

# Hurricane Matthew Resilient Redevelopment Plan

## Wake County



May 2017

Version 1.2

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## Change Log

Version	Date	Summary of Changes
1.1	6/19/17	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.<sup>1</sup> 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.

<sup>1</sup> 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, Wake County has identified 13 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	1
Economic Development	0
Infrastructure	10
Environment	2
<b>Grand Total</b>	<b>13</b>

**Table 1. Wake County Summary of Projects by Pillar**





# 1. Background

# 1. Background

## Summary of Hurricane Matthew Storm Damage

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

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

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

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

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

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

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

## 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.

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<sup>2</sup> *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:

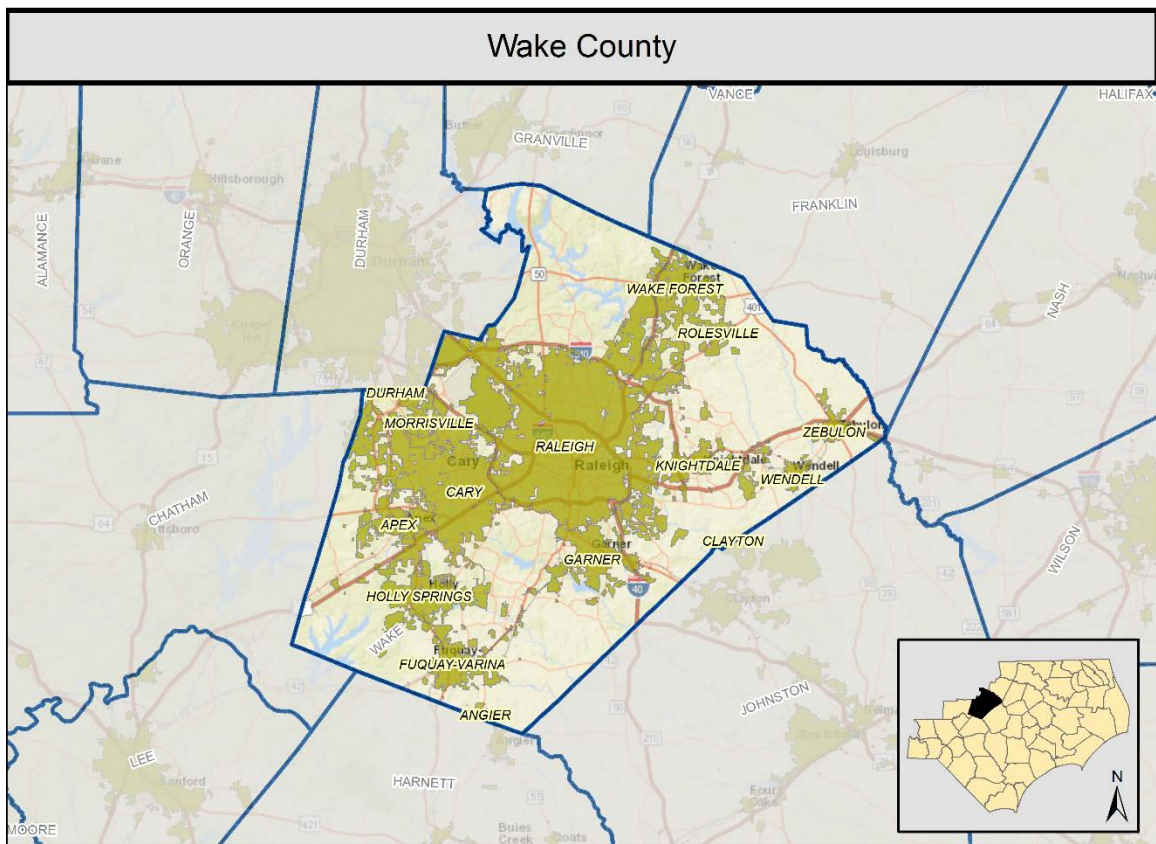
**Meeting 1** – Initiated the planning process and validated the existing data pertaining to damage and impacts.

**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 Wake County and surrounding counties is shown below.



**Figure 2. Wake County and Neighboring Counties**

## **Data, Assumptions, and Methodologies**

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

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



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

## 2. County Profile



## 2. County Profile

Wake County is located in eastern-central North Carolina. It is comprised of eleven census-designated places: Apex, Cary, Fuquay-Varina, Garner, Holly Spring, Knightdale, Morrisville, Raleigh, Rolesville, Wake Forest, Wendell and Zebulon. Its current population is 976,019. This section provides a profile of housing, economics, infrastructure, environment, and administration within Wake County.

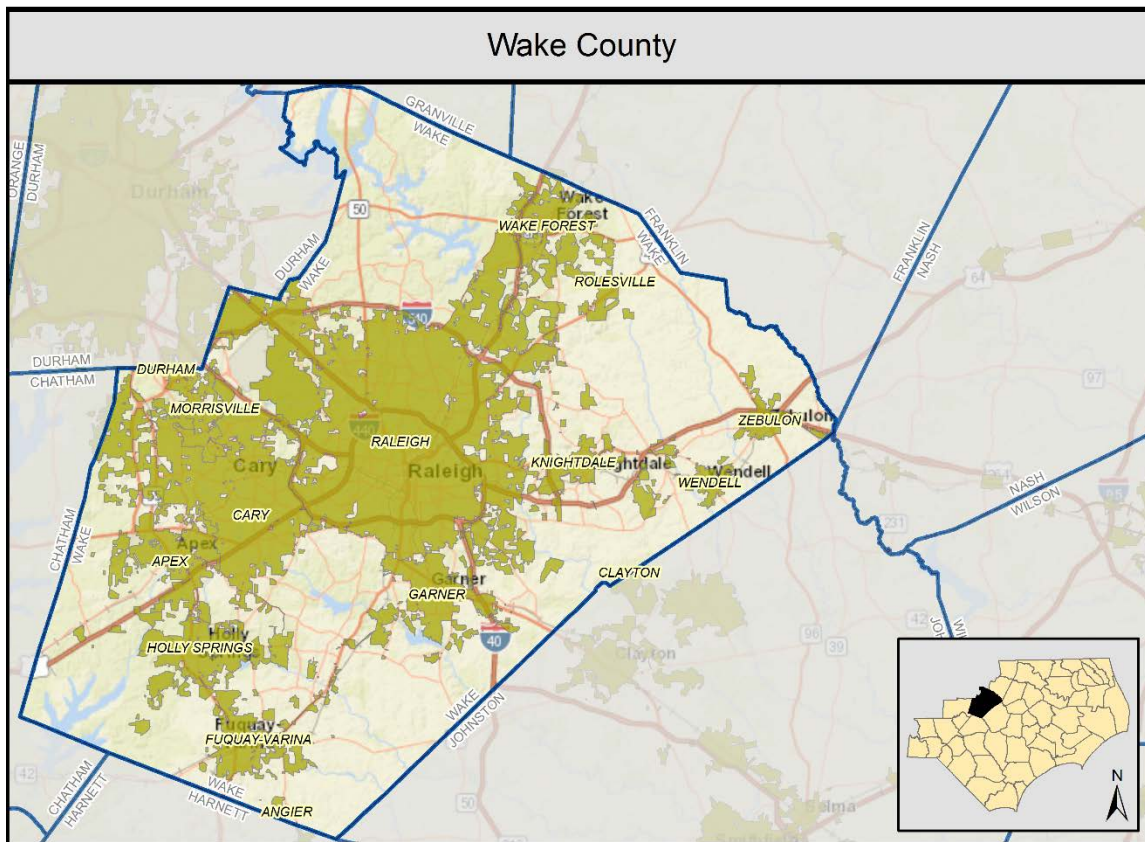


Figure 3. Wake Base Map

### Demographic Profile

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

### Population

Wake County has a population of 976,019. Raleigh is the most populous place within Wake County with a population of 432,520 and Zebulon is the least populous place with a population of 4,690.<sup>3</sup>

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

## Population Change (2000 to 2010)

The Wake County population grew rapidly between the 2000 and 2010 Census. In 2000 the population was 627,779 and in 2010 it was 900,993. The population increased by 273,214 people, or about 43 percent. In comparison, North Carolina grew by 19 percent from 8,049,313 people in 2000 to 9,535,483 in 2010.<sup>4</sup>

## Age

The median age in Wake County is 35, which is below the median age for North Carolina, 42. Within Wake County, the Garner population has the oldest median age, 38, and the Zebulon population has the youngest median age, 32.

## Race and Ethnicity

Wake County is mostly White (68 percent) and African American (20 percent) with other races constituting the remaining 12 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.

The Latino population in Wake County is 10 percent compared to 9 percent for North Carolina. Zebulon has the largest proportion Latino population (19 percent) while Holly Springs and Morrisville have the lowest proportion Latino population with fewer than 4 percent. Raleigh has a Latino population of 47,992.

Geography	White	Black or African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian/Pacific Islander	Some Other Race	Two or More Races	Total Non-White
Apex	80.1%	8.5%	0.2%	6.6%	0.0%	2.0%	2.6%	19.9%
Cary	71.4%	8.2%	0.5%	15.0%	0.0%	2.3%	2.6%	28.6%
Fuquay-Varina	74.3%	17.3%	0.0%	2.2%	0.0%	4.2%	2.0%	25.7%
Garner	58.7%	35.9%	0.7%	2.1%	0.0%	0.6%	2.0%	41.3%
Holly Springs	79.2%	12.9%	0.0%	3.9%	0.0%	1.3%	2.7%	20.8%
Knightdale	51.6%	35.9%	0.1%	3.0%	0.0%	5.2%	4.1%	48.4%
Apex	80.1%	8.5%	0.2%	6.6%	0.0%	2.0%	2.6%	19.9%
Morrisville	45.5%	13.2%	0.5%	36.4%	0.0%	0.4%	3.9%	54.5%
Raleigh	60.2%	29.3%	0.3%	4.4%	0.1%	3.5%	2.3%	39.8%
Rolesville	79.8%	16.4%	0.1%	1.8%	0.0%	0.4%	1.5%	20.2%
Wake Forest	79.4%	14.5%	0.1%	1.8%	0.0%	1.0%	3.0%	20.6%
Wendell	69.3%	20.3%	0.0%	3.1%	0.0%	3.1%	4.2%	30.7%
Zebulon	57.9%	31.6%	0.0%	2.0%	0.0%	1.9%	6.7%	42.1%

**Table 2. Wake County Race and Ethnicity**

<sup>4</sup> 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

## Limited English Proficiency

Limited English Proficiency (LEP) is defined as populations 18 years or older that speak English less than very well. In Wake County, most of individuals identified as LEP speak Spanish while others speak Indo-Euro, Asian/Pacific, or other languages. Similarly, the primary language group for LEP individuals in North Carolina is Spanish. Within Wake County, Raleigh has the largest LEP population. The primary language group for LEP populations in Raleigh is Spanish. In Morrisville, the primary language groups are Indo/Euro and Asian /Pacific both at 4.5 percent.<sup>5</sup>

## Poverty

In Wake County, 11 percent of the population is below the poverty level compared to 17 percent of the North Carolina population. In Wendell and Zebulon 21 percent of the populations are below the poverty level, 16 percent in Raleigh, and 2.5 percent in Holly Springs.<sup>6</sup>

## Low and Moderate Income Individuals

In Wake County, 36 percent of the population is classified as low and moderate income (LMI) individuals based on the US Department of Housing and Urban Development's definition. In comparison, 39 percent of the North Carolina population is classified as LMI.<sup>7</sup>

## Median Household Income

The median household income of the population 25 to 64 years old is \$76,000 in Wake County and \$53,000 in North Carolina. Cary has the highest median household income for this age group, \$103,000, and Wendell has the lowest: \$48,000. Median household income was not available for Garner, Holly Springs, Knightdale and Wake Forest.<sup>8</sup>

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

<sup>6</sup> Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table C17002, "Ratio of Income to Poverty Level in the Past 12 Months."

<sup>7</sup> Source: US Department of Housing and Urban Development, Estimate of Low and Moderate Income Individuals, <https://www.hudexchange.info/programs/acs-low-mod-summary-data/acs-low-mod-summary-data-block-groups-places/>

<sup>8</sup> Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B19094, "Median Household Income in the Past 12 Months."

## Zero Car Households

In Wake County, 4.4 percent of households do not have a vehicle available compared to 7 percent of North Carolina households. Within Wake County, Wendell has the highest percentage of households without access to a vehicle, 7.3 percent, while Rolesville has the lowest percentage: 0 percent.<sup>9</sup>

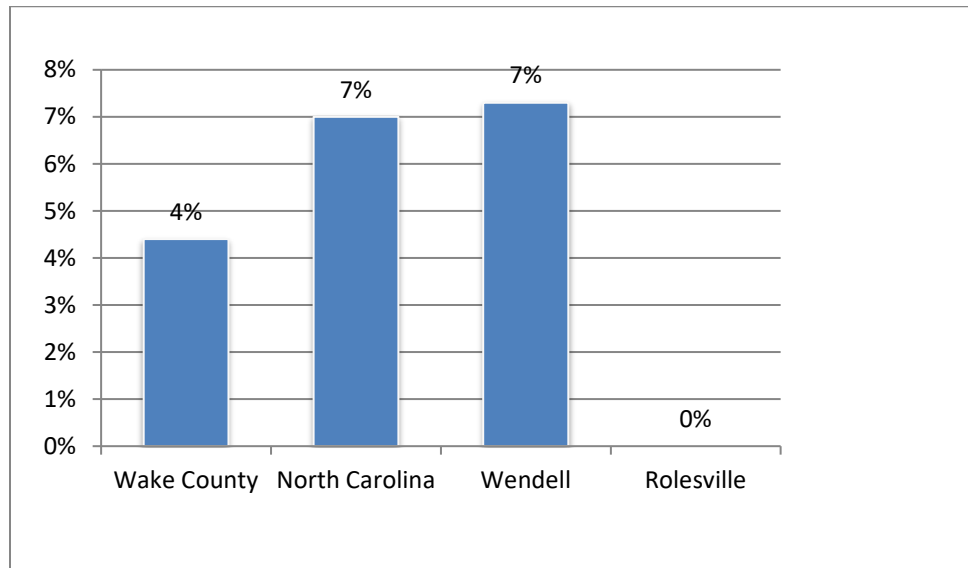


Figure 4. Zero Car Households by Percentage

## Commuting: Travel Time to Work, Means of Transportation

The majority of Wake County residents commute alone to work by vehicle, 80 percent, which is similar to North Carolina average of 81 percent. Within Wake County, Wendell has the largest percentage of commuters commuting alone, 87 percent, and Fuquay-Varina has the least 78 percent.

