mostly White (67.9 percent) and African American (21 percent) with other races constituting the remaining 11 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.⁶

Within Harnett County, all municipalities are predominantly White, except for Dunn and Lillington, where the minority population combines to just over 50 percent. In Lillington, 42 percent of the population identifies as Black or African American and 40 percent in Dunn identifies as Black or African American. In comparison, only approximately 12 percent of the population in Coats and Buies Creek identifies as Black or African American.

The Latino population in Harnett County is 11.7 percent compared to 9 percent for North Carolina. Coats has the largest Latino population (24.8 percent), while Mamers has no Latino population according to the census data.

Geography	White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian/Pacific Islander	Some Other Race	Two or More Races	Total Non-White
Angier town	69.5%	18.9%	0.4%	0.0%	0.0%	7.6%	3.7%	30.5%
Buies Creek CDP	80.9%	12.7%	0.0%	3.5%	0.0%	0.3%	2.6%	19.1%
Bunnlevel CDP	59.6%	33.1%	0.0%	0.0%	0.0%	2.5%	4.8%	40.4%
Coats town	73.2%	12.1%	0.5%	0.9%	0.0%	12.1%	1.3%	26.8%
Dunn city	52.1%	40.3%	1.0%	0.4%	0.0%	3.5%	2.8%	47.9%
Erwin town	77.9%	18.1%	0.7%	0.0%	0.0%	2.2%	1.2%	22.1%
Lillington town	50.1%	42.1%	0.9%	1.7%	0.0%	1.6%	3.5%	49.9%
Mamers CDP	77.1%	21.1%	0.0%	0.0%	0.0%	0.0%	1.8%	22.9%
Harnett County	67.9%	21.0%	1.1%	1.2%	0.0%	5.1%	3.7%	32.1%
North Carolina	69.5%	21.5%	1.2%	2.5%	0.1%	3.0%	2.4%	30.5%

Table 2. Harnett County Race and Ethnicity

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: U.S. Census Bureau, American Community Survey 5-Year Estimates (2011-2015), Table B01001, "Sex by Age."

⁶ Source: U.S. Census Bureau, American Community Survey 5-Year Estimates (2011-2015), Table B02001, "Race" and Table B03002, "Hispanic or Latino Origin by Race."

Limited English Proficiency

Limited English Proficiency (LEP) is defined as populations 18 years or older that speak English less than very well. In Harnett County, most 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 Harnett County, Angier has the largest LEP population (7.6 percent). The primary language group for LEP populations in Angier is Spanish.⁷

Poverty

In Harnett County, 18 percent of the population lives below the poverty level compared to 17 percent of the North Carolina population. In Coats, 32.8 percent of the population is below the poverty level, while Angier is only 9.6 percent.⁸

Low- and Moderate-Income Individuals

In Harnett County, 39.9 percent of the population is classified as low- and moderate-income (LMI) individuals based on the U.S. Department of Housing and Urban Development's definition. In comparison, 39 percent of the North Carolina population is classified as LMI.⁹

Median Household Income

The median household income of the population that is 25 years old to 64 years old is \$51,682 in Harnett County and \$53,000 in North Carolina. Angier has the highest median household income for this age group at \$49,715 and Lillington has the lowest at \$29,765. The census does not include data for Buies Creek and Bunnlevel.¹⁰

Zero Car Households

In Harnett County, 5 percent of households do not have a vehicle available compared to 7 percent of North Carolina households. Within Harnett County, Lillington has the highest percentage of households without access to a vehicle at 17.7 percent, while Mamers has the lowest percentage at 1.9 percent.¹¹

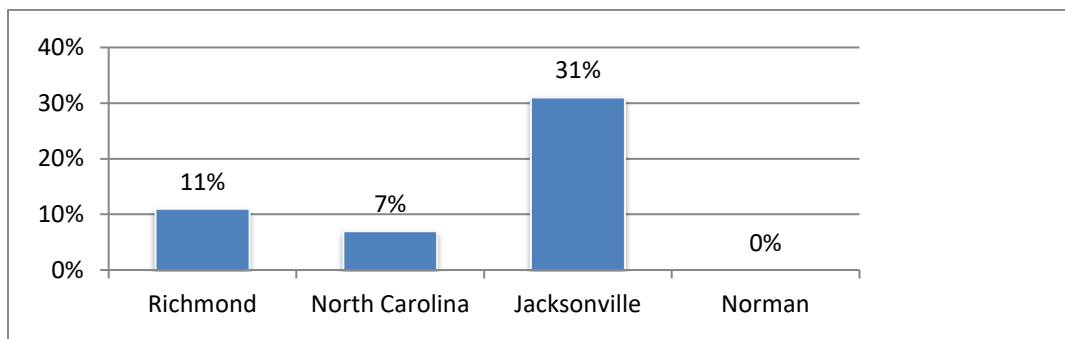


Figure 4. Zero Car Households by Percentage

⁷ Source: U.S. 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."

⁸ Source: U.S. Census Bureau, American Community Survey 5-Year Estimates (2011-2015), Table C17002, "Ratio of Income to Poverty Level in the Past 12 Months."

⁹ Source: U.S. 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/>

¹⁰ Source: U.S. Census Bureau, American Community Survey 5-Year Estimates (2011-2015), Table B19094, "Median Household Income in the Past 12 Months."

¹¹ Source: U.S. Census Bureau, American Community Survey 5-Year Estimates (2011-2015), Table B25044, "Tenure by Vehicles Available."

Commuting: Travel Time to Work, Means of Transportation

The majority of Harnett County residents, 84.6 percent, commute alone to work by vehicle. This is slightly higher than the North Carolina average of 81 percent. Within Harnett County, Lillington has the largest percentage of commuters commuting alone at 90 percent, and Buies Creek has the lowest percentage at 67.8 percent.

Erwin has the largest percentage of residents commuting by public transportation: 0.2 percent. In comparison, 1 percent of North Carolina commuters use public transportation. A greater percentage of Buies Creek residents, 19.3 percent, commute by walking, bicycle, or motorcycle than the North Carolina average of 2 percent.

The mean commute time to work for Harnett County residents is 28.7 minutes. In comparison, the North Carolina mean commute time is 24.7 minutes. Within Harnett County, Dunn has the shortest mean commute time at 21.8 minutes, while Angier has the longest at 35.3 minutes.¹²

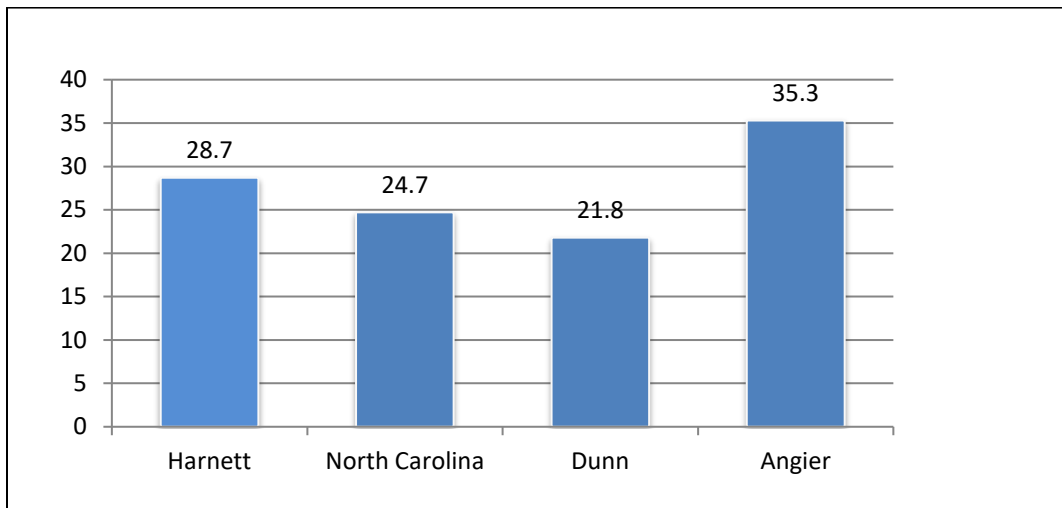


Figure 5. Mean Commute Time to Work in Minutes

¹² Source: U.S. 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

Harnett County has more than 48,000 housing units, 68 percent of which are single-family homes, 10.4 percent multi-family units, and 21.6 percent manufactured housing.

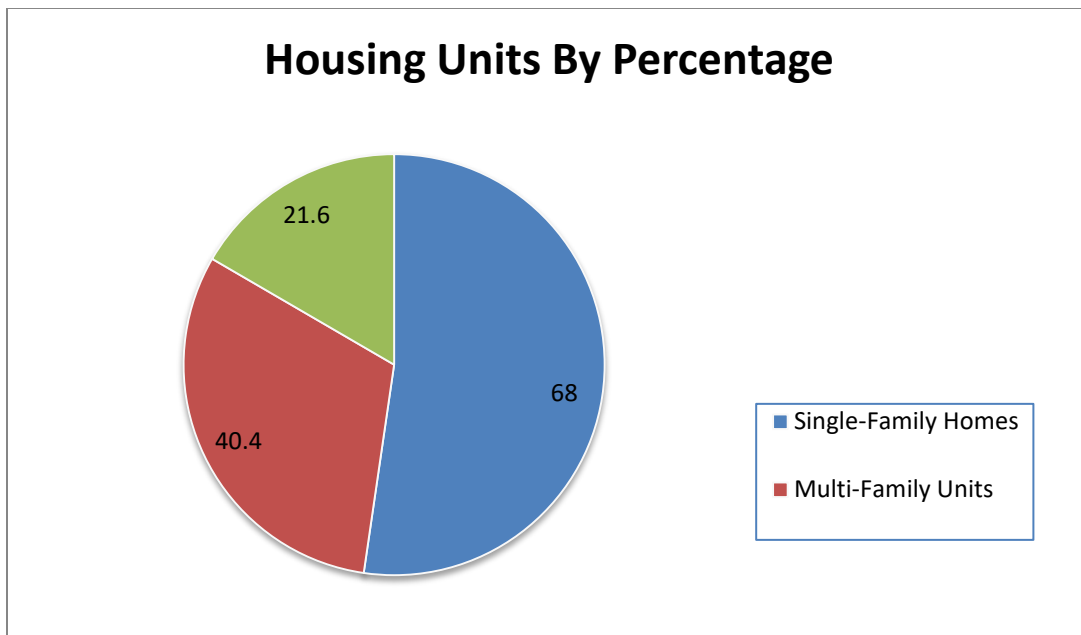


Figure 6. Housing Units By Percentage

In Harnett County, 12.3 percent of housing units are vacant, compared with 15 percent for North Carolina. Within Harnett County, Buies Creek has the largest percentage of vacant housing units at 22.5 percent, while Bunnlevel has the smallest percentage of vacancies at 8.8 percent.

Of the occupied housing units, 65.9 percent are owner-occupied compared to 65 percent in North Carolina; 34.1 percent are renter-occupied compared to 35 percent in North Carolina.

The median housing value in Harnett County \$135,400. In comparison, the median housing value in North Carolina is \$140,000. Within Harnett County, Angier has the highest median housing value: \$147,100. Bunnlevel have the lowest median housing value: \$87,900.

According to the National Housing Preservation Database, Harnett County has 1,387 affordable housing units. Most of the affordable housing is located within the Dunn area. Other units are located in Lillington and Angier.¹³

Economic / Business Profile

Harnett County is home to many businesses specializing in manufacturing. According to the U.S. Census Bureau's Longitudinal-Employer Household Dynamics Program, the largest concentrations of jobs within Harnett County are in Dunn, along Cumberland Street near the interchange with I-95.¹⁴

¹³ Sources: U.S. 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

¹⁴ Source: U.S. Census Bureau Longitudinal-Employer Household Dynamics Program

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 Harnett County is 51,533.¹⁵ Within Harnett County, Mamers has the largest percentage of residents 16 years or older in the labor force at 70.5 percent, while Lillington has the smallest percentage at 31.6 percent.

