



# 2018 LUMBERTON RECOVERY PLAN

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October 2018

Prepared by:  
Hurricane Matthew Disaster Recovery and Resilience Initiative  
Coastal Resilience Center  
The University of North Carolina at Chapel Hill

# Lumberton, North Carolina

## Hurricane Matthew Recovery Plan

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The Hurricane Matthew Disaster Recovery and Resilience Initiative, a collaborative program involving the University of North Carolina at Chapel Hill and North Carolina State University.



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PLANNING**



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The Hurricane Matthew Disaster Recovery and Resilience team led the development of the Lumberton Disaster Recovery Plan. Team members included faculty and students from the University of North Carolina at Chapel Hill and North Carolina State University as well as a group of consultants.

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## ACRONYMS

ACS	American Community Survey
BFE	Base Flood Elevation
CDBG	Community Development Block Grant
CDBG-DR	Community Development Block Grant – Disaster Recovery
CEDS	Comprehensive Economic Development Strategy
CFR	Code of Federal Regulations
CHNA	Community Health Needs Assessment
CRS	Community Rating System
EDA	Economic Development Administration
ETJ	Extraterritorial Jurisdiction
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
HACL	Housing Authority, City of Lumberton
HMDRRI	Hurricane Matthew Disaster Recovery and Resilience Initiative
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
IA	Individual Assistance
LID	Low-Impact Development
LSA	Land Suitability Analysis
NC	North Carolina
NCEM	North Carolina Emergency Management
NCHFA	North Carolina Housing Finance Agency
NCSU	North Carolina State University
NFIP	National Flood Insurance Program
NIMS	National Incident Management System
NRCS	Natural Resources Conservation Service
PA	Public Assistance
RCHD	Robeson County Health Department
RRP	Resilient Redevelopment Plans
SWOT	Strengths, Weaknesses, Opportunities, and Threats
U.S.	United States
UNCCH	University of North Carolina at Chapel Hill



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# CHAPTER 1

## INTRODUCTION

### Purpose of Disaster Recovery Plan

This plan is meant to help the City of Lumberton recover from Hurricane Matthew. Although this plan is focused on the steps needed to recover from a particular storm, it should be updated as needed to help the city recover following future events.

The plan focuses on the following key objectives:

- Identify and address local disaster recovery needs;
- Increase disaster resilience;
- Facilitate collaboration;
- Improve local institutional capacity;
- Facilitate implementation of actions; and
- Draw from related program information and studies, including those developed by the Hurricane Matthew Disaster Recovery and Resilience Initiative (HMDRRI) team.

### What is

#### DISASTER RECOVERY?

DISASTER RECOVERY can be defined as: "The differential process of restoring, rebuilding, and reshaping the physical, social, economic, and natural environment through pre-event planning and post-event actions that enhance the resilience and adaptive capacity of assistance networks to effectively address recovery needs that span rapid and slow onset hazards and disasters" (Smith et al., 2017).

### Identify and Address Local Disaster Recovery Needs

This plan focuses on local needs that often are unaddressed through traditional federal post-disaster recovery programs. Many of these needs were identified by HMDRRI teams as part of an ongoing dialogue with local government officials and incorporated into the recovery plan as goals, issues, policies, and projects.

### Increase Disaster Resilience

Resilience is a broad concept to which communities may aspire, yet often fail to develop a clear path to achieve. A general definition of resilience is the ability of a community to withstand a severe shock and quickly rebound to a post-disaster condition that represents pre-event conditions, or better yet, a "new normal" based on lessons and improvements that make a community less vulnerable and more adaptable to future events (Paton and Johnston, 2006). A key part of a community's capacity to achieve an enhanced level of resilience involves the widespread incorporation of hazard mitigation policies and projects into post-disaster recovery efforts. Creating resilient communities also involves learning from disasters and taking action to address identified challenges and opportunities uncovered in the aftermath of extreme events.

## Facilitate Collaboration

One of the most important ways communities can rebound from a disaster in a timely and thoughtful manner is to develop and maintain partnerships with organizations within the city borders and with others that can provide external assistance such as federal and state agencies; non-profit organizations, foundations, and community groups; regional planning organizations; universities; groups that emerge after disasters; and individuals residing in the community (Smith, 2011). This recovery plan strives to foster the collaboration needed to tackle the range of issues and challenges noted herein through identified goals, policies, and projects.

## Improve Local Institutional Capacity

Good recovery plans enhance local capacity by building on inherent strengths and addressing identified gaps. As noted above, this requires partnering with other communities, groups, and government agencies.

## Facilitate Implementation of Actions

This recovery plan identifies the resources needed to help achieve the goals, policies, and projects. Resources comprise funding, technical assistance, and supporting policies required to implement the plan, including hiring additional local staff and fostering new relationships or expanding existing ones. The plan also provides the rationale to help potential funders identify areas where they can assist. The implementation matrix found in Chapter 6 is designed to consolidate recovery actions and potential funding sources to help achieve this goal.

## Draw from Related Program Information and Studies, Including those Developed by the HMDRRI Team

Related program information and studies include the Robeson County Resilient Redevelopment Plan (Robeson County Emergency Services, 2017), Federal Emergency Management Agency (FEMA) Public Assistance (PA) worksheets and Individual

## Hurricane Matthew

### DISASTER RECOVERY AND RESILIENCE INITIATIVE

The idea for the Hurricane Matthew Disaster Recovery and Resilience Initiative (HMDRRI) began as part of a conversation with Mike Sprayberry, Director of the North Carolina Division of Emergency Management. This led to the creation of a team comprising faculty and students from the University of North Carolina at Chapel Hill and the North Carolina State University College of Design as well as seasoned consultants who have over 40 years of experience in disaster recovery and land use planning.

As part of a two-phased approach, emphasis has been placed on assisting six hard-hit communities, including Windsor, Princeville, Kinston, Seven Springs, Lumberton, and Fair Bluff. HMDRRI-based assistance has emphasized unmet needs identified by participating communities that go beyond the type of programs traditionally provided by federal and state recovery agencies. Initial meetings with HMDRRI communities involved asking them which issues and needs weren't being addressed by existing aid organizations. Based on these conversations, four communities, including Princeville, Seven Springs, Lumberton, and Fair Bluff, noted the need to help them develop a disaster recovery plan.

For more information on HMDRRI, please see <http://coastalresiliencecenter.unc.edu/hurricane-matthew-recovery/>.

Assistance (IA) information, the 2017 Robeson County Multi-Jurisdictional Hazard Mitigation Plan, and resource agencies such as the North Carolina Housing Finance Agency, North Carolina State University (NCSU) – College of Textiles, Robeson County departments, Lumber River Council of Governments, and others identified throughout this plan.

This plan draws on several projects undertaken by the HMDRRI team, including those focused on open-space management of parcels slated for acquisition and demolition, replacement housing designs, and land suitability analyses targeting areas for new development outside the floodplain. The information from these projects is used to guide goals, policies, and projects throughout the recovery plan. Links to each study are provided in the Appendices of this plan.

### *Role of Planning in Local Capacity Building and Implementation*

As stated in the State Disaster Recovery Planning Guide, “Disaster recovery planning provides a procedural and action-oriented vehicle to prepare communities in advance of a disaster for the multitude of complex challenges that follow extreme events.” Planning also helps marshal the resources needed to expedite post-disaster recovery and reconstruction activities in a thoughtful and coordinated manner.

More specifically, disaster recovery planning realizes several important objectives:

- Achieving greater disaster resilience;
- Improving the speed and quality of disaster recovery through the more effective use of available resources;
- Building the capacity of local governments;
- Maximizing the coordinated distribution of assistance pre- and post-disaster;
- Providing a collaborative decision-making framework;
- Improving the efficient and equitable distribution of resources pre- and post-disaster;
- Providing a process to inject hazard mitigation into the recovery process; and
- Establishing “a means to monitor the implementation of recovery planning policies and projects over time, including the development of measurable benchmarks” (Smith and Sandler, 2012).

### *Role of Inter- and Intra-Organizational Coordination*

A better appreciation of collaboration in inter- and intra-organizational relationships will result in a more efficient, effective, and rapid recovery than working separately in “silos,” which is known to result in duplicative efforts, inefficient use of scarce resources, and a longer recovery period.

## Plan Integration

An important objective of the recovery plan is to guide the post-disaster redevelopment decision-making process in a manner consistent with local plans. Plans developed well before the disaster struck may include a comprehensive land use plan, local hazard mitigation plan, emergency management operations plan, long-range transportation plan, capital improvement plan, and economic development plan. Each plan includes policies or procedures that affect disaster recovery. The disaster recovery planning process provides an opportunity to examine how local plans could help or hinder disaster recovery goals. Based on this assessment, existing plans (and their associated policies and projects) may be modified to complement desired outcomes in the recovery plan. This approach allows a community to draw from existing, recognized plans with regulatory standing and utilize work agreed upon before the disaster.

## Plan Content

Elements of the recovery plan are briefly outlined below.

**VISION** | A vision statement defines the underlying themes and intent of the plan.

**GOALS** | Goals are statements of future desired conditions tied to the overall vision. Goals are instrumental in setting a direction to guide policies and actions described within the plan.

**POLICIES** | Policies are statements used to guide public and private decisions and achieve identified goals. Policies are specific and tied to definitive actions.

**COMMUNITY SETTING AND ASSETS** | Understanding a community's historical, cultural, economic, and political setting provides important contextual information to guide the city's actions.

**ISSUES** | Issues are problems germane to a community. Understanding local issues provides additional background to inform proposed actions.

**PROJECTS** | Projects may include physical "brick and mortar" efforts as well as activities or processes.

**RECOMMENDED ACTIONS AND IMPLEMENTATION** | Implementation is the process of carrying out policy-driven actions through the identification of resources and responsible organizations as well as the timing of assistance.

## CHAPTER 2

### VISION

The foundation of a recovery plan is its overall vision. In Lumberton, the vision was created through consultation with the City Council and involvement of the Technical Advisory Committee, Robeson County Office of Economic Development, and Public Schools of Robeson County.

Based on these consultations, the resulting vision statement was created:

**To recover and become a resilient city requires a whole community approach, collaborating with the county and neighboring jurisdictions to repair and mitigate physical infrastructure, public facilities, and housing, and to implement programs that address health, education, job skills, and economic development opportunities that lead to community stabilization and growth of the local tax base.**



Recovery Planning Session. City of Lumberton, August 10, 2017.



## CHAPTER 3

# GOALS AND POLICIES

Goals and policies serve as part of a direction-setting framework to ensure every recommended project is tied to the aims of the plan. The following goals and policies were created through a participatory process involving stakeholder input and public interaction.

### Goals

#### **Goal 1 | INFRASTRUCTURE**

Repair and/or construct resilient public infrastructure.

#### **Goal 2 | PUBLIC FACILITIES**

Repair and/or construct resilient public facilities.

#### **Goal 3 | HOUSING**

Provide safe and affordable housing for all residents.

#### **Goal 4 | HEALTH**

Provide accessible, affordable, and quality health care facilities and programs that address the root causes of obesity, crime, youth violence, and drug abuse.

#### **Goal 5 | ENVIRONMENT**

Protect Lumberton's unique natural environment, recognizing the special character of the Lumber River, creeks, and streams and the important function they serve, if properly maintained, to mitigate future flooding.

#### **Goal 6 | LAND USE**

Create a land use blueprint that ensures quality of life for all, reduces flood losses, protects the environment, supports ecotourism, and generates a strong core of commercial and industrial businesses that results in long-term resilience.

#### **Goal 7 | ADMINISTRATION AND FINANCE**

Stabilize and grow the tax base by embracing programs and initiatives that expand the city's economy and enables the City Government to function efficiently and cost-effectively.

**Goal 8 | ECONOMIC DEVELOPMENT**

Regain the community's commercial and industrial vibrancy by ensuring land and infrastructure are available, and the local labor force is trained in the technologies and skills needed now and in the future.

**Goal 9 | WORKFORCE DEVELOPMENT**

Create a workforce with the skills and knowledge needed by prospective employers in a changing economy.

*Policies***Infrastructure**

1. Install flood gates at VFW Road and I-95.
2. Increase capacity of the city's existing stormwater system through stream restoration, culvert replacements, and bank stabilization.
3. Complete levee modifications to meet the requirements of 44 CFR 65.10 of the National Flood Insurance Program (NFIP) regulations.
4. Repair and maintain existing public infrastructure using materials and techniques that enhance flood resilience.
5. Create a sinking fund (i.e., a fund created by setting aside money for gradual repayment of a debt or for replacement infrastructure or a public facility).
6. Prioritize expansion of new public infrastructure outside of the 100-year floodplain to enhance the safety of the community and guide future development into less vulnerable locations.

**Public Facilities**

1. Relocate substantially damaged critical facilities (e.g., Public Works, Electric Utility, Robeson County School Administration building, Planetarium) outside of the 100-year floodplain.
2. Elevate critical facilities (e.g., Jaycee Hut) in accordance with the city's 2-foot freeboard requirement and incorporate other mitigation actions (e.g., elevation of utility or heating, ventilation, and air conditioning [HVAC] equipment).
5. Use the findings of the Land Suitability Analysis to inform the siting of new and replacement public facilities.
6. Retrofit existing public facilities (e.g., fire stations, sewer lines) using proven flood-retrofit techniques.
7. Explore other best practices as identified over time during implementation of this plan.

8. Work with the Lumber River Council of Government as well as county, state, and federal agencies to secure funds and technical assistance to retrofit public facilities.

## Housing

1. Maximize hazard mitigation techniques in all housing efforts, including the buyout or elevation of flood-prone properties, repairs, and new housing construction.
2. Coordinate the repair of flood-damaged housing by non-profit organizations to encourage incorporation of flood risk reduction measures, such as home elevation and compliance with the Local Flood Damage Prevention Ordinance standards, regardless of whether homes were substantially damaged.
3. Develop a communication process that ensures information dissemination during a disaster event is coordinated and clear to avoid confusion and is responsive to the questions posed by owners and renters of damaged housing.
4. Review and update the disaster preparedness plans of elderly housing complexes periodically, and exercise the plans annually.
5. Create affordable housing opportunities, including the construction of homes outside of the 100-year floodplain (informed by the Land Suitability Analysis Report). Emphasis should be placed on providing viable housing options for people who participate in the Hazard Mitigation Grant Program (HMGP) and Community Development Block Grant – Disaster Recovery (CDBG-DR) buyout programs.
6. Identify properties that have been abandoned and assess whether the properties are suitable to repair or replace in order to serve as affordable housing. Work with the Housing Authority for City of Lumberton (HA CL) to establish eligibility criteria for property condemnation and housing repair and construction.
7. Work with Habitat for Humanity to build houses on abandoned and condemned property sites.
8. Consider using replacement housing prototypes developed by the NCSU College of Design (Appendix A) by TightLines Designs (prepared for the North Carolina Housing Finance Agency) and the Eastern Section of North Carolina American Institute of Architects.
9. Identify funding to construct replacement housing outside the 100-year floodplain and within the city's extraterritorial jurisdiction.
10. Repair damaged houses in accordance with building codes or replace houses, as necessary, to protect the health and safety of residents.
11. Prioritize increasing the resilience of public housing projects in designated floodplains, including those that were not substantially damaged.
12. Develop a comprehensive buyout strategy addressing "checker-boarded" properties to include acquiring contiguous parcels and managing the land following purchase. Options include the creation of pocket parks, community

- gardens, natural areas, greenways, and other public amenities (drawing on the findings in the HomePlace greenspace concept).
13. Discourage building new housing within the 100-year floodplain. However, if the property owners do not have the financial resources to relocate and the existing home is in sound condition, encourage them to elevate the structure two feet above the base flood elevation (BFE).
  14. Encourage all homeowners within the 100-year floodplain to purchase and maintain flood insurance.
  15. Create an outreach strategy to educate homeowners about the merits of purchasing flood insurance and flood-proofing their property. The strategy should include posting information on the City's website, placing flyers in utility bills, and providing flyers to local banks, real estate firms, and the Robeson County Home Builders Association.

## Health

1. Support the Robeson County Farmers Market, emphasizing locally grown produce, including produce raised in community gardens.
2. Support the concept of state-funding for universal childcare up to 4 years old.
3. Support the wellness activities of organizations, businesses, and government agencies that encourage a healthy lifestyle for Lumberton residents.
4. Support the outreach activities of the Southeastern Health and its affiliated organization, the Community Health Education Center, and the Southeastern Lifestyle Center for Fitness.
5. Promote fitness through physical education in schools, senior participation in the Silver Sneakers Program, and city recreation programs. Support organizations that host events like Chevy on the Levee and Rumba on the Lumber. Establish a 50-mile backroads bike race.
6. Implement the Purpose-Built Communities Model to transform Lumberton's most distressed neighborhoods through a holistic approach that includes housing, education, and wellness.
7. Work with local faith-based groups to provide emergency support systems for large-scale or traumatic events.
8. Develop an outdoor exercise strategy in coordination with the Southeastern Health and associated doctors.
9. Promote river-oriented activities like canoeing and kayaking.
10. Take steps to ensure, to the maximum extent practicable, that all city buildings and facilities are handicap accessible and recreation options targeting disabled persons within the community are provided.
11. Facilitate the provision of transportation services to health and human services facilities and healthy food retail, especially in high-priority health and wellness areas.
12. Promote community programming by the Health Department, faith-based groups, and local non-profit organizations.

13. Support the North Carolina Youth Prevention Center's activities, including the development of parenting, youth violence prevention, and interpersonal/social skill development.
14. Support efforts to improve access to local produce and value-added agricultural products.
15. Support municipal, county, and state programs that encourage physical activities on and adjacent to the Lumber River, including Lumber River State Park.
16. Provide public information describing how to eliminate mold in houses, including posting information on the City's website, placing flyers in utility bills, and placing documents in Lumberton's libraries.

### Environment

1. Protect the natural resources within and surrounding the city by coordinating with the Lumber River State Park and with Columbus and Robeson counties.
2. Maximize the benefits of Lumber River's Wild and Scenic River designation by seeking federal and state ecotourism grants.
3. Explore the potential creation of a "blueway" along the Lumber River, connecting Lumberton to Lumber River State Park and the town of Fair Bluff (Appendix A; Chapter 4).
4. Seek funding to purchase lands and easements adjacent to the Lumber River and connect property acquired through the HMGP to create a riverine buffer, enhancing the storage capacity of the river and improving recreational and economic benefits.
5. Promote educational programs, including those sponsored by local elementary, middle, and high schools, that encourage respect for the uniqueness of the Lumber River.
6. Solicit private sector partners to sponsor expansion of the Riverwalk, greenspace, canoe access points, tree houses, campsites, or other recreational amenities.
7. Eliminate all stormwater discharge into the Lumber River and creeks in and around Lumberton.
8. Design public facilities to minimize stormwater runoff into public waters.
9. Support the protection of natural heritage sites and other natural resource areas through easements and acquisition by private entities, non-profit environmental organizations, land trusts, and state/federal agencies.