Raleigh has the largest percentage of residents commuting by public transportation: 3 percent. In comparison, 1 percent of North Carolina commuters use public transportation. A greater percentage of Raleigh and Morrisville residents commute by walking, bike, or motorcycle than the North Carolina average of 2 percent.

The mean commute time to work for Wake County residents is 24.1 minutes. In comparison, the North Carolina is similar with a mean commute time of 24.7 minutes. Within Wake County, Morrisville has the shortest mean commute time at 21 minutes while Wendell has the longest at 31.3 minutes.<sup>10</sup>

<sup>9</sup> Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B25044, "Tenure by Vehicles Available."

<sup>10</sup> Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B08301, "Means of Transportation to Work" and Table GCT0801, "Mean Travel Time to Work of Workers 16 Years and Over Who Did Not Work at Home (Minutes)."



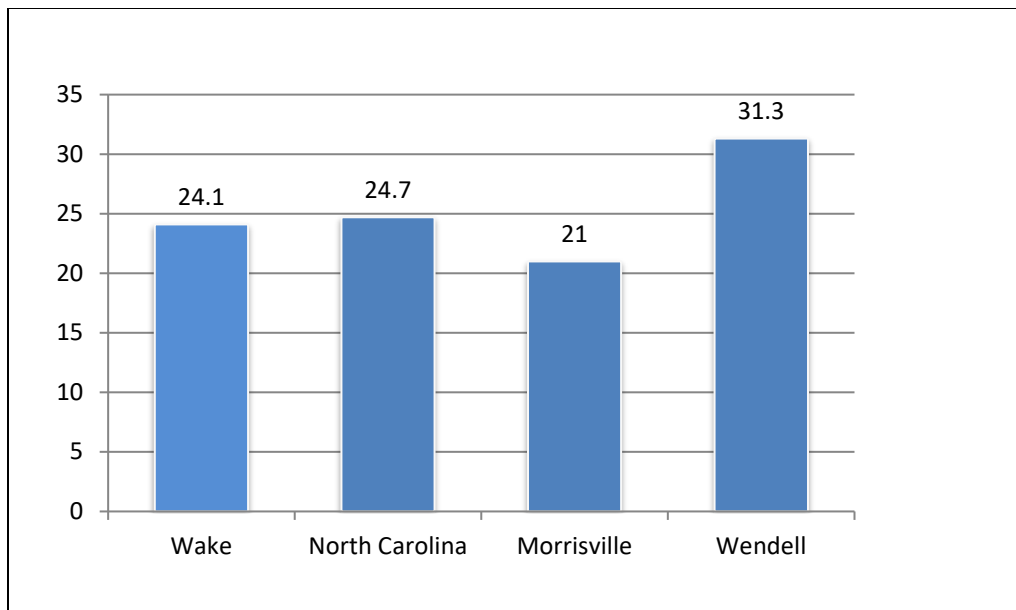


Figure 5. Mean Commute Time to Work in Minutes

### Housing Profile

Wake County has over 392,000 housing units, 60 percent of which are single-family homes, 36 percent multi-family units, and 4 percent manufactured housing.

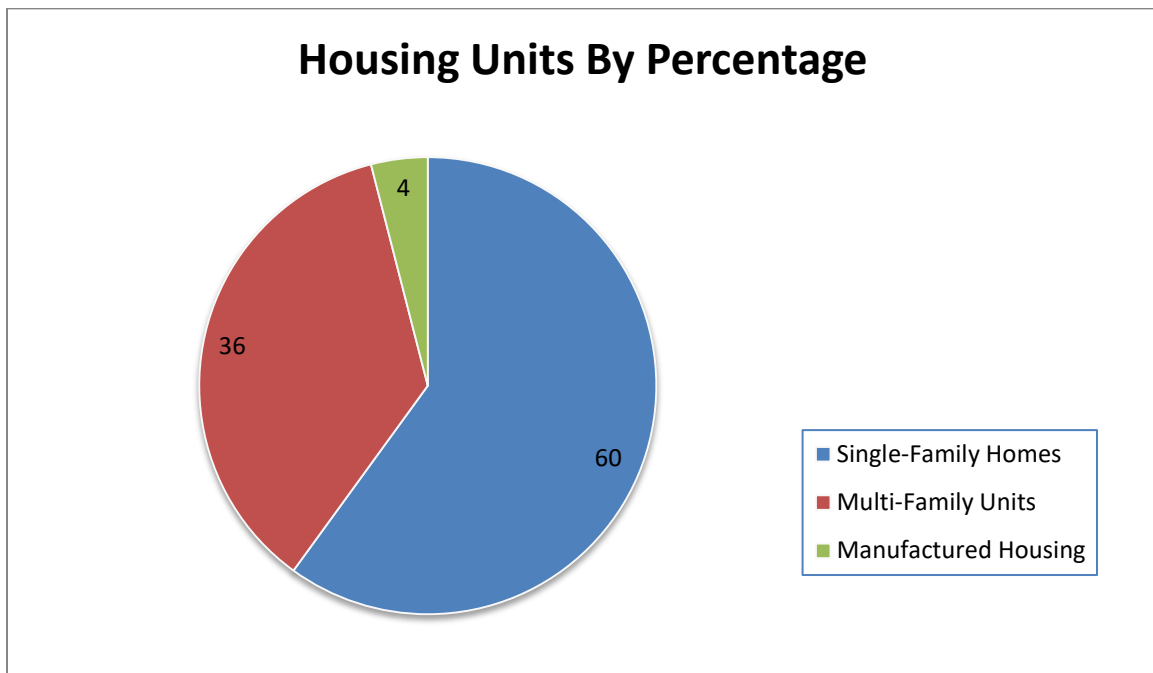


Figure 6. Housing Units By Percentage

In Wake County 7.2 percent of housing units are vacant, which is lower than the percentage for North Carolina which is 14.5. Within Wake County, Rolesville has the largest percentage of vacant housing units, 12 percent, while Knightdale has the least: 4 percent.

Of the occupied housing units, 64 percent are owner-occupied compared to 65 percent in North Carolina; 36 percent are renter-occupied compared to 35 percent in North Carolina.

The median housing value in Wake County is \$234,000. In comparison, the median housing value in North Carolina is \$140,000. Within Wake County, Cary has the highest median housing value: \$306,000. Wendell and Zebulon have the lowest median housing value: \$127,000.

According to the National Housing Preservation Database, Wake County has 12,438 affordable housing units. Most of the affordable housing is located in Raleigh.<sup>11</sup>

### **Economic/Business Profile**

Wake County's economy is heavily influenced by the Research Triangle Park (RTP). As the country's largest industrial park, RTP is home to a diverse array of businesses from high-tech and biotech research to textile development. According to the US Census Bureau's Longitudinal-Employer Household Dynamics Program, the largest concentrations of jobs within Wake County are in downtown Raleigh, at an industrial park north of I-440 at Wake Forest Rd, and off of Fayetteville Highway near Garner.<sup>12</sup>

### **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 Wake County is 558,950.<sup>13</sup> Within Wake County, Rolesville has the largest percentage of residents 16 years or over in the labor force, 78 percent, while Wendell has the smallest: 62 percent.

The civilian unemployment rate in Wake County is 4.2 percent. In comparison, the North Carolina civilian unemployment rate is 5.1 percent.<sup>13</sup> Within Wake County, Cary has the smallest civilian unemployment rate at 4.5 percent while Rolesville has the largest: 9.9 percent.<sup>14</sup>

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<sup>11</sup> Sources: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B25002, "Occupancy Status"; Table B25003, "Tenure"; Table B25024 "Units in Structure"; Table B25077, "Median Value (Dollars)."

National Housing Preservation Database

<sup>12</sup> Source: US Census Bureau Longitudinal-Employer Household Dynamics Program

<sup>13</sup> Source: Civilian Population and Unemployment Rate - Labor and Economic Analysis Division (LEAD) of North Carolina Department of Commerce – Local Area Unemployment Statistics <http://d4.nccommerce.com/LausSelection.aspx>

<sup>14</sup> Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B23025, "Employment Status for the Population 16 Years and Over."

## Major Employers

The top ten employers in Wake County<sup>15</sup> represent the manufacturing, public administration, education and health service industries, and are listed in order of total employees.

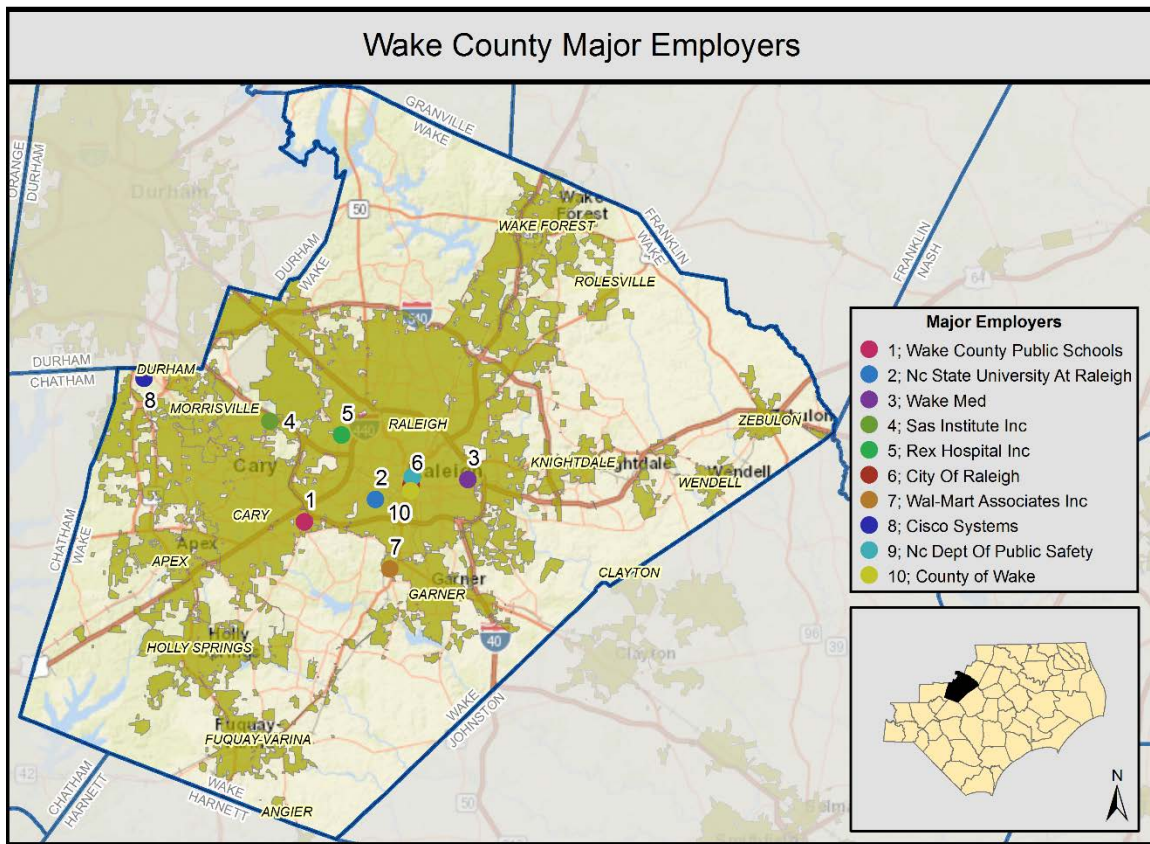


Figure 7. Major Employers by Number of Employees

## Economic Development

Wake County Economic Development (WCED) is the primary economic development organization for Wake County, providing economic development support for its 12 municipalities. As a program of the Greater Raleigh Chamber of Commerce, the organization “proactively creates an environment in which Wake County can grow and thrive, resulting in new jobs and capital investment.”