The civilian unemployment rate in Harnett County is 5.7 percent. In comparison, the North Carolina civilian unemployment rate is 5.1 percent.¹⁵ Within Harnett County, Bunnlevel has the smallest civilian unemployment rate at 4.4 percent, while Dunn has the largest civilian unemployment rate at 13.8 percent. Mamers has no civilian unemployment according to the census data.¹⁶

Major Employers

The top 10 employers in Harnett County represent the manufacturing, public administration, education, and health service industries, and are listed below in order of total employees:¹⁷

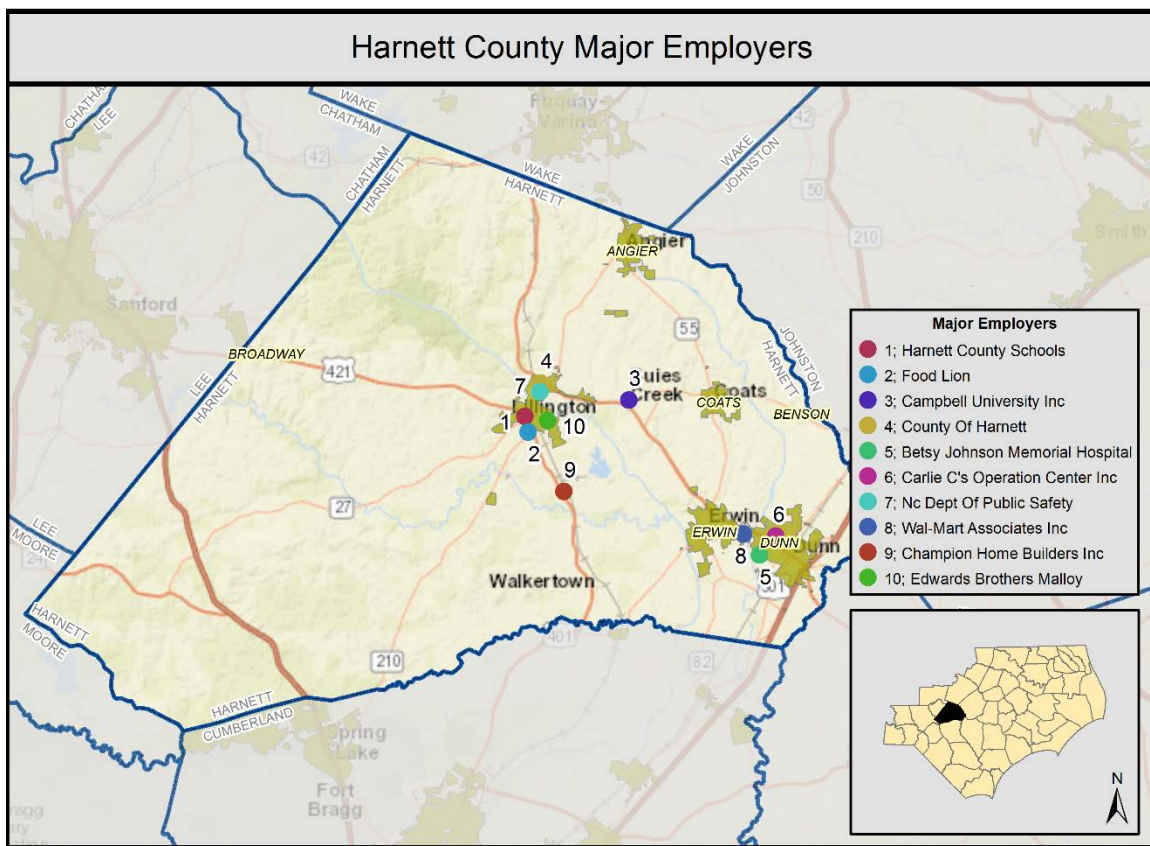


Figure 7. Major Employers by Number of Employees

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

¹⁶ Source: U.S. Census Bureau, American Community Survey 5-Year Estimates (2011-2015), Table B23025, "Employment Status for the Population 16 Years and Over."

¹⁷ Sources: NC Department of Commerce

Economic Development

Harnett County is the fifth fastest growing county in North Carolina. It has a long agricultural history as a leader in poultry production and forestry. According to the Harnett County Economic Development Plan, these industries saw a 10-percent growth from 2007 to 2012.

Manufacturing is one of Harnett County's largest employment sectors. It is home to a thriving and diverse manufacturing economy, producing a range of products from food products and books to large body trucks and camouflage, with myriad products in between. There are more than 100 diversified manufacturers, including Boon Edam, Godwin Manufacturing, and Edwards Brothers Malloy.

Harnett County is at the heart of an industry sector known as the All-American Defense Corridor. Companies specializing in defense and homeland security, such as Saab Barracuda LLC and Esterline Defense Technologies, enjoy the strategic advantages Harnett County offers. Nearby Fort Bragg, the largest military installation in the world, offers access to military business opportunities.

The well-established Food Lion Distribution Center and recently opened 1.5 million-square-foot Rooms To Go regional distribution center and retail store anchor Harnett County's private industry economy and this growing industry sector.¹⁸

Infrastructure Profile

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

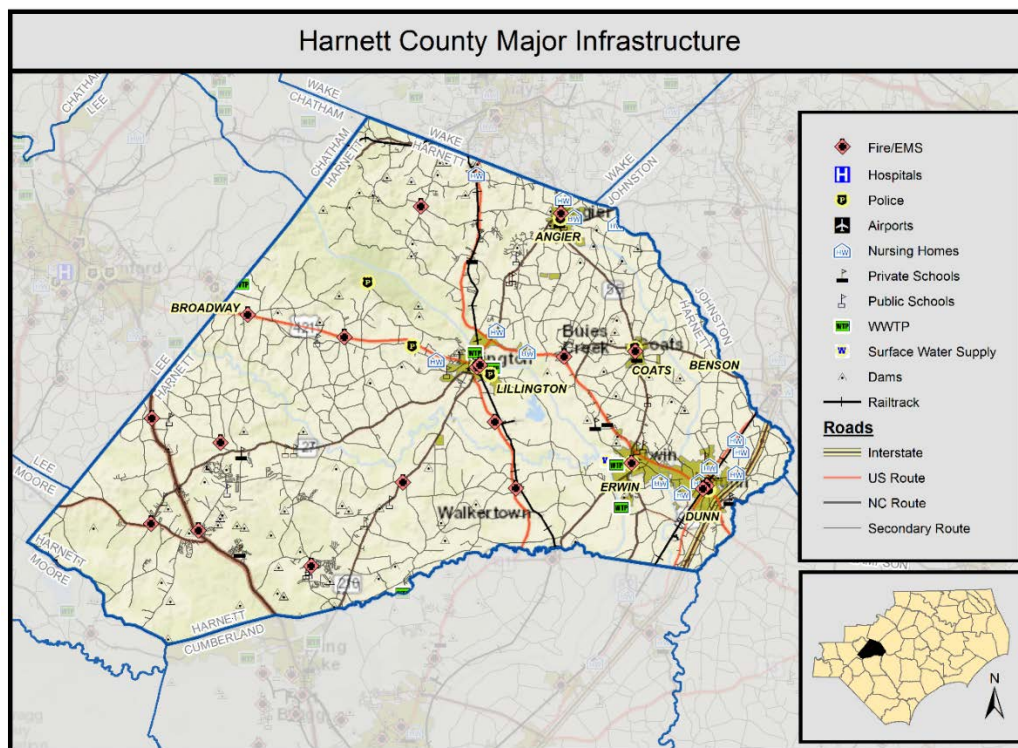


Figure 8. Harnett County Major Infrastructure

¹⁸ Sources: Harnett County Economic Development

Transportation

Harnett County has several major roads passing through it. In the eastern portion of the county passing through the town of Dunn are I-95 and U.S. Highway 301 (US 301). U.S. Highway 401 (US 401) runs north to south through the middle of the county, passing through Lillington. U.S. Highway 421 (US 421) also goes through Lillington, as well as Buies Creek—home to Campbell University—Erwin, and Dunn. It runs relatively perpendicular to US 401. NC Highway 24 (NC 24) and NC Highway 87 (NC 87) service the southwestern portion of the county, providing access to nearby Fort Bragg.

The port of Wilmington is two hours away and the county is served by CSX and Norfolk Southern railroads.

Health

There are two main hospitals in Harnett County. Central Harnett Hospital is located in Lillington and Betsy Johnson Hospital is in Dunn.

Education

In terms of schools, there are 13 elementary, six middle, and six high schools within the Harnett County School System. Central Carolina Community College has a campus in Lillington, and Campbell University is located in Buies Creek.¹⁹

Water

Harnett County has four large wastewater treatment plants: North Harnett Regional, Erwin, Dunn, and South Harnett Regional. It also has four main water treatment plants: Angier, Broadway, Coats, and Dunn. Angier has a 0.85-million-gallon capacity. Broadway has a 0.10-million-gallon capacity. Coats has a 0.25-million-gallon capacity. And, Dunn has a 6.5-million-gallon capacity.²⁰

Power

There are three solar farms located within Harnett County. These power plants have a net summer capacity of 5 megawatts each.²¹

Environmental Profile

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

Water Resources

The most prominent river in Harnett County is the Cape Fear River. It runs the entire length of the county from the northwest to the southeast. The Cape Fear River also runs directly through Raven Rock State Park, a major ecotourism source for the region. Raven Rock State Park is home to Lanier Falls and serves as a natural oasis for hiking, fishing, canoeing, and camping on the Cape Fear River. Raven Rock State Park covers roughly seven square miles.²²

¹⁹ Sources: Harnett County Public Schools and Central Carolina Community College

²⁰ Sources: NC Division of Water Resources, Local Water Supply Plans; and the Neuse Regional Water and Sewer Authority

²¹ Source: U.S. Department of Energy, U.S. Energy Mapping System

²² Source: NC Natural Heritage Program

Natural and Managed Areas

According to the North Carolina Natural Heritage Program, there are several natural areas of high, very high, or exceptional value in Harnett County; particularly of note is Raven Rock State Park. There are several managed areas under state ownership within Harnett County. Managed areas are properties and easements where natural resource conservation is one of the current primary management goals, or they are of conservation interest. Raven Rock State Park is one of these areas.²³

Biodiversity and Wildlife Habitat

The North Carolina Natural Heritage Program produces a biodiversity and wildlife habitat assessment for the state. According to this assessment, areas with the highest rating for biodiversity and wildlife habitat are along the Cape Fear River and its tributaries. 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.²⁴

Parks and Recreation

The Harnett County Parks and Recreation Department maintains several parks and facilities in Harnett County. The facilities available through the county's park system include: Neill's Creek County Park, Barbeque Creek County Park, South Harnett Park, Anderson Creek County Park, Cape Fear River Trail Park, Boone Trail Community Center, and Dunn-Erwin Rail Trail.²⁵

Administrative Profile

The administrative capabilities of Harnett County and the municipalities within the County are discussed in great detail within Section 7 of the Cape Fear Regional Hazard Mitigation Plan (2016). 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 Harnett 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 "high" capabilities. Harnett 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, Zoning Ordinance, Subdivision Regulations, Unified Development Ordinance, Open Space Management Plan, Capital Improvements Plan 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.

Angier, Dunn, Erwin, and Lillington also have "high" and "moderate" capabilities. They all have administrative resources that would likely be able to assist with implementing the strategies in this plan. In addition, they have the plans, policies and procedures in place that indicate higher capability. The Town of Coats may need

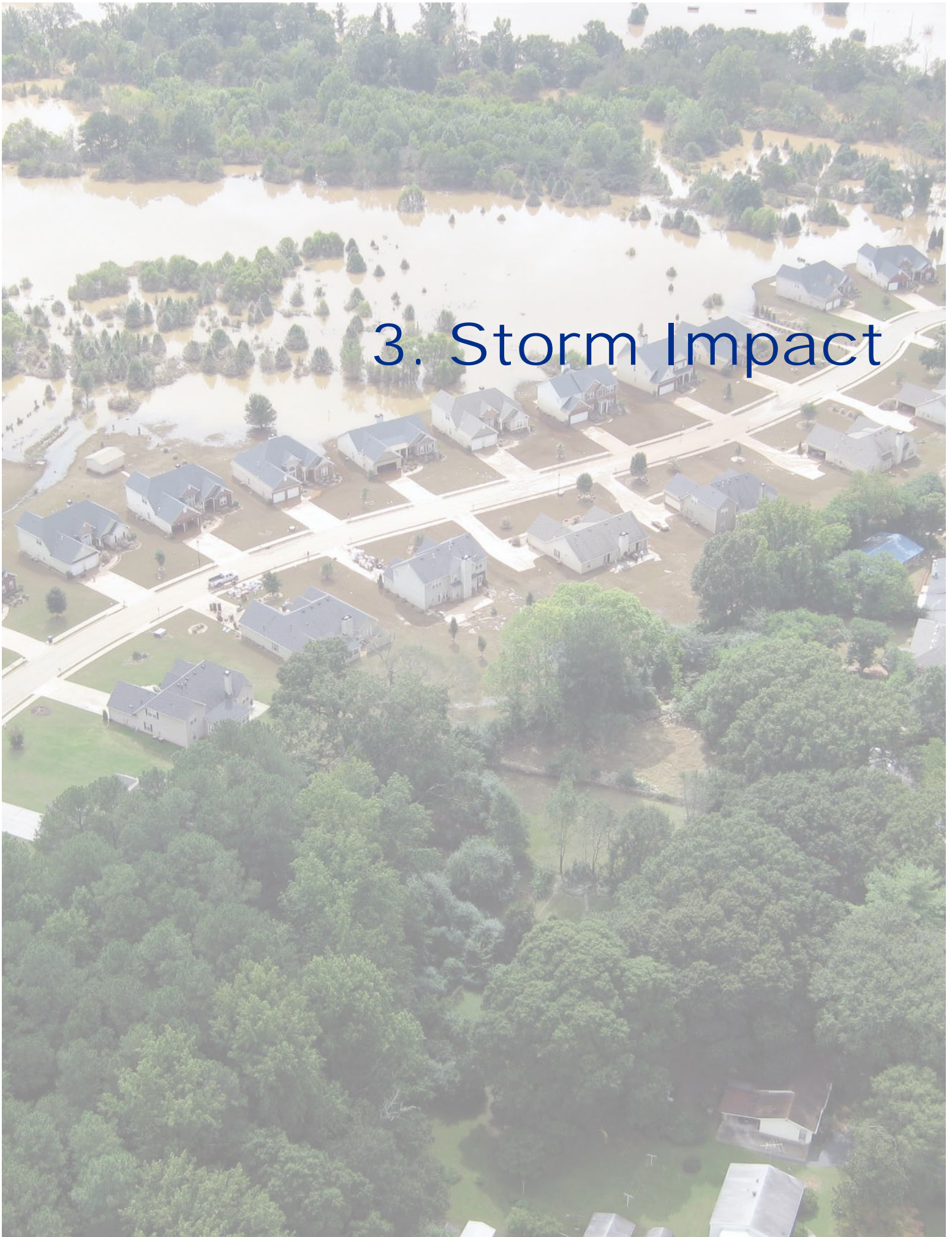
²³ Source: NC Natural Heritage Program

²⁴ Source: NC Natural Heritage Program

²⁵ Sources: Harnett County Parks and Recreation Department

assistance from other agencies in order to implement the strategies in this plan as a result of limited administrative resources.