### Land Use

1. Assess the current and future development pattern in the floodplain and based on expected buildout scenarios, modify the Land Use Plan and Land Use Ordinance to minimize future flood losses.
2. Minimize the intensity, density, and types of land uses in flood hazard areas, while encouraging development in areas not prone to flooding through modification

- of the city's zoning ordinance, and the use of the Land Suitability Analysis (Appendix D).
3. Encourage land uses in and adjacent to the 100-year floodplain that improve the natural and beneficial use of the floodplain.
  4. Update the Lumberton *Tomorrow* Land Use Plan (Appendix E) to include hazard mitigation and disaster recovery elements.
  5. Develop an open-space plan that directs growth away from flood-prone areas.
  6. Explore the use of cluster development to encourage development outside of flood-prone areas when parcels are sufficiently large and contain land located inside and outside of the mapped flood hazard area.
  7. Participate in the NFIP's Community Rating System (CRS).

### Administration and Finance

1. Hire a contractor or staff with planning experience to oversee and implement the Disaster Recovery Plan.
2. Explore the expansion of mutual aid agreements with nearby towns and cities to provide supplemental long-term disaster recovery assistance, including tasks such as conducting damage assessments, permitting, grant writing, post-disaster financial assistance, and general guidance, as identified.
3. Establish a "rainy day" fund for future repairs to city infrastructure, public facilities, and housing.
4. Minimize maintenance costs for acquired land and properties through buyouts, condemnation or other means, by identifying private and non-profit sponsors.
5. Explore the selective reversion of land acquired through the HMGP acquisition program to its natural state in partnership with the Robeson County Extension Service and integrate these properties into a city open-space/greenway plan.
6. Consider establishing a stormwater utility that enables the City to set aside a portion of the stormwater fees to maintain open space in the floodplain and/or purchase flood-prone properties.
7. Adopt a temporary building moratorium ordinance for use post-disaster, thereby allowing time for decision-makers to consider the adoption of more stringent codes and standards to ensure the health and safety of residents before reconstruction begins.
8. Join the CRS program in partnership with Robeson County.
9. Include specific projects in the Robeson County Multi-Jurisdictional Hazard Mitigation Plan (HMP) that address flood-prone houses, the flood-retrofit of public facilities, stormwater management, the acquisition of undeveloped flood-prone land, and the implementation of a stormwater management program when the HMP is updated.
11. Operators of nursing homes and assisted care facilities should annually update their list of patients and provide it to the City Emergency Services Department.

## Economic Development

1. Create a Manufacturing Task Force that addresses the restoration of manufacturing industries (e.g., textiles) in Lumberton and is co-chaired by the Robeson County Economic Director and Lumberton Planning Director.
2. Involve the NCSU College of Textiles in assessing the viability of renewing the local textile industry.
3. Assess the structural integrity of vacant textile buildings.
4. Build a high-technology high school on the Robeson County School District's 35-acre property in Com Tech.
5. Become involved in the Hometown Strong/Robeson County partnership to support Lumberton economic initiatives.
6. Establish an industrial park adjacent to the Lumberton Municipal Airport and surrounding properties.
7. Designate the area around the proposed industrial park as a North Carolina Opportunity Zone, thereby offering tax benefits to potential investors.
8. Support development of new businesses that create new products, processes, and business models.
9. Direct potential small businesses and start-ups to become involved with the University of North Carolina at Pembroke (UNCP) Thomas Entrepreneurship Hub, which provides education, personalized consulting, and networking opportunities.
10. Partner with the Carolina Small Business Fund to promote the Economic Development Administration's (EDA) Revolving Loan Fund.
11. Encourage participation in federal grant programs that foster innovation and commercialization of technology, such as the Small Business Innovation Research/Small Business Technology Transfer grant programs.
12. Support efforts to improve community appearance as an aid to business/industry recruitment.
13. Pursue economic development measures to increase sales and property tax revenues.
14. Implement a multi-dimensional campaign to promote Lumberton, including the Lumber River and the city's designation as a Certified Retirement Community.
15. Work with North Carolina Small Business Technology Development Center Business Continuity Planners of the Carolinas to develop business continuity planning, outreach, and education programs.

## Workforce Development

1. Promote the UNC Pembroke Thomas Entrepreneurship Hub as a way for prospective entrepreneurs to develop the skills needed to succeed in small business.
2. Work with the North Carolina Work Center – Robeson County to provide job seekers, training seekers, and businesses access to a variety of employment and training services.

3. Work with Robeson Community College, Robeson County School District Career Center, and identified non-profit organizations to teach courses on housing repair and reconstruction.
4. Design a program with the NCSU College of Textiles and Contempora Fabrics that introduces middle and high school students to opportunities in the “new” high-tech textile industry.
5. Partner with the Lumber River Workforce Development Board to identify employment opportunities and training programs throughout the Lumber River region in addition to those in Lumberton.
6. Work with artificial intelligence and robotics experts to encourage the Robeson County School District to create opportunities for students to be exposed to leading-edge technologies.
7. Build a new high-tech high school to provide students with skills needed in the future.

## CHAPTER 4

# COMMUNITY SETTING AND ASSETS

This chapter describes the characteristics that define Lumberton and provides the basis for policies and projects recommended in this plan. An overview of demographics, the local economy, and the physical and social environmental issues and assets is discussed. A description of the flood hazard and closely associated vulnerability of residents and property also is provided. This is followed by an assessment of local capabilities to enact proposed policies and projects, including organizations participating in Lumberton's recovery efforts, as well as a review of existing plans, policies, and ordinances.

### *History and Culture*

The City of Lumberton was created by an Act of the North Carolina General Assembly in 1787 and was named the county seat of Robeson County. The county was named after Colonel Robeson, and the land for the county seat was donated by General Willis, who also is credited with naming Lumberton as the county seat.

Lumberton is located on the Lumber River in the coastal plains of Southeastern North Carolina. The Lumber River was designated as a National Wild and Scenic River and is part of the North Carolina Natural and Scenic River System. Recreation activities, many of which are undertaken in nearby Lumber River State Park, include canoeing and boating, fishing, picnicking, camping, nature study, swimming, biking, and jogging. Hunting as well as searching for fossils and artifacts also occur adjacent to the river. The State Historic Preservation Office has identified 460 prehistoric and historic sites in Robeson County.

Lumberton includes members of the Lumbee Tribe, which is the largest tribe east of the Mississippi River. Approximately 15 miles northwest of Lumberton, Pembroke is the economic, cultural, and political center of the tribe, but there are several Lumbee neighborhoods in Lumberton as well.

### *Demographics*

While Lumberton is a diverse city, and includes a range of income levels, there exists a number of challenges including unique patterns of hardship, joblessness, and insufficient training or education to participate fully in the workforce. High levels of poverty contribute to vulnerability and hinder the ability of individuals and families to recover from a disaster. When a city includes high levels of negative socioeconomic characteristics, its financial ability to provide public services are constrained. High costs of operations are felt by school districts, hospitals, public safety agencies, and others. These needs

compete for funds to carry out community improvements of all kinds, including hazard mitigation, disaster preparedness, and infrastructure upgrades following disasters.

## Population

Lumberton's population has slowly increased over the past 50 years. In 2000, the U.S. Census reported Lumberton's population as 21,542 people, whereas in 2016, the population increased to 21,646 (Table 1). Growth stagnation is attributable partly to the major loss of manufacturing jobs during the late 1990s and early 2000s (Hossfeld et al, 2004).

Nearly 13% of Lumberton's population identifies as American Indian or Alaska Native, due to members of the neighboring Lumbee Tribe. There are approximately 55,000 tribal members across Robeson, Hoke, Cumberland, and Scotland counties. The tribe was recognized by North Carolina in 1885 and currently is lobbying for federal recognition.

Year	Lumberton	Robeson County	North Carolina
2000	21,542	123,339	8,049,313
2010	21,448	134,168	9,535,483
2016	21,646	134,576	9,940,828

Source: American Community Survey (2016).

## Race

Lumberton has a racially and ethnically diverse population with whites accounting for 38.4% and African Americans comprising 37.4% of the total number of residents. Unlike any other city in North Carolina, Lumberton has a sizeable American Indian population, primarily Lumbee, which accounts for 12.8% of the city's population and 38.7% of the county's population. Hispanics are a growing segment of the population, nearly tripling in size since 2000. In 2018, Hispanics accounted for 9.3% of the population (2,771 people). Robeson County is part of a small percentage (10%) of U.S. counties that are majority-minority; its combined population of American Indian, African American, and Hispanic residents accounts for more than 70% of the total population (Robeson County Health Department [RCHD], 2017).

It is difficult to quantify the disparate effects of Hurricane Matthew on communities of color. However, in Lumberton the majority of individuals impacted lived in South and West Lumberton, areas predominantly occupied by African Americans and Lumbee. The effects are particularly evident at the intersection of race and class. For example, the poverty rate in 2016 was 44.6% for African American residents and 47.4% for American Indian residents, primarily Lumbee, compared to 18.4% for white residents. The unemployment rate for African American residents and American Indians looking for a job was 16.8% and 15.6%, respectively, compared to 3.3% for white residents.

## Age

Lumberton has a relatively young population (Table 2). In 2016, approximately 60% of the city's population was working age, 18 to 64 years old. With a median age of 33.7 years old, Lumberton's population is younger than the Robeson County median age of 35.6 years old.

Table 2: Age of Lumberton Residents		
	No. People	Percentage
Total Population	21,646	
Under 18 Years	5,650	26.1%
18 to 34 Years	5,563	25.7%
35 to 64 Years	7,359	34.0%
65 Years and Older	3,074	14.2%
Median Age by Sex		
Median Age		33.7
Male Population		31.3
Female Population		36.1

Source: American Community Survey (2016).

The city's senior population has remained relatively constant (approximately 14%) since 2000. However, given the city's recent designation as a Certified Retirement Community and the increasing average age of the population of eastern North Carolina as a whole, Lumberton's elderly population may increase in the future (Baumann-Mitchell et al., 2017).

## Income

In 2016, Lumberton's median household income was \$31,126, which mirrors Robeson County's median income of \$31,298. Both are substantially lower than the state's median income of \$46,256. Approximately 35% of Lumberton's population is below the poverty line. Nearly 64% of Lumberton's households receive their income from wages or salaries. Other sources of income include Social Security (30.7%), Supplemental Security Income (10.8%), and retirement (19.8%). In 2015, 31.1% of the population received food stamps/Supplemental Nutrition Assistance Program (SNAP) (American Community Survey [ACS], 2016).

FEMA data show flooding from Hurricane Matthew disproportionately affected low-income households. The median reported income of IA applicants in Lumberton was \$18,100 and only 4% of applicants had flood insurance.

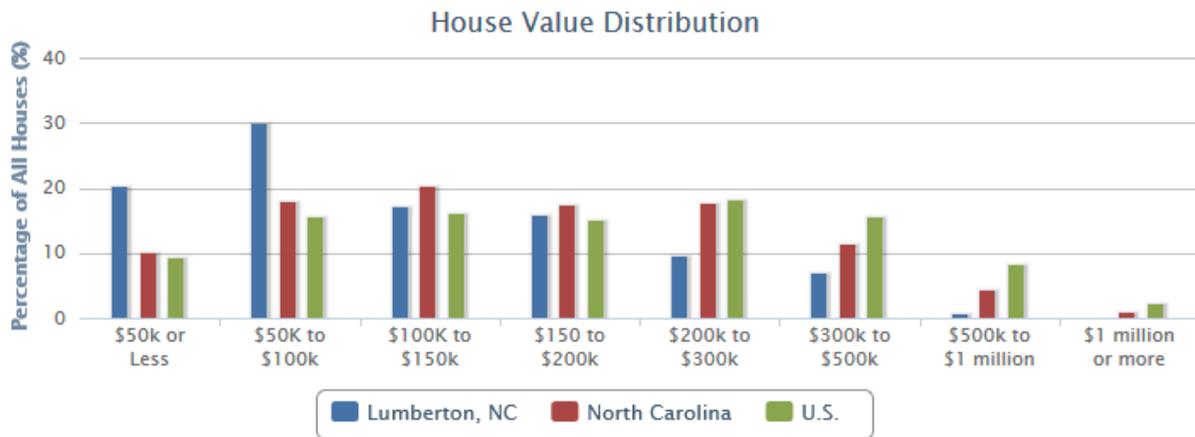
## Housing

According to the 2010 U.S. Census, Lumberton had 8,877 housing units citywide. By 2016, the number of total housing units had decreased to 8,597. Lumberton is comprised of

more renter-occupied housing units (54.5%) than owner-occupied (45.5%). Between 2010 and 2016, the percentage of renter-occupied housing increased from 47.6% to 54.5%. Since 2010, owner-occupied housing has decreased by 560 units, while rental housing has increased by 461 units. Statewide renter-occupied housing in 2016 constituted 33.3%, which is substantially less than Lumberton (ACS, 2016).

In 2016, the median house value in Lumberton was \$98,500, and the median monthly rent was approximately \$651 (Figure 1). In comparison, the statewide averages were \$157,100 and \$816, respectively (ACS, 2016).

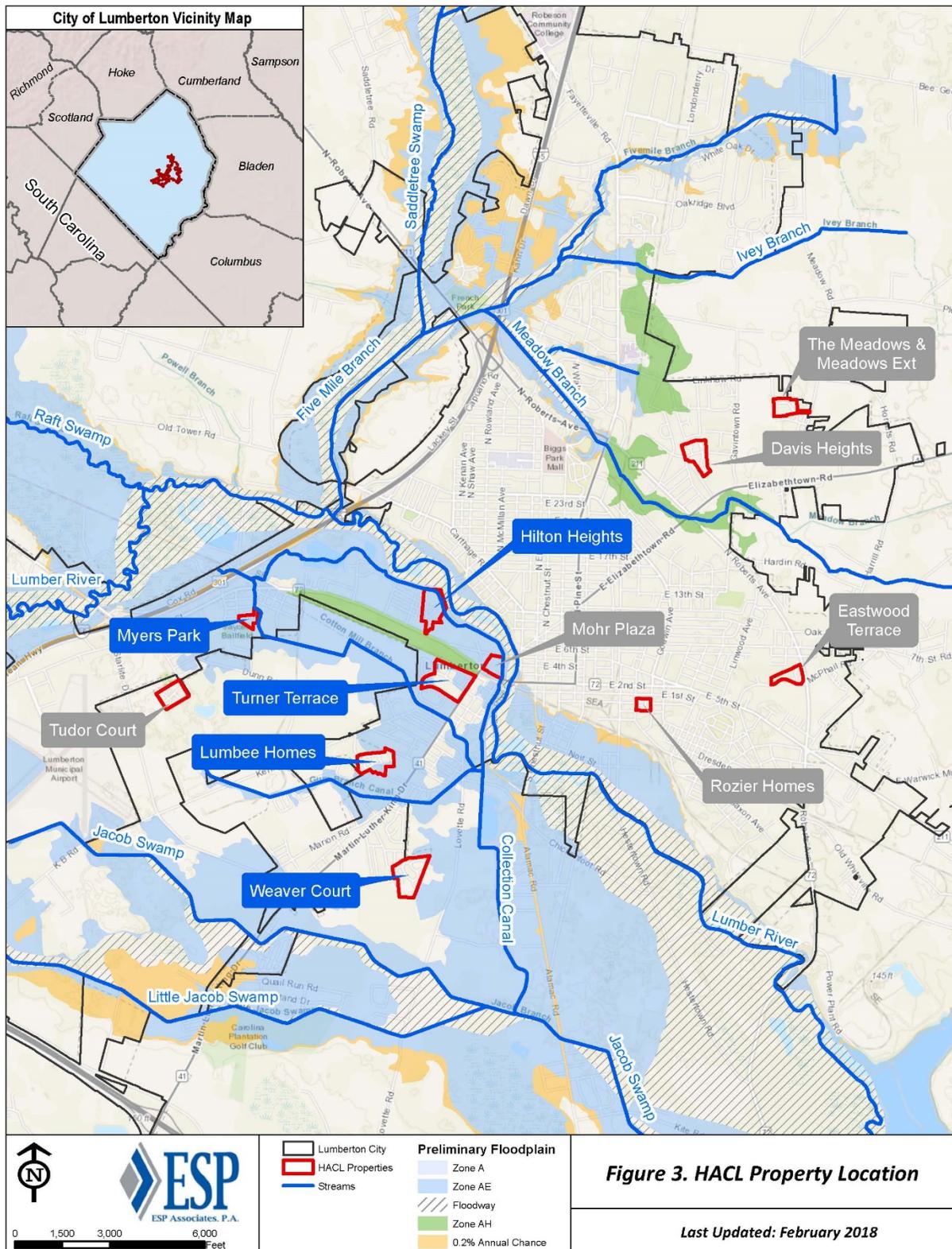
**Figure 1: Distribution of Median House Values.**



In Lumberton, the median year a house was built is 1973, which is older than that of the state (1986) and the U.S. (1976).

The Housing Authority City of Lumberton (HACL) manages 11 scattered site developments, consisting of 729 units, more than half of which are in or adjacent to the 100-year floodplain. The combined effects of tenants living close to a flood-prone area makes them particularly vulnerable (Figure 2).

Figure 2: City of Lumberton Housing Authority Properties.



There are three privately owned, subsidized apartment complexes in South Lumberton. Holly Ridge is a 110-unit development offering 1-, 2-, 3-, and 4-bedroom floor plans. Parkview Terrace is a 100-unit affordable housing complex with 1-, 2-, and 3-bedroom apartments. First Baptist Homes is a 40-unit project available for seniors only.

### Education

In terms educational attainment, Lumberton trails the state average. Of Lumberton residents 25 years and older, 36.3% have at least a high school degree. In contrast, statewide, 86.3% of residents over 25 years old have at least as high school degree. The percentage of Lumberton residents with less than a high school degree is 26.4%, which is substantially higher than the state percentage of 14.7%. The number of people with bachelor or graduate degrees in Lumberton also is far lower than the state average.

Poverty and education are strongly linked. In Lumberton, 43.5% of the population 25 years and older living below the poverty line had less than a high school education; whereas, 33.3% of residents with a high school degree (or equivalent) were living in poverty. Only 7.9% of individuals with a bachelor degree or higher is living below the poverty line (ACS, 2016).

### Vehicle Ownership

During a hurricane or flood event, it is important that residents have the means to evacuate quickly. In Lumberton, nearly 12% of the city's population does not own a vehicle, which is higher than the state average of 6.5% (Table 3). However, in South and West Lumberton, vehicle ownership is considerably lower, at 25.7% and 15.6%, respectively.

	Lumberton		North Carolina	United States
Occupied Housing Units	7,403	100%	3,742,514	116,211,092
No Vehicles Available	866	11.70%	6.54%	9.12%
1 Vehicle Available	3,001	40.54%	32.77%	33.80%
2 Vehicles Available	2,485	33.57%	38.61%	37.48%
3 or More Vehicles Available	1,051	14.20%	22.08%	19.61%

Based on 2010 to 2014 data from ACS (2016).