They have targeted areas in south Cary, northeast Morrisville, and North Raleigh as areas with the greatest potential for economic growth.<sup>16</sup>

<sup>15</sup> Sources: NC Department of Commerce

<sup>16</sup> Sources: Wake County Economic Development

## Infrastructure Profile

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

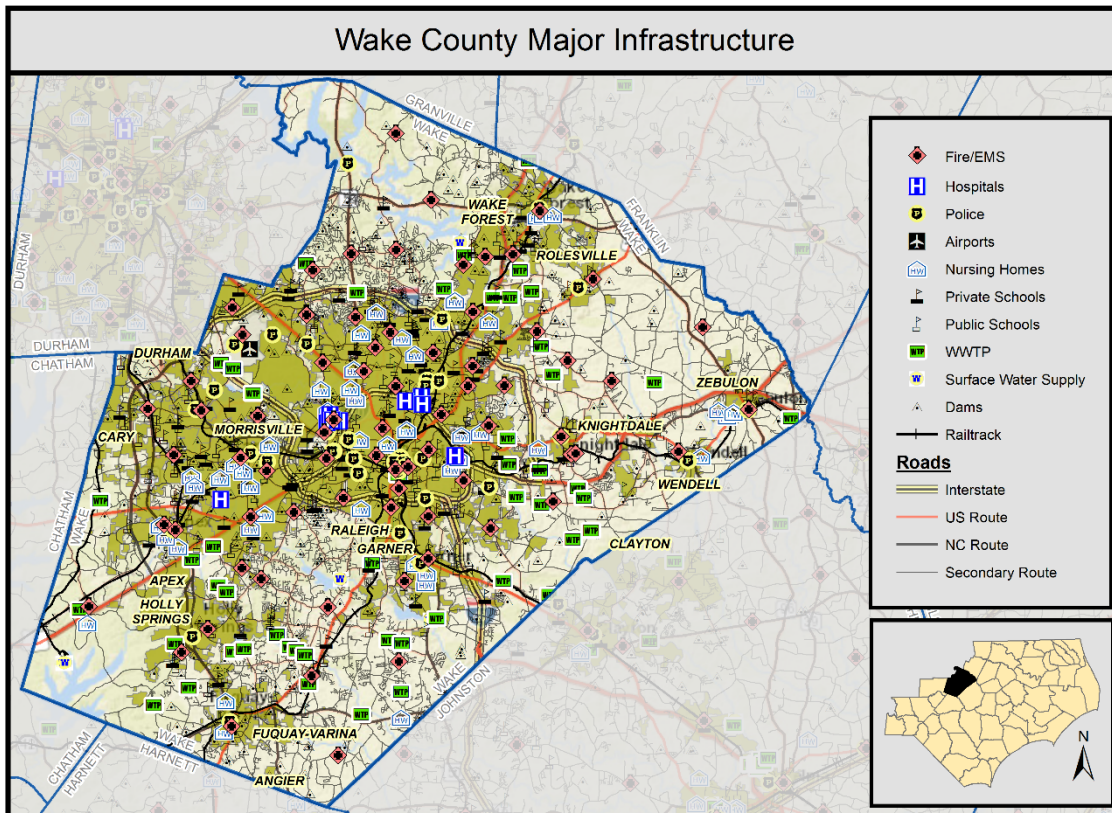


Figure 8. Wake County Major Infrastructure

## Transportation

The only major interstate in Wake County is I-40. I-40 is a major east-west highway that provides Wake County with access to Greensboro and Winston Salem to the west and Wilmington to the south-east. It has two spur routes in Wake County; I-440 to the north of Raleigh, which creates a “beltline” with I-40 to the south, and I-540. Wake County is also served by Amtrak for rail passengers. Raleigh-Durham International Airport is located in northwest Wake County and serves more than 9 million passengers a year.

## Health

Wake County is served by three different hospitals: Rex Hospital, WakeMed, and Duke Raleigh Hospital.

## Education

Wake County Public School System administers 104 elementary, 33 middle, and 27 high schools. Wake County is home to eight institutions of higher learning. They include Meredith College, North Carolina State University, Peace College, Shaw University, and Wake Technical Community College.<sup>17</sup>

<sup>17</sup> Sources: Wake County Public Schools



## Water

Drinking water to Wake County is provided by municipal water supply systems in Angier, Apex, Cary, Fuquay-Varina, Holly Springs, and Raleigh. Municipal wastewater is treated at 9 different facilities: for Raleigh at the Smith Creek, Little Creek, Neuse River, and Swift Creek Waste Water Treatment Plants (WWTP), for Fuquay-Varina at the Terrible Creek WWTP, for Cary at the North Cary WRF and South Cary WRF, and for Holly Springs at the Holly Springs WWTP.<sup>18</sup>

## Power

Shearon Harris Nuclear Plant is located in south-west Wake County adjacent to the Shearon Harris reservoir. It has a net summer capacity of 928 megawatts.

There are several solar farms located within Wake County. There is the Sas Solar Farm in Cary which has a capacity of 2 MW. The Neuse River Solar Farm in southeast Raleigh which has a capacity of 1.1 MW, and the CBC Solar Energy in Gardner which has a capacity of 2.5 MW. There is also the Wake County Landfill Gas Facility in Apex which has a total net summer capacity of 7.2 MW.<sup>19</sup>

## Environmental Profile

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

## Water Resources

The Neuse River flows east-west through the north part of Wake County. Wetlands are present along the Neuse River and its tributaries. The most common wetland type in Wake County is freshwater forested/shrub wetland.

There are also several lakes including Falls Lake, Sharon Harris Reservoir, Johnson Lake, Raleigh Lake, Lake Benson, Lake Wheeler, and Lake Crabtree.<sup>20</sup>

## Natural and Managed Areas

According to the NC Natural Heritage Program, there are several natural areas of high, very high, or exceptional value in Wake County. William Umstead State Park and along the Neuse River are areas identified as very high value. There is also Mitchel Miff State natural Area in Zebulon that is identified as exceptional value.

There are several managed areas under state ownership within Wake County. Managed areas are properties and easements where natural resource conservation is one of the current primary management goals, or are of conservation interest. These areas in Wake County include: the William Umstead State Park, the Yates Mill Pond Park, and along the Neuse River.<sup>21</sup>

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<sup>18</sup> Sources: NC Division of Water Resources, Local Water Supply Plans; and the Neuse Regional Water and Sewer Authority

<sup>19</sup> Source: US Department of Energy, US Energy Mapping System

<sup>20</sup> Source: NC Natural Heritage Program

<sup>21</sup> Source: NC Natural Heritage Program

## Biodiversity and Wildlife Habitat

The NC Natural Heritage Program produces a biodiversity and wildlife habitat assessment for the state. According to this assessment, areas with the highest rating for biodiversity and wildlife habitat are within William Umstead State Park and along the Neuse 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.<sup>22</sup>

## Parks and Recreation

The Wake County Parks and Recreation Department maintains several parks and facilities in Wake County. There is Blue Jay Point Park, Crowder District Park, Harris Lake County Park, Historic Oak View County Park, Historic Yates mill County Park, Lake Crabtree County Park, and North Wake Landfill District Park. The American Tobacco Trail also passes through Wake County. The recreation department also offers several neighborhood parks, community centers, gyms, a golf course, and tennis courts. Most of these facilities are located in Raleigh.<sup>23</sup>

## Administrative Profile

The administrative capabilities of Wake County and the municipalities within the County are discussed in great detail within Section 7 of the Wake County Multi-Jurisdictional Hazard Mitigation Plan (2015). The assessment evaluates the capabilities of the County and municipalities to implement mitigation actions across the areas of planning and regulatory capabilities, administrative and technical capabilities, fiscal capabilities, and political capabilities. Many more details about the capabilities of Wake 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. Wake 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, 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.

All of the municipalities in Wake County have high capabilities as well. All of the municipalities have a Planning department that would likely be able to assist with implementing the strategies in this plan as well. In addition, the municipalities have the plans, policies and procedures in place that indicate high capability.<sup>24</sup>

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<sup>22</sup> Source: NC Natural Heritage Program

<sup>23</sup> Sources: NC Natural Heritage Program, Wake County Parks and Recreation Department

<sup>24</sup> Sources: Wake County, City of Raleigh



An aerial photograph showing a residential neighborhood severely impacted by flooding. The houses, which are mostly two-story structures with light-colored siding and dark roofs, are surrounded by deep, muddy brown floodwater. The water has inundated the yards and streets, leaving only the roofs and upper parts of the trees visible. The background is filled with dense green trees, some of which are also partially submerged. The overall scene depicts significant damage and displacement caused by a storm.

### 3. Storm Impact



### 3. Storm Impact

#### Rainfall Summary

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

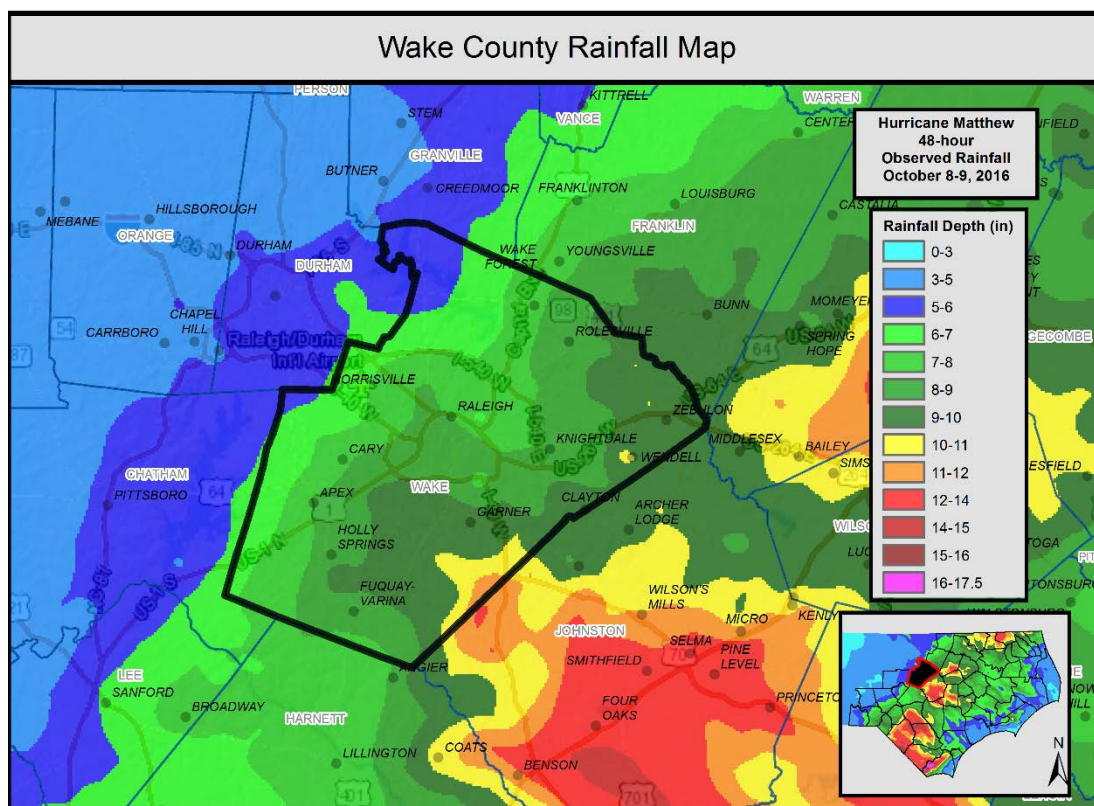


Figure 9. 48-hour Observed Rainfall Depth (October 8-9, 2016)

#### Riverine Flooding Summary

In general, riverine flooding during and after Hurricane Matthew was not a county-wide event that impacted large areas of the Wake County population. Several roads in the area were impassable during the storm as a result of localized flooding but road closures were not widespread or long lasting. The USGS documented stream gage data in the report "Preliminary Peak Stage and Streamflow Data at Selected Streamgaging Stations in North Carolina and South Carolina for Flooding Following Hurricane Matthew, October 2016". Select stream gage data from the USGS report for Wake County is summarized below;



USGS Gage	County	River Name and Location	Drainage Area (sq. mi)	Peak Matthew Elevation (ft.)	Previous Record (ft.)
0208706575	Wake	Beaverdam Creek at Dam near Creedmore, NC	52.5	258.93	259.89
02087182	Wake	Falls Lake above Dam near Falls, NC	771.0	258.94	264.34
0208726005	Wake	Crabtree Creek at Ebenezer Church Road, NC	76.0	19.96	22.40
02087275	Wake	Crabtree Creek at Hwy 70 at Raleigh, NC	97.6	22.7	27.69
0208731190	Wake	Crabtree Creek at Anderson Drive, Raleigh, NC	110.0	21.3	21.22
02087322	Wake	Crabtree Creek at Old Wake Forest Road, Raleigh, NC	119.0	20.12	19.93
02087324	Wake	Crabtree Creek at US 1, Raleigh, NC	121.0	17.49	18.23
0208732534	Wake	Pigeon house Creek at Cameron Village, Raleigh NC	0.3	4.91	8.65
0208732885	Wake	Marsh Creek near New Hope, NC	6.8	11.68	13.33
0208735012	Wake	Rocky Branch below Pullen Drive, Raleigh NC	1.2	9.07	9.23
02087359	Wake	Walnut Creek at Sunnybrook Drive, Raleigh, NC	29.8	16.1	17.03
0209782609	Wake	White Oak Creek at mouth near Green Level, NC	11.9	10.94	13.50
02087580	Wake	Swift Creek near Apex, NC	21.0	12.22	13.86
0208758850	Wake	Swift Creek near McCullars Crossroads, NC	35.8	14.31	14.15
02088383	Wake	Little River near Zebulon, NC	55.0	5.47	3.62

**Table 3: Wake County USGA Stream Gage Data**

The USGS gage data generally validates the reported flooding experienced in Wake County from Hurricane Matthew. Flooding occurred at various locations throughout the County but generally was heavier from Raleigh eastward matching the rainfall pattern. According to County personnel, approximately 200 roads were overtopped and flooded for some period of time resulting in multiple water rescues. Post storm inspections by County personnel did not identify significant residential structural damage. A few houses were damaged by falling trees as is typical in storms like Hurricane Matthew. Approximately 19 businesses were flooded on Durham Street near Tryon Road in an area that has experienced flooding in the past due to problems with a private storm drainage system.

### Coastal Flooding Summary

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

### Housing Impacts

According to FEMA Individual Assistance claims as of March 20, 2017, there were 916 registrations for Individual Assistance in Wake County as a result of Hurricane Matthew. NFIP claims totaled 122 and zero SBA Home loan applications totaled 109. Additional claims from Hurricane Matthew may still be pending, so these totals may not reflect the final claims data from the event.