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 three inches to eight inches in the central regions of North Carolina and eight inches 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 already had received above-normal rainfall in the month of September leading to wet antecedent conditions prior to Hurricane Matthew. Total rainfall depth for Harnett County is highlighted graphically in the figure below.

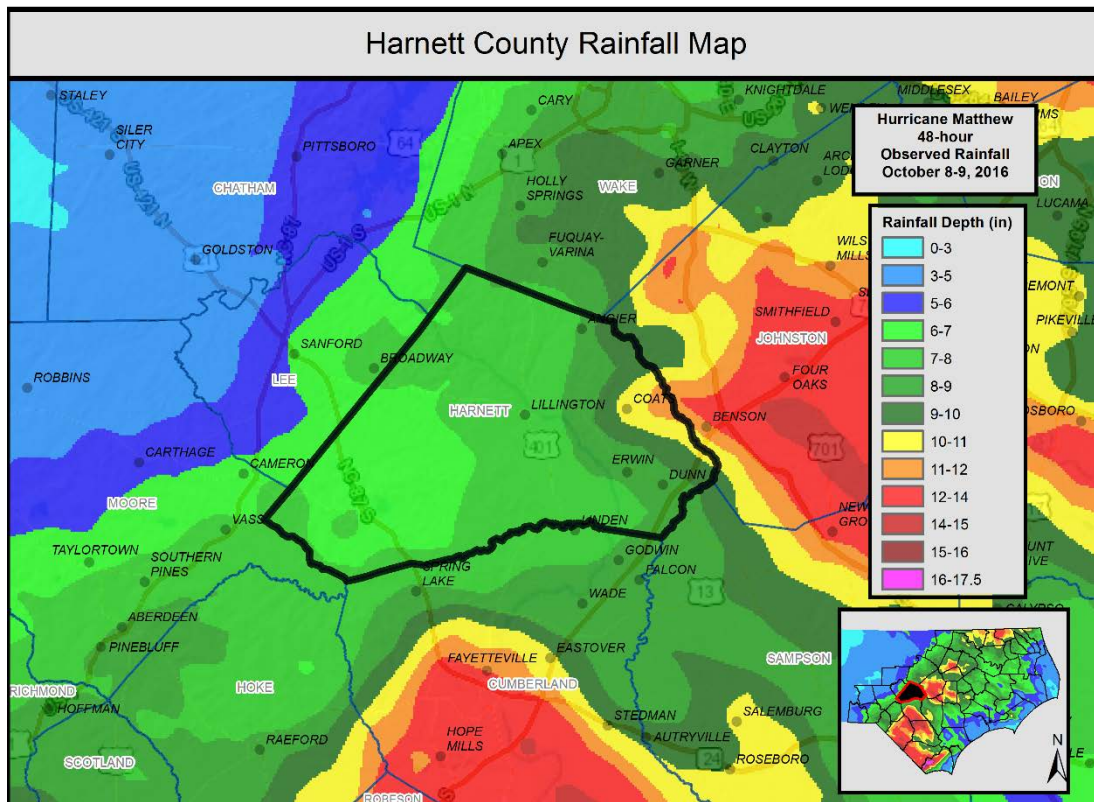


Figure 9. Hurricane Matthew 48-hour Observed Rainfall Depth

Riverine Flooding Summary

The effects of Hurricane Matthew on Harnett County were felt particularly along the Black River, Little River, and Cape Fear River. The U.S. Geological Survey (USGS) documented stream gauge 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 gauge data from the USGS report for the lone Harnett County gauge is summarized below.

USGS Gage	County	River Name and Location	Drainage Area (sq mi)	Peak Matthew Elevation (ft)	Previous Record (ft)
02102500	Harnett	Cape Fear River at Lillington, NC	4,395	123.2	137.0

Table 3. Stream gage flow data for Hurricane Matthew and previous records for gages near Harnett County

Housing

According to FEMA Individual Assistance claims filed as of March 17, 2017, there were 1,653 registrations for Individual Assistance in Harnett County as a result of Hurricane Matthew. It should be noted that additional claims from Hurricane Matthew still may be pending, so this number may not reflect the final claims data from the event. This also does not take into account other historic impacts to the county or other areas of concern for flooding that may not have occurred during this storm. With that in mind, the planning team attempted to take a comprehensive look at both Hurricane Matthew impacts and any historic impacts that local officials felt would validate areas that should be considered at high risk to future flooding.

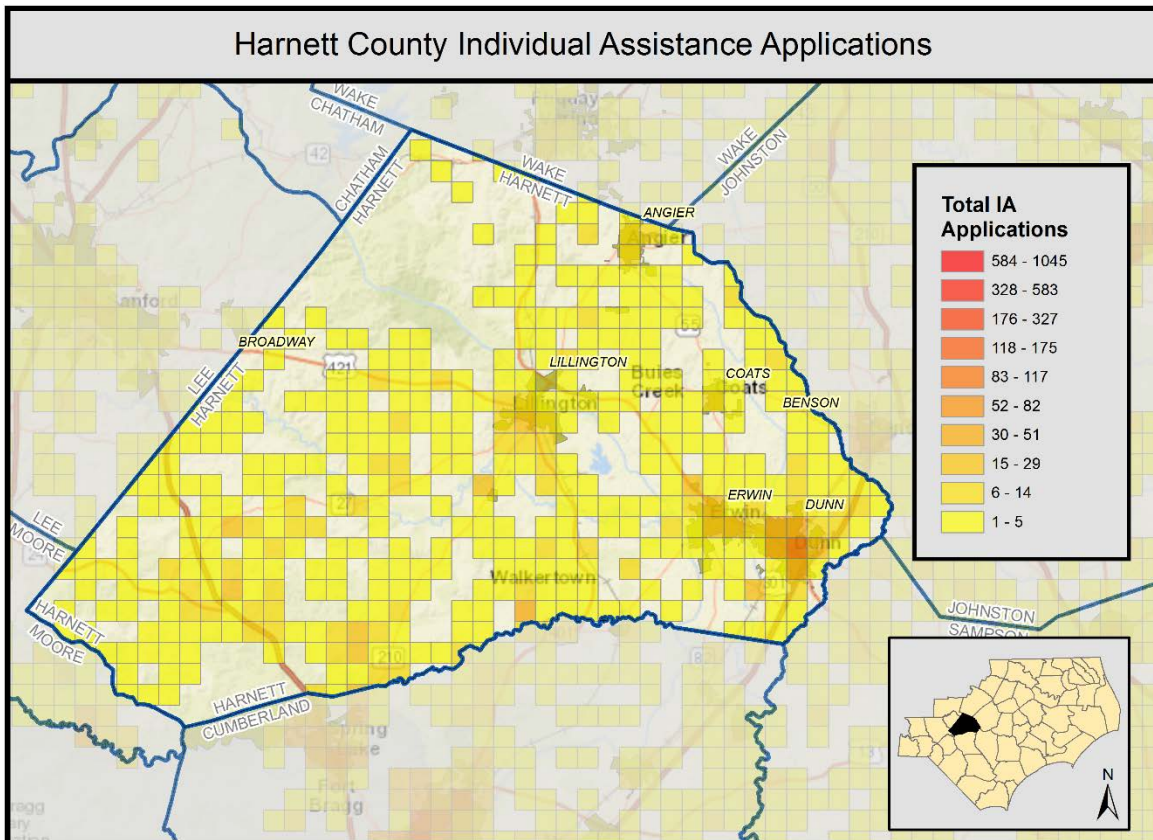


Figure 10. Harnett County IA Applications by Area

Housing was impacted in Harnett County as a result of Hurricane Matthew as there were several homes damaged, especially in the southeastern part of the county. Some of the major impacts to housing that were identified by local officials from the event include:

- **Impacted homes:** Unincorporated areas near Anderson Creek and the Cape Fear River sustained the most housing damage. Residential areas in the vicinity of Avery Road/U.S. Highway 421 (US 421), Arrowhead Road, Anderson Road, and Wire Road had road closures, flooded streets, and structure flooding. The Kenlan Farms subdivision was extensively impacted.
 - Of the 133 homes damaged, 22 were classified as having minor damage, 108 were classified as having major damage, and 3 were classified as being destroyed.

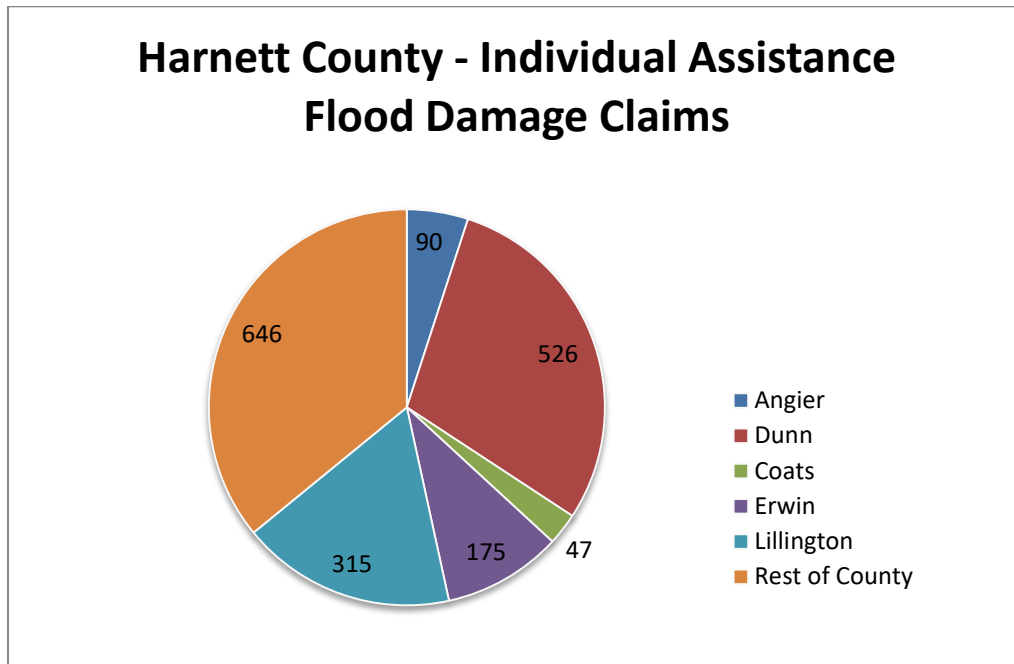


Figure 11: Number of IA Flood Damage Claims by Area

- **Availability of affordable housing:** Though displacement of families was not a major issue following Hurricane Matthew, Harnett County is concerned that it will be a huge issue in future events that track more closely to the county. The neighboring Raleigh metro population is expected to swell by 50 percent between 2010 and 2030, resulting in continued growth for Harnett County and potentially making availability of affordable housing a perpetual challenge.

Economics / Businesses / Jobs

Although there were some impacts to the economy in Harnett County from Hurricane Matthew, these were generally minor compared to some of the other impacts the county experienced. Some of the impacts to the economy/businesses/jobs that were identified by local officials from the event include:

- Due to road closures, especially N.C. Highway 55 (NC 55) and Interstate 95 (I-95), traffic management created many challenges for the county and caused long detours and business disruption.
- Many small businesses were impacted by flooded streets and water in their buildings. Small businesses are vital to the community. In an event like Hurricane Matthew, these communities fear their small

businesses will relocate to neighboring counties so it is crucial they get back on their feet as quickly as possible following a disaster.

- Energy and electric coops estimated 70 percent of customers were without power, thus causing Harnett County Schools and Campbell University to be closed and hundreds of residents forced to take refuge at County Emergency Services shelters.
- The Top 10 major employers in the county experienced the following notable impacts:
 - Harnett County Schools: All facilities were closed for over a week. Several schools experienced minor water damages which were repaired prior to school opening.
 - Food Lion: All stores in the area were closed for multiple days due to lack of power, causing a loss of inventory and revenue.
 - Campbell University: University facilities were closed for several days.
 - County of Harnett: Operational burden on Emergency Services and County Solid waste staff for debris removal operation.
 - Betsy Johnson Memorial Hospital: The hospital experienced power issues during the storm and for multiple days after the storm. Generator power was used for multiple days.
 - Carlie C's Operation Center, Inc.: All stores in the area were closed for multiple days due to lack of power, causing a loss of inventory and revenue.
 - Wal-Mart Associates, Inc.: All stores in the area were closed for multiple days due to lack of power, causing a loss of inventory and revenue.
 - Champion Home Builders, Inc.: The lack of power caused a loss of production time.
 - Edwards Brothers Malloy: The lack of power caused a loss of production time.

Infrastructure

According to Public Assistance claims, which often are tied closely to infrastructure damage, as of March 17, 2017, there were no claims yet in Harnett County as a result of Hurricane Matthew. It should be noted that additional claims from Hurricane Matthew still may be pending, so this number may not reflect the final claims data from the event.