### Drainage

The City of Lumberton is located on the Lumber River in the Coastal Plains ecoregion of North Carolina. The landscape is characterized by relatively flat terrain and gently rolling hills. There are four distinct subbasins; Lumberton is in the Lumber River Subbasin (Hydrologic Unit Code 03040203), which drains approximately 1,630 acres. The basin contains many smaller tributaries that feed into the Lumber River. South and West Lumberton are situated within the Jacob Swamp Watershed containing the Collection

Canal as well as the creeks and stream channels of Jacob Swamp, Little Jacob Swamp, Gum Branch, and Cotton Mill Branch. Drainage on the north side of Lumberton flows through a series of small streams, including Five Mile Branch, Ivey Branch, Meadow Branch, and Saddletree that merge near Interstate 95 and ultimately drain into the Lumber River to the south.

The Lumber River and its tributaries have a long history of flooding. Major flooding events occurred in 1928, 1945, and 1964. In the early 1900s, drainage districts were formed in Robeson County to make areas usable for residential housing and agriculture. Areas in South Lumberton experienced extensive flooding; therefore, in an attempt to mitigate flood risk, a 2.8-mile earthen berm was completed in 1974 by the U.S. Soil Conservation Service, extending from Interstate 95 to the bridge crossing on Alamac Road.

While the northern side of Lumberton does not experience the same magnitude of flooding problems facing areas to the south and west, flooding primarily occurs in areas adjacent to creeks. The Meadow Branch, just north of NC 211 (Roberts Road) in the Best Drive area, has a history of flooding. Property owners along the Meadow Branch have experienced repetitive losses and were flooded during Hurricane Matthew (ESP Associates, 2018; AECOM Technical Services of North Carolina, Inc., 2017).

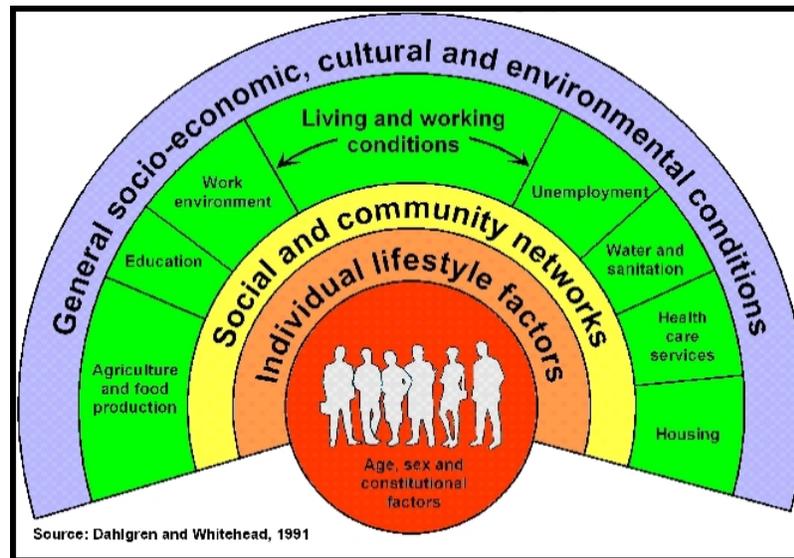
## Health

Health, poverty, and jobs are inextricably linked to the concept of resiliency. As noted in the Institute of Medicine report, “Health, equity, resilience, and sustainability are interdependent and mutually reinforcing-part of the same virtuous cycle. As a result of this interdependence, initiatives that reduce inequities will yield ancillary or co-benefits for population health, as will efforts to strengthen a community’s sustainability or resilience. A community with large concentrations of vulnerable populations will be less resilient in the face of social and economic disruption, and slower to recover in the event of a disaster” (Institute of Medicine, 2015).

To foster community recovery from the effects of Hurricane Matthew and to create a resilient Lumberton, physical and socioeconomic changes need to occur. Important factors include education and workforce development. Creating jobs and job skills can go a long way in reversing health risks; however, the health situation in Lumberton is extremely complex with no simple fix. The NC Association of County Commissioners (2012) report, *A Guide to Employee Wellness Initiatives for North Carolina Counties*, states, “The potential return on investment and money saved by implementing even basic wellness initiatives can be significant, and city employees will be happier, healthier, and feel more appreciated.”

Many factors combine together to affect the health of individuals and communities. The factors that influence the health status of the community are known as determinants of health. They include personal, social, economic, and environmental factors. Figure 3 graphically illustrates the breath of health determinants.

Figure 3: Health Determinants.



As expressed in the Institute of Medicine, National Academies Press publication, *Healthy, Resilient, and Sustainable Communities After Disasters: Strategies, Opportunities, and Planning for Recovery*, “intentional consideration of health, including health equity, is necessary during recovery to mitigate the negative effects of a disaster and seize opportunities to advance population health and well-being.”

All counties in North Carolina prepare a community health assessment which is “a systematic examination of the health status indicators for a given population that is used to identify key problems and assets in the community” (Institute of Medicine, 2015). In 2017, the Community Health Needs Assessment (CHNA) Advisory Group updated the assessment initially prepared in 2013, which documents the structural conditions that influence the health of the population (i.e., social determinants of health). The advisory group is co-chaired by Dr. William Smith, Director of the RCHD and Ms. Joann Anderson, President and CEO of Southeastern Health.

“These determinants include physical environment, housing, socioeconomic status, education and racism. These factors influence health because they are in the arena in which people live, work and play. People with higher incomes, more years of education, and a healthy and safe environment to live in tend to have better health outcomes and generally longer life expectancies than people who have unstable income, live in unsafe neighborhoods and receive poor education” (RCHD, 2017). Table 4, which is drawn from the CHNA, clearly portrays the severe health situation in Robeson County. Dr. William Smith indicated Lumberton and Robeson County possess similar characteristics.

**Table 4: Determinants of Health – Economic Indicators**

Indicator	Robeson County	North Carolina
High school graduates, % of persons age 25+, 2012-2015	70.9%	86.6%
Persons below poverty level, less than 100%, 2015	30.6%	16.4%
Unemployment, December 2016	7.4%	5.1%
Median household income, 2015	\$32,128	\$47,884
WIC mothers, 2015	67.1%	45.4%
Residents eligible for Medicaid, 2015	39.0%	22.0%
Children eligible for free/reduced price lunch, 2013-2014	96.4%	54.0%
Rate of births to women ages 15-19 years old per 1,000 females, 2015	50.9	30.2

The RCHD and Southeastern Health are two major health organizations serving the residents of Lumberton and Robeson County. Both organizations provide comprehensive health services addressing drug abuse, obesity, diabetes, physical fitness, elderly services, maternity care, and other health issues. Additionally, these organizations co-chair the Healthy Robeson Coalition.

Southeastern Health, a non-profit organization, is a comprehensive health care system that offers a wide array of health care services through its affiliated divisions. Southeastern Health Medical Center is a fully accredited, not-for-profit hospital offering comprehensive patient care services, including the Lifestyle Rehabilitation/Fitness Center, Community Health Education Center, Diabetes Community Center of Robeson County, Gibson Cancer Center, and the Southeastern Heart Center (managed by the Duke University Health Center). Southeastern Health is a licensed 452-bed facility that includes the Southeastern Regional Medical Center, a DNV GL – Healthcare accredited hospital offering acute care, intensive care, and psychiatric services to more than 15,000 in-patients and 61,000 emergency patients annually. The medical center is licensed for 292 general acute care beds and 33 psychiatry beds. WoodHaven Nursing, Alzheimer's and Rehabilitation Center is licensed for 115 beds and Southeastern Hospice House is licensed for 12 beds.

The RCHD provides health promotion, clinic, nutrition, and home visitation services. Health promotion services enable people to better control and improve their health through programs focused on adolescent parenting, adolescent pregnancy prevention, and substance misuse and prevention. Clinic services are provided for prenatal, children, and adults to keep residents healthy and to prevent the spread of diseases. Nutrition services, including WIC (Women, Infants and Children), are provided as well. Home visitation programs focus on home health services for seniors, and "Parents as Teachers" delivering parent education through personal visits and group meetings to provide knowledge and resources that enable parents to raise healthy children.

The programs offered by the RCHD and Southeastern Health support the three health priorities, outlined in the CHNA: 1) obesity, 2) substance misuse/mental health, and 3) determinants of health. Other organizations in the Lumberton area also provide services that address issues identified in the CHNA. The NC Youth Violence Prevention Center operates programs such as Teen Court, Parenting Wisely, and the CORE Project. The Center for Community Action focuses on grassroots empowerment and multi-sector collaboration to achieve positive social change.

Lumberton also has organizations that address the needs of the elderly population. There are several nursing homes and assisted care facilities in Lumberton as well as home care services. Facilities include: Covenant Care, Companion Home Care, Glenfora, Liberty Home Care, We Care for You, Wesley Pines, Kindred at Home Shipman's family Care, Inc. Woodhaven Nursing and Alzheimer's Rehabilitation Center, ComForCare, Home Care, Lumberton Assisted Care, Carrolton Nursing Center, Golden Living Center, and Christa Assisted Living.

Although there are many government and nonprofit initiatives in Lumberton and Robeson County, socioeconomic challenges remain large, complex, and interconnected, hampering the potential for revitalization, recovery, and resilience. These factors also contribute to high costs of public services and low revenues to pay for those services. New strategies have demonstrated success elsewhere in North Carolina and in other states. One new strategy is place-based initiatives, which focuses upgrades in designated geographic areas. The concept works in tandem with a feature called "collective impact," in which numerous organizations collaborate to trigger synergies across sectors such as housing, education, and health. Philanthropic organizations typically lead these investments in coordination with local governments. Technical assistance is available through organizations like Purpose Built Communities, and state and federal funding sources also can be utilized to implement these ideas.

While Lumberton has neighborhoods with high unemployment, poverty, drug abuse, gang crime, abandoned structures, and low educational levels, it is not the only city to face this problem. Southeastern Raleigh and Memphis, Tennessee, had neighborhoods that have implemented strategies that successfully addressed these problems resulting in a reduction in abandoned housing, lower crime rates, increased tax revenues, and new investment in housing and commerce. It took a collaborative effort between local government and non-profit community development corporations, private developers, schools, health providers, and potential employers, but these cities are realizing a significant return on public investments.

## Economy

United States manufacturing has undergone intensive economic restructuring over the past several decades. This has had a profound effect on rural areas, especially in the Southeast where textile, apparel, and furniture manufacturing served as the backbone of local economies. In Lumberton and Robeson County, restructuring of the economy

led to a significant reduction in the number of manufacturing jobs. Fewer jobs resulted in a loss of personal income (affecting Lumberton's retail businesses), property taxes (supporting the City's government operations), revenue to repair and upgrade infrastructure, and funding needed to maintain public infrastructure (Hossfeld et al, 2004).

Hurricane Matthew had a major impact on Lumberton; however, the job loss from firms moving out of the U.S. already had a devastating effect on the city's economy. For Lumberton to become a more resilient community, growing the industrial base that generates decent-paying jobs for all residents who want to work is necessary.

## Employment

According to the 2016 ACS Population Estimates Program, 7,073 people 16 years and older in Lumberton were employed. While manufacturing has lost thousands of jobs over the years, it still provides 1,341 (18.7%) jobs in Lumberton, whereas manufacturing jobs constitute only 12.3% of total jobs statewide. During multiple discussions, Lumberton residents identified the city as a manufacturing town despite the loss of manufacturing jobs. The only other employment sector with more workers is the health industry, which employs 1,341 people. Education, accommodations, and food services also is a notable employment sector in the city (ACS, 2016).

Unemployment is a major concern in Lumberton and Robeson County. Leading health professionals in Lumberton have identified jobs as essential to overcome the health problems plaguing Lumberton and Robeson County. However, unemployed is not distributed equally among the population (Table 5).

<b>Race</b>	<b>%Unemployed</b>	<b>Compared to North Carolina</b>
White	4.6%	Lower
African American	16.6%	Higher
Native American	20.0%	Higher

Source: American Community Survey (2016).

African American and Native American residents of Lumberton experience disproportionately higher barriers to employment and wage gains than white residents. One in five Native American workers and almost one in six black workers were unemployed in Lumberton. By comparison, only 4.6% of white Lumberton workers were unemployed (ACS, 2018). In addition to the city's underlying economic challenges, black and Native American residents will face greater barriers to recovery due to their severe economic disadvantage.

Lumberton's economic disparities will be challenging to overcome but are necessary to mitigate the impacts of future disaster events. Fortunately, Lumberton maintains a higher level of educational attainment than Robeson County (U.S. Census Bureau, 2011-2015), which suggests the city has a higher concentration of talent that can be leveraged to

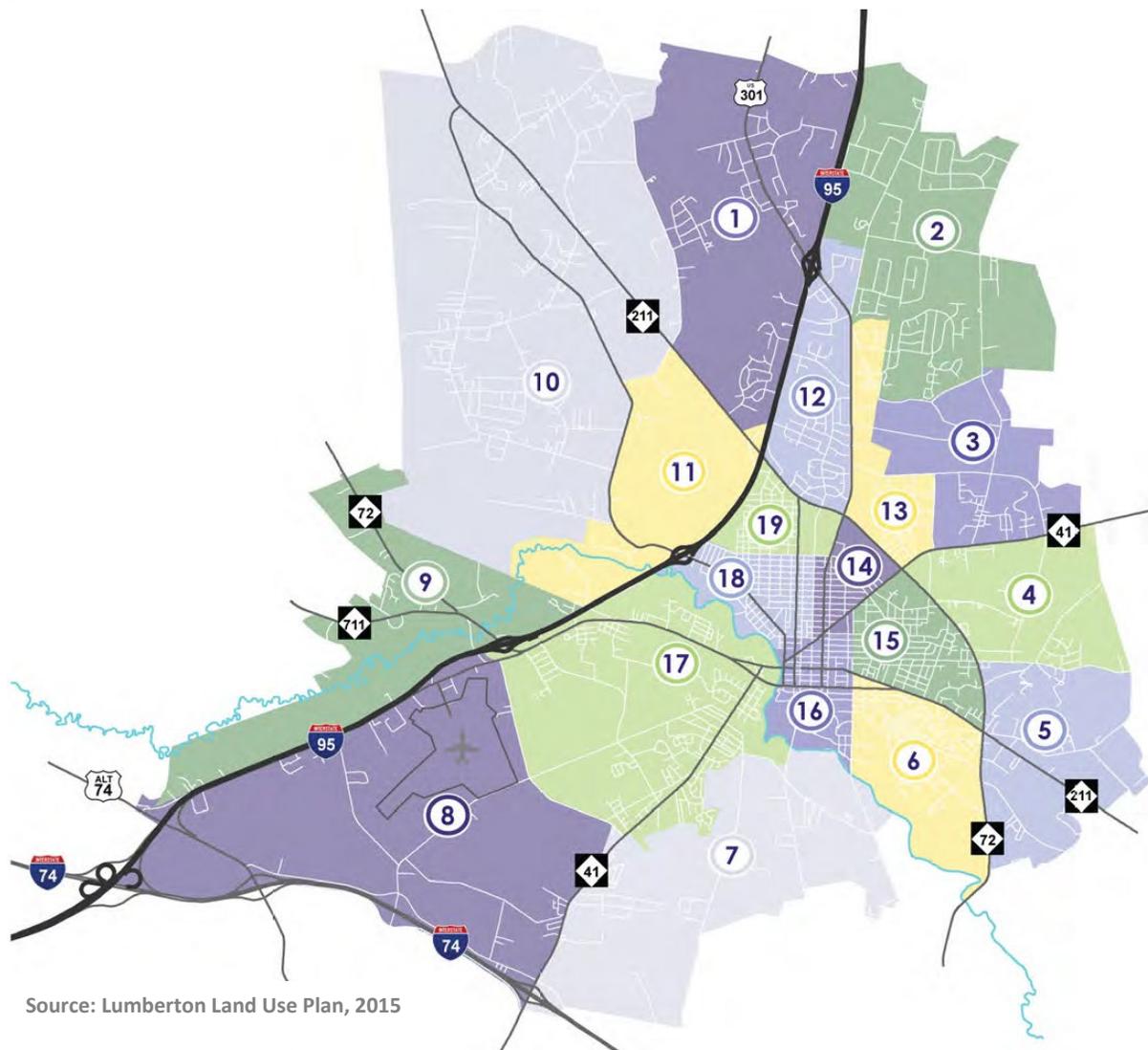
implement change in the community. UNC operates a predominantly Native American campus in Pembroke which is a strong institutional asset for the region.

Lumberton households will require consistent employment and strong wages to recover from Hurricane Matthew and future natural disasters. For decades, Lumberton's economy has struggled with two major challenges. First, wages have stagnated and unemployment has increased while the rest of North Carolina's economy has grown. For example, in 2015, Robeson County manufacturing workers (21% of the county's labor force) earned \$20,973 less than their counterparts across the state (Bureau of Labor Statistics, 2015). This wage disparity results in Lumberton residents having less disposable income to pay for flood insurance, home upgrades, or vehicles and accommodations required for evacuation. Furthermore, many Lumberton businesses were damaged during the storm. The North Carolina Department of Commerce estimates 43% of businesses affected by Hurricane Matthew are at risk of falling into arrears or closing. While detailed information about impacted businesses in Lumberton was not available, the North Carolina Department of Commerce (2017) estimates service and retail sector businesses (more than 27% of the county's workforce) were the most impacted.

### *Land Use*

North Carolina law does not mandate adoption of a land use plan; however, when considering zoning amendments, local governments must approve a statement describing how the action is consistent with an adopted comprehensive plan and any other official plans, as applicable (G.S. 160A383).

Benchmark Planning (2015) completed an update of Lumberton's land use plan. The city was divided into 19 planning areas (Figure 4), of which three (12, 16, and 17 in West and East Lumberton) were identified as those that experienced the greatest devastation from flooding.