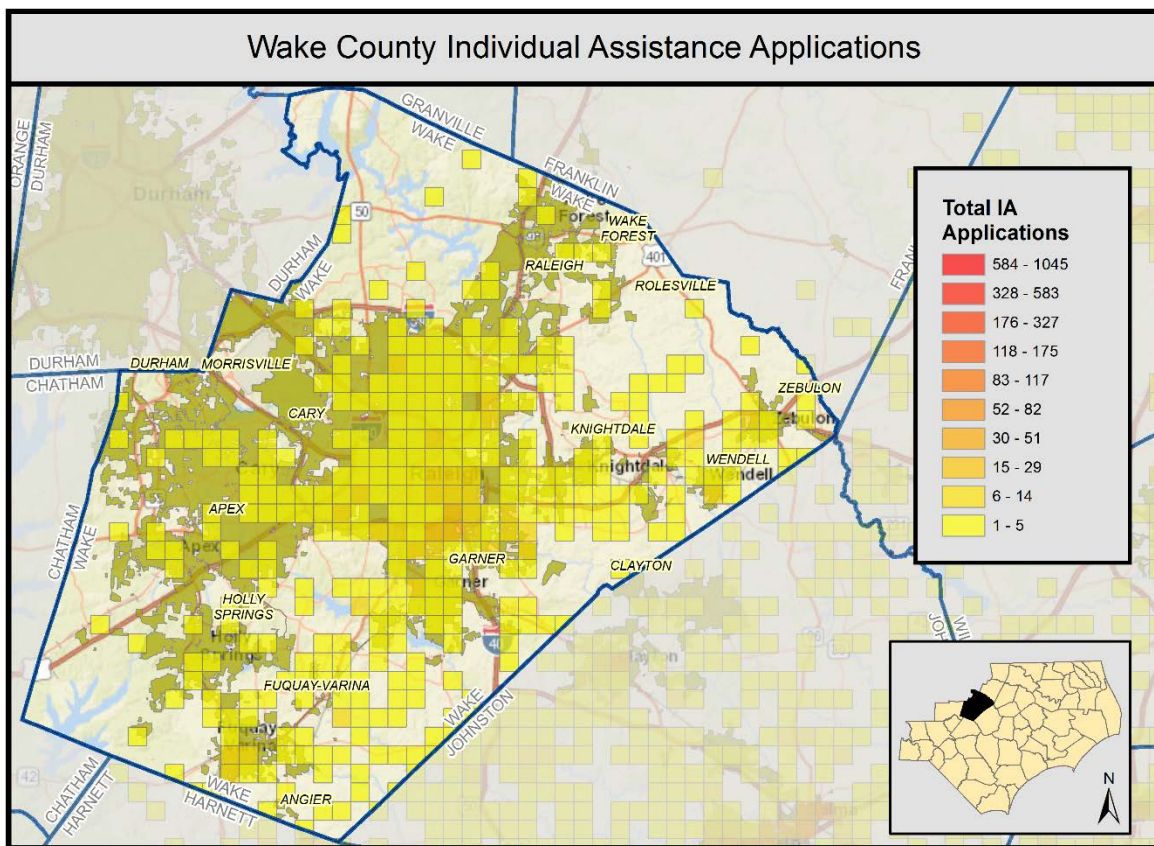
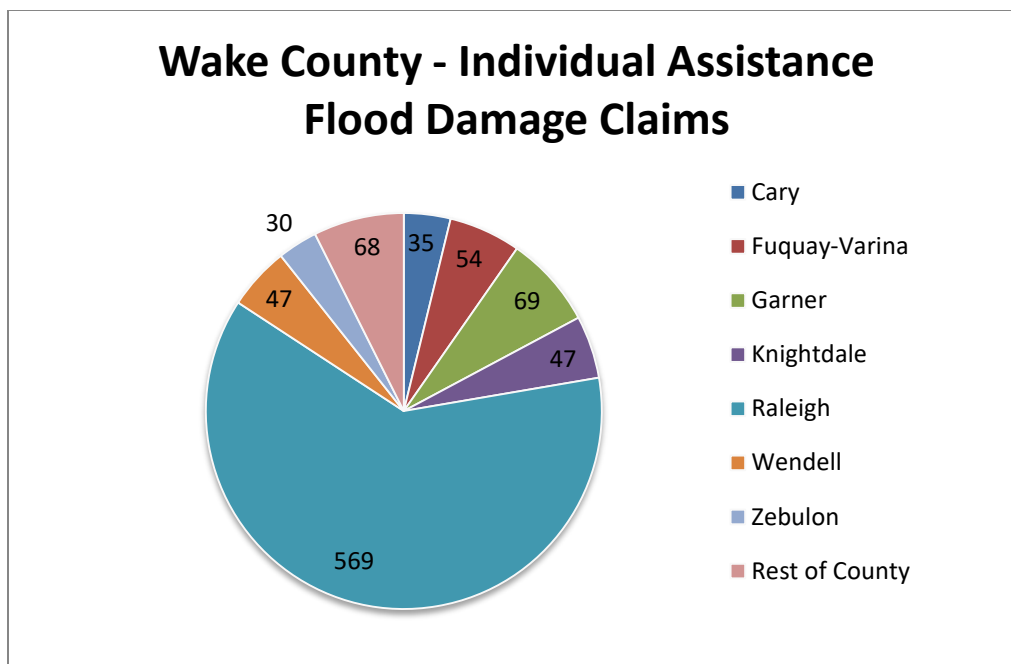


Figure 10. Wake County IA Applications by Area

Based on meetings with County personnel and representatives from several of the towns in Wake County, impacts to housing from Hurricane Matthew were sporadic and considered minimal. Of the 916 IA claims, 203 received assistance. Of the 122 NFIP claims, 97 received payouts. It is not known how many of the NFIP claims were business related.

- **Homes damaged from Hurricane Matthew:** In Wake County, a majority of the NFIP claims were located in the central and southern parts of the County in areas well known for flooding in past storm events. Concentrations of claims are found on Crabtree Creek near Old Wake Forest Road and on Swift Creek just south of US 1. Sporadic claims are found along Walnut Creek, Marsh Creek, and Little River.



**Figure 11: Number of IA Flood Damage Claims by Area**

- **Homes At-Risk of Future Flooding:** Concentrations of structures in the SFHA are found in the following locations:
  - Along White Oak Creek in the Town of Cary.
  - Along Panther Creek in the Town of Cary.
  - Along Beaver Creek in Apex.
  - Along Crabtree and Hatchet Grove Tributary in Morrisville.
  - Swift Creek Tributary No. 7 in Cary.
  - Walnut Creek in Cary.
  - Straight Branch and Lens Branch in Cary.
  - Walnut Creek in Raleigh.
  - Crabtree Creek in Raleigh.
  - Pigeon house Branch in Raleigh.
  - New Hope Creek Tributary to Mash Branch and Marsh Branch in Raleigh.
  - Big Branch in Raleigh.
  - Beaverdam Creek near the Neuse River in Raleigh.
  - Reedy Branch in Town of Garner.

Based on an analysis of claims data there are approximately 32 miles of unstudied streams in Wake County that may have experienced flooding but are not mapped as SFHA on the FEMA FIRM maps.

### **Economics / Business / Jobs**

If there were impacts to the economy in Wake County from Hurricane Matthew they were very minor or short lived. As of March 20, 2017, there were 132 business applications for loans from the SBA. Impacts to the economy/businesses/jobs that were identified by local officials from the event are summarized below;

- **Downtown Areas Impacted:** Local officials did not report any damage to downtown areas in any of the municipalities in Wake County.
- **Employment:** Based a review of available data it does not appear that Hurricane Matthew caused widespread or long term impacts to employment in Wake County.

## Infrastructure

According to Public Assistance claims data, which are often closely tied to infrastructure, as of March 17, 2017 there was \$7,363,741 of approved claims in Wake as a result of Hurricane Matthew. Additional claims from Hurricane Matthew may still be pending, so this number may not reflect the final claims data from the event.

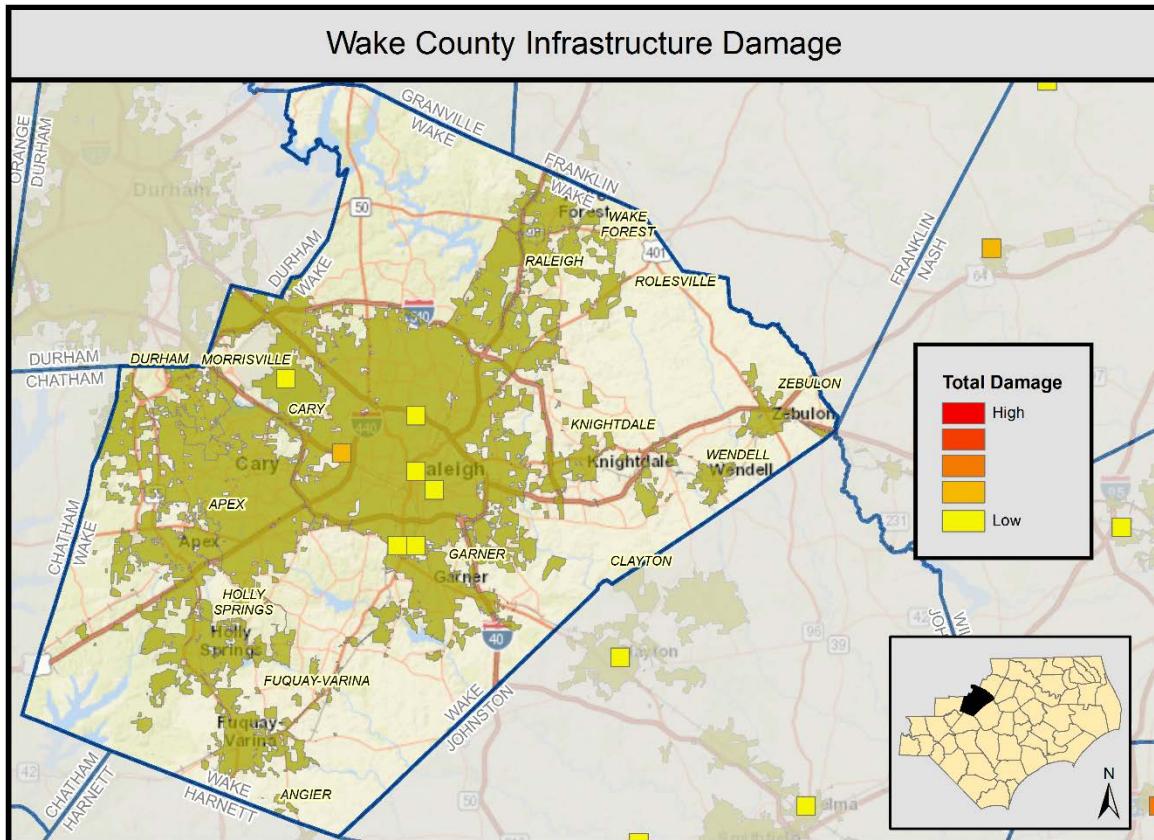


Figure 12. Wake County Infrastructure Damage

There were several types of infrastructure damaged in Wake County. The bullets below summarize some of the major impacts identified by local officials.

- **Dam Issues:** Wake County has 129 high hazard dams, 58 intermediate hazard, and 215 low hazard dams. Five of the high hazard dams experienced some level of damage in Hurricane Matthew. The historic Little River dam in Zebulon was damaged. This is a non-classified dam that also experienced damage during Hurricanes Fran and Floyd when it was a water supply resource for the Town of Zebulon.
- **Road/Bridge Flooding:** Numerous Wake county roads and bridges experienced flooding during Hurricane Matthew. Many of these locations have a history of flooding and are often affected by heavy rainfall events. For example:



- NCDOT reported several roads closed due to flooding. NC-42, Stewart Road, Edgemont Road, Roberson Road, and NC-47 were impassable during the peak of the storm. NC-42 and NC-97 were closed for several weeks for repairs.
- The City of Raleigh and other municipalities own and maintain many roads that experienced flooding and were impassable during the storm. County officials reported over 200 roadways were impassable at some point during the storm.

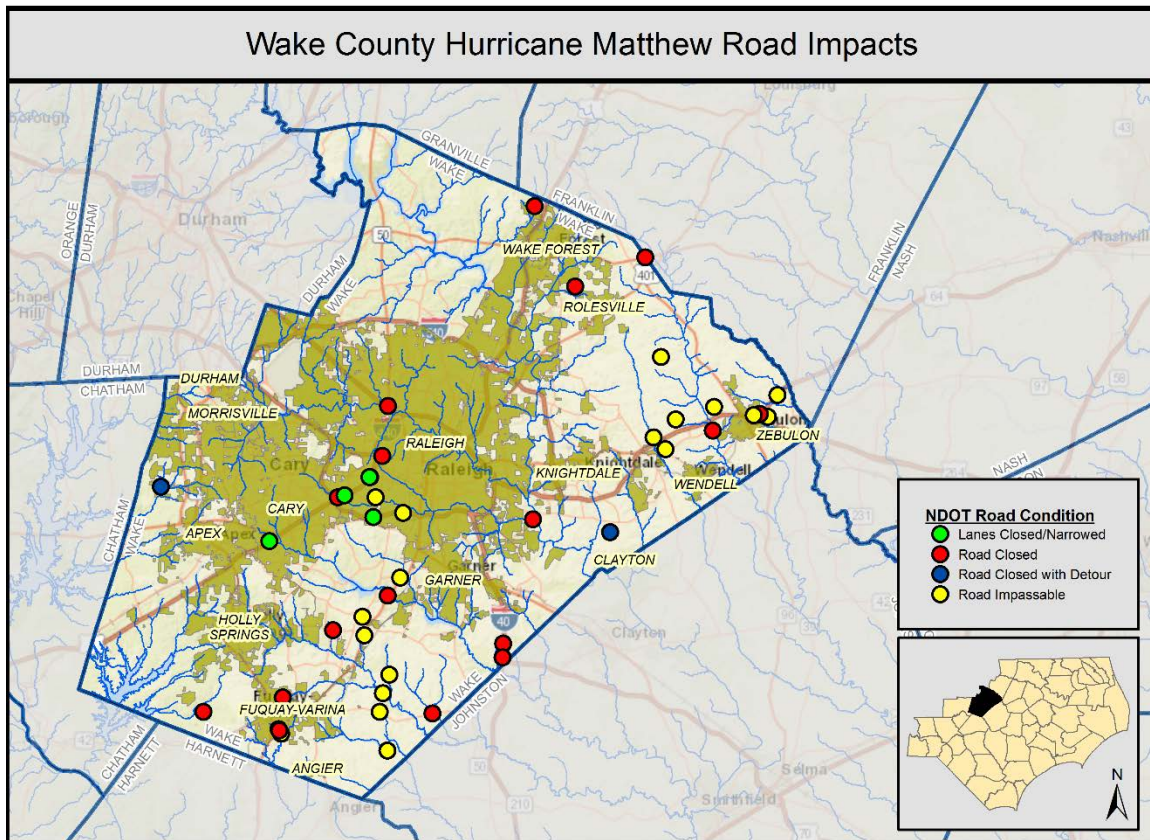


Figure 13. Impacted NCDOT Structures in Wake County

- **Water/Wastewater Infrastructure:** Water and wastewater infrastructure is critical to maintaining the health and well-being of the public in the wake of a storm event. Often, this infrastructure is threatened due to the necessity of placing it near water bodies, which naturally causes the risk to flooding. The City of Raleigh reported the following impacts.
  - City of Raleigh Maxwell Drive sewer lift station caught fire and is currently in the process of being replaced.
  - City of Raleigh Crabtree lift station capacity was affected due to stormwater infiltration during Hurricane Matthew.
- **Public Facilities:** The following public facilities in Wake County were impacted by Hurricane Matthew.
  - City of Raleigh Parks; Docks at Lake Wheeler and Lake Johnston were damaged by high water caused by Hurricane Matthew.