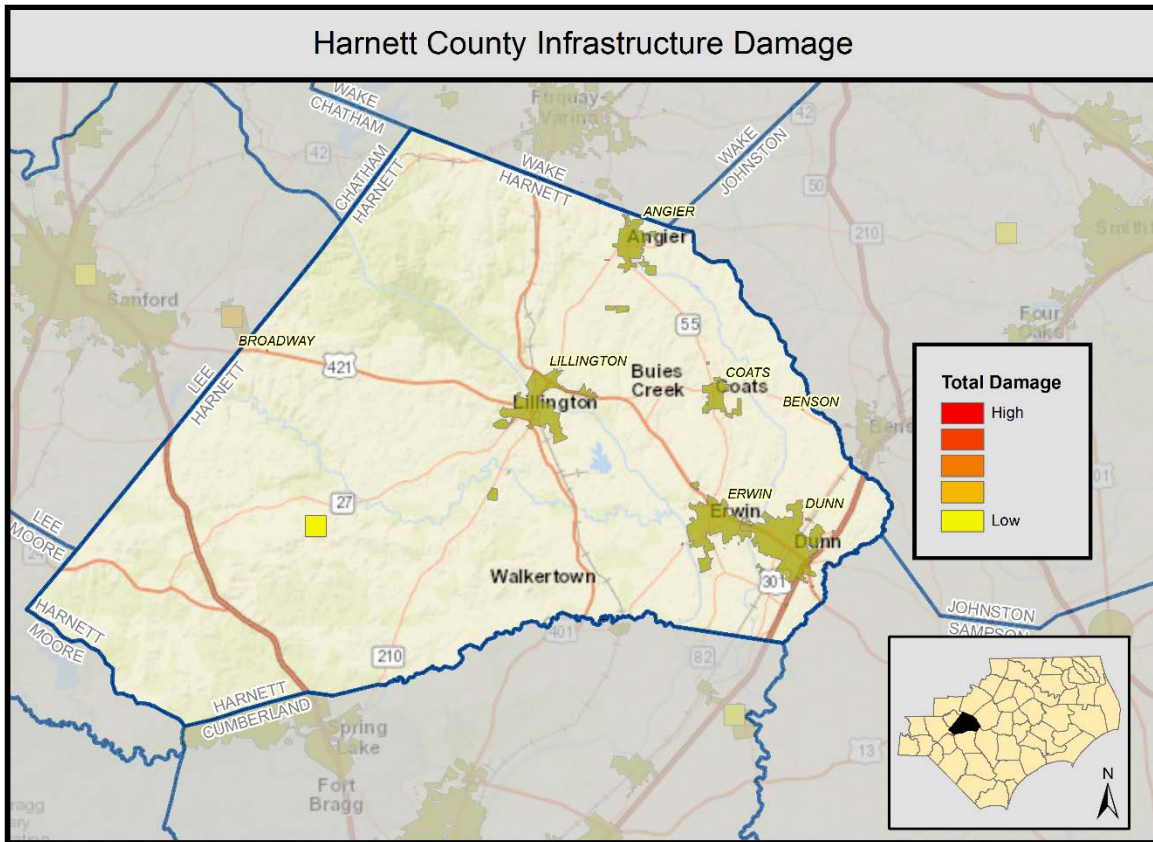


Figure 12. Harnett County Infrastructure Damage

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 or threatened in multiple locations. Some of the major impacts to infrastructure that were identified by local officials as a result of the event include:

- Roads/bridges:** Flooding overtopped I-95 in multiple locations, making it impassable, causing emergency services to be paralyzed and forcing detour traffic along smaller roads where signals were not working due to power outages. Harnett County had a total of 15 road closures requiring repairs. Larger streams remained out of their banks for multiple days. Locally, the greatest impact to traffic was the closure of NC 55. The flooding over the roads resulted in one death. Several roads require extensive repairs that are still underway six months after the event.

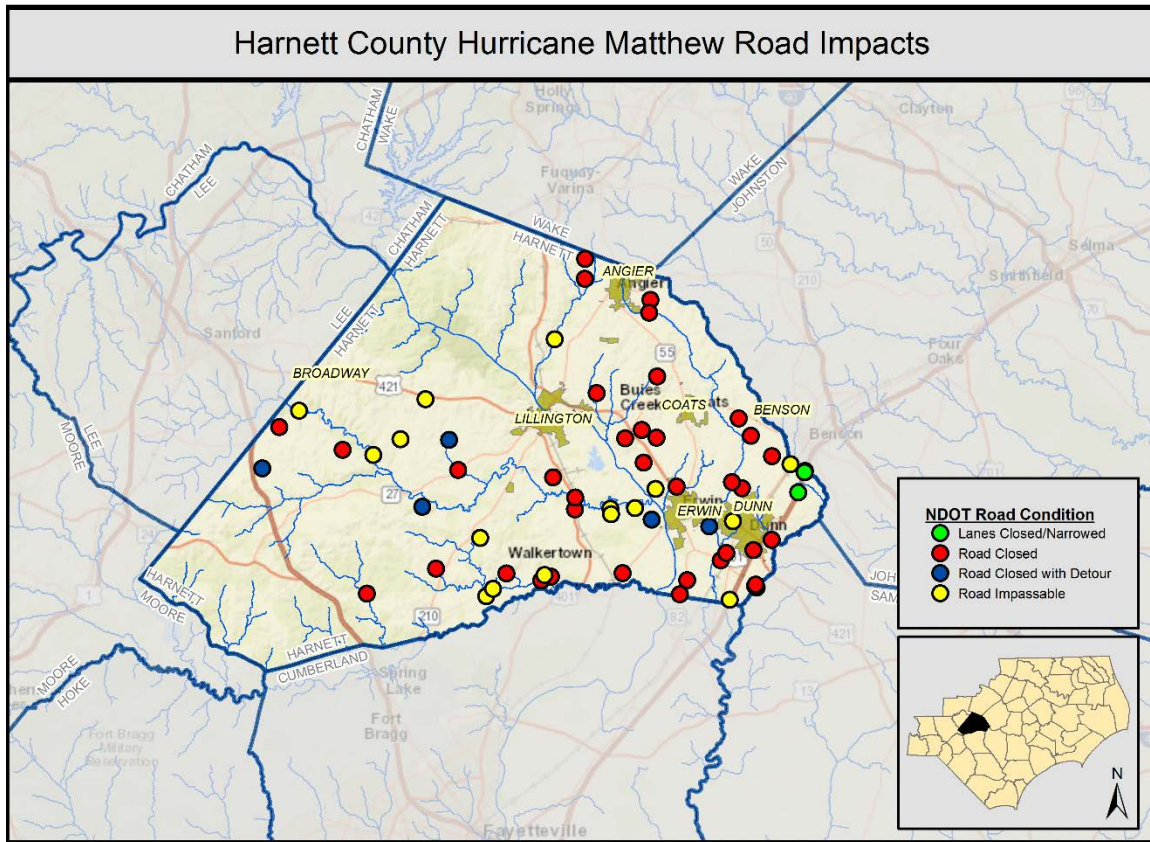


Figure 13. Impacted NCDOT Structures in Harnett County

- **Stormwater:** Many culverts were clogged or overtopped during the event, causing flooding in ditches and along roads.
- **Dams:** There are 30 dams in Harnett County, and the county is also at risk from dam failures outside of the county. The Woodlake Dam failure in Moore County as well as a failure of the Carver Dam in Cumberland County collectively poured water into the Little River and caused issues for the southern part of Harnett County.
- **Natural gas and electricity:** Electricity in Harnett County is currently provided by three different electrical distributors. During the height of the hurricane, more than 32,000 customers were without power, and major portions of the electrical infrastructure were lost. Outages included the police department and town hall in Angier, the Lillington library (which houses computer servers for the County's phone system), and 10 schools, which do not have backup power sources.

Ecosystems / Environment

Overall, environmental impacts in Harnett County as a result of Hurricane Matthew were relatively minimal. However, there were some identified direct impacts to the environment and ecosystems that brought to light some underlying issues related to maintenance of environmental features that the county faces recurrently.

- **Flood debris buildup causing flooding:** Several water bodies across the county experienced a significant amount of debris buildup during Hurricane Matthew's heavy rains. This debris is frequently in the form of downed trees and buildup of other natural remnants. As the flows move it along waterways, it is

caught underneath bridges and in culverts, causing a jam that backs up water upstream and results in flooding.

- **Flood risk data:** Currently, the county is using 2004 flood risk data and Flood Insurance Rate Maps (FIRMs). The 2014 preliminary maps have not been finalized. Due to the growing population in certain areas of the county, some areas that flooded during Hurricane Matthew do not have detailed flood data or base flood elevations. The lack of approvals and relevant data causes confusion with officials and a growing concern with development to prevent future flooding.

An aerial photograph showing a residential neighborhood severely affected by flooding. The water is a murky brown color, inundating the streets and yards of several houses. The houses are mostly two-story structures with light-colored siding and dark roofs. Some trees are partially submerged, with only their tops visible above the water. The background shows a dense line of green trees, suggesting a wooded area or park. The overall scene conveys a sense of environmental impact and the need for resilient redevelopment.

4. Strategies for Resilient Redevelopment

4. Strategies for Resilient Redevelopment

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

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

Pillar	Project/Action Count
Housing	2
Economic Development	3
Infrastructure	3
Environment	2
Grand Total	10

Table 4. Harnett County Summary of Projects by Pillar

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

Pillar	Action Name	Priority	Overall Ranking
Environment	Stream Restoration/ Debris Removal	High	1
Infrastructure	Backup Power for Critical Facilities	High	2
Infrastructure	Critical Emergency Response Equipment	High	3
Infrastructure	Stormwater Management/Culvert Upgrades (County/Dunn/Erwin)	High	4
Economic Development	Transportation Access Improvements	Medium	5
Environment	Update FIRMs/flood studies and add river gauges	Medium	6
Economic Development	Business Acquisition and Recovery Planning	Medium	7
Housing	Create centralized shelter to increase shelter capacity	Medium	8
Housing	Residential Property Acquisition/Demolition	Medium	9
Economic Development	Trail debris removal and repairs	Medium	10

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

Medium Priority Housing Strategies

Pillar	Action Name	Priority	Overall Ranking
Housing	Create centralized shelter to increase shelter capacity	Medium	8
Housing	Residential Property Acquisition/Demolition	Medium	9

Table 6. Harnett Medium Priority Housing Summary

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

- **Create centralized shelter to increase shelter capacity:** Increase shelter capacity for Harnett County by retrofitting an existing structure at the Boone Trail Community Center.

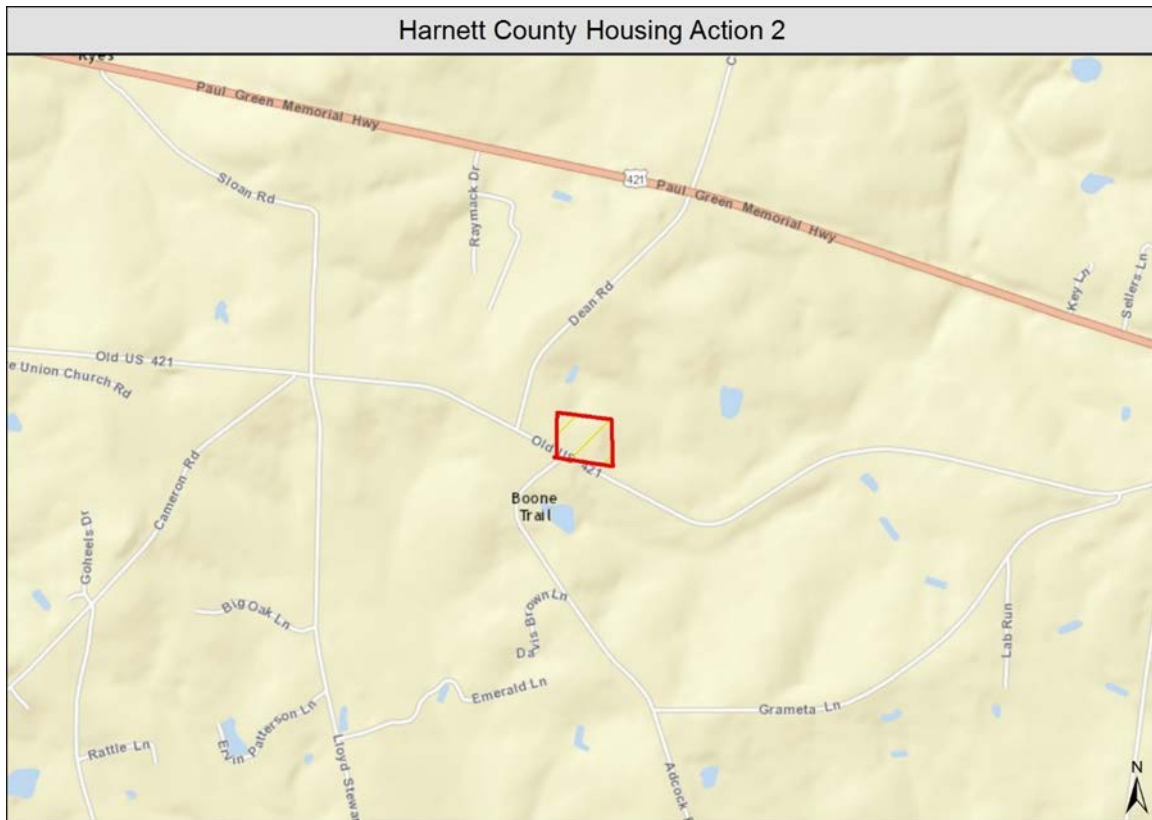


Figure 14. Create centralized shelter to increase shelter capacity

Create centralized shelter in Harnett County

County: Harnett

Priority Grouping: Medium Priority

Priority Ranking: 8

Project Timeframe: Approximately 2-3 years

Location: Proposed location is currently Boone Trail Community Center, 8500 Old US 421, Lillington, NC 27546

Project Summary: Harnett County's Emergency Services does not have a centrally located space large enough to facilitate temporary housing and emergency services during and immediately following a disaster such as Hurricane Matthew.