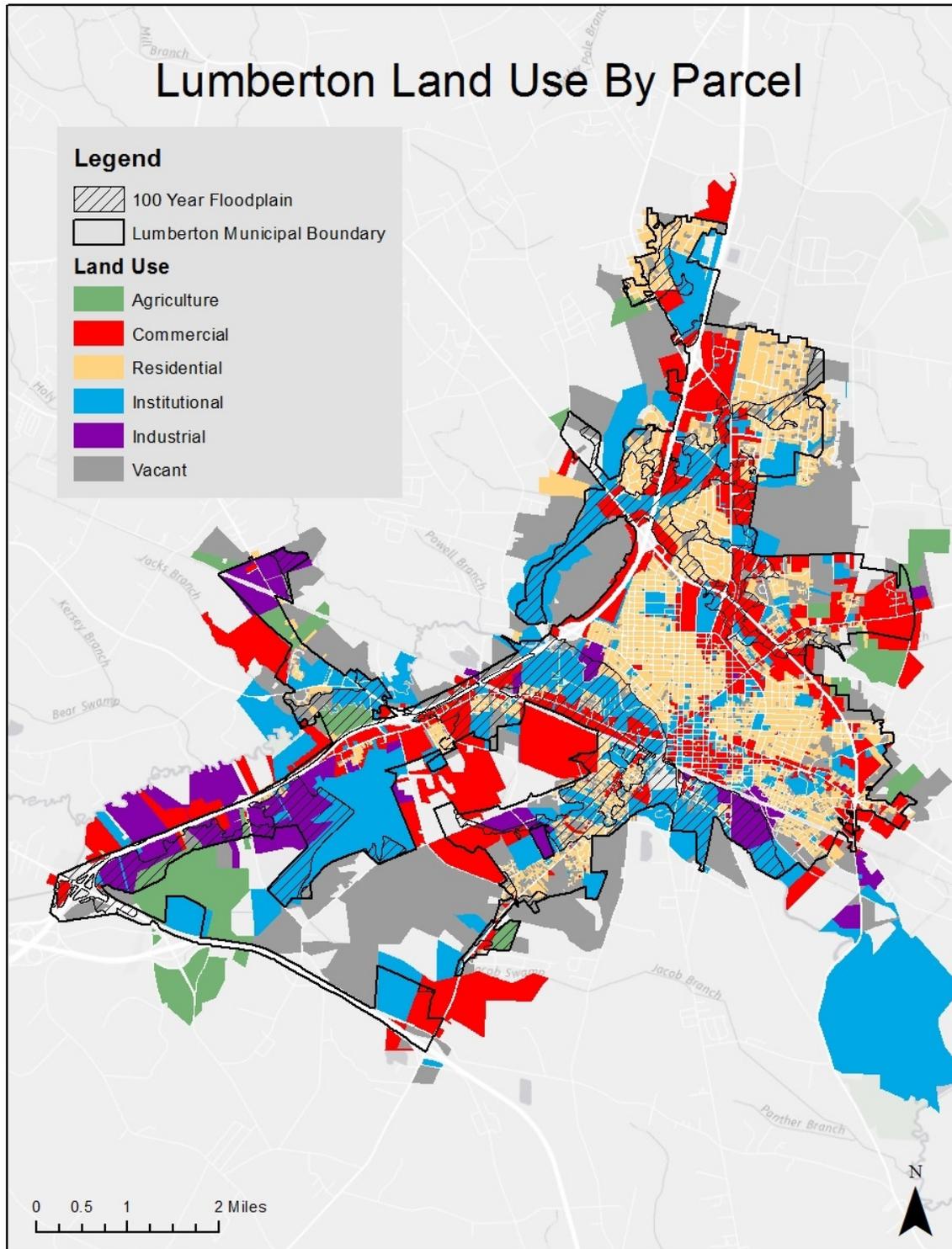
**Figure 4: Lumberton Planning Areas.**

The Lumberton slogan: “When you stop here, you’re halfway there!” highlights the fact that Lumberton is the halfway point between New York and Florida. Hotels, restaurants, and gas stations line Interstate 95 for approximately 12 miles as the highway passes through Lumberton. Roberts Avenue (NC 211) and Fayetteville Road also are important commercial corridors entering Lumberton from the north. Between these roadways are residential neighborhoods not prone to flooding, except for the Best Drive area off Roberts Avenue that borders the Meadow Branch. The CSX Railroad passes southeast through Lumberton, just south of downtown. Immediately north of the Lumber River is the levee, an earthen dike extending south from Interstate 95 for 2.8 miles where it ties in with Alamac Road (SR 2289).

As shown in Figure 5, South and West Lumberton are south of the Lumber River and levee. South Lumberton is primarily residential, while West Lumberton has scattered residential areas and extensive commercial and industrial uses along West 5<sup>th</sup> Street from downtown

to the Interstate 95 exit at Country Club Road (NC 72). Much of the land south of the Lumber River is characterized by low-lying wetlands, commonly known as the Jacobs Swamp Watershed.

Figure 5: Lumberton Land Use by Parcel.



Downtown radiates out from the county courthouse near the intersections of West and East 5<sup>th</sup> Streets, and North Elm and North Chestnut Streets. The area extends north to 15<sup>th</sup> Street just beyond Elizabethtown Road. Downtown extends south across 2<sup>nd</sup> Street to just beyond 1<sup>st</sup> Street. The far eastern boundary of downtown extends to City Hall at Cedar Street and the Lumber River serves as the western boundary. Lumberton's downtown has survived the exodus of businesses by maintaining many destinations important to city residents, such as several locally owned retail and services businesses, the library, civic center, courthouse, and City Hall.

One of the major planning challenges facing the City of Lumberton is the concentration of development within flood-prone areas. The County's Multi-Jurisdictional HMP (Robeson County Emergency Services, 2017) provides cost estimates of potential building damages for several land use categories within the 100-year floodplain (Table 6).

<b>Table 6: Estimated Building Damage and Content Loss – 100-year Return Period</b>						
<b>Occupancy Type</b>	<b>Total Number of Buildings with Loss</b>	<b>Total Value (Building &amp; Contents)</b>	<b>Estimated Building Damage</b>	<b>Estimated Content Loss</b>	<b>Estimated Total Damage</b>	<b>Loss Ratio</b>
<b>Zone AE</b>						
Agricultural	0	\$0	\$0	\$0	\$0	0.00%
Commercial	84	\$81,316,353	\$2,153,875	\$7,630,010	\$9,783,885	12.03%
Education	12	\$10,792,044	\$307,307	\$1,788,292	\$2,095,599	19.42%
Government	3	\$3,150,690	\$110,644	\$774,001	\$884,645	28.08%
Industrial	1	\$478,868	\$42,667	\$38,788	\$81,456	17.01%
Religious	9	\$1,097,787	\$324,124	\$1,395,673	\$1,719,798	156.66%
Residential	1,521	\$375,930,974	\$13,638,532	\$14,705,523	\$28,344,056	7.54%
<b>Total</b>	<b>1,630</b>	<b>\$472,766,716</b>	<b>\$16,577,149</b>	<b>\$26,332,288</b>	<b>\$42,909,437</b>	<b>9.08%</b>

Source: Robeson County Emergency Services (2017). NOTE: AE zone is the area within the 100-year floodplain in which the annual chance flood elevations are known.

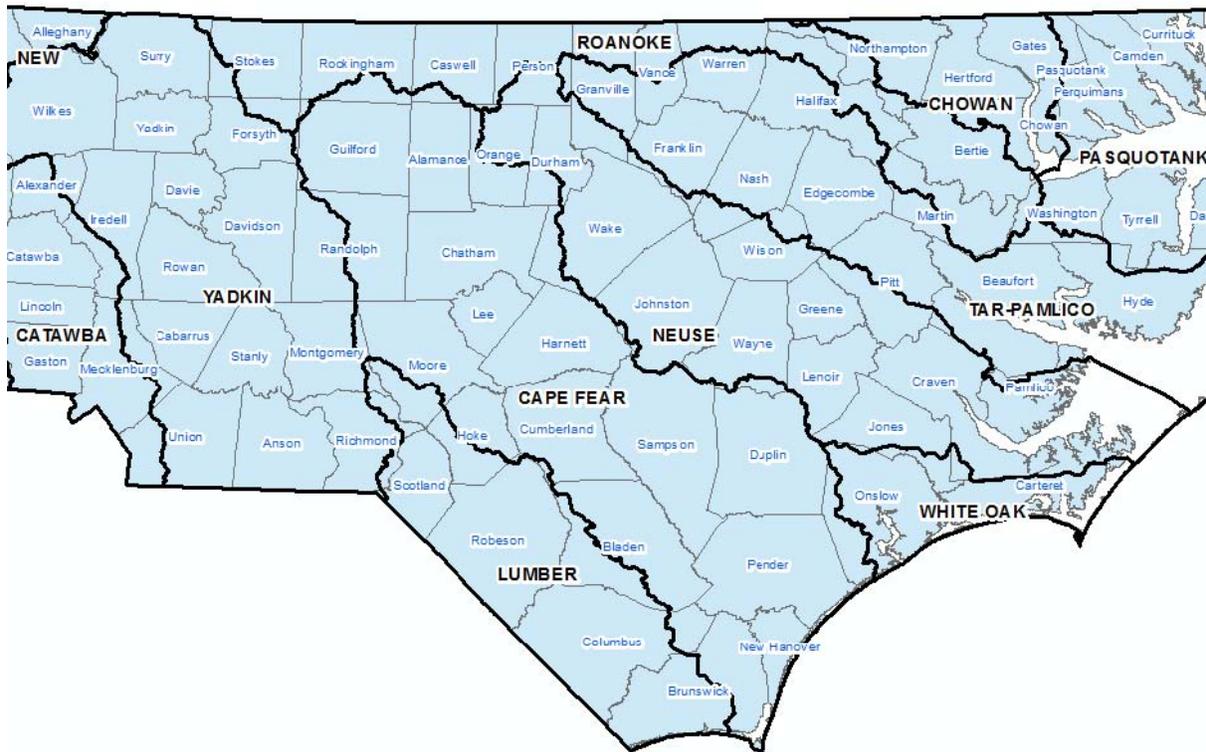
The loss ratio in Table 6 is the loss estimate divided by the total potential exposure (i.e., total improved and contents value for all buildings located within the 100-year floodplain), displayed as a percentage loss. FEMA considers loss ratios greater than 10% to be significant and an indicator that a community may have more difficulties recovering from a disaster event (Robeson County Emergency Services, 2017).

Lumberton's Land Use Ordinance includes a Lumber River Protection Overlay District (Section 35-141) that establishes a 100-foot riverbank buffer in which no new buildings may be constructed and disturbance of vegetation is strictly regulated. As a result of Hurricane Matthew, the City has had an opportunity to assess whether the 100-foot buffer was sufficient to protect the flood storage functions set out in Section 35-141(b). In addition, the City should consider expanding the overlay district to all streams and creeks such as the Five Mile, Ivy, and Meadow branches. The overlay district's stated goal is to conserve the floodplain's flood storage functions (Section 35-141(b)). As previously mentioned, the Flood Prevention Ordinance only applies to the 100-year floodplain, which is problematic in light of the expected intensification of natural hazard events due

to climate change. Regulations in these districts include: 1) the prohibition of any encroachment that would raise the base flood (100-year flood) level, and 2) the requirement that new or renovated construction (exceeding 50% of the structure's value) must be elevated 2 feet above BFE (or if the BFE is undetermined, elevated 2 feet above the highest adjacent grade), with exceptions for some specific districts where flood-proofing is an acceptable substitute for elevation of non-residential buildings (Section 35-269.1(2)).

## Environment

**Figure 6: Piedmont and Eastern North Carolina River Basins.**



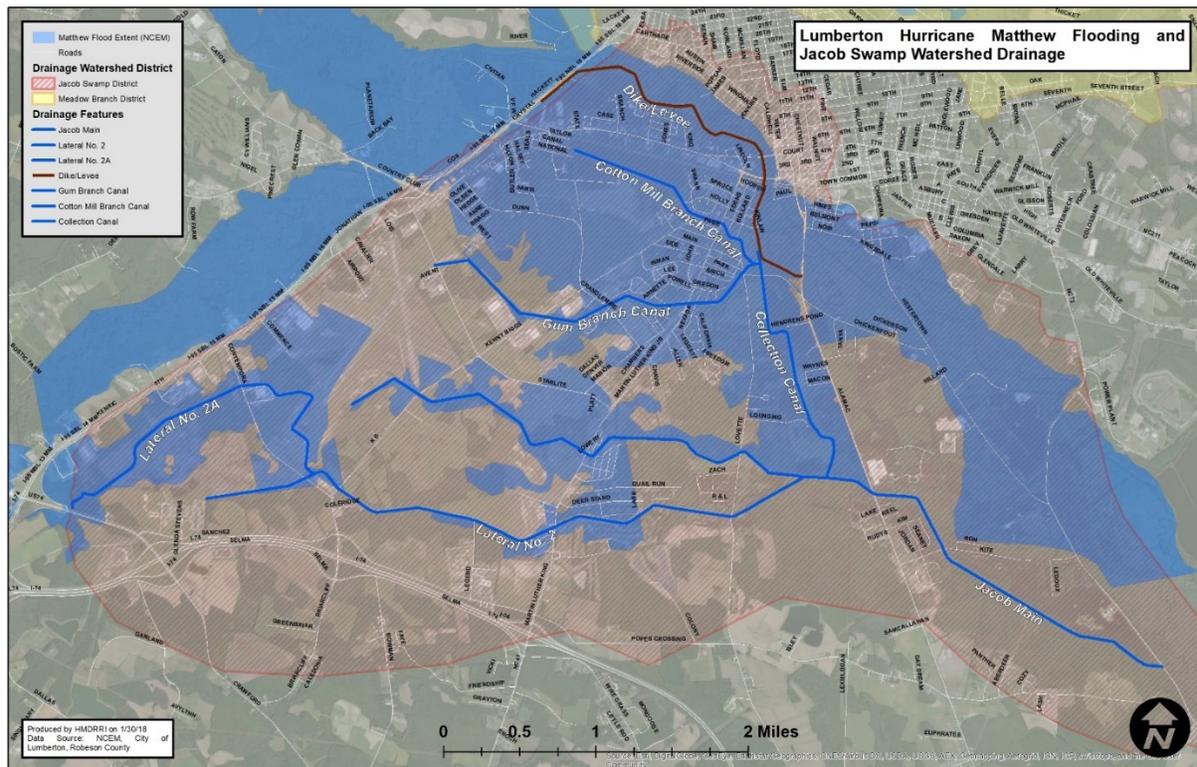
## Drainage

The Lumber River Basin exists primarily within the borders of North Carolina, with a small portion of the drainage area in South Carolina (Figure 6). The basin encompasses 3,343 square miles and four different watersheds: the Lumber River, the Waccamaw River, the headwaters of the Little Pee Dee, and the coastal watershed of the Shalotte/Lockwoods Folly Rivers. Larger municipalities within the Lumber River basin include Lumberton, Laurinburg, Southern Pines, Pinehurst, and Whiteville. The headwaters of Lumber River, known as Drowning Creek, is approximately 89 miles northwest of Lumberton (North Carolina Emergency Management [NCEM], 2018).

There are two watershed drainage areas in Lumberton: Jacob Swamp and Meadow Branch (Figures 7 and 8). In the early 1900s, drainage districts were formed to help flood-

prone areas (e.g., South and West Lumberton) become habitable and useable for agriculture (AECOM, 2017). Mac Legerton, a longtime resident and Executive Director of the Center for Community Action mentioned Hestertown, situated southeast of downtown and east of the levee, has had severe flood issues in the past and several homes were acquired with CDBG funds during the 1980s.

**Figure 7: Jacob Swamp Watershed.**

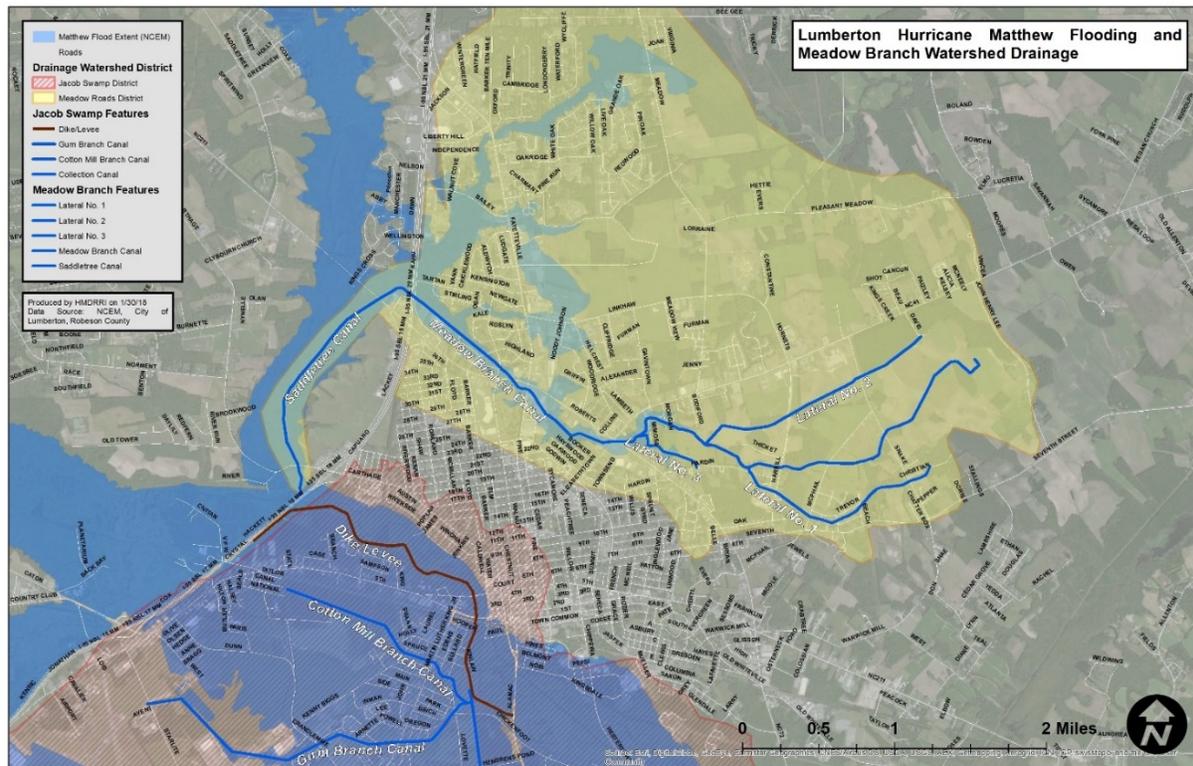


The Jacob Swamp Watershed primarily includes the areas south of the Lumber River, which has a long history of flooding portions of Lumberton. Following the 1964 flood, the Natural Resources Conservation Service (NRCS) developed the Jacob Swamp Watershed improvement Plan to mitigate flooding issues and allow for safer development of the land for commercial, agricultural, and residential uses. These improvements were intended to improve drainage in order to ease flooding concerns and prevent future damages, thereby opening up additional land for agriculture and other types of development. In the Jacob Swamp Watershed, the existing stream channels for Jacob Swamp, Little Jacob Swamp, Gum Branch, and Cotton Mill Branch were widened and deepened. A maintenance plan was put into place to keep these channels and the immediate overbank area free of blockage. Construction began in 1975 on a levee along the Lumber River. The earthen dike was completed by the NRCS in 1977. It tied into Interstate 95 to the north and extended approximately 2.8 miles south, terminating at Alamac Road (SR 2289).

The original watershed improvement plan included provisions for closing the underpass at Interstate 95 and VFW Road (SR 1541); however, those plans were never completed.

The road was to be raised from an elevation of 122.43 feet to 124.53 feet and a 10-foot wide earthen dike was to have been constructed in the area between VFW Road and the railroad. Agreements were reached between all parties, but the permanent improvements were not made (AECOM, 2017). As an alternative, agreements were signed for an emergency sandbagging plan that would interrupt traffic on VFW Road and the railroad during a flood.

**Figure 8: Meadow Branch Watershed.**



In 1998, the U.S. Secretary of the Interior designated 81 miles of the Lumber River as a National Wild and Scenic River (Scenic Rivers Council, n.d.). Lumber River State Park, which encompasses 7,937 acres of land along the river, is located approximately 22 miles downstream from Lumberton. The river is unique considering North Carolina has approximately 37,853 miles of river, but only 144.5 miles (less than 0.4%) are designated as National Wild and Scenic Rivers (North Carolina Department of Environmental Quality, 2010).

Every National Wild and Scenic River is classified into one of three categories:

- **Wild Rivers:** Rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
- **Scenic Rivers:** Rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

- **Recreational Rivers:** Rivers or sections of rivers that are readily accessible by road or railroad that may have some development along their shorelines and may have undergone some impoundment or diversion in the past, as is the case with Lumberton.