- City of Raleigh Greenway; Hurricane Matthew flooding severely damaged Bridge 106 on the Crabtree Creek Greenway between Atlantic Avenue and Capital Boulevard. Ecosystems / Environment.

### **Ecosystems / Environment**

Overall, environmental impacts in Wake County as a result of Hurricane Matthew were minimal. No damage information or specific issues were raised in the meetings with government officials related to this pillar.



An aerial photograph showing a residential neighborhood severely affected by flooding. The houses, which are mostly two-story structures with light-colored siding and dark roofs, are partially submerged in muddy, brown water. The surrounding landscape, including lawns and trees, is also inundated. The water appears to be quite deep, reaching up to the second floors of some houses. The overall scene conveys a sense of significant environmental impact and displacement.

## 4. Strategies for Resilient Redevelopment

## 4. Strategies for Resilient Redevelopment

This section provides details about the resilience and revitalization strategies and actions identified in Wake 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	1
Economic Development	0
Infrastructure	10
Environment	2
<b>Grand Total</b>	<b>13</b>

**Table 4. Wake County Summary of Projects by Pillar**

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

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Crabtree Lift Station Rehabilitation	High	1
Infrastructure	Wake County School System Unmet Needs	High	2
Infrastructure	Upgrade Vulnerable Roads and Bridges	Medium	3
Infrastructure	Zebulon Dam Repair	Medium	4
Infrastructure	Maxwell Drive Sewer Pump Station Generator Replacement	Medium	5
Infrastructure	Assess and Mitigate Areas of Recurring Flooding	Medium	6
Infrastructure	Install/Improve Flood Warning System	Medium	7
Housing	Acquisition or Elevation of Flood Prone Properties	Medium	8
Infrastructure	Crabtree Creek Greenway Bridge Reconstruction	Medium	9
Infrastructure	Lake Johnson and Lake Wheeler Public Dock Repairs	Medium	10
Infrastructure	Fuquay Varina Mineral Spring Park Streambank Restoration	Low	11
Environment	Unmapped Stream Studies	Low	12
Environment	Debris Removal from Streams and Watercourses	Low	13

**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

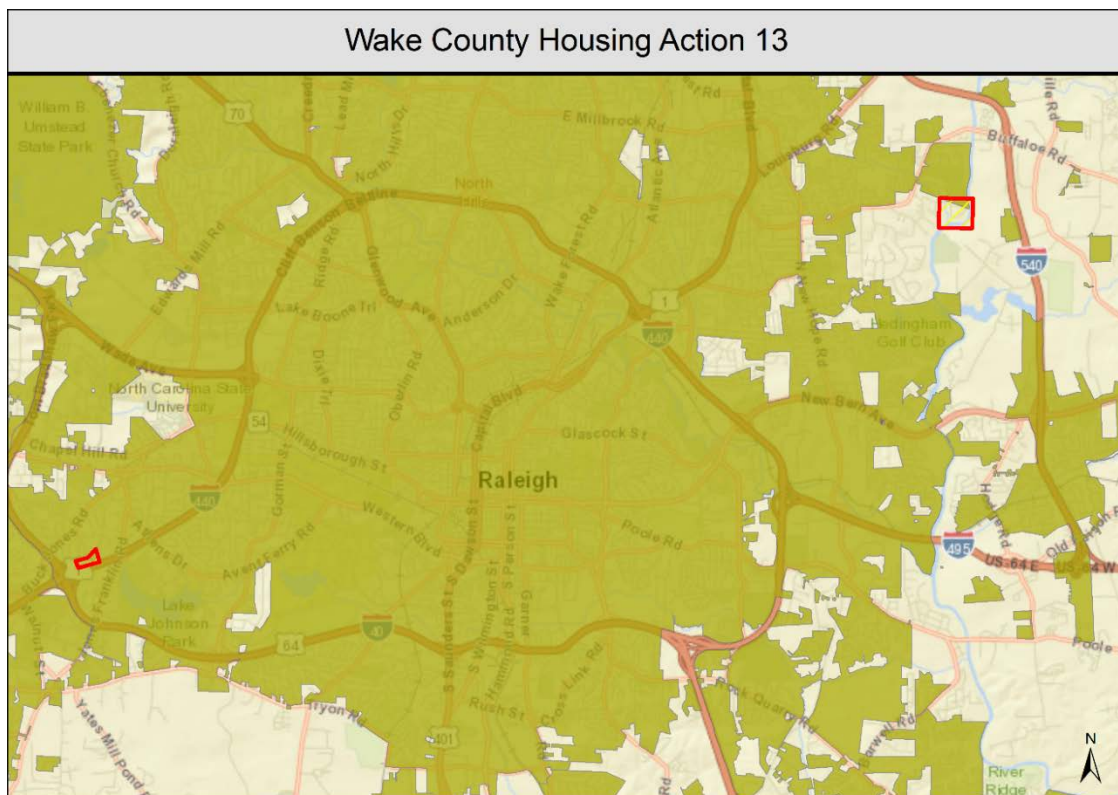
### Medium Priority Housing Strategies

Pillar	Action Name	Priority	Overall Ranking
Housing	Acquisition or Elevation of Floodprone Properties	Medium	8

**Table 6. Wake Medium Priority Housing Summary**

Although Wake County as a whole suffered only minor housing impacts from Hurricane Matthew, other storms have impacted housing, especially in areas of known flood hazards. To increase resiliency for future storm events the planning team and County officials developed the following strategy.

- **Acquisition or Elevation of Flood-Prone Properties:** Use voluntary acquisition or elevation of flood-prone properties to remove or reduce risk in known high risk areas. Flood prone properties exist in several areas of Wake County. Two prominent locations of repetitive flooding are the Brook Hill Townhouse Apartments along Walnut Creek and the Riverbend Subdivision along the Neuse River.



**Figure 14. Housing Strategy – Acquisition or Elevation of Flood Prone Properties**



## Acquisition or Elevation of Flood-Prone Properties

**County:** Wake

**Priority Grouping:** Medium Priority

**Priority Ranking:** 8

**Project Timeframe:** 3-5 years

**Location:** Wake County

**Project Summary:** Use voluntary acquisition or elevation of flood-prone properties to remove or reduce risk in known high risk areas. These areas include the Brook Hill Townhouse Apartments along Walnut Creek and the Riverbend Subdivision along the Neuse River. Other areas of Repetitive Loss will be considered as well.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Although not flooded during Hurricane Matthew these locations have been flooded repeatedly. The Riverbend Plantation Subdivision can be impacted by ACOE releases from Falls Lake Dam.	N/A
Consistent with existing plans (describe points of intersection/departure)	This strategy is consistent with the Wake County Multi-Jurisdictional Hazard Mitigation Plan	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Due to the limited nature of these projects no impacts to the County's economy are expected.	Agree
For how long will this solution be effective?	Between 31 and 50 years	Agree
How effective is the risk reduction?	100-200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	0	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	The potential to restore and protect floodplain areas could be a benefit to the natural 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?	\$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?	Regional	Agree

# Infrastructure Strategies

## High Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Crabtree Lift Station Rehabilitation	High	1
Infrastructure	Wake County School System Unmet Needs	High	2

Table 7. Wake High Priority Infrastructure Summary

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

- **Crabtree Lift Station Rehabilitation:** The City is currently rehabilitating this pump station. During Hurricane Matthew, this lift station overflowed in part due to heavy rainfall and flooding of Crabtree Creek. The City estimated lift station capacity was reduced by 20% due to Hurricane Matthew.

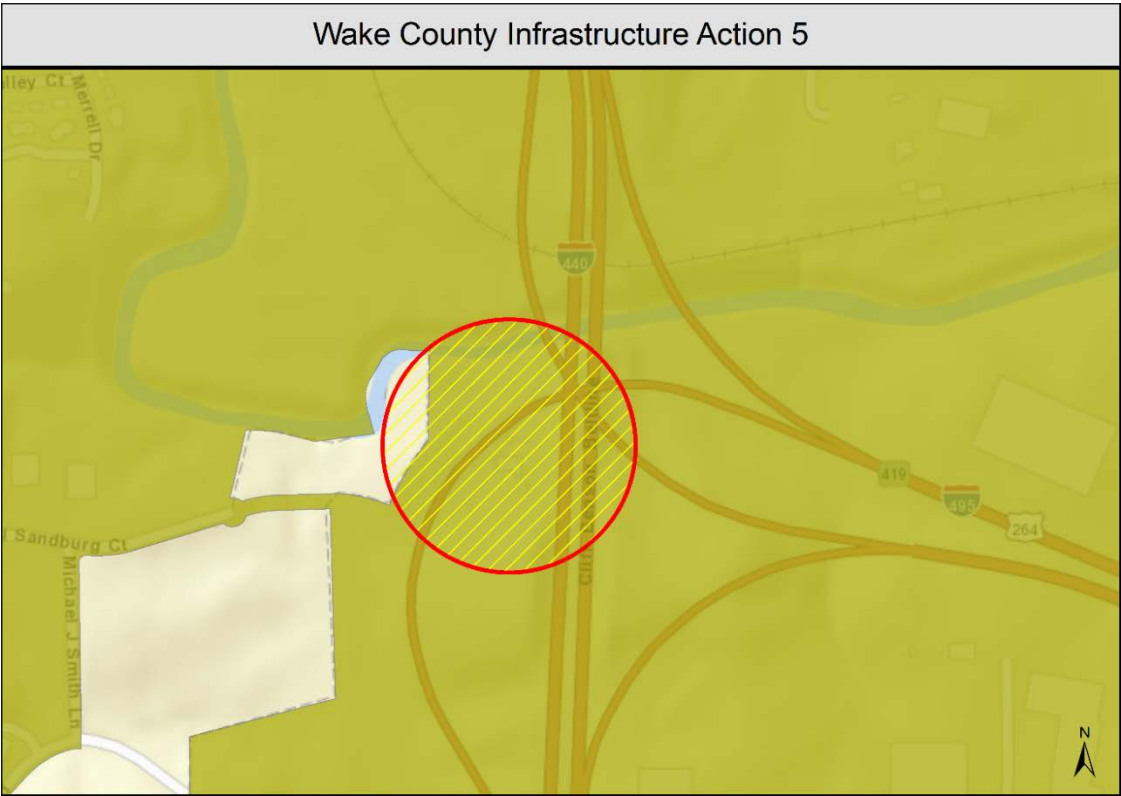


Figure 15. Infrastructure Strategy – Crabtree Lift Station Rehabilitation

## Crabtree Lift Station Rehabilitation

**County:** Wake

**Priority Grouping:** High Priority

**Priority Ranking:** 1

**Project Timeframe:** The lift station rehabilitation is currently in progress.

**Location:** City of Raleigh

**Project Summary:** City of Raleigh Crabtree Lift Station Rehabilitation. The City is currently rehabilitating this pump station. During Hurricane Matthew this lift station overflowed in part due to heavy rainfall and flooding of Crabtree Creek. The City estimated lift station capacity was reduced by 20% due to Hurricane Matthew.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Hurricane Matthew rainfall was at least partially responsible for sewer overflow from this pump station. Upgrading this pump station will increase its capacity and ability to prevent overflows in future flood events.	N/A
Consistent with existing plans (describe points of intersection/departure)	This project is part of the City's Capital Improvement Projects	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.	properly functioning sewer system is certainly a benefit to the local economy	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	100-200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$501K - \$1M	Agree
What is the level of public support for this project?	Medium	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Local	Agree

- **Wake County School System Un-Met Needs:** The Wake County Public School System has unmet needs for cost of debris removal at schools across the county and for repairs at the Vernon Malone College and Career Academy which experienced significant flood damage during Hurricane Matthew.