The proposed project will create a centrally located community center to provide appropriate shelter capacity for Harnett County by retrofitting an existing structure at the Boone trail Community Center.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The proposed project addresses an unmet need that has been created by damage from Hurricane Matthew by providing much-needed shelter availability to a growing population.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent 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.	The proposed project will not adversely affect the local economy.	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)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	No Impact	Agree
What impacts to the environment of the county will result from this project?	The proposed project will not create any adverse impacts to the environment.	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$101K - \$250K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **Residential Property Acquisition/Demolition:** Acquire and demolish two homes on Arrowhead Road and 10 manufactured homes at Woody's Mobile Home Park on N.C. Highway 210 (NC 210) South. Remove damaged manufactured home debris at Avery Road/U.S. Highway 421 (US 421) in Erwin to make space for new code-compliant affordable housing structures.

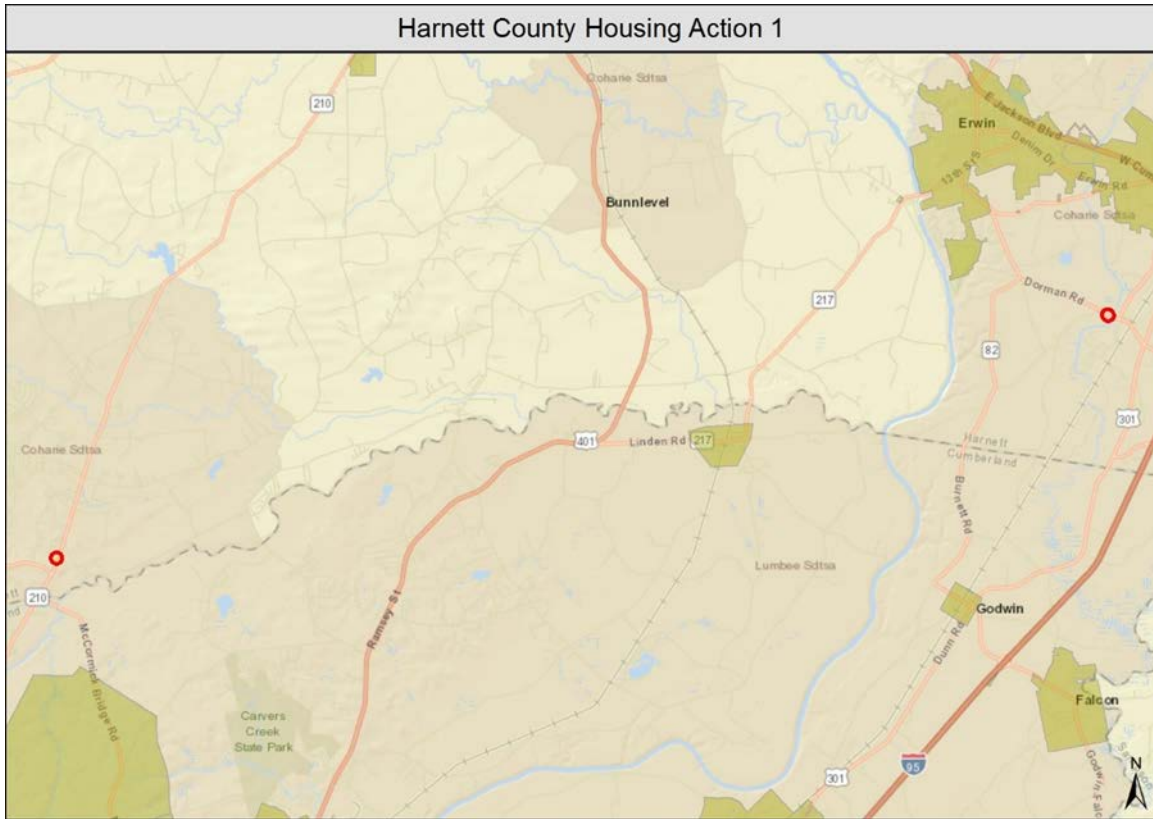


Figure 15. Residential Property Acquisition/Demolition

Harnett County Residential Property Acquisition/Demolition

County: Harnett

Priority Grouping: Medium Priority

Priority Ranking: 9

Project Timeframe: 1-3 years

Location: Scattered sites in Harnett County

Project Summary: Flooding from area rivers and tributaries, as well as drainage issues near culverts and ditches, caused damage to residential properties in Harnett County. Affected property owners have expressed interest in participating in acquisition/demolition activities. Proposed projects include:

- Acquisition/Demolition of 2 homes on Arrowhead Road (2300 & 2328 Arrowhead Rd)
- Acquisition/Demolition of 10 manufactured homes at Woody's Mobile Home Park on NC-210 South
- Remove old manufactured home debris at Avery Road/US-421 in Erwin ETJ in order to make space for new code-compliant affordable housing structures

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The proposed project addresses an unmet need that has been created by damage from Hurricane Matthew by enabling the removal of flood-prone properties. Until these properties are no longer inhabited there is still risk to people and property and losses will continue to occur. Preventing future impacts to residents is a high priority.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent 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.	The proposed project will not adversely affect the local economy. The proposed project will benefit the economy of the county by decreasing damage from drainage issues and flooding.	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	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?	High confidence	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?	The proposed project will not create any adverse impacts to the environment	N/A
What is the capability of the local government to administer this project?	High	Agree

What is the financial range of this project?	\$501K - \$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

Economic Development Strategies

Medium Priority Economic Development Strategies

Pillar	Action Name	Priority	Overall Ranking
Economic Development	Transportation Access Improvements	Medium	5
Economic Development	Business Acquisition and Recovery Planning	Medium	7
Economic Development	Trail debris removal and repairs	Medium	10

Table 7. Harnett Medium Priority Economic Development Summary

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

- Transportation Access Improvements:** Vital transportation routes must function to drive the local and regional economy. The county proposes the following projects to maintain these critical thoroughfares so they are operational during flood events.
 - Prioritize the widening of N.C. Highway 401 (NC 401, 1st priority) and N.C. Highway 55 (NC 55, 2nd priority) and perform construction quickly to enable westward evacuation and detour options that enable commerce to be maintained during emergencies.
 - Correct I-95 deficiencies at bridges/culverts to allow proper flow and decrease the need for detours and emergency rescues.
 - Mitigate flooding/dam failure caused by Rhodes Pond at U.S. Highway 301 (US 301). Rhodes Pond is owned by the state and is in Cumberland County. The failure of the dam (which continues to await funding for repair/upgrade) during the storm caused flooding of US 301 South and closed this critical detour route for I-95.

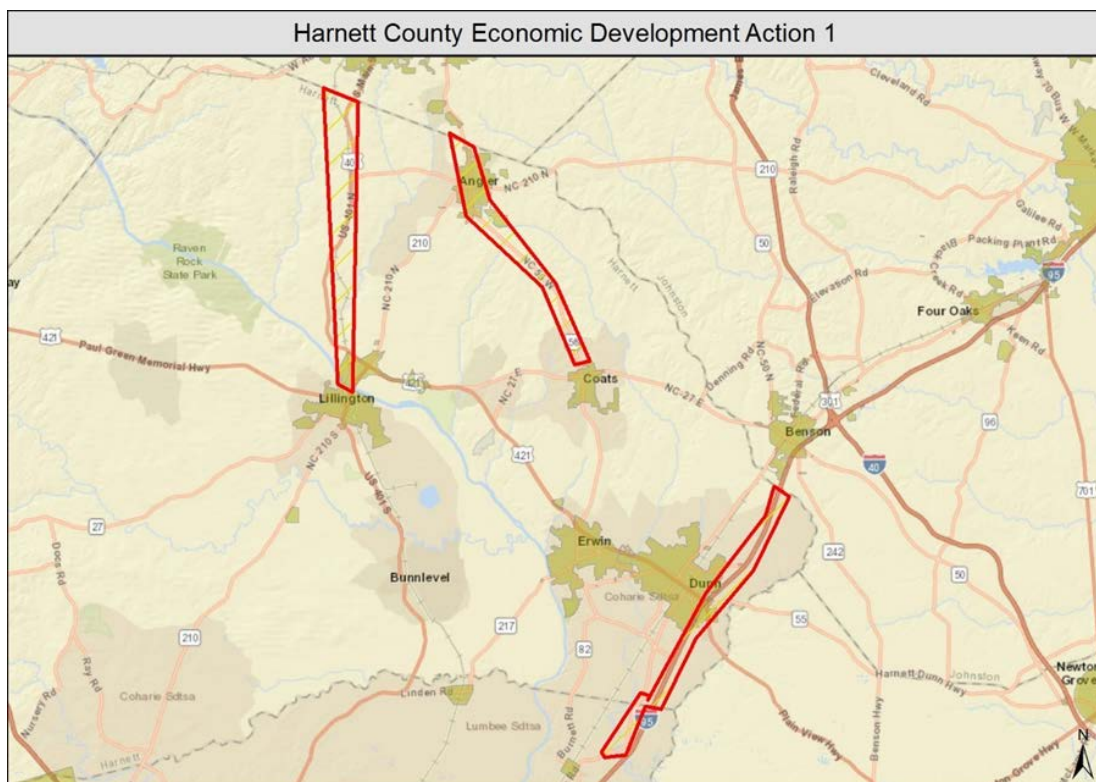


Figure 16. Transportation Access Improvements

Harnett County Transportation Access Improvements

County: Harnett

Priority Grouping: Medium Priority

Priority Ranking: 5

Project Timeframe: 1-5 years

Location: Scattered sites in Harnett County

Project Summary: During Hurricane Matthew, transportation access issues included:

- No four-lane way into Wake County for evacuation or commuting purposes caused longer detours
- Rhodes Pond overflowed due to dam failure and closed US-301
- I-95 was closed in several places and detours were not coordinated with county/municipal officials, forcing long, high-volume traffic detours through parts of the county when power was out and signals were not functional.

To mitigate these issues, the county proposes to:

- Prioritize the widening of Highway 401 (1st priority) and Highway 55 (2nd priority) and perform construction quickly to enable westward evacuation and detour options that enable commerce during emergencies.
- Correct I-95 deficiencies at bridges/culverts to allow proper flow and decrease the need for detours and emergency rescues.
- Mitigate flooding/dam failure caused by Rhodes Pond at Hwy 301. Rhodes Pond is owned by the State and is in Cumberland County. The failure of the dam (which continues to await funding for repair/upgrade) during the storm caused flooding of US- 301 South and closed this critical detour route for I-95.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The proposed project addresses an unmet need that has been created by damage from Hurricane Matthew by increasing options for travelling north and west into Wake County as well as preventing future closures and detours due to flooding on I-95.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent with existing plans. County economic development plans include widening these roads as a high priority.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	The proposed project will not adversely affect the local economy. The proposed project will benefit the economy of the county by improving commuter experience and commute times and supporting local population growth.	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	>6	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree

What impacts to the environment of the county will result from this project?	The proposed project will not create any adverse impacts to the environment. Improving commute times to Wake County will result in less emissions contributing to air quality.	N/A
What is the capability of the local government to administer this project?	Low	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	State	Agree

- **Business Acquisition and Recovery Planning:** Because most of the businesses that were flooded during and after Hurricane Matthew did not have Business Preparedness or Recovery Plans in place, the business owners weren't sure how to start the recovery process. Many months later, these businesses still feel unsure about how to rebuild and become more resilient. Proposed projects include:
 - Provide a \$10,000 grant to a total of five locally owned small businesses to support businesses owners in creating Business Preparedness and Recovery Plans.
 - Acquire the business at 804 W. Broad Street in Dunn and use the property to reroute stormwater piping to allow better flow. After demolition, use the area as a permeable overflow parking lot for area businesses.