The portion of the Lumber River designated as Wild and Scenic stretches from SR 1412/1203 (River Mile 0) to the Scotland/Robeson County line at the end of the Maxton Airport Swamp (River Mile 22) and from Back Swamp (River Mile 56) to the North/South Carolina border (River Mile 115). While the segment from Jacob Swamp Canal (Lumberton) to the border of South Carolina is classified as natural, the segment of the river within the Lumberton city limits is designated as recreational ([www.rivers.gov](http://www.rivers.gov)). Approximately 75% of the river is designated as scenic and 25% as recreational. Moreover, numerous swamps that generally flow northwest to southeast characterize the area and eventually drain into the Lumber River.

### History

The Lumber River has long been used by Native Americans for travel and subsistence. The earliest Native Americans, who may have lived in the region as early as 20,000 B.C., were nomadic and subsisted through food-gathering and hunting. By the 18<sup>th</sup> century, the river and its associated swamps had become a melting pot of several Indian tribes, some of them refugees who fled to the backwoods and swamplands from the coastal regions to escape the attacks of other tribes as well as the westward



Image by: Tim Palmere

advancement of European settlers. It has been speculated that members of Sir Walter Raleigh's "Lost Colony" may have been among these Native American immigrants to the area. The earliest European settlers in Robeson County found several thousand Native Americans who spoke broken English and farmed as Europeans did. Some were blue-eyed and bore familiar English names. Because of a lack of recorded history and a loss of linguistic identity, the history of these people has been shrouded in mystery, conjecture, and myth and their true origins will probably never be known. Having survived the encroachment on their lands, they established rural communities on the banks of the Lumber River where their descendants, known as the Lumbee, live today. They adopted their tribal name officially in 1953 from the Native American name for the river.

According to poet John Charles McNeill (1874-1907), the name Lumbee was originally used for the river, meaning "black water." Early European surveyors and settlers called it Drowning Creek. This name appears in colonial records dated 1749, which identified the river as a branch of the Little Pee Dee River. The name was changed by legislative action in 1809 to the Lumber River, most likely because of the river's heavy use by the lumber industry.

In the late 18<sup>th</sup> and 19<sup>th</sup> centuries, the lumber and naval stores industries were critical to the region, and the river was a vital route for transporting products. In the late 1800s, 100-foot logs were rafted downriver to Georgetown, South Carolina, and Lumberton was considered an important turpentine and timber town. Unfortunately, no standing structure related to these industries has been found that could be considered of historic value. The few existing structures are younger and in a state of decay. Remnants of bridge abutments, tram bridges, and dock pilings in the Net Hole area are reminders of the lumber and naval stores industries.

### **Scenic/Aesthetic Resources**

The Lumber River corridor possesses a high level of scenic integrity (i.e., the landscape character is largely intact and natural in appearance) for most of its 115 miles, making it highly attractive to canoeing, kayaking, and fishing. The surrounding area provides excellent camping, hiking, birding, and hunting opportunities. The river is predominantly bottomland hardwood swamp, which is rare in the National Wild and Scenic Rivers System. Only the upland pine forest areas of Pembroke, Lumberton, and Fair Bluff are composed of substantially developed land. While other rivers within the region (e.g., the Black, South, and Waccamaw rivers), rival the Lumber's scenic beauty, the Lumber River covers a much larger area.

The river corridor contains some visual features that detract from its natural scenic attractiveness, primarily in the Pembroke, Lumberton, and Fair Bluff areas. Visual intrusions include homes and small businesses, canals, farms, and several bridge and power line crossings. Within Lumberton, there is a dike, buildings to the water's edge, parks, a large water intake structure, stretches of bank hardening, and a small junkyard.

Sandbars, fallen logs, overhanging branches, and an abundant food supply provide excellent habitat and structure for fish. Fishing from the banks and from small boats is popular along most of the river. The species most frequently sought include sunfish (bluegill, warmouth, and redbreast), largemouth bass, catfish, pickerel, and yellow perch.

### **Greenspace and Hazard Mitigation**

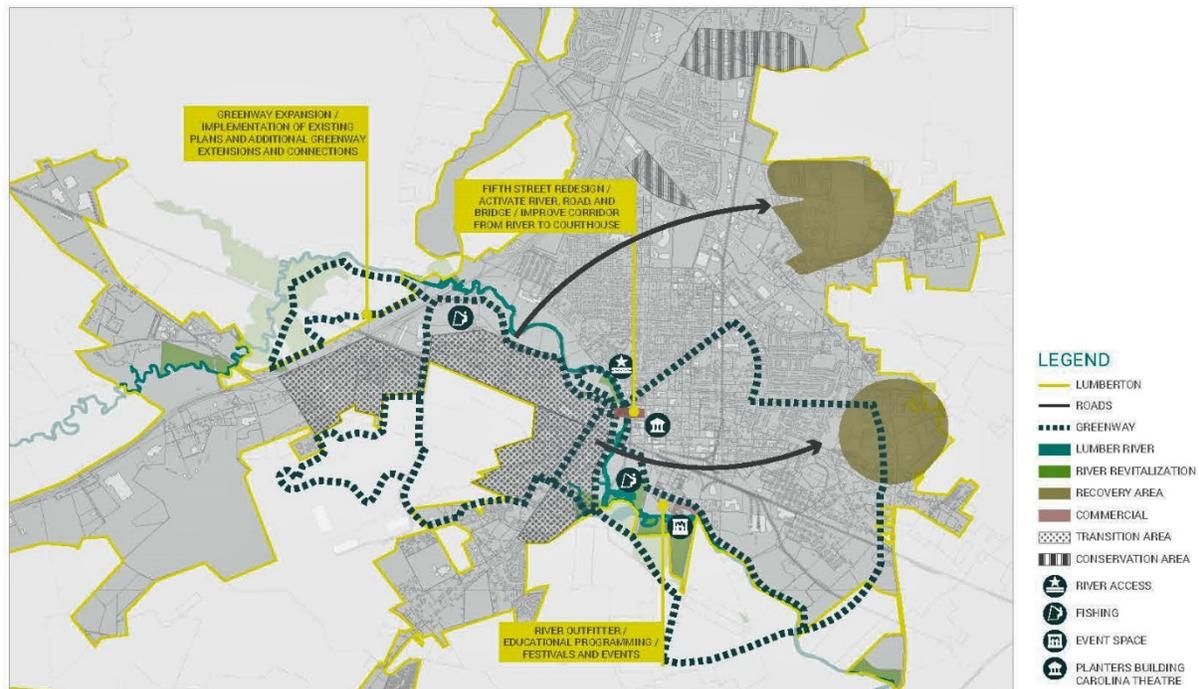
Setting aside land in the floodplain for greenways and greenspace has helped communities across the country protect themselves from flooding. It also provides a shared local amenity and has consistently boosted local economies. Greenspace development is a proven economic-development strategy.

The Trust for Public Land and the Rails-to-Trails Conservancy have found greenways have a positive impact on surrounding property values—homes next to greenways consistently sell faster and for more money than similar homes that are not next to greenways. Parks, trails, and greenways also generate local revenue. The story of high economic return is common to greenway and greenspace developments across the country. Due to

buyouts and relocation following Hurricane Matthew, greenway development is anticipated along several creeks and streams.

Lumberton has a history of greenway planning and development dating back to the 1970s. The greenspace concept map (Figure 9) builds on this legacy and is based, in part, on the recently adopted Lumberton Tomorrow Land Use Plan (Appendix E).

**Figure 9: Greenspace Concept.**



Adapted from: HOMEPLACE report (2017).

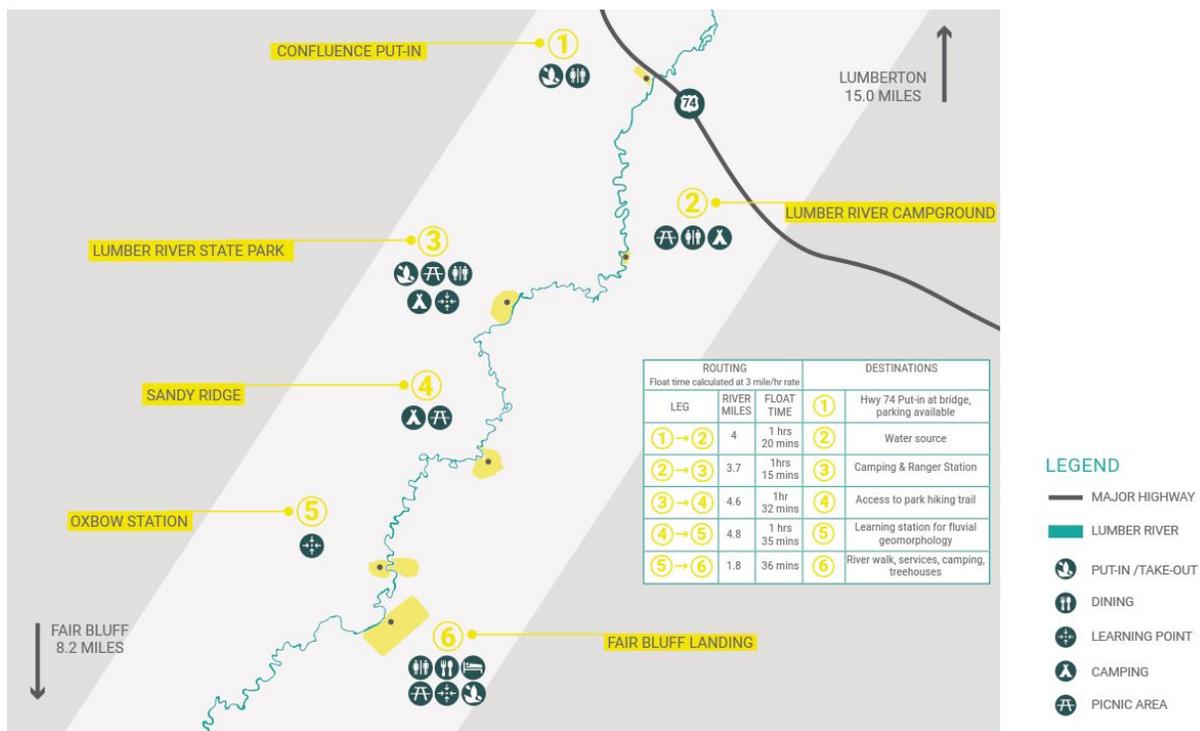
The Lumberton greenway system could include an expanded network of trails, bikeways, passive pocket parks, as well as launching areas for kayaks and canoes that capitalize on the region's waterways such as the Lumber River, Five Mile Branch, Meadow Branch, and Ivey Branch. The primary greenway is a combined bikeway and walking trail that borders the south side of the Lumber River starting downtown at 2<sup>nd</sup> Street and ending at Luther Britt Park near Interstate 95.

A new addition to the city's greenway system will be Riverwalk, located on the bluff side of the Lumber River and extending from downtown to the old water plant on 5<sup>th</sup> Street. The Riverwalk project will include the selective removal of vegetation, thereby opening views from 2<sup>nd</sup> Street to 6<sup>th</sup> Street, and building a viewing pier as described in Appendix E. Funding has been obtained and construction is anticipated to start in fall 2018. This project will expand the downtown public space to support festivals and community events like Chevy to the Levee, a 5k run, and 1-mile walk. The event is held annually and attracts more than 3,000 participants. In addition, implementing a greenspace concept is an opportunity to create stronger connections between downtown and the Lumber

River. The North Carolina State University (NCSU) Department of Landscape Architecture is working with the City to develop a comprehensive open space plan that studies river trails and integrates the buyout properties, including those in South Lumberton and Best Drive. For more information and ideas associated with the Lumberton greenway concept, see Appendix A.

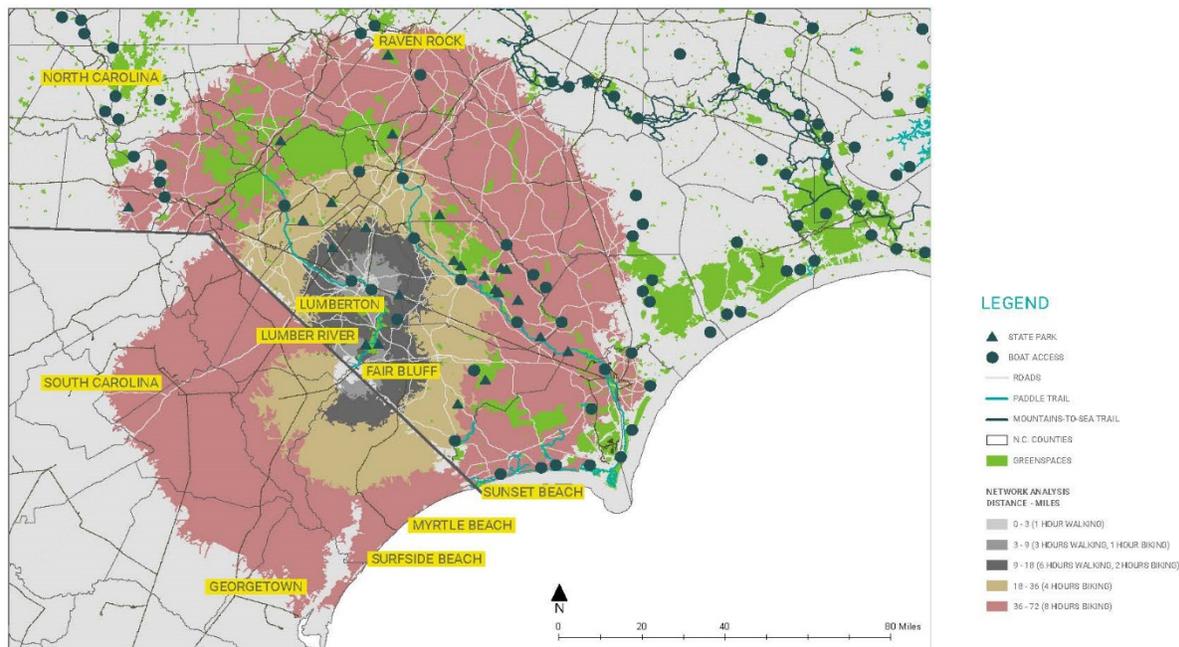
Lumberton's natural amenities make it a desirable recreation destination. The region offers a variety of outdoor activities like kayaking, canoeing, hiking, and fishing as well as three walking loops in the historic downtown: Riverside, Old Lumberton, and Plaza. The Lumber River offers an opportunity to create a blueway (Figure 10) from Lumberton to the Lumber River State Park and on to Fair Bluff. The Superintendent of the Lumber River State Park indicated that he would be happy to work with the city to create a blueway. Lumberton is surrounded by an extensive network of rural back roads that appeal to those interested in long-distance bicycling (Figure 11). Through its Visitor's Center, the City has a unique opportunity to work with the RCHD and Southeastern Health to sponsor a 50-mile backroads bike race, with proceeds supporting non-profit groups that provide health services, or the organizations that may maintain the greenway and associated open space.

Figure 10: Potential Blueway.



Adapted from: HOMEPLACE report (2017).

Figure 11: Lumberton Network Analysis.



**LUMBERTON NETWORK ANALYSIS**

This map illustrates walking and bicycling distances from both Fair Bluff and Lumberton. The purpose of the map is to indicate travel time, with the inner ring representing less than one hour of walk travel time and the outer ring representing an eight-hour bike ride.

Adapted from: HOMEPLACE report (2017).

*Flood Hazard Identification and History*

Lumberton has a history of substantial riverine flooding events, especially following hurricanes and tropical storms that represent ongoing risks to residents, local businesses, and city services. Past floods have caused power outages, water service interruptions, school closures, and displacement for city residents. During Hurricane Matthew, East and West Lumberton experienced the greatest flood damage. While the Hestertown area in southeastern Lumberton experienced flooding during Hurricane Matthew, the area had minimal damages as many homes and commercial businesses were bought out with federal funds following past disasters. The breaching of the levee at VFW Road and the railroad reduced the flood impact from Hurricane Matthew in Hestertown, but created devastating impacts in South and West Lumberton. Like East and West Lumberton, Hestertown is home to primarily low-income and minority residents (M. Legerton, personal communication).

## Sources and Types of Flooding

Flooding within Robeson County can be attributed to two sources: 1) flash flooding from heavy rainfall that overburdens the community's drainage system; and 2) riverine flooding from heavy and prolonged rainfall over the Lumber River watershed. Flooding along the larger streams primarily results from hurricanes, tropical storms, and other major weather fronts, while flooding along the smaller streams mainly is due to localized thunderstorms.

**Riverine Flooding:** Robeson County has numerous streams and tributaries that are susceptible to overflowing their banks during and following excessive precipitation events. While flash flooding caused by surface water runoff is not uncommon in the region, riverine flood events (such as the "100-year flood") can cause significantly more damage and economic disruption.

**Flash or Rapid Flooding:** Flash flooding is the result of heavy, localized rainfall, possibly from slow-moving, intense thunderstorms that cause small streams and drainage systems to overflow. Flash flood hazards caused by surface water runoff are exacerbated in urbanized cities, where greater population density generally increases the amount of impervious surface (e.g., pavement, buildings). Flooding can occur when the capacity of the stormwater system is exceeded or if conveyance is obstructed by debris, sediment, or other materials that limit the volume of drainage (Robeson County Emergency Services, 2017).

## Hurricane Matthew Overview

Like Tropical Storm Dennis, which preceded Hurricane Floyd, Tropical Storm Hermine set the stage for Hurricane Matthew. "On August 29, Hermine intensified to a Category 1 hurricane in the south-central Gulf of Mexico before making landfall in the northeast Florida Panhandle near Cedar Key on September 2. The storm weakened quickly and transitioned to a post-tropical cyclone before moving off the coast on September 3. The system produced very heavy rainfall, rip currents, and three tornadoes in eastern North Carolina" (Newport/Morehead City, North Carolina Weather Forecast Office, August 2-3, 2016.). Tropical Storm Hermine along with the recent summer rains created a situation where a number of rivers, particularly the Lumber, rose above flood stage prior to the onset of Hurricane Matthew.