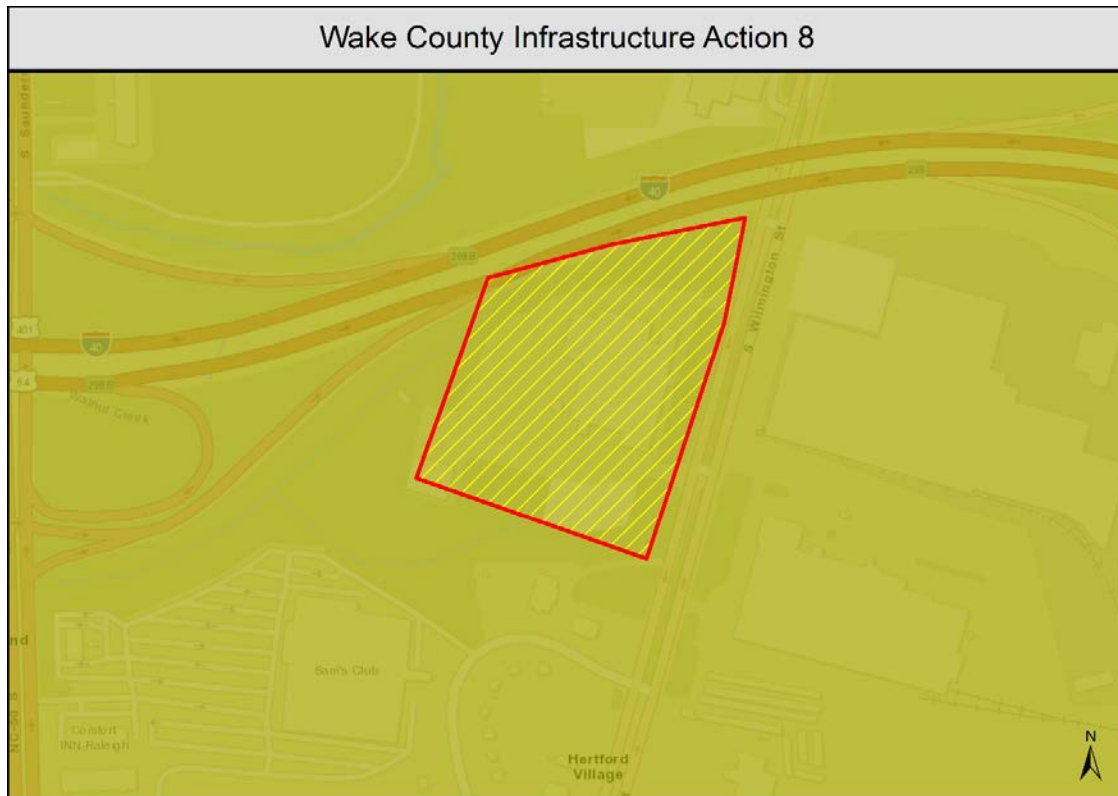


Figure 16. Infrastructure Strategy – Wake County School System Un-met Needs



## Wake County School System Un-Met Needs

**County:** Wake

**Priority Grouping:** High Priority

**Priority Ranking:** 2

**Project Timeframe:** Immediately

**Location:** Wake County

**Project Summary:** Wake County Public School System has unmet needs for cost of debris removal at schools across the county and for repairs at the Vernon Malone College and Career Academy which experienced significant flood damage during Hurricane Matthew and again during the rainfall event in late April 2017. The school is not located in the floodplain per current maps.

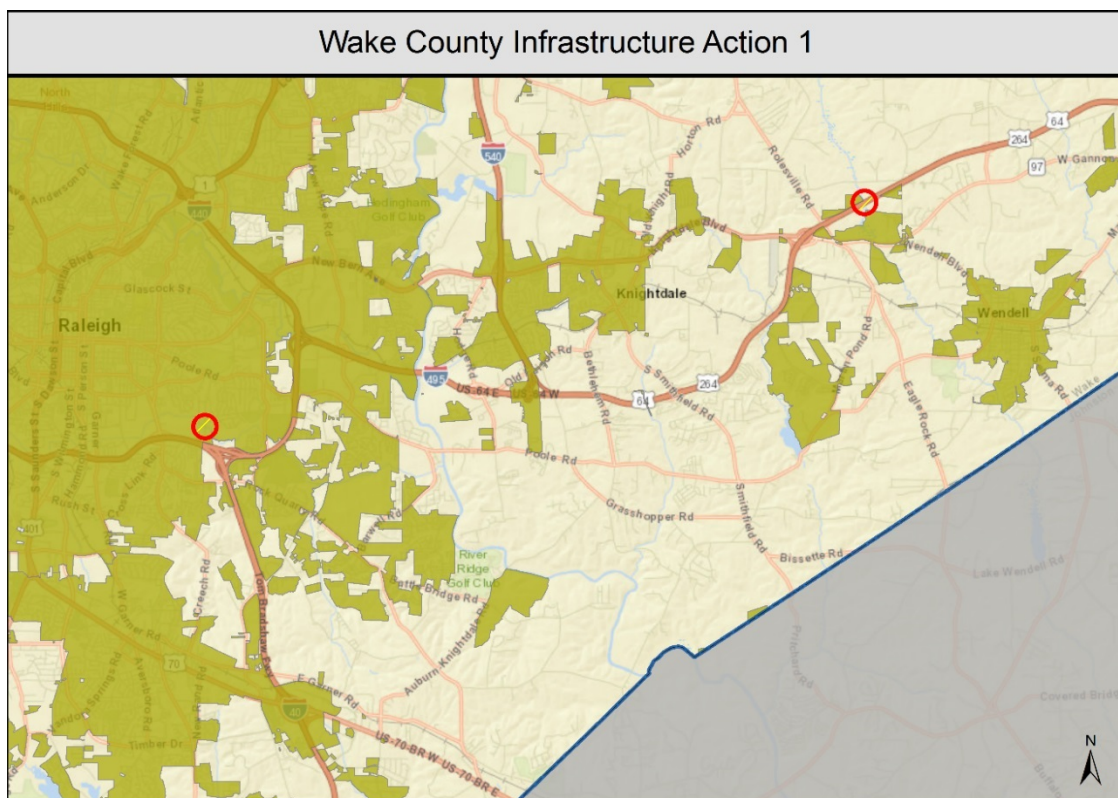
Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The School System requested \$4.5 million for debris removal and repair of the Vernon Malone College and Career Academy. This need is currently un-met.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Long term economic benefits of providing quality education to school children.	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?	No environmental impacts are expected.	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

## Medium Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Upgrade Vulnerable Roads and Bridges	Medium	3
Infrastructure	Zebulon Dam Repair	Medium	4
Infrastructure	Maxwell Drive Sewer Pump Station Generator Replacement	Medium	5
Infrastructure	Assess and Mitigate Areas of Recurring Flooding	Medium	6
Infrastructure	Install/Improve Flood Warning System	Medium	7
Infrastructure	Crabtree Creek Greenway Bridge Reconstruction	Medium	9
Infrastructure	Lake Johnson and Lake Wheeler Public Dock Repairs	Medium	10

**Table 8. Wake Medium Priority Infrastructure Summary**

- Upgrade Vulnerable Roads and Bridges:** Implement roadway and bridge improvements to alleviate flooding. For Rose Lane (City of Raleigh owned and maintained), elevating the bridge will ensure emergency access to residents south of Walnut Creek. Hwy 64/264 is a major artery (NCDOT owned and maintained) into and out of Raleigh that has been flooded by Buffalo Creek in past events, closing this major highway into and out of Raleigh. Another potential area for consideration (not on map below) includes Swift Creek at Old Stage Rd.



**Figure 17. Infrastructure Strategy – Upgrade Vulnerable Roads and Bridges**

## Upgrade Vulnerable Roads and Bridges

**County:** Wake

**Priority Ranking:** 3

**Priority Grouping:** Medium Priority

**Project Timeframe:** 3-5 years

**Location:** Rose Lane, Hwy 64/264, Old Stage and Fannie Brown at Middle Creek

**Project Summary:** Roadway and bridge improvements to alleviate flooding. For Rose Lane (City of Raleigh owned and maintained), elevating the bridge will ensure emergency access to residents south of Walnut Creek. Hwy 64/264 is a major artery (NCDOT owned and maintained) into and out of Raleigh that has been flooded by Buffalo Creek in past events, closing this major highway into and out of Raleigh. Old Stage and Fannie Brown at Middle Creek. Another potential area for consideration includes Swift Creek at Old Stage Rd.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Rose Lane was flooded during Hurricane Matthew and the location of a swift water rescue. This bridge is the only access to the Rosalynn Place and Maplewood Forest neighborhoods located on the south side of Walnut Creek. Elevating the bridge and roadway over Walnut Creek will ensure emergency access to the 54 homes during future flooding events.  Additionally, 264/64 and Old Stage at Middle Creek flooded during Matthew and will flood again if not addressed.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Roads not flooding helps keep all businesses up and running thus a benefit to the economy.	Agree
For how long will this solution be effective?	Between 31 and 50 years	Agree
How effective is the risk reduction?	50-100 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	0	Agree
Is coordination with other communities/counties needed to complete this project?	Yes	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	Less than 25%	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?	No impacts to the environment are expected.	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?	Medium	Agree
What is the technical feasibility of this project?	Between 51 and 75%	Agree
Who will administer this project?	State	Agree

- **Zebulon Dam Repair:** The historic Zebulon Dam was damaged during Hurricane Matthew which coincided with flood damage to NC Hwy 97 just south of the dam. The dam was partially breached. Repair of the dam will restore the aesthetic qualities of Little River Park and provide a water source for rural volunteer fire departments.

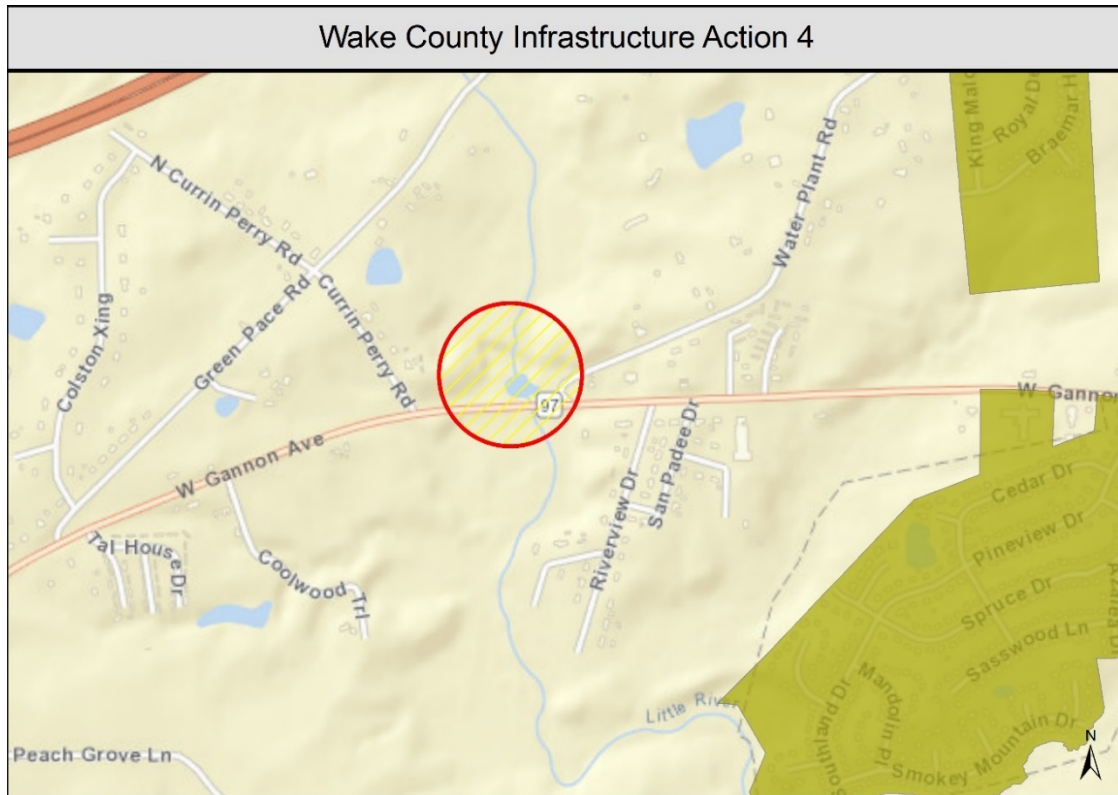


Figure 18. Infrastructure Strategy – Zebulon Dam Repair



# Zebulon Dam Repair

**County:** Wake

**Priority Grouping:** Medium Priority

**Priority Ranking:** 4

**Project Timeframe:** 2-3 years

**Location:** Little River Park, Zebulon NC

**Project Summary:** Zebulon Dam Repair. The historic Zebulon Dam was damaged during Hurricane Matthew which coincided with flood damage to NC Hwy 97 just south of the dam. The dam was partially breached.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The dam was damaged during Hurricane Matthew. The local community supports the reconstruction of the dam but lack of funding has preventing authorities from initiating design permitting and construction.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	The dam impounds water which enhances the aesthetic qualities of the Little River Park. The impoundment may also serve as a fire fighting water source for rural volunteer fire departments.	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?	Less than 25%	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree
What impacts to the environment of the county will result from this project?	This project will restore the impoundment behind the dam.	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$251K - \$500K	Agree
What is the level of public support for this project?	Medium	Agree
What is the technical feasibility of this project?	Between 51 and 75%	Agree
Who will administer this project?	Local	Agree

- **Maxwell Drive Sewer Pump Station Generator Replacement:** During Hurricane Matthew, the sewer pump station generator caught fire. The generator has been replaced and the City of Raleigh seeks financial assistance to offset replacement costs.