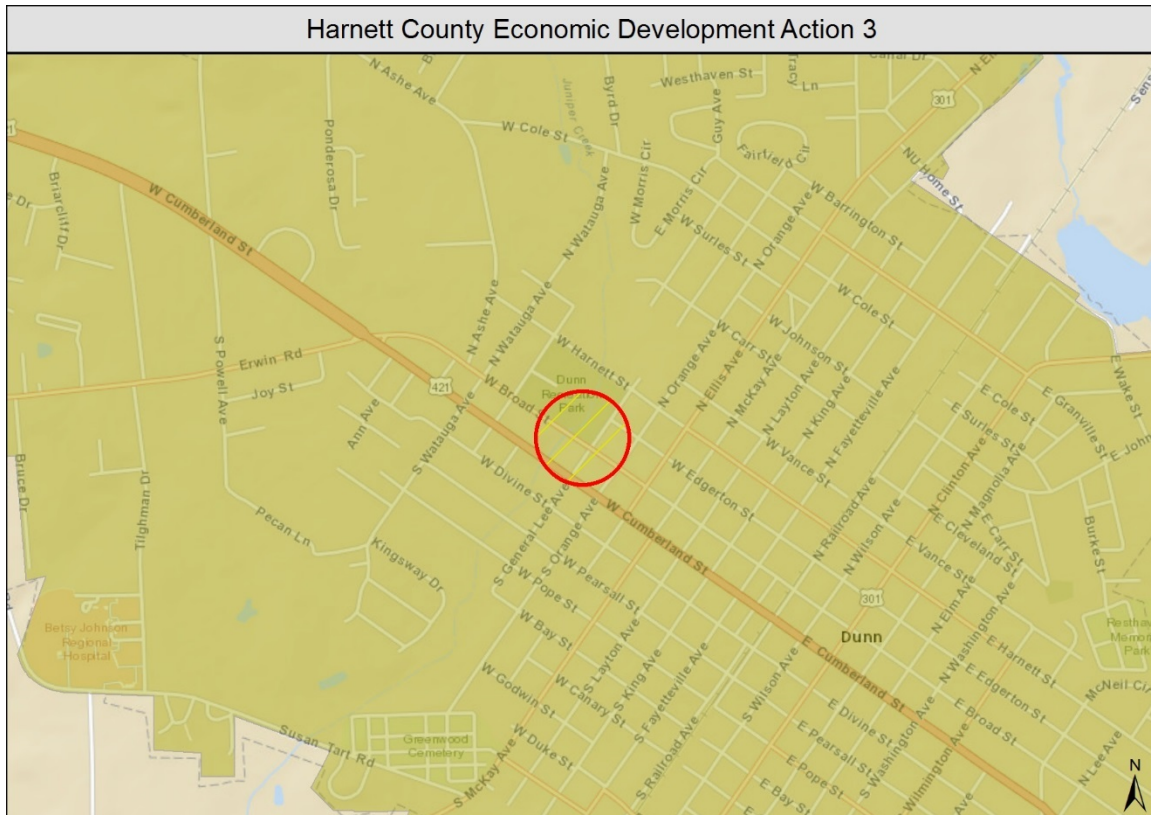


Figure 17. Acquire the business at 804 W. Broad Street

Business Acquisition and Recovery Planning

County: Harnett

Priority Grouping: Medium Priority

Priority Ranking: 7

Project Timeframe: 1-2 years

Location: 804 W Broad St in Dunn and other scattered sites within Harnett County to be determined

Project Summary: During and following Hurricane Matthew, flooded businesses did not have Business Preparedness or Recovery Plan in place and weren't sure how to start recovery. Funding is needed to assist local business owners, to help them minimize future disruption and losses. Projects include:

- Provide a \$10,000 grant to a total of 5 locally-owned small businesses to help business owners create Business Preparedness and Recovery Plans.
- Acquire law office at 804 W Broad St in Dunn and use property to re-route stormwater piping to allow better flow. After demolition, use the area as a permeable overflow parking lot for area businesses. The law office will relocate to another location in town that is not floodprone.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The proposed project addresses an unmet need that has been created by damage from Hurricane Matthew by preventing future losses to the affected business and enabling other local businesses to become more resilient in future hazard events.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent 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.	The proposed project will not adversely affect the local economy. The proposed project will benefit the economy of the county by decreasing damage from drainage issues and flooding.	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	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?	High confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	The proposed project will not create any adverse impacts to the environment	N/A
What is the capability of the local government to administer this project?	High	Agree

What is the financial range of this project?	\$101K - \$250K	Agree
What is the level of public support for this project?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **Trail Debris Removal and Repairs:** The Dunn-Erwin Trail and Raven Rock State Park, sources of tourism for the county, still are littered with debris, downed trees, and trail surface erosion in many places, which limits functionality and use of these resources. The effort described in the projects below will restore the trails and reopen them fully to tourism.
 - Dunn-Erwin Trail—To restore functionality of the entire trail, remove debris and clear downed trees. Ameliorate trail surface erosion by applying a crusher fines surface along the entire trail length (five miles).
 - Raven Rock State Park—Remove debris and clear downed trees. Clean up and stabilize trail surfaces where needed.

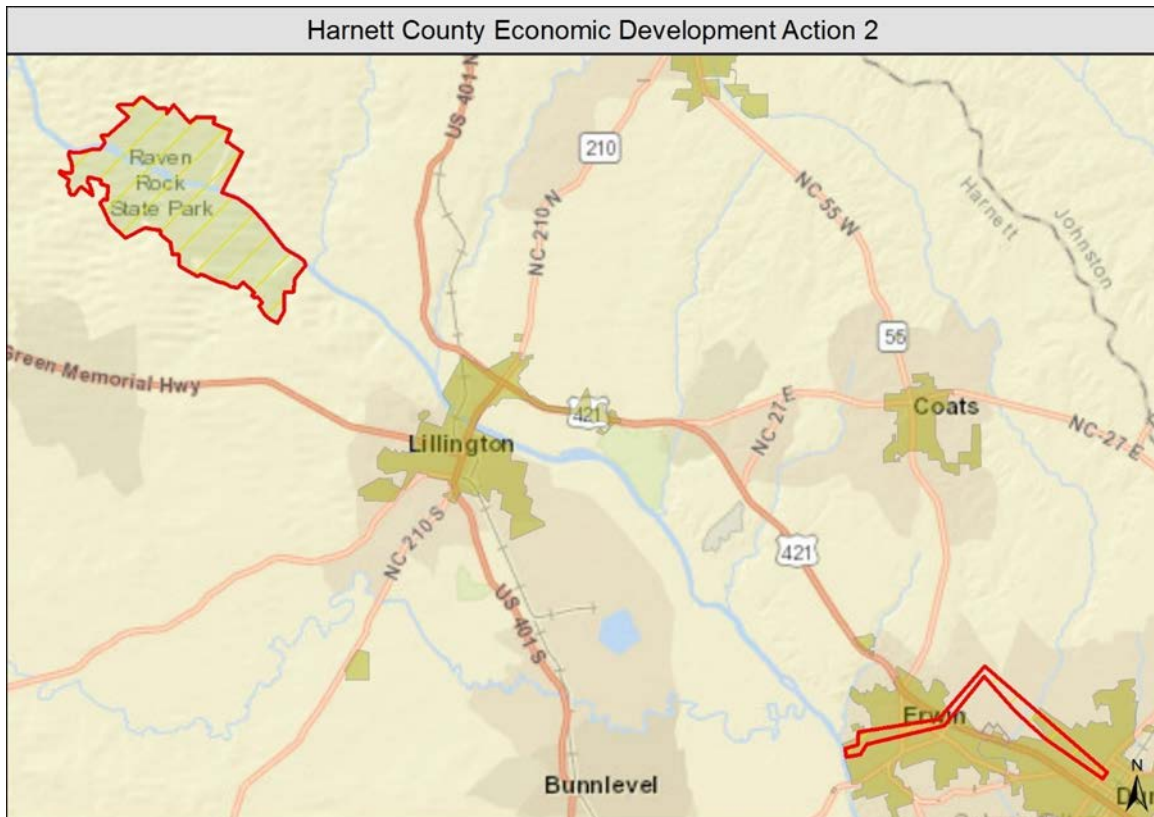


Figure 18. Trail Debris Removal and Repairs

Trail debris removal and repairs

County: Harnett

Priority Grouping: Medium Priority

Priority Ranking: 10

Project Timeframe: 6 months-1year

Location: Dunn-Erwin Rail Trail and Raven Rock State Park

Project Summary: The Dunn-Erwin Trail and Raven Rock State Park are sources of tourism for the county; yet both still have debris and downed trees caused by Hurricane Matthew which limit functionality. As a result of Hurricane Matthew, many trees were downed and the trail surface material eroded in many places. This effort will restore the trails and reopen them fully to tourism.

- Dunn Erwin Rail trail - Remove debris and clear downed trees, as well as top off crusher fine surface with 1"-2" material along entire trail (5 miles) to restore functionality of the entire trail.
- Raven Rock State Park -Tree debris removal, cleanup, and stabilize trails where needed.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The proposed project addresses an unmet need that has been created by damage from Hurricane Matthew by restoring these popular trails (and sources of tourism that benefit the local economy).	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent 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.	The proposed project will not adversely affect the local economy. The proposed project will benefit the economy of the county by making trails ready for visitors.	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)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	The proposed project will not create any adverse impacts to the environment.	N/A
What is the capability of the local government to administer this project?	Unknown	Agree
What is the financial range of this project?	\$501K - \$1M	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Unknown	Agree

Infrastructure Strategies

High Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Backup Power for Critical Facilities	High	2
Infrastructure	Critical Emergency Response Equipment	High	3
Infrastructure	Stormwater Management/Culvert Upgrades	High	4

Table 8. Harnett High Priority Infrastructure Summary

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

- Backup Power for Critical Facilities:** To ensure that critical facilities can properly function during power outages, purchase 17 generators to provide backup power for critical facilities/equipment, including:
 - Erwin: police department, town hall, public works facility, and parks/recreation building
 - Dunn: Food Lion Distribution Center sewer lift station, Champion Products sewer lift station, and City public works facility
 - Angier: public works facility, police station/town hall, Honeycutt Drive Lift Station, and N Raleigh Street Lift Station
 - Harnett County Public Library (houses county servers and phone systems)
 - Harnett County backup shelter locations: Overhills Middle School, Western Harnett High School, Harnett Central High School, Highland Middle School, and Old Boone Trail Gymnasium

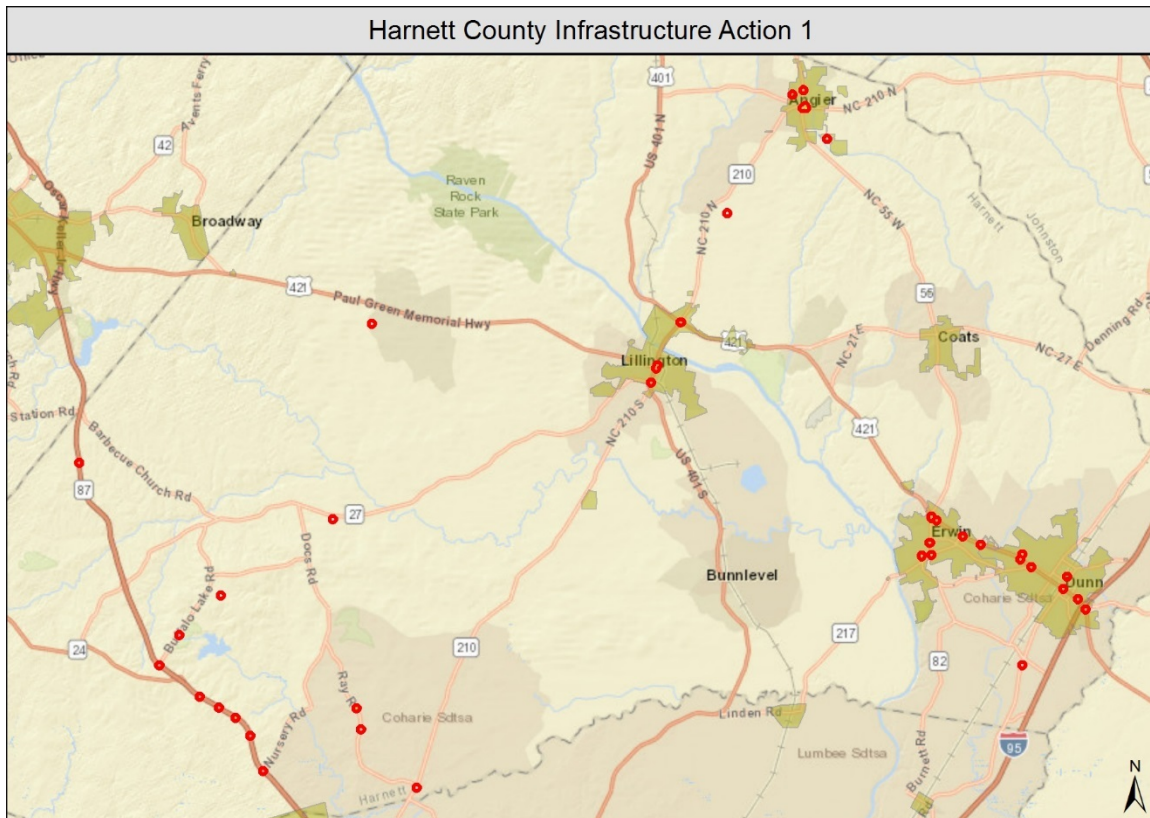


Figure 19. Backup Power for Critical Facilities

Backup Power for Critical Facilities

County: Harnett

Priority Grouping: High Priority

Priority Ranking: 2

Project Timeframe: Approximately 6 months

Location: various sites in Harnett County

Project Summary: Power loss during Hurricane Matthew identified a need for back-up and redundant power. To ensure that critical facilities can properly function during power outages, proposed projects include:

- Purchase 17 generators to provide backup power for critical facilities/equipment:

o Erwin:

- police department,
- town hall
- public works facility
- parks/recreation building.

o Dunn:

- Food Lion Distribution Center sewer lift station
- Champion Products sewer lift station
- public works facility

o Angier:

- public works facility
- police station/town hall
- Honeycutt Dr Lift Station
- N Raleigh St Lift Station

o Harnett County public library (houses county servers and phone systems)

o Harnett County backup shelter locations:

- Overhills Middle School
- Western Harnett High School
- Harnett Central High School
- Highland Middle School
- Old Boone Trail Gymnasium

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The proposed project addresses an unmet need that has been created by damage from Hurricane Matthew by providing power for emergency operations so residents and businesses can be served and protected during response and recovery from a hazard event.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent 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.	The proposed project will not adversely affect the local economy.	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)?	>6	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree

Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	No Impact	Agree
What impacts to the environment of the county will result from this project?	The proposed project will not create any adverse impacts to the environment.	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$101K - \$250K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **Critical Emergency Response Equipment:** Jurisdictions need adequate barricades/emergency signage/equipment to protect drivers as well as public safety personnel. Proposed projects include:
 - Purchase barricades and emergency signage/equipment for road closures.
 - Purchase mobile generators and complete traffic signal electrical conversions at the following critical intersections so they can be powered by generator:

Critical Intersection Locations	Jurisdiction	Critical Intersection Locations	Jurisdiction
US 421 @ NC 55	Erwin	Main Street @ Front Street	Lillington
US 421 @ Maynard Lake Road	Erwin	Main Street @ W. Old Highway 27	Lillington
US 421 @ Red Hill Church Road	Erwin	Nursery Road @ NC 87	Harnett County
South 13th Street @ Old Post Road	Erwin	Centennial Parkway @ NC 87	Harnett County
US 421 @ Lowe's Access/Wal-Mart Entrance	Erwin	Plantation Road @ NC 87	Harnett County
E. Cumberland Street @ S. Sampson Avenue	Dunn	Mittie Haddock Drive @ NC 87	Harnett County
E. Cumberland Street (US 421) @ S. Clinton Avenue (US 301)	Dunn	Buffalo Lake Road @ NC 87	Harnett County
W. Cumberland Street @ W. Broad Street/Erwin Road	Dunn	Olivia Road @ NC 87	Harnett County
W. Cumberland Street @ N. Powell Avenue	Dunn	2800 S NC 87 Cameron NC (Walmart Supercenter) @ NC 87	Harnett County
NC 55 @ NC 210	Angier	Ray Road @ Overhills Road	Harnett County
East Depot Street @ South Broad Street	Angier	NC 210 @ Ray Road	Harnett County
East Cornelius Harnett Boulevard @ Main Street	Lillington	Buffalo Lake Road @ Carolina Lakes Road	Harnett County

Table 9. Backup Power for Critical Intersections

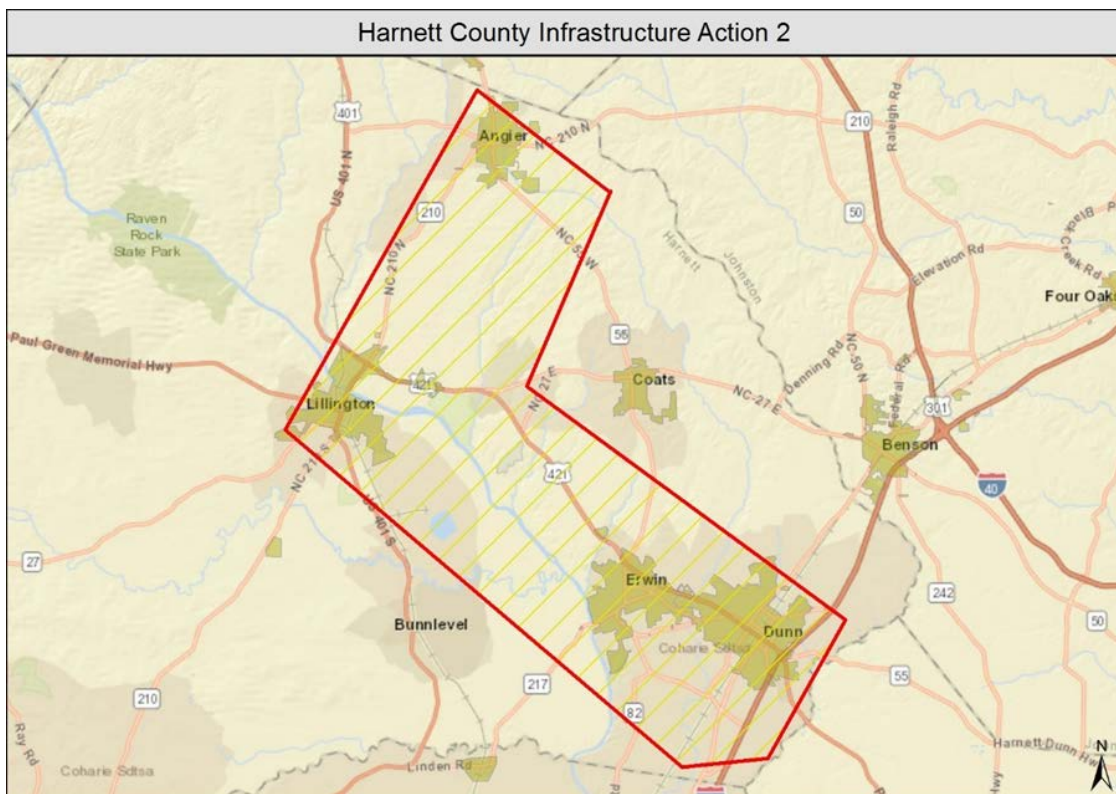


Figure 20. Critical Emergency Response Equipment

Critical Emergency Response Equipment

County: Harnett

Priority Grouping: High Priority

Priority Ranking: 3

Project Timeframe: 6 months -1 year

Location: Harnett County, Erwin, Dunn, and Angier

Project Summary: During Hurricane Matthew, local officials had issues getting message out to residents on road closures and emergency issues and did not have adequate barricades or emergency signage for closed roads and dangerous areas. The power outage also required police (including additional staff brought in from other counties) directing traffic at critical intersections along I-95 detours for several days instead of helping tend to people. Jurisdictions need adequate Barricades/Emergency signage to protect drivers as well as public safety personnel. Proposed projects include:

- o Purchase barricades and emergency signage/equipment for road closures
- o Purchase mobile generators and complete traffic signal electrical conversions at the following critical intersections so can power by generator:

Critical Intersection Locations Jurisdiction

US- 421 @ NC-55 Erwin

US-421 @ Maynard Lake Rd Erwin

HWY 421 @ Red Hill Church Rd Erwin

South 13th St @ Old Post Erwin

HWY 421 @ Lowes Access/Wal-Mart Entrance Erwin

E. Cumberland St @ S. Sampson Ave Dunn

E. Cumberland St (HWY 421) @ S. Clinton Ave (US 301) Dunn

W. Cumberland St @ W. Broad St/ Erwin Rd Dunn

W. Cumberland St @ N. Powell Ave Dunn

NC- 55@ NC-210 Angier

East Depot @South Broad Angier

East Cornelius Harnett Blvd @Main St Lillington

Main St @Front St Lillington

Main St @ W. Old Hwy 27 Lillington

Nursery Rd @NC-87 Harnett County

Centennial Pkwy @NC-87 Harnett County

Plantation @NC-87 Harnett County

Mitte Haddock @NC-87 Harnett County

Buffalo Lake Rd @NC-87 Harnett County

Olivia Rd @NC-87 Harnett County

2800 S NC 87 Cameron NC (Walmart Supercenter) @NC-87 Harnett County

Ray Rd @ Overhills Harnett County

NC-210 @ Ray Rd Harnett County

Buffalo Lake Rd @ Carolina Lakes Harnett County

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The proposed project addresses an unmet need that has been created by damage from Hurricane Matthew by providing power for emergency operations so residents and businesses can be served and protected during response and recovery from a hazard event.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent 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.	The proposed project will not adversely affect the local economy.	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)?	>6	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	The proposed project will not create any adverse impacts to the environment	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$101K - \$250K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Local	Agree

- **Stormwater Management/Culvert Upgrades:** Improve stormwater management by improving systems to more appropriately accommodate adequate flow through the following proposed projects:
 - Update county and municipal stormwater management plans to accommodate growth and prevent future flooding.
 - Replace critical underperforming culverts in Dunn, including on the 800 block of Divine Street and the 200 block of Jackson Road, and replace the bridge on Johnson Street with concrete culvert.

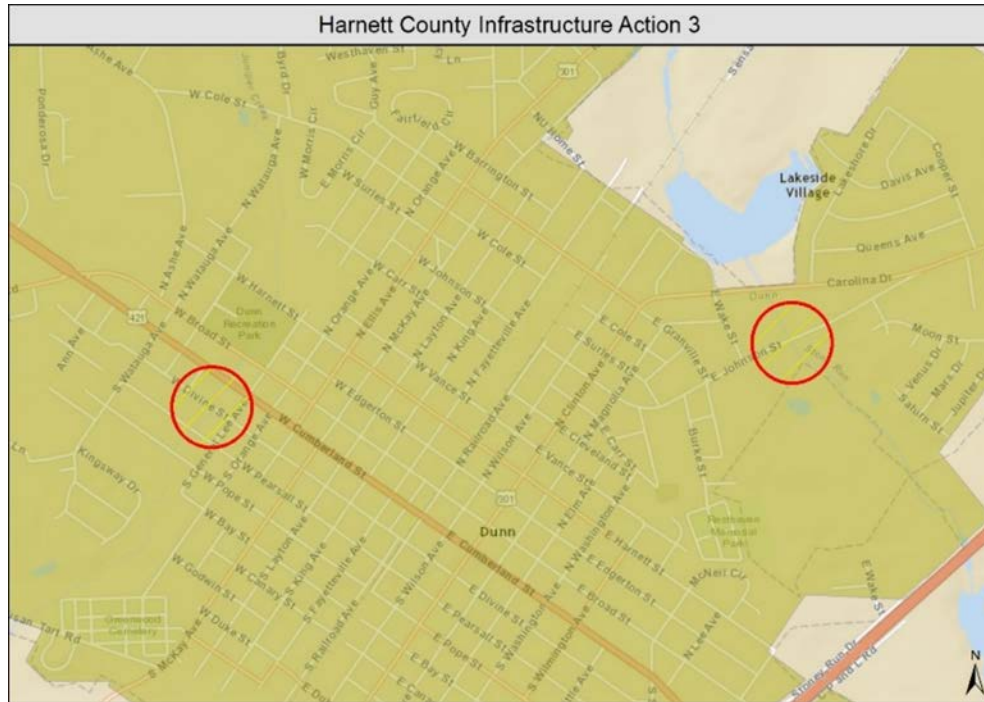


Figure 21. Stormwater Management/Culvert Upgrades – Replace Culverts

Harnett County Stormwater Management and Culvert Upgrades

County: Harnett

Priority Grouping: High Priority

Priority Ranking: 4

Project Timeframe: 1-3 years

Location: Harnett County and Dunn

Project Summary: Stormwater Deficiencies caused issues during and after Hurricane Matthew, including underperforming culverts and ditches, areas where culverts may no longer be sufficient due to increasing growth and temporary fixes after the storm are not permanent solutions. The county proposes to improve stormwater management by improving systems to more appropriately accommodate adequate flow through the following proposed projects:

- Update County and municipal Stormwater Management plans to accommodate growth and prevent future flooding
- Replace critical underperforming culverts in Dunn, including 800 block Divine Street (need culvert upsize to prevent business flooding), 200 block Jackson road (upsized) and Replace bridge on Johnson St. with concrete culvert

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The proposed project addresses an unmet need that has been created by damage from Hurricane Matthew by informing drainage improvement decisions and priorities as well as resolving culvert issues that were caused during Matthew and other heavy rain events.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent 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 proposed project will not adversely affect the local economy. The proposed project will benefit the economy of the county by resolving drainage issues that cause losses for local businesses.	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)?	1-3	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?	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?	The proposed project will not create any adverse impacts to 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?	Local	N/A

- Improve East Erwin drainage. The East Erwin project area is a low-income area with a mixture of houses and businesses. The area floods during heavy rains and has experienced problems for decades due to drainage issues (not resulting from or related to the nearby Black River). This project is designed to improve drainage through a variety of stormwater system improvements in the area, including culvert upsizing and ditch stabilization. Though the project area is not in the Special Flood Hazard Area (SFHA), events above the designed effectiveness of the drainage improvements will continue to overwhelm the ditch and cause structural flooding unless the structures are mitigated. To mitigate the structural flooding, this project will also elevate or replace/reconstruct approximately 30 homes in the project area.

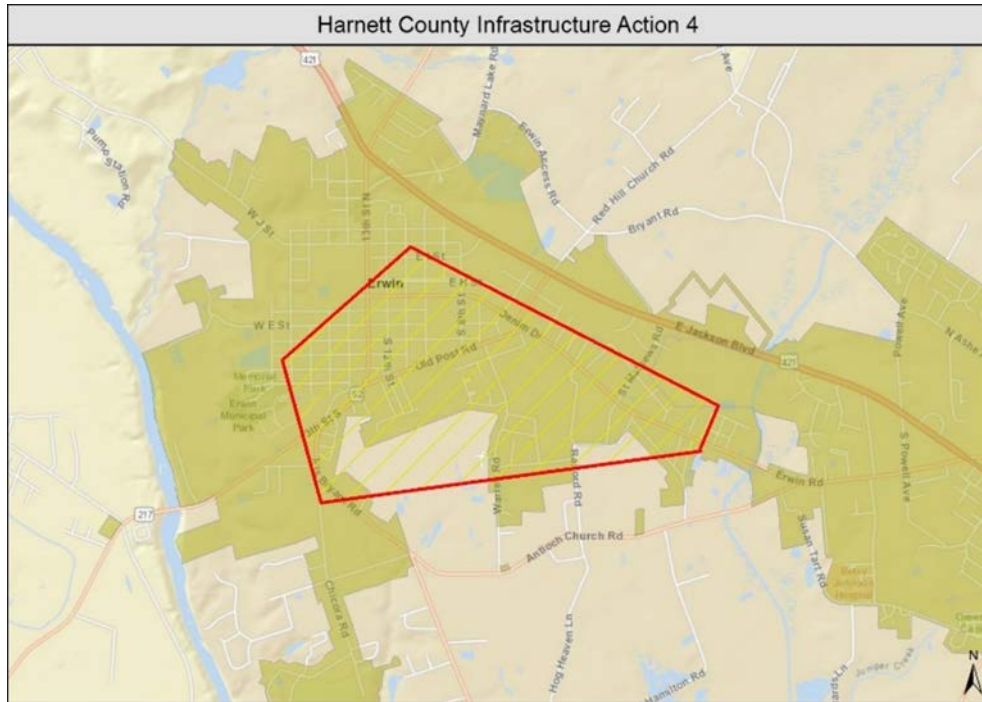


Figure 22. Stormwater Management/Culvert Upgrades – Improve East Erwin Drainage

East Erwin Stormwater Drainage Improvements

County: Harnett

Priority Grouping: High Priority

Priority Ranking: 4

Project Timeframe: 1-3 years

Location: East Erwin

Project Summary: The East Erwin project area is a low-income area with a mixture of houses and businesses. A blue-line ditch traverses this area, leading to the Black River. The area floods beginning at the at the 10-year stormwater event level and has experienced flooding for decades due to drainage issues (not resulting from or related to the nearby Black River). During Hurricane Matthew, the homes in this area again flooded. This project is designed to improve drainage through a variety of stormwater system improvements in the area, including culvert upsizing and ditch stabilization.