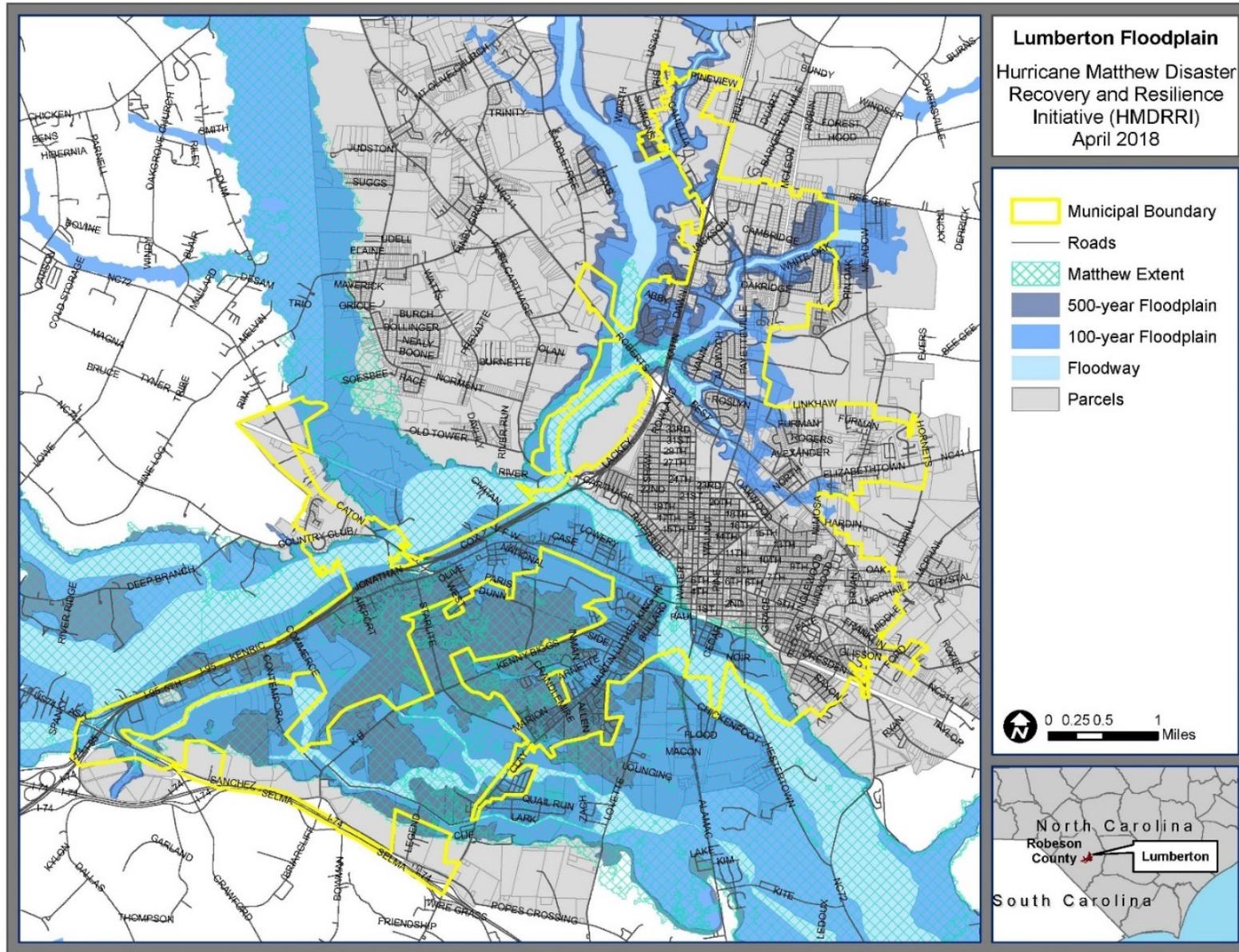
On October 8, 2016, intense rain from Hurricane Matthew began to fall in the City of Lumberton and across the Lumber River watershed. Rainfall continued through October 9, resulting in Lumberton receiving approximately 12 inches of rain over 2 days, causing widespread flooding. In the early morning of October 10, the Lumber River overwhelmed the sandbagging effort at the VFW Road underpass, and water began flowing into the area ostensibly protected by the levee system. The floodwaters washed out the railroad and overtopped VFW Road, resulting in flood depths greater than 4 feet in many areas, including the City's water treatment plant. The flooding was the result of

several contributing factors, including the flooding of interior drainage channels, backwater from the Lumber River, and the inflow of floodwater through the VFW Road underpass. Investigation of the levee breach did not show any signs the levee was compromised (AECOM, 2017).

The Lumber River and Jacob Swamp drainage area have a long history of flooding the City of Lumberton. In the early 1900s, drainage districts were formed in Robeson County to help flood-prone areas become inhabitable and usable for agriculture. Significant flooding occurred in 1928, 1945, and 1964 causing road closures, loss of crops, and property damage or loss. The 1964 flood event prompted Robeson County Drainage District Number 1 and Natural Resources Conservation Service (NRCS) to initiate the "Jacob Swamp Watershed Improvement Plan" to prevent further loss of life and property. The Plan included the construction of a levee along the right bank of Lumber River, widening and deepening the existing stream channels of Jacob Swamp, Little Jacob Swamp, Gum Branch, and Cotton Mill Branch, construction of a collection canal inside the area protected by the levee, closing of the underpass at Interstate 95 and VFW Road (SR 1541), and the adoption of operation/maintenance strategies (ESP Associates, 2018). While most of the flooding from Hurricane Matthew occurred south of the levee, the streams on the north side of the city also experienced flooding, albeit not as severely.

Figure 12 depicts the flood extent of Hurricane Matthew relative to the 100-year and 500-year floodplains. As described earlier, the areas most susceptible to flooding are neighborhoods situated on the south side of the Lumber River, especially South and West Lumberton. Areas on the north side of Lumberton do not have the same propensity to flood. Areas where development borders the waterway (e.g., Best Drive), property owners are at greater risk of flooding and have flooded on numerous occasions in the past.

Figure 12: Hurricane Matthew Flood Extent.



## Vulnerability Assessment

### Overview

Countywide, flooding from Hurricane Matthew displaced up to 5,000 people and damaged up to 7,000 structures (Douglas, 2016). FEMA surveyors recorded 1,738 properties in Lumberton that had sustained some level of damage (Appendix A). Approximately 87% of impacted structures were residential dwellings, and 38% of those residences had moderate to severe damage (FEMA, 2016). West and South Lumberton, including 2<sup>nd</sup> Street and Martin Luther King Jr. Drive, experienced the worst damage in the county (Gellalty, 2016). Structural damage in those areas resulted from a combination of flooding and fallen trees (Leclercq, 2016). The flooded areas are predominantly populated by African American residents (Harlan and Fritz, 2016). Immediately south of Lumberton, outside the city limits on Alamac Road, 20 homes and a fire station were lost (Leclercq, 2016). Road networks also suffered heavy damage. As of mid-January 2017, approximately 80% of the 255 damaged sites had been repaired, but 26 roads were still closed to traffic, including 3 primary roads (Shiles, 2017; Table 7).

<b>Land Use Category</b>	<b>Estimated Potential Damage to Buildings and Building Contents</b>	<b>Loss Ratio</b>
Agricultural	\$0	0.00%
Commercial	\$9,783,885	12.03%
Education	\$2,095,599	19.42%
Government	\$884,645	28.08%
Industrial	\$81,456	17.01%
Religious	\$1,719,798	156.66%
Residential	\$28,344,056	7.54%
<b>Total Damages</b>	<b>\$42,909,437</b>	<b>9.08%</b>

Source: Robeson County Multijurisdictional Hazard Mitigation Plan, 2017.

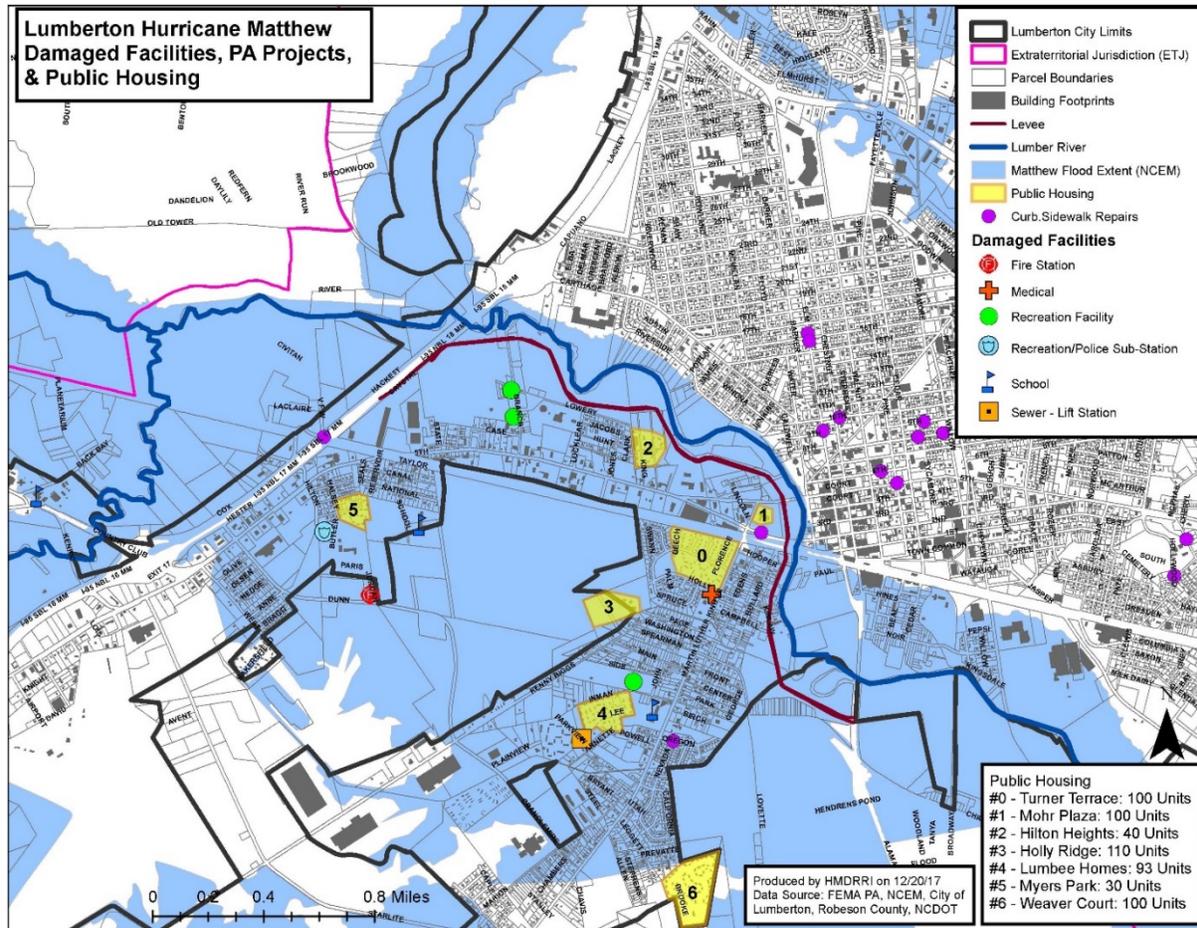
### Infrastructure and Public Facilities

The City's electric substation and water treatment plant were flooded (Figure 13), leaving the entire city without power or water (Gellalty, 2016; Quillin, 2016). By October 12, power was restored to approximately 90% of the city, with the exception of areas where localized flooding remained, namely west and south of the levee (Douglas, 2016). Using portable water treatment equipment/trailers, water was restored nine days after the storm passed, albeit at partial capacity and including a boil-water advisory (Willetts, 2016).

Luther Britt Park sustained heavy damage to its beach house and maintenance building, vehicles, and equipment. As of mid-January 2017, the park was open to visitors, although the damage had not yet been fully repaired while the Parkview Activity Center had to temporarily close due to flood damage, which reduced the number of basketball courts

available. Participants in the youth basketball program actually grew in numbers over the following year (Bigelow, 2017).

Figure 13: Damaged Public Facilities.



### Schools

Robeson County public schools were affected by the damage to facilities and by the impacts on the students and teachers. Three weeks of classes were missed and thousands of students lacked clothing and school supplies (Douglas, 2016). While public schools sustained widespread damage at 14 sites throughout the county, the most extensive damage occurred to its facilities in Lumberton. The flooding destroyed the Central Office Complex, which housed the administration, maintenance, purchasing, and nutrition services offices along with a fleet fuel depot and the school system's data center. West Lumberton Elementary School suffered heavy damage. H. Knuckles Elementary School in East Lumberton was flooded but not as badly as West Lumberton Elementary School. The cafeteria and kitchen area experienced 20 inches of standing water, requiring replacement of flooring, wall board, insulation, and doorways (ESP Associates, 2018).

## Economy

The flooding heavily impacted the local economy and by late October 2016, numerous businesses were still closed (Gellalty, 2016). The county's unemployment rate climbed from 6.8% to 10.3% by the end of October. The Robesonian newspaper office in Lumberton was flooded (Douglas, 2016). Dobb's Enterprise, a used car dealership on West 5<sup>th</sup> Street, lost 50 cars, suffered extensive building damage, and did not have flood insurance and yet they chose to rebuild. The boil-water advisory that persisted after the floods receded also put a damper on restaurant business (Gellalty, 2016).

Lumberton is not an affluent community and many families experienced significant new financial burdens affecting their ability to recover and return to their homes. Many low-income homeowners did not have flood insurance and the assistance provided by FEMA did not cover all of the associated repair costs. These homeowners have had to rely on volunteers and donations from community and faith-based organizations to return their homes to a livable condition (Quillin, 2016). For those who have insurance or choose to purchase it, insurance premiums are expected to rise because the city is now considered to be a greater risk (Thrasher, 2016). Additionally, more than 5,000 cars were damaged irreparably in Lumberton, removing some families' only means of transportation (Shaffer, 2016).

## Land Use

A number of areas in Lumberton are vulnerable to flooding (FEMA, 2016). Of particular concern is the concentration of commercial and industrial districts in hazardous areas because damage to that infrastructure impedes the recovery of an economy that was struggling before Hurricane Matthew hit. The Martin Luther King Jr. corridor, which was devastated by flooding, is zoned primarily as low-density residential and multi-family, with isolated pockets of single-family development. There also are a fair number of business/commerce districts and several office/residential mixed-use districts along the corridor. The western end of 2<sup>nd</sup> Street and West 5<sup>th</sup> Street, which also sustained heavy flood damage, are zoned for business/commercial and light industrial uses, with a couple pockets of low-density residential. East of the river and south of the railroad tracks are some low-density residential (single-family and duplex) districts, a heavy manufacturing district (currently occupied by Buckeye Lumberton), and a large light manufacturing district. All of these areas were flooded during Hurricane Matthew. The southwestern portion of Lumberton along Interstate 95, which is zoned commercial and industrial (light and heavy manufacturing) due to its proximity to the airport, was also heavily impacted.

In the aftermath of Hurricane Matthew, flooding reached well beyond the boundaries of the 100-year floodplain. Table 8 presents a breakdown of inundated areas by land use category. Institutional and vacant uses make up the greatest share of the flooded area, though some of the impacted institutional uses are conservation areas or parks. Commercial and industrial uses collectively make up more than 25% of the total flooded area. It should be noted that these are provisional data, and it appears that some

information is missing. For example, The Robesonian's (local newspaper) office was flooded by Hurricane Matthew (Douglas, 2016), but does not appear in FEMA's data set.

**Table 8: Area Flooded by Hurricane Matthew**

Land Use	Flood Extent (Acres)	% of Total Flooded Area
Agriculture	346.1	4.61%
Commercial	1,227.0	16.36%
Residential	439.2	5.86%
Institutional	2,671.4	35.61%
Industrial	821.1	10.95%
Vacant	1,996.0	26.61%
<b>Total</b>	<b>7,500.8</b>	<b>100.00%</b>

Source: Baumann-Mitchell et al. (2017).

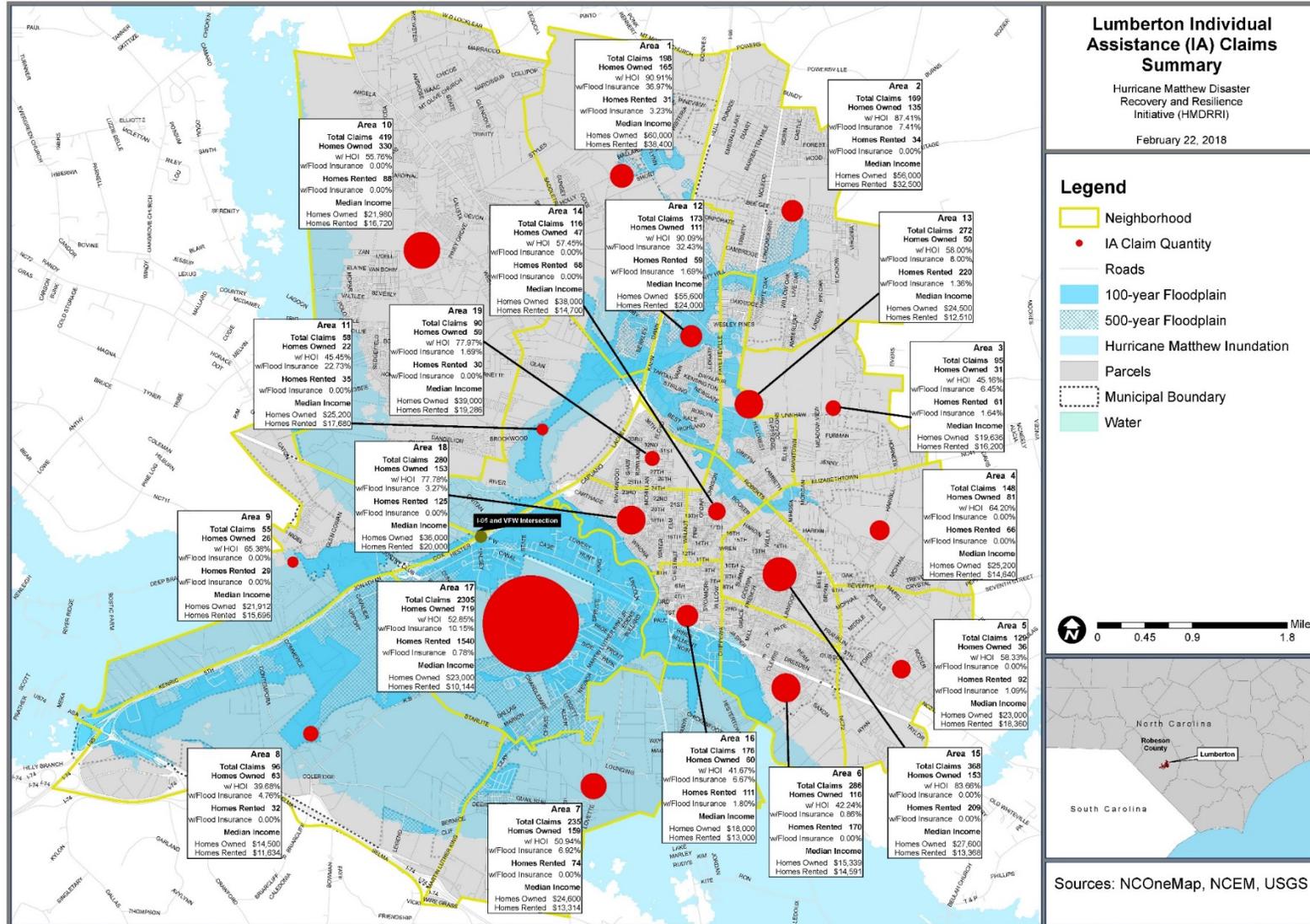
## Housing

In Lumberton, more than 876 structures received major to severe damage. Most (60%) of the structures were rental properties, while the remaining 40% were owner-occupied homes (NCEM, 2017). South and West Lumberton, the neighborhoods having the highest level of poverty in the city, contained more than 53% of the damaged structures.