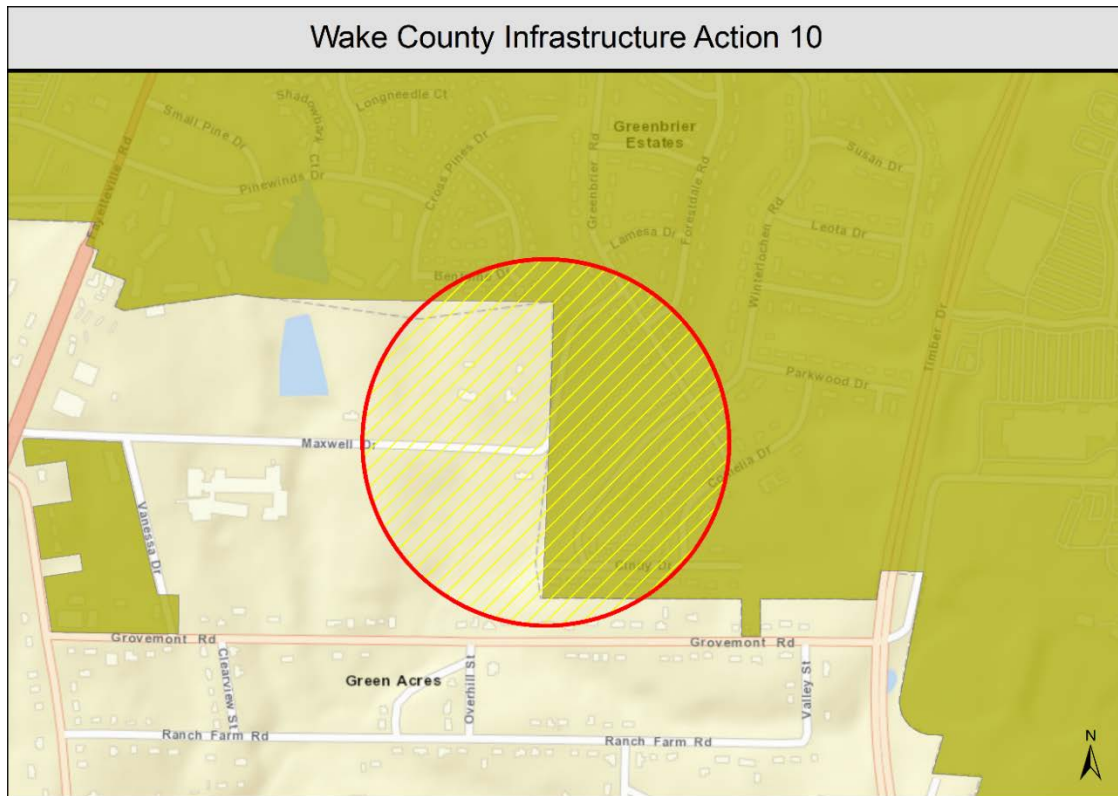


Figure 19. Infrastructure Strategy – Maxwell Drive Sewer Pump Station Generator Replacement

# Maxwell Drive Sewer Pump Station Generator Replacement

**County:** Wake

**Priority Grouping:** Medium Priority

**Priority Ranking:** 5

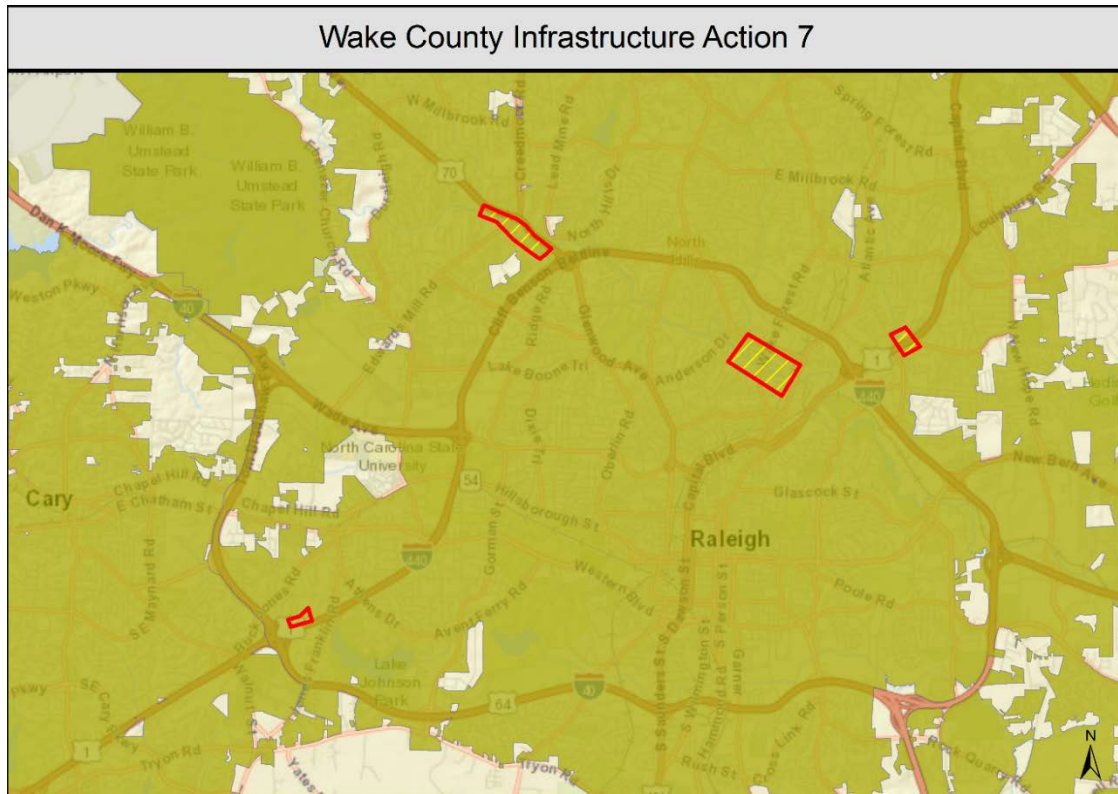
**Project Timeframe:** Immediate

**Location:** Maxwell Drive, Raleigh NC

**Project Summary:** During Hurricane Matthew the sewer pump station generator caught fire. The generator has been replaced and the City of Raleigh seeks financial assistance to offset replacement costs.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This generator caught fire during Hurricane Matthew resulting in power loss at the pump station.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	None	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?	No environmental impacts will result from this project.	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$51K - \$100K	Agree
What is the level of public support for this project?	Medium	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Local	Agree

- **Assess and mitigate areas of recurring flooding:** Assess possible solutions to enhance existing strategies to mitigate the effects of recurring flooding at the following locations.
  - Crabtree Valley Mall Area
  - Old wake Forest Road at Crabtree Creek
  - Capital Boulevard at Marsh Creek
  - Brook Hill Townhouse Apartments at Walnut Creek



**Figure 20. Infrastructure Strategy – Assess and mitigate areas of recurring flooding**



## Assess and mitigate areas of recurring flooding

**County:** Wake

**Priority Grouping:** Medium Priority

**Priority Ranking:** 6

**Project Timeframe:** 2-5 years

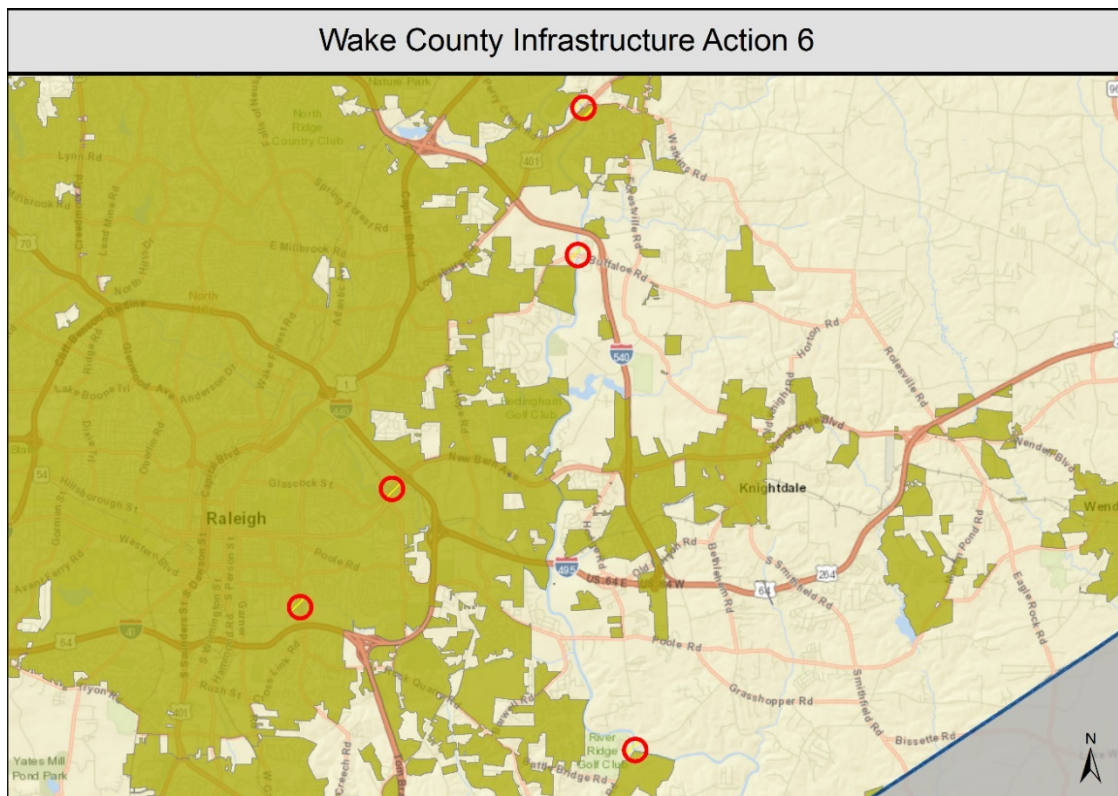
**Location:** Wake County

**Project Summary:** Assess possible solutions to enhance existing strategies to mitigate the effects of recurring flooding at

- Crabtree Valley Mall Area
- Old wake Forest Road at Crabtree Creek
- Capital Boulevard at Marsh Creek
- Brook Hill Townhouse Apartments at Walnut Creek

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	These areas experienced flooding during Hurricane Matthew and have been recurring flooding problems in Wake County. Finding solutions to these problems will enhance resiliency in the County.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Recurring impacts to businesses could impact the economy but relieve to the size of the Wake County economy impacts would be small.	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	0	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	Less than 25%	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree
What impacts to the environment of the county will result from this project?	Environmental impacts are expected to be minimal.	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Unknown	Agree
Who will administer this project?	County	Agree

- **Install/Improve Flood Warning System:** Install 5 stream gages; 3 along the Neuse River, 1 on Walnut Creek and 1 on Crabtree Creek as part of FIMAN network. Existing USGS gage stations in Wake County that are not already in FIMAN should be considered for addition to the network. Additional areas for potential gage placement (not on map below) include Swift Creek at Highway 401 and Middle Creek at Highway 401 south of Wake Tech.



**Figure 21. Infrastructure Strategy – Install/Improve Flood Warning System**

## Install/Improve Flood Warning System

**County:** Wake

**Priority Grouping:** Medium Priority

**Priority Ranking:** 7

**Project Timeframe:** 2-3 years

**Location:** Wake County

**Project Summary:** Install 5 stream gages; 3 along the Neuse River, 1 on Walnut Creek, 1 on Swift Creek, 1 on Middle Creek and 1 on Crabtree Creek as part of FIMAN network. Existing USGS gage stations that are not already in FIMAN should be considered for addition to the network. Additional areas for potential gage placement include Swift Creek at Highway 401 and Middle Creek at Highway 401 south of Wake Tech.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Additional gages will enhance the coverage of the FIMAN network. FIMAN can provide early warning of future flooding to a larger population.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Better flood warning capabilities is a benefit to the County's economy.	Agree
For how long will this solution be effective?	Between 31 and 50 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	0	Agree
Is coordination with other communities/counties needed to complete this project?	Yes	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	No Impact	Agree
What impacts to the environment of the county will result from this project?	No environmental impacts will result from this project.	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$251K - \$500K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	State	Agree

- **Crabtree Creek Greenway Bridge Reconstruction:** Reconstruct the Crabtree Creek Greenway bridge near Capital Boulevard. This elevated portion of the greenway was damaged by Crabtree Creek flooding during Hurricane Matthew.

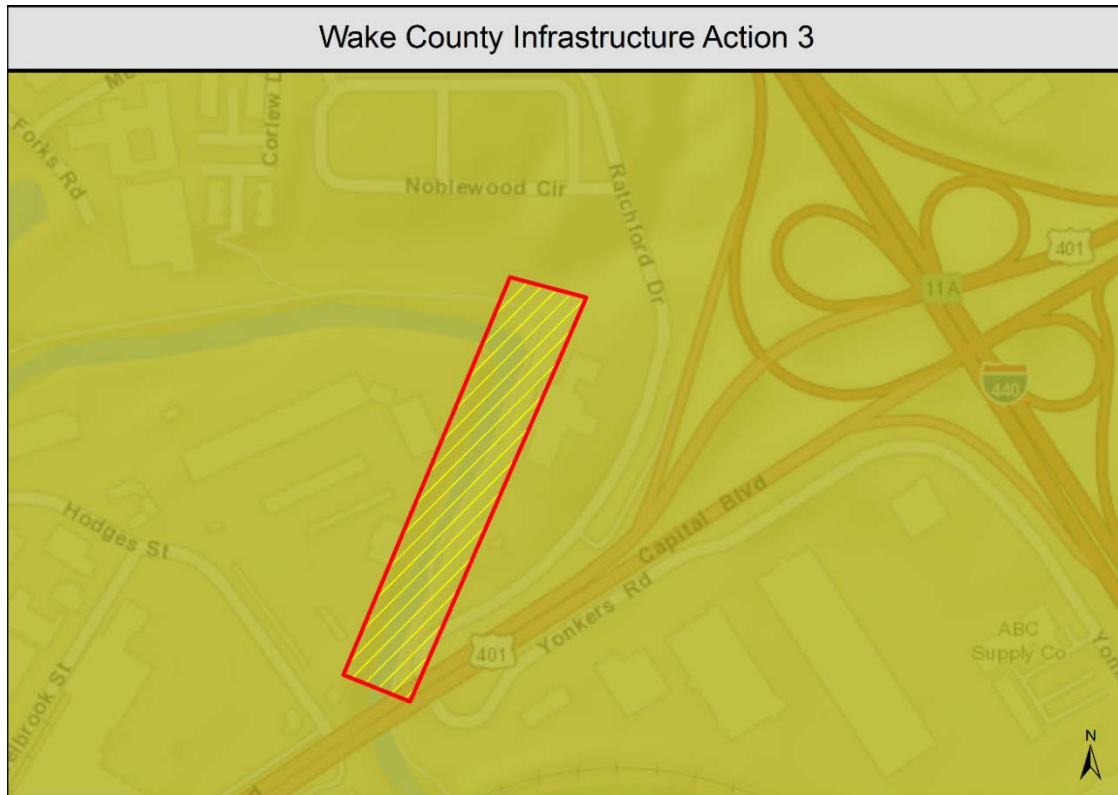


Figure 22. Infrastructure Strategy – Crabtree Creek Greenway Bridge Reconstruction



## Crabtree Creek Greenway Bridge Reconstruction

**County:** Wake

**Priority Grouping:** Medium Priority

**Priority Ranking:** 9

**Project Timeframe:** 0-1 year

**Location:** Crabtree Creek Greenway near Capital Boulevard, Raleigh NC

**Project Summary:** Reconstruct the Crabtree Creek Greenway bridge near Capital Boulevard. This elevated portion of the greenway was damaged by Crabtree Creek flooding during Hurricane Matthew and again during April 2017 flooding.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Damage was caused by flooding from Hurricane Matthew. It is not clear if this project will receive funding from other sources.	N/A
Consistent with existing plans (describe points of intersection/departure)	Yes the Crabtree Creek Greenway is a major part of the City's Greenway Trail System	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.	Fully functioning greenway systems are a benefit to 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?	No environmental impacts are expected.	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$251K - \$500K	Agree
What is the level of public support for this project?	Medium	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Local	Agree

- **Lake Johnston and Lake Wheeler Public Dock Repairs:** Repair public access docks at these two parks that were damaged by high water levels during Hurricane Matthew.