A study was completed in 2008 to examine alternatives for this stormwater improvements project, and the Town believes that Alternative 2 listed in that study is the most cost-effective solution. This solution would provide drainage improvements that mitigate to the 10-year stormwater event level.

Another portion of this project will be to elevate or replace/reconstruct approximately 30 homes in the project area so that they are protected up to the 100-year event level. Though they are not in the SFHA, events above the 10-year rainfall will continue to overwhelm the ditch and cause structural flooding unless the structures are mitigated.

This project also includes drainage improvements along nearby 13th Street.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The proposed project addresses an unmet need that has been created by damage from Hurricane Matthew by addressing a recurring issue of drainage in this low-income area which adversely affects residents on a regular basis.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent 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.	The proposed project will not adversely affect the local economy. The proposed project will benefit the economy of the county by decreasing damage from drainage issues and flooding.	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	The proposed project will not create any adverse impacts to the environment. The	N/A

What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Local	Agree

Environmental, Ecosystem, and Agricultural Strategies

High Priority Environmental Strategies

Pillar	Action Name	Priority	Overall Ranking
Environment	Stream Restoration/ Debris Removal	High	1

Table 10. Harnett High Priority Environmental Summary

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

- **Stream Restoration/Debris Removal:** Restoration of streams includes, but is not limited to, debris removal, streambank stabilization, and naturalization of channels. Specific locations identified by local county officials include:
 - Little River—upper and lower reaches
 - Stony Run—from Carolina Drive to I-95
 - Black River—all reaches and including from Angier Elementary School to Guy Road in Angier as well as Hwy 421 @ Dunn/Erwin line near Walmart
 - Juniper Creek—Hwy 421 to Susan Tart Road
 - Angier Pond at Jack Marley Park

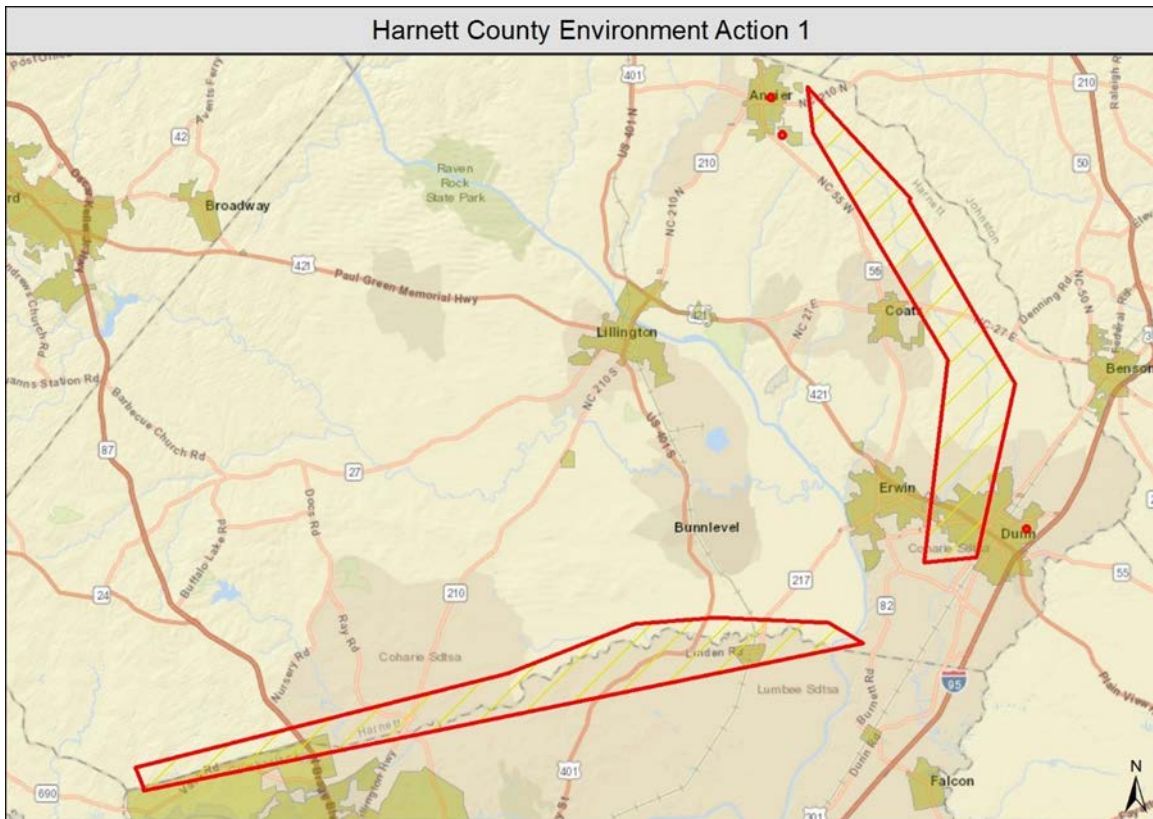


Figure 23. Stream Restoration/Debris Removal

Harnett County Stream Restoration/ Debris Removal

County: Harnett

Priority Grouping: High Priority

Priority Ranking: 1

Project Timeframe: 1-2 years

Location: scattered throughout Harnett County

Project Summary: As a result of Hurricane Matthew, many trees and other debris litter the county. During heavy rains, this debris will continue to dam up water and alter flows, which could cause flooding of additional roads and structures during future storm events. These unnatural changes in the water flow puts more properties at risk to future flooding and would cause additional road closures and utility line crossing damage. The proposed project would remove large vegetative debris from these waterways and dredge/remove silt to restore the channel to its proper depth and allow proper flow. This effort will restore natural floodplain functions and protect water-adjacent areas and infrastructure.

Locations include: 1) Little River including all upper and lower reaches; 2) Stony Run from Carolina Drive to I-95; 3) Black River including all reaches and including from Angier Elementary to Guy Road in Angier as well as Hwy 421 at Dunn/Erwin line near Walmart; 4) Juniper Creek at Hwy 421 to Susan Tart Road; and 5) Angier Pond at Jack Marley Park.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Stream restoration has been needed for many years and the heavy flows during Matthew exacerbated the issue. When another flood event occurs the County will be in a worse position than they were when Matthew occurred and flooding will damage more properties and infrastructure because the water can't flow properly in the current channels.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent with existing plans. The Cape Fear Regional Hazard Mitigation Plan includes a relevant goal to Protect and preserve the natural resources and environmentally sensitive areas within the region and this project helps achieve this.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	The proposed project will not adversely affect the local economy. The proposed project will benefit the economy of the county by decreasing damage from drainage issues and flooding.	Agree
For how long will this solution be effective?	Less than 10 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?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree

What impacts to the environment of the county will result from this project?	The proposed project will not create any adverse impacts to the environment. The environment will benefit from this project as the project will allow better conveyance which will reduce erosion. This project will allow the natural intended functions to resume again.	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?	Unknown	Agree

Medium Priority Environmental Strategies

Pillar	Action Name	Priority	Overall Ranking
Environment	Update FIRMs/flood studies and add river gauges	Medium	6

Table 11. Harnett Medium Priority Environmental Summary

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

- **Update FIRMs/flood studies and add river gauges:** County Flood Insurance Rate Maps (FIRMs) are in the process of being updated, but there are areas of the county that are experiencing dramatic, ongoing growth which still do not have detailed flood studies. Also, there is a lack of adequate data on flow rates along critical water bodies, which left the county vulnerable to rising waters without enough warning and also increases the uncertainty of flood modeling shown on the FIRMs. There is a need for better hazard data identification of flood risk areas, including updated flood profiles and mapping in areas of frequent and nuisance flooding to regulate growing development in these areas, as well as additional river gauges to better understand overall risk of future events.
 - Coordinate with the U.S. Geological Survey (USGS) to install permanent river gauges on:
 - Erwin Cape Fear Bridge
 - Lower Little River @ Wire Road (Harnett/Cumberland county line)
 - Upper Little River @ NC 24/27
 - Black River
 - Need detailed flood hazard study and credible regulatory data for:
 - Little River near Wire Road in southern part of the county
 - Within the SFHA, only the Cape Fear River and two small sections within Erwin and Dunn have floodway info. Need floodway data on remaining areas to enable informed hazard-resistant development.

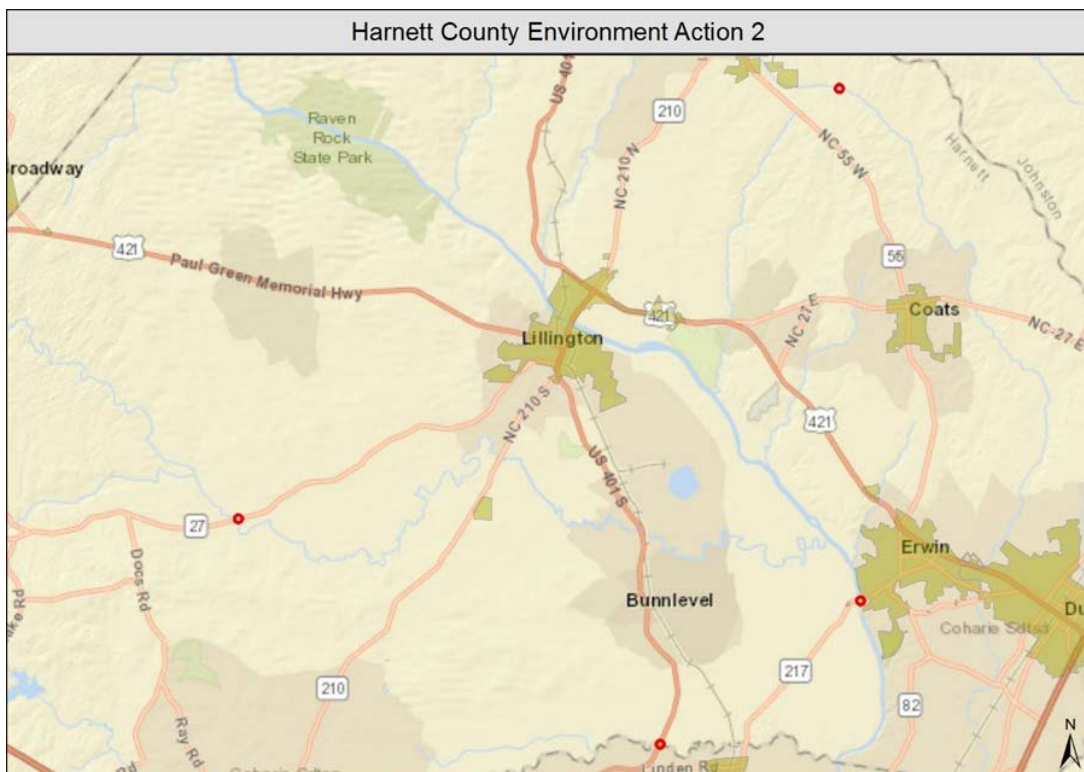


Figure 24. Update FIRMs/flood studies and add river gauges

Update FIRMs/flood studies and add river gauges

County: Harnett

Priority Grouping: Medium Priority

Priority Ranking: 6

Project Timeframe: 1-5 years

Location: Little River, Black River, Upper Little River and Cape Fear River

Project Summary: County Flood Insurance Rate Maps (FIRMs) are in the process of updates but there are areas of the county that still do not have detailed flood studies that are experiencing dramatic growth that will continue. Also, there is a lack of adequate data on flow rates along critical water bodies, which left the county vulnerable to rising waters without enough warning and also increases the uncertainty of flood modeling shown on the FIRMs.

There is a need for better hazard data identification of flood risk areas including updated flood profiles and mapping in areas of frequent and nuisance flooding in order to regulate growing development trend in that area as well as additional river gauges to better understand overall risk of future events.

- Coordinate with USGS to install permanent river gauges on:
 - o Erwin Cape Fear Bridge
 - o Lower Little River @Wire Rd (Harnett/Cumberland County line)
 - o Upper Little River @Hwy 24/27
 - o Black River
- Need detailed flood hazard study and credible regulatory data for:
 - o Little River near Wire Road in southern part of the County
 - o Within the Special Flood Hazard Area, only the Cape Fear River and 2 small sections within Erwin and Dunn have floodway info. Need floodway data in remaining areas to enable informed hazard-resistant development.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The proposed project addresses an unmet need that has been created by damage from Hurricane Matthew by better accounting for flooding that more regularly occurs as development has increased as well as better understanding risk in order to inform regulatory and enforcement decisions.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent 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.	As development occurs in Harnett County on both the Southern side from Fayetteville and on the Northern side from Wake County detailed floodplain mapping studies will allow the County and Local government to better regulate development in high hazard areas. The impact would be positive by implementing development practices that do not endanger residential and commercial structure from reoccurring flooding thereby reducing the amount of displaced residents and business closures post disaster.	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	>6	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree

To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	No Impact	Agree
What impacts to the environment of the county will result from this project?	The proposed project will not create any impacts to 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?	\$501K - \$1M	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Unknown	Agree

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.