The City of Lumberton is working with FEMA and the North Carolina Housing Finance Agency (NCHFA) to ensure families receive funds to rebuild their homes. Based on conversations with the City Manager and Planning Director, flooding impacts were not equally distributed throughout the city. According to Bill French, Lumberton's Emergency Services Director, residents with limited financial resources were the most impacted. This was corroborated by Stephanie Chavis, Robeson County Emergency Management Director.

Figure 14 summarizes the 5,590 IA claims made by Lumberton residents. Most IA claims are requests for financial assistance to individuals and families whose property has been damaged or destroyed as a result of a federally declared disaster, and whose losses are not covered by insurance (FEMA, 2018). Throughout Lumberton, 55% of claims were filed by renters and the remaining 45% were filed by owner-occupied homeowners. Almost 41% of claims were from residents in Planning Area 17 (South Lumberton), and nearly 70% of the claims in South Lumberton were filed by renters.

Figure 14: Individual Assistance Claims by Planning Area.



Lumberton experienced substantial loss of rental housing. The state reported that renters severely impacted by the storm typically were located in low- and moderate-income households. The most impacted neighborhoods in Lumberton were West and East Lumberton, where 739 residences were lost. Of these homes, 275 were owner-occupied homes and 464 were rentals (NCEM, 2017).

The HACL owns and manages 11 property sites, totaling 729 housing units, throughout the City of Lumberton (Figure 2). Six properties are within or adjacent to the 100-year floodplain. Five properties (Hilton Heights, Lumbee Homes, Myers Park, Turner Terrace, and Weaver Court) sustained substantial damage during the flooding, while the sixth property, Mohr Plaza, did not sustain any damage. Although the high-rise building was not flooded, the surrounding area (parking lots, alleys, roads) was under water, which poses a risk for the senior citizens living in the building who may have critical medical needs as access to the building may be limited.

The HACL has a 5-year planning document in addition to an annual plan. The 5-year plan was updated to reflect changes due to Hurricane Matthew damages and proposed procedures for restoring units. According to the latest annual plan (FY 2018), FEMA has committed more than \$12.9 million in federal funding to help repair and reconstruct flood-damaged units. In addition, damaged buildings that had flood insurance received more than \$4.3 million in insurance proceeds. Due to the location and extensive damage to Myers Park and Hilton Heights, these properties are anticipated to be relocated outside the floodplain. Lumbee Homes, due to its age and condition, is scheduled for modernization and remodeling.

The CDBG-DR program has identified HACL as having the most extensive damage among all public housing impacted by Hurricane Matthew. An estimated 264 families were displaced. Damages totaled approximately \$8 million, of which approximately \$3 million will be covered by flood insurance. The remaining \$5 million represented an unmet need. As of March 2017, the Public Housing Restoration Fund administered by NCEM set aside \$5 million for the Lumberton Public Housing Authority to address this unmet need. The State of North Carolina proposed to award \$3.75 million in the first year and \$1.25 million in the second year for restoration of HACL public housing (ESP Associates, 2018).

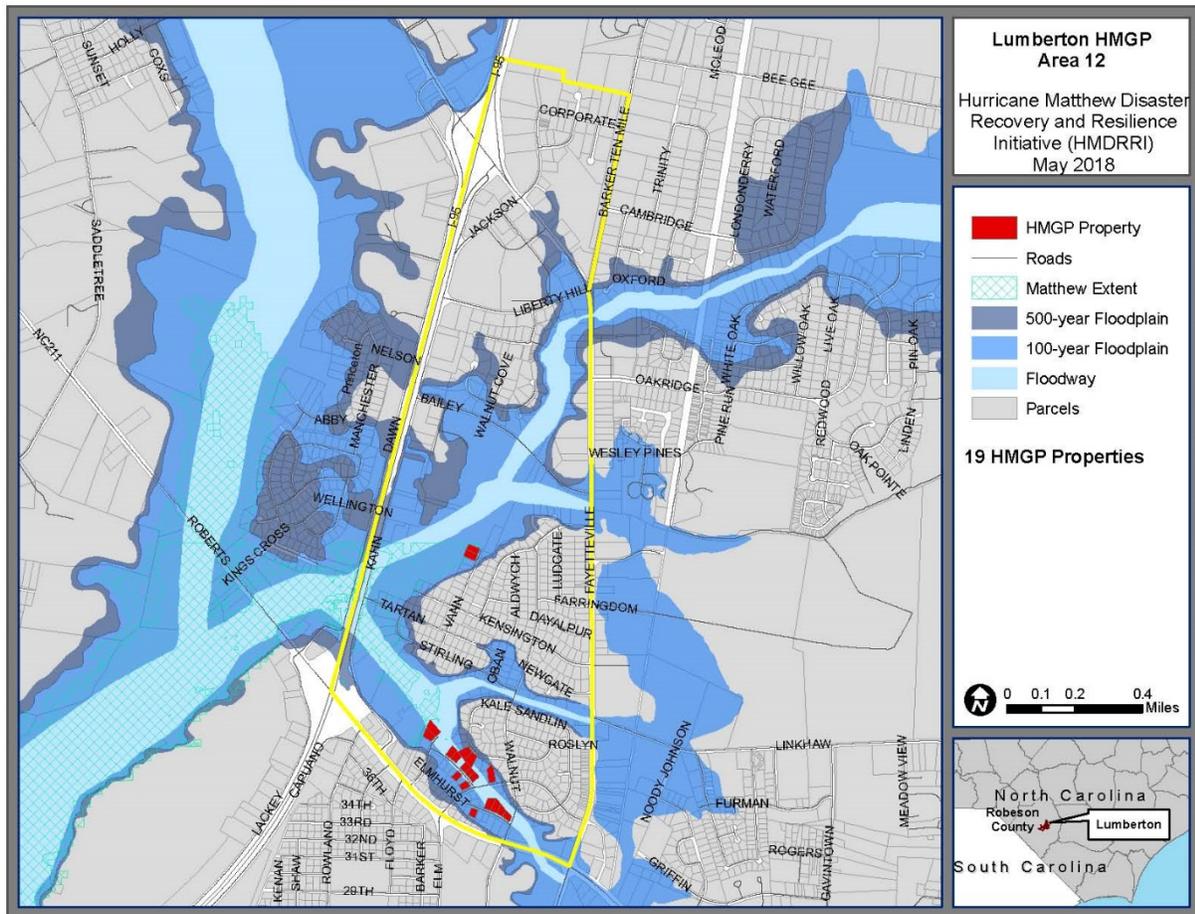
The NCEM surveyed other housing providers like the North Carolina Housing Finance Agency (NCHFA) to assess damages and unmet needs due to Hurricane Matthew. In Lumberton, NCHFA operates First Baptist Homes on Marion Road in South Lumberton. While the development had 40 damaged properties, the NCHFA believe they have sufficient funds to make the needed repairs (NCEM, 2017).

During 2017, NCEM invited property owners interested in acquisition, elevation, or relocation projects to submit an owner interest form to the local government. The City of Lumberton received 300 applications. In March 2018, the City was told by the NCEM Recovery Team that 106 properties were selected for funding. Of the 106 approved

HMGP applications, 47 were for buyouts (\$6.01 million), 23 for elevation (\$2.87 million), and 36 for reconstruction (\$4.66 million) (Bradley, 2018).

Figures 15, 16, and 17 depict the locations of the selected HMGP properties in Planning Areas 12, 16, and 17. There are other applicants seeking buyouts in the Best Drive area near the intersection of North Roberts Avenue and Interstate 95 as shown in Figure 15.

**Figure 15: Location of HMGP Applications for Acquisition/Relocation, Elevation, or Reconstruction (Yellow boundary defines Area 12).**



**Figure 16: Location of HMGP Applications for Acquisition/Relocation, Elevation, or Reconstruction (Yellow boundary defines Area 16).**

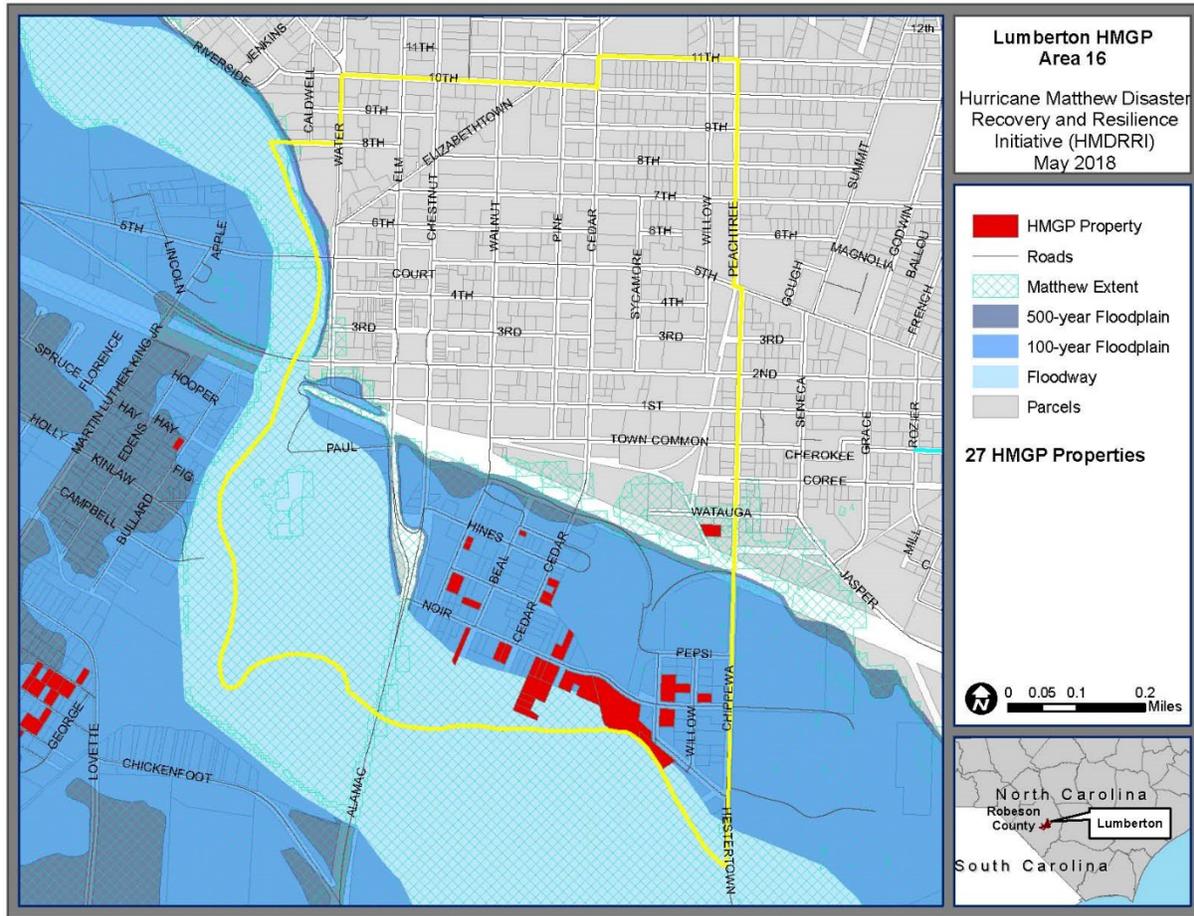
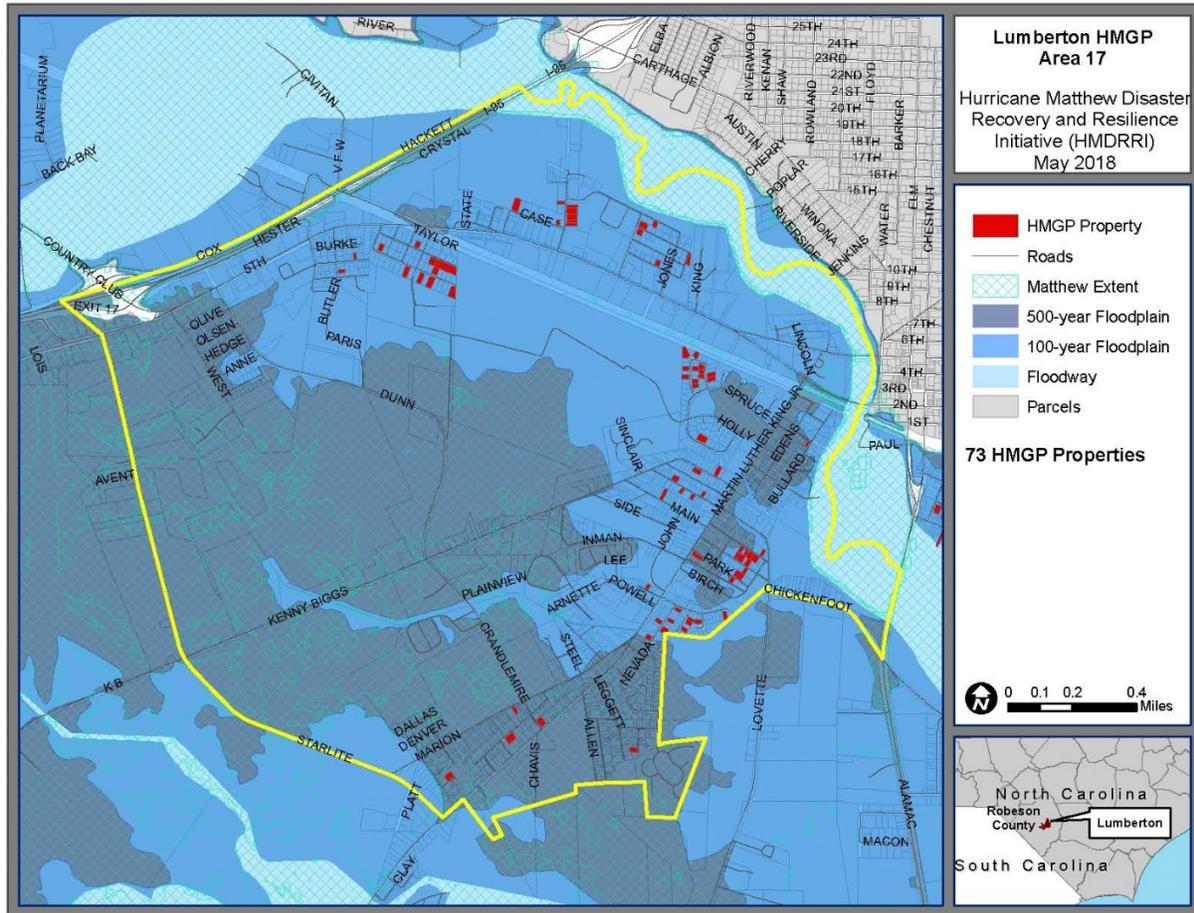


Figure 16 shows the clustering of HMGP properties in the southern portion of Area 16. In Area 17, the HMGP properties form a band that follows the bend in the Lumber River as depicted in Figure 17.

Figure 17: Location of HMGP Applications for Acquisition/Relocation, Elevation, or Reconstruction (Yellow boundary defines Area 17).



## Capability Assessment

A capability assessment evaluates a jurisdiction's financial and administrative capacity to act as well as its existing programs and plans. Collectively, the assessment helps identify gaps that can be addressed through new or modified policies and projects identified in Chapter 3. Plan evaluations help identify existing decision-making processes with regulatory standing to build upon in the recovery plan, and existing programs that should be altered based on goals found in this recovery plan.

## Financial Capability

Among the most important indications of financial strength are ratings by bond agencies (Table 9). Lumberton has an “upper middle” rating by two agencies (Moody’s Investor Services and Standard & Poor Financial Services, LLC (as highlighted in yellow). Ratings consider many characteristics of the community, including socioeconomic circumstances. Lumberton and Robeson County are challenged by issues of poverty, blight, joblessness, and low education attainment. Poor health, crime, and addictive behaviors plague the area, straining the capacity of law enforcement and social services demanded of hospitals and other institutions. Regional economic conditions have deteriorated over a long period due to changes in industrial sectors (e.g., tobacco, textiles). Economic revival is possible, however, as are community revitalization programs described throughout this recovery plan. Anecdotal information from employers suggests a specialized emphasis on workforce development will be a necessary component of economic recovery for the region.

**Table 9: Bond Ratings.**

<b>Lumberton 2017 Bond Ratings</b> (highlighted in yellow)			
<b>Moody's Long-term</b>	<b>S&amp;P Long-term</b>	<b>Rating description</b>	
Aaa	AAA	Prime	Investment-grade
Aa1	AA-	High grade	
Aa2	AA		
Aa3	AA-		
A1	A+	Upper medium grade	
A2	<b>A</b>		
<b>A3</b>	A-		
Baa1	BBB+	Lower medium grade	
Baa2	BBB		
Baa3	BBB-		
Bal	BB+	Non-investment grade speculative	
Ba2	BB		
Ba3	BB-		
B1	B+	Highly speculative	
B2	B		
B3	B-		
Caa1	CCC+	Substantial risks	Non-investment grade AKA highly-yield bonds AKA junk bonds
Caa2	ccc	Extremely speculative	
Caa3	ccc-	Default imminent with little prospect for recovery	
Ca	cc		
	c		
C	D	In default	
<i>i</i>			

**Table 10: Lumberton financial summary, 2013-2017.**

Audit Year	Total Margin Ratio	Total Resource Inflow	Total Resource Outflow	Percent Change In Net Assets	Change In Net Assets	Net Assets	Charge To Expense Ratio	Charges For Services	Total Expenses	Debt Service Ratio	Debt Service	Total Expenses Plus Principal
2013	0.92	27,414,732	29,884,135	-9.9	-2,469,403	24,933,387	0.23	6,962,443	29,884,135	0.04	1,342,375	30,680,362
2014	0.93	27,009,467	28,919,161	-8.5	-1,909,694	22,463,984	0.27	7,925,581	28,919,161	0.13	4,297,834	32,696,230
2015	0.93	28,029,854	30,170,483	-10.9	-2,140,629	19,634,490	0.26	7,844,208	30,170,483	0.05	1,652,680	31,215,466
2016	0.99	29,051,721	29,276,053	-1.28	-224,332	17,493,861	0.26	7,635,771	29,276,053	0.04	1,350,002	30,017,795
2017	1	31,923,612	31,815,063	0.7	108,549	15,500,099	0.25	7,999,069	31,815,063	0.04	1,407,013	32,629,695

Audit Year	Liquidity Quick Ratio	Cash Investments	Current Liabilities	Net Assets Ratio	Unrestricted Net Assets	Total Liabilities	Debt To Assets Ratio	Long Term Debt	Total Assets	Capital Assets Condition Ratio	Accumulated Depreciation	Capital Assets
2013	1.39	6,709,033	4,830,934	-0.15	-4,378,817	28,260,095	0.3	15,195,965	50,724,079	0.5	17,820,682	35,599,840
2014	3.73	6,195,372	1,660,181	-0.24	-7,237,852	30,503,299	0.31	15,833,876	51,057,587	0.48	19,164,703	36,594,387
2015	3.82	6,298,433	1,650,787	-0.32	-11,064,071	34,320,679	0.3	15,618,893	51,814,540	0.5	20,369,622	40,799,720
2016	3.68	7,094,871	1,930,015	-0.33	-11,096,705	33,531,115	0.3	15,187,152	50,800,644	0.49	20,879,393	40,776,355
2017	3.65	8,257,612	2,260,983	-0.36	-14,139,713	39,037,428	0.27	14,837,520	54,646,076	0.47	22,001,245	41,264,367

A financial assessment evaluates internal and external funding that can be marshaled to address disaster recovery needs (Table 10). Internal funding is typically associated with existing operating budgets (e.g., tax revenues, savings, fees), which can be stressed following disasters. This is particularly evident in small and mid-sized towns and cities with limited or non-existent savings and reserves. In the short term, municipal resources may be spent repairing damaged infrastructure and public facilities, removing debris, paying for local employees' overtime and contractor expenses, and assisting community recovery. Seeking the funds needed to reimburse the community for these costs is a complex and time-consuming process. External funding, particularly that obtained post-disaster, may include grants, loans, and donations from outside organizations, including federal and state agencies, lending institutions, and non-profits (e.g., faith-based groups, foundations).

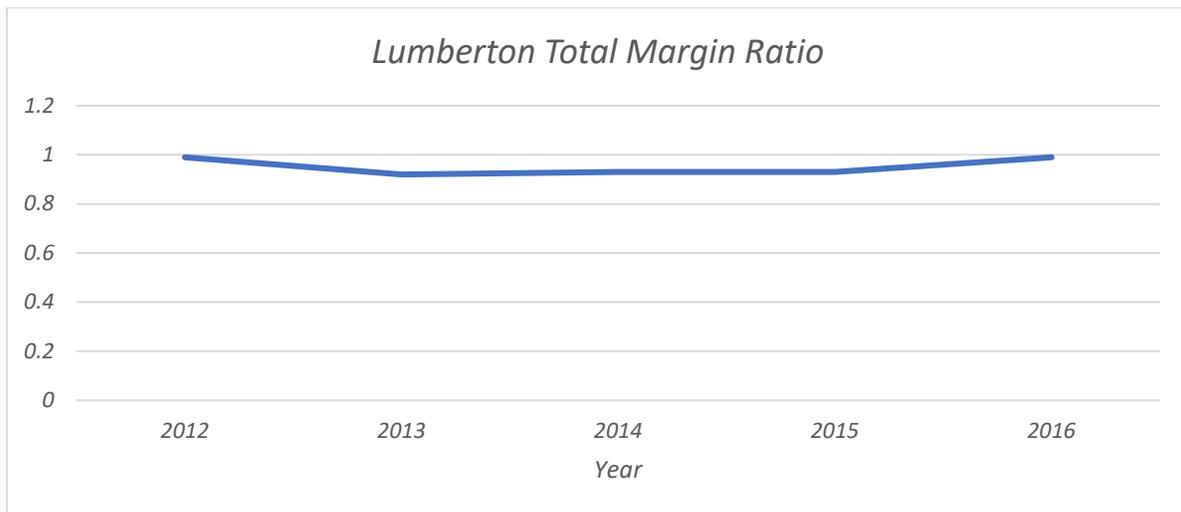
Compounding this challenge is the potential loss of tax revenue. For example, if homeowners and businesses struggle to recover in the months or years following a disaster, the loss of tax revenues can dramatically impact the city's ability to provide adequate public services and finance recovery projects. The acquisition and demolition of flood-damaged homes will further degrade the city's tax base unless a sound relocation strategy is implemented (see Appendix A and Appendix D). The fiscal impact of Hurricane Matthew on Lumberton's budget cannot be fully measured until early 2019 when financial information from the 2018 fiscal year is published. Even then, a picture of the long-term impact of the storm may not be clear until later when additional data can be analyzed.

A portion of the available financial information helps document Lumberton's fiscal capability before Hurricane Matthew. This recovery plan attempts to illustrate the connection between fiscal health and economic development, and proposes policies to make the municipal budget more sustainable given existing economic constraints and the likelihood of future disasters. The assessment relies heavily on the County and Municipal Fiscal Analysis Tool developed by the Department of State Treasurer and the

School of Government at UNC Chapel Hill. The management tool, which helps local governments in North Carolina analyze and communicate their financial condition, is based on 5-year trend data, spanning several financial indicators.

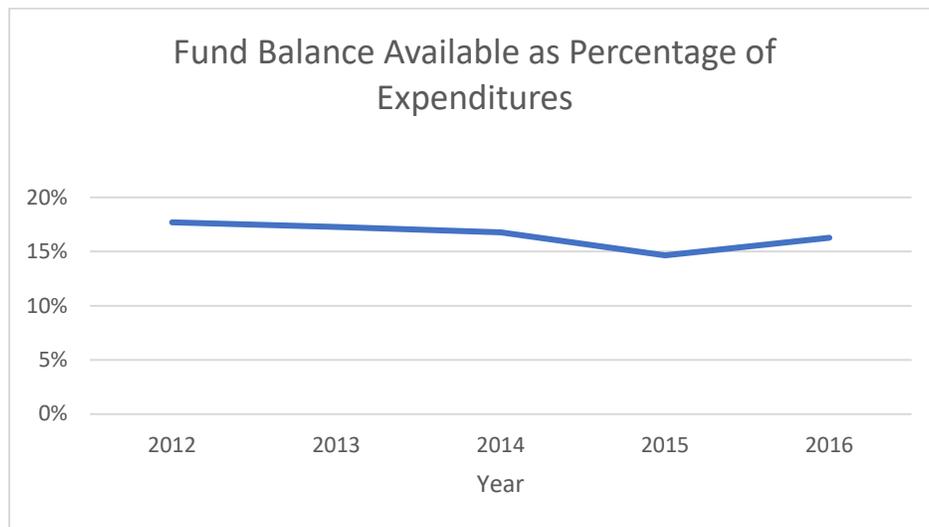
Two important indicators of fiscal health are the government activity fund's total margin ratio and the solvency of the city's general fund. The total margin ratio is calculated by dividing a municipality's total financial resources by its total financial obligations. A ratio above one indicates a local government has lived within its financial means. As shown in Figure 18, Lumberton hovered around a ratio of one during the five years preceding Hurricane Matthew.

**Figure 18: Lumberton Total Margin Ratio over Time.**



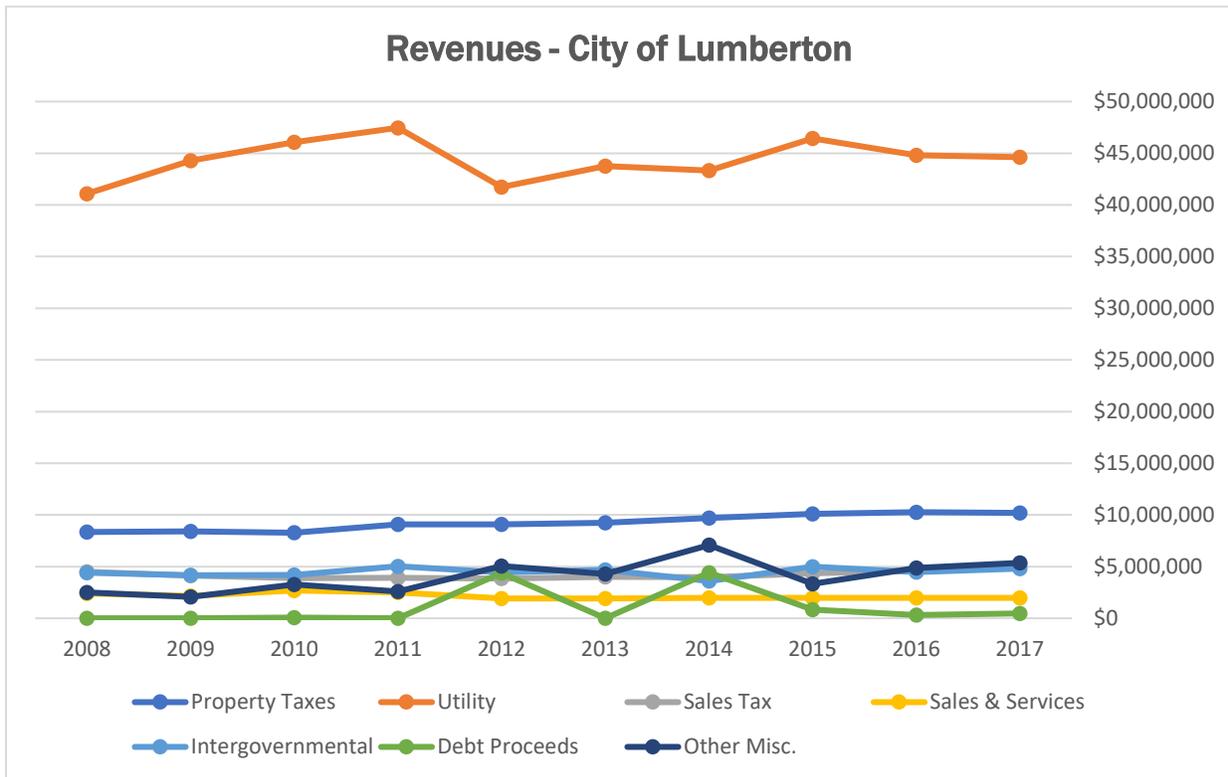
Solvency of a city's general fund indicates a government's ability to meet long-term obligations and is calculated by dividing the available fund balance by expenditures plus transfers. Lumberton experienced a dip in solvency in 2015 but recovered to an adequate position of 31.6% by 2016. Maintaining an adequate percentage is important to Lumberton's economic resiliency because a high or rising number means the city is in a better position to meet the demands of unexpected emergencies.

Lumberton had a solvency of 18% in 2017, a slight increase from its position two years prior as depicted in Figure 19. Maintaining or increasing this percentage is important to Lumberton's resiliency because it indicates the city can meet the demands of future emergencies.

**Figure 19: Solvency of Lumberton's General Fund over Time.**

Information in this section describes the status of municipal finances in Lumberton. The graphs in Figures 20 and 21 depict revenues and expenditures by the City of Lumberton in selected categories over a 10-year period (2008 to 2017). Because Lumberton operates municipal utilities, including electricity, that portion of the financial operation is largest, in the range of \$40 million each year, whereas other categories are more in the range of \$10 million or less. The graphs show general stability, including major revenue sources such as property taxes and sales taxes.

Figure 20: Revenues.



Income from property taxes is about \$10 million per year, while sales taxes are about half as much, totaling \$5 million per year. In the expenditure category, not considering utilities, the largest cost is for public safety, which includes the combination of police and fire services.

Figure 21: Expenditures.

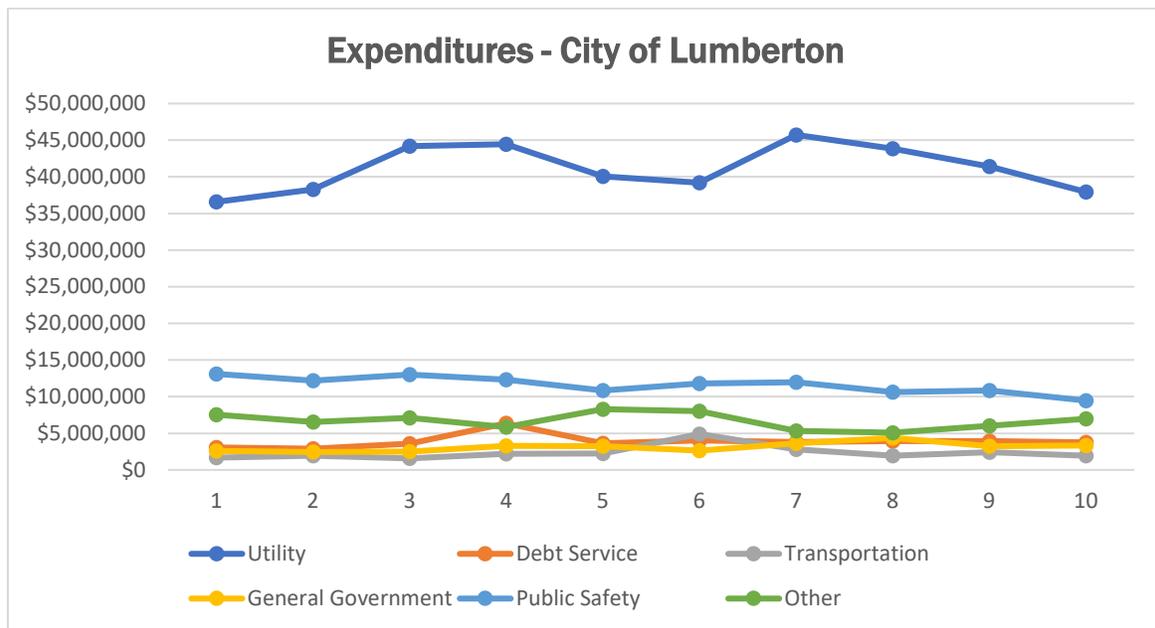


Table 11 shows a ten-year trend in assessed valuation of properties in Lumberton. This information, and that found in Table 10, highlight a number of financial measures. For example, long-term debt is about \$15 million, whereas assessed value (Table 11) is about \$1.5 billion, thus debt is equal to about 1% of assessed value. The same table shows adjusted assessed values that factor in sales ratio data to reflect market conditions and different reevaluation years for counties. For Lumberton, the variability year to year is slight. The recent unadjusted rate is \$0.65 per \$100 assessed value. The multi-year effect of Hurricane Matthew on Lumberton's financial status is yet to be determined. Investment in long-term recovery projects will continue for many years. Periodic updates to this recovery plan should include tracking of municipal financial capacity as recovery advances.

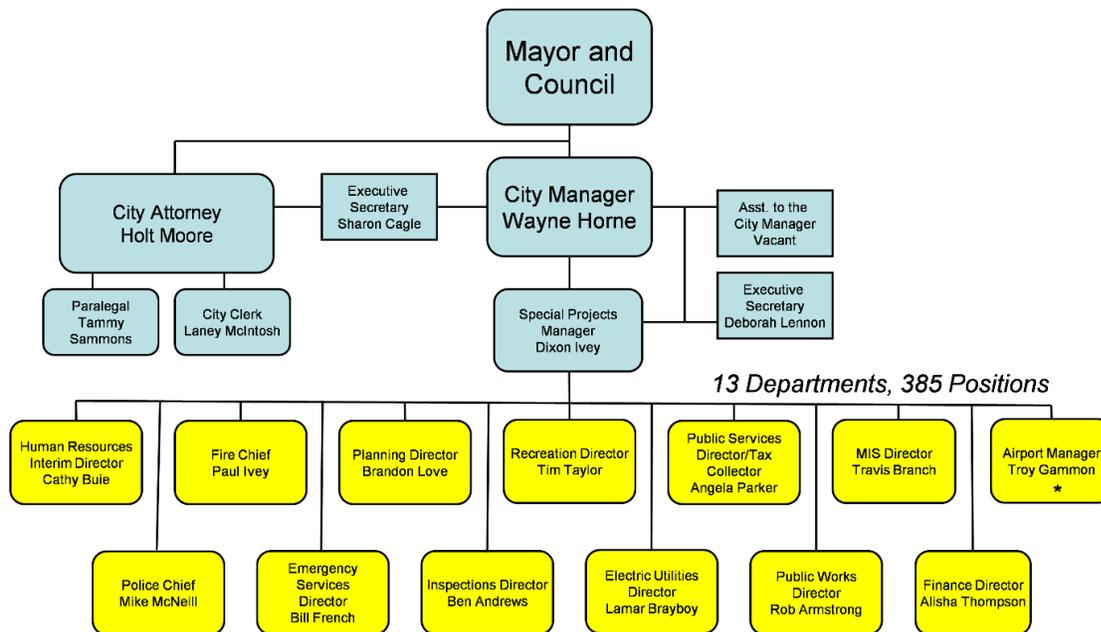
	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Assessed valuation adjusted for assessed to sales ratio	1,552,296,822	1,522,486,831	1,493,719,443	1,500,986,910	1,500,372,047	1,454,498,880	1,438,537,634	1,619,621,829	1,605,175,402	1,522,677,512
Tax rate	0.6500	0.6500	0.6500	0.6300	0.6300	0.6300	0.6300	0.6300	0.6300	0.6300
Adjusted tax rate	0.6488	0.6497	0.6500	0.6186	0.6174	0.6300	0.6204	0.5240	0.5317	0.5652
Assessment-to-sales ratio (state average)	95.69	97.32	100.71	103.53	104.04	101.37	98.32	92.80	90.81	88.65

Overall, the financial status of a community, considering the indicators that are cited above, is summarized in Lumberton's rating by companies such as Moody's Investor Services and Standard and Poor Financial Services, LLC.

### Administrative Capability

Lumberton is governed by a Mayor-Council form of government. The city manager is supported by 385 staff members, including professional, technical, and service operations, including: legal, accounting, engineering, electric utilities, emergency services, planning, inspections, public safety, public works and economic development. City staff are organized into 13 departments, as displayed in Figure 22.

Figure 22: City of Lumberton Organizational Chart.



Updated 7/13/2018

\* The airport is governed by a board and jointly funded by the city and county.

The slow decline in population has resulted in the reduction of revenues which has made it difficult to add additional staff to augment existing services. Hurricane Matthew has created additional stress on staff, as they are required to meet their daily responsibilities, as well as flood recovery assignments.

### Participating Organizations

Lumberton's capability to recover involves engaging with a broad network of organizations. Participants include non-profits and faith-based groups, FEMA and other federal agencies, state agencies, regional and local planning organizations, and private businesses. The ability to draw from the multitude of resources at their disposal will be crucial to the success of Lumberton's recovery efforts. This also requires helping organizations in Lumberton that were impacted by Hurricane Matthew so they can

provide assistance to their constituents. The following list of organizations represents those engaged in post-Matthew recovery efforts in Lumberton.

### **Non-Profits and Faith-Based Groups**

- Golden LEAF Foundation
- Kate B. Reynolds Charitable Foundation
- Southeastern Health
- Lutheran Services
- Baptists on Mission
- United Methodists Committee on Relief
- Senior Housing Developments
- Habitat for Humanity
- Community Action Agency
- Lumberton Visitors' Center
- Lumberton churches
- Salvation Army
- Red Cross
- North Carolina Preservation
- Lumber River Conservancy
- North Carolina Community Development Initiative
- Frayser Community Development Corporation
- Southeast Raleigh Community Development Corporation
- Purpose Built Communities

### **Federal Agencies**

- Federal Emergency Management Agency
- Department of Homeland Security
- Economic Development Administration
- Small Business Administration
- Department of Housing and Urban Development
- Department of Agriculture (Rural Development)
- United States Army Corps of Engineers
- National Oceanic and Atmospheric Administration
- United States Geological Survey
- Department of the Interior
- Department of Health and Human Services

### **State Agencies**

- Division of Emergency Management
- Department Environmental Quality
- Department of Revenue
- Department of State Treasurer

- Office of Historic Preservation
- Department of Commerce
- Rural Economic Development Commission
- Main Street Program
- Housing Finance Agency
- Small Business Technology Development Center
- Department of Transportation
- Division of Parks and Recreation
- Department of Health & Human Services
- NC Rural Center
- NC Youth Violence Prevention Center
- Lumber River State Park

### **Universities**

- UNC Coastal Resilience