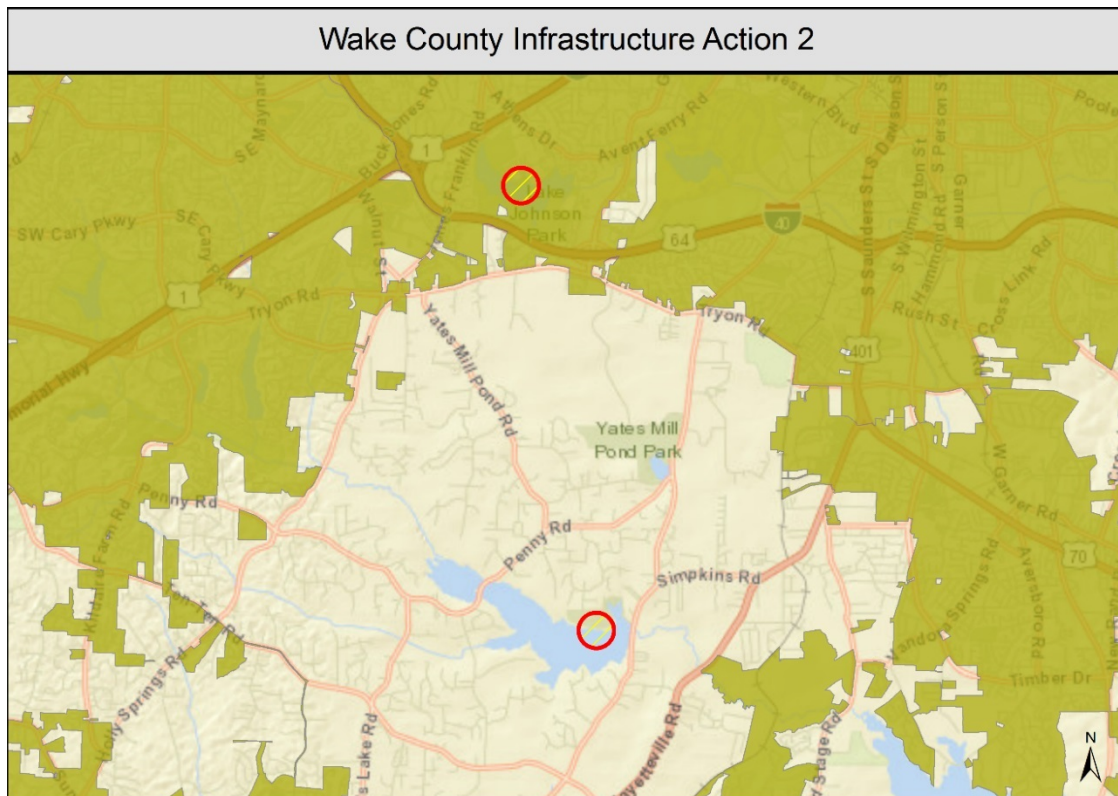


Figure 23. Infrastructure Strategy – Lake Johnston and Lake Wheeler Public Dock Repairs

## Lake Johnston and Lake Wheeler Public Dock Repairs

**County:** Wake

**Priority Grouping:** Medium Priority

**Priority Ranking:** 10

**Project Timeframe:** 1-2 years

**Location:** Lake Johnston and lake Wheeler Parks

**Project Summary:** Repair public access docks at these two parks that were damaged by high water levels during Hurricane Matthew.

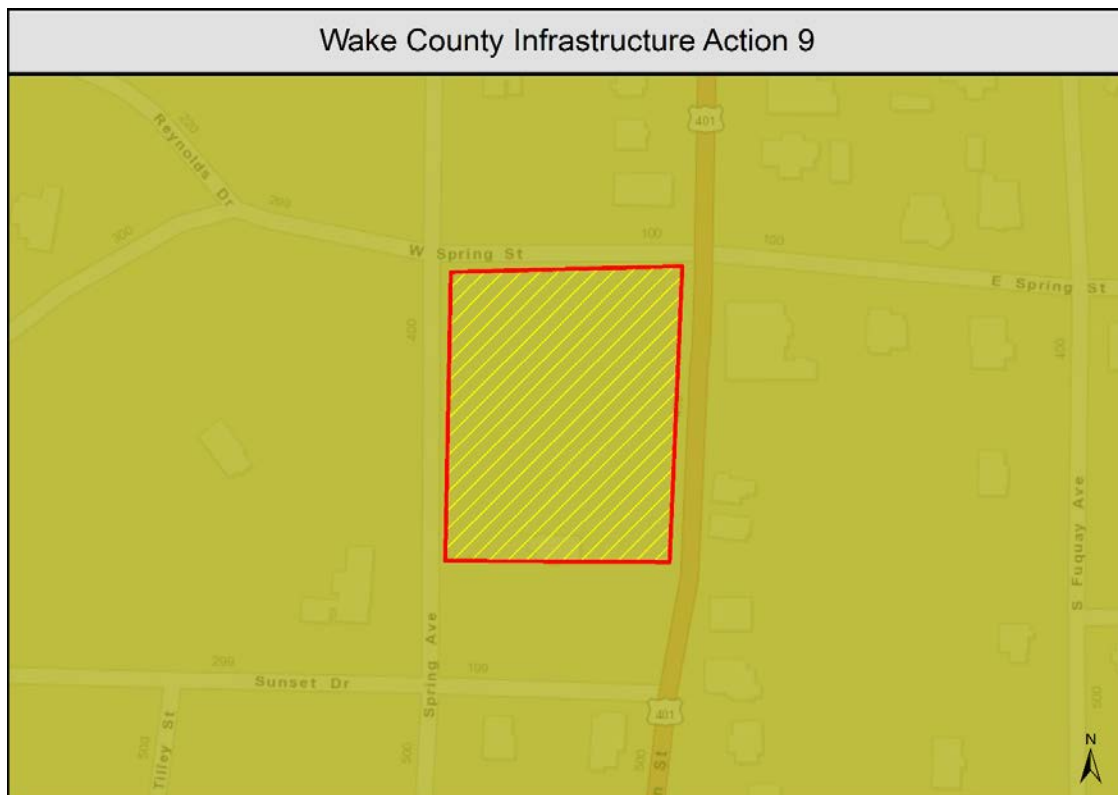
Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	High water caused by Hurricane Matthew rainfall damaged public access docks. The City has repaired the docks and seeks funding assistance for repair costs.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	No adverse impacts to County's 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?	No environmental impacts are expected from this project.	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$51K - \$100K	Agree
What is the level of public support for this project?	Medium	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Local	Agree

## Low Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Fuquay Varina Mineral Spring Park Streambank Restoration	Low	11

**Table 9. Wake Low Priority Infrastructure Summary**

- **Fuquay Varina Mineral Spring Park Streambank Restoration:** Repair of streambank erosion and roadway curb and gutter due to heavy rain and flooding during Hurricane Matthew. This has been a recurring maintenance issue for the Town.



**Figure 24. Infrastructure Strategy – Fuquay-Varina Mineral Spring Park Streambank Restoration**



## Fuquay Varina Mineral Spring Park Streambank Restoration

**County:** Wake

**Priority Grouping:** Low Priority

**Priority Ranking:** 11

**Project Timeframe:** 1-2 years

**Location:** Town of Fuquay Varina

**Project Summary:** Repair of streambank erosion and roadway curb and gutter due to heavy rain and flooding during Hurricane Matthew.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The Town has submitted this project for assistance. Funding for this project is currently an un-met need.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	No economic impacts.	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	<50 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	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?	Less than 25%	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?	Streambank stablization is expected to reduce erosion and sedimentation of downstream reaches.	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?	Medium	Agree
What is the technical feasibility of this project?	Between 51 and 75%	Agree
Who will administer this project?	Local	Agree

## Environmental, Ecosystem and Agricultural Strategies

### Low Priority Environmental Strategies

Pillar	Action Name	Priority	Overall Ranking
Environment	Unmapped Stream Studies	Low	12
Environment	Debris Removal from Streams and Watercourses	Low	13

Table 10. Wake Low Priority Environmental Summary

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

- **Detailed Flood Studies of Unmapped Streams:** There is a need for studies to map areas of frequent and nuisance flooding to better understand risk for future flood events. Several areas of Wake County have streams that experienced flooding but actual flood risk is unknown. Approximately 66 miles of streams not currently mapped as FEMA Special Flood Hazard Area.

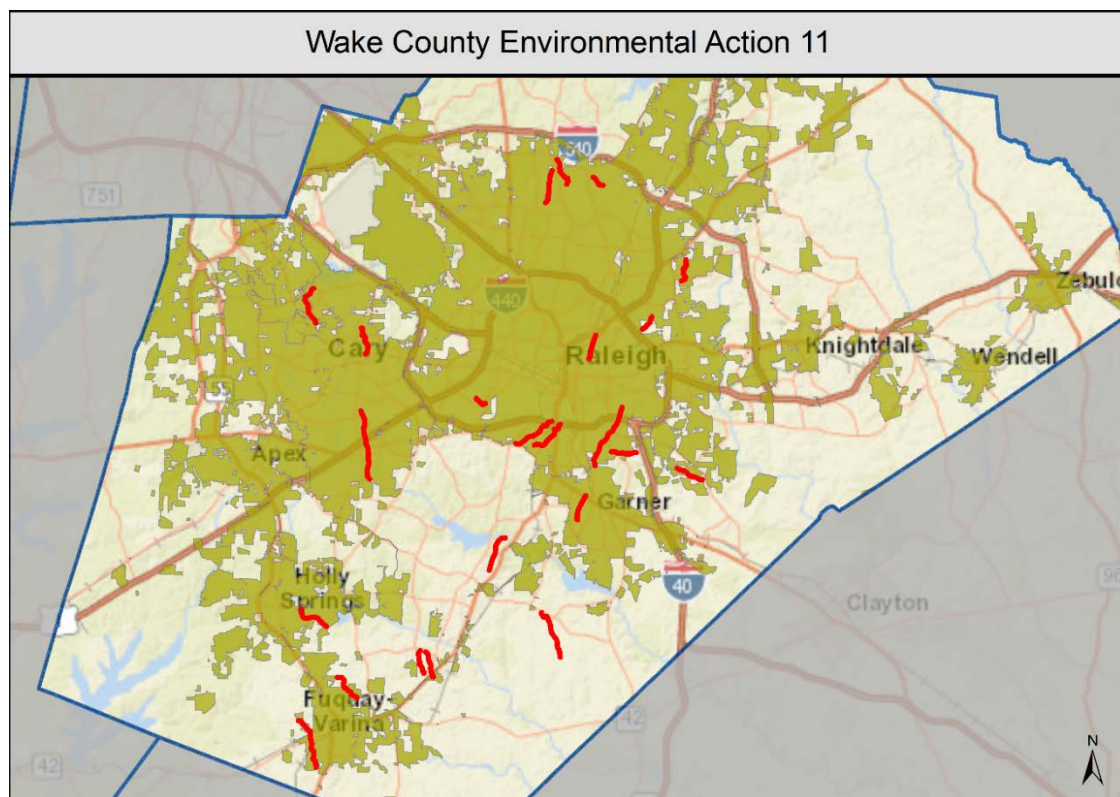


Figure 25. Environmental Strategy – Detailed Flood Studies of Unmapped Streams

## Unmapped Stream Studies

**County:** Wake

**Priority Grouping:** Low Priority

**Priority Ranking:** 12

**Project Timeframe:** Immediately

**Location:** Wake County

**Project Summary:** Several areas of Wake County have streams that experienced flooding but actual flood risk is unknown. There is a need for studies to map areas of frequent and nuisance flooding to better understand risk for future flood events. Approximately 66 miles of streams not currently mapped as FEMA Special Flood Hazard Area may have experienced flooding during Hurricane Matthew.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	There is a need for studies to map areas of frequent and nuisance flooding to better understand risk for future flood events.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	This project is not expected to affect the economy in wake County.	Agree
For how long will this solution be effective?	Less than 10 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?	Less than 25%	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?	No impacts to the environment from this project.	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$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?	State	Agree

- **Debris Removal from Streams and Watercourses:** Remove trees, sediments, and other litter that have built-up in area waterways as a result of Hurricane Matthew and other large storm events. Debris removal can reduce the potential for clogged inlets, pipes and culverts.



## Debris Removal from Streams and Watercourses

**County:** Wake

**Priority Grouping:** Low Priority

**Priority Ranking:** 13

**Project Timeframe:** 3-5 years

**Location:** Wake County

**Project Summary:** Remove trees, sediments, and other litter that have built-up in area waterways as a result of Hurricane Matthew. Debris removal can reduce the potential for clogged inlets, pipes and culverts.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Removal of debris may reduce flooding potential in future storm events.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	None	Agree
For how long will this solution be effective?	Less than 10 years	Agree
How effective is the risk reduction?	<50 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	0	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	No Impact	Agree
What impacts to the environment of the county will result from this project?	Removal of debris may impact water quality in area waterways.	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?	Between 51 and 75%	Agree
Who will administer this project?	County	Agree

## Summary

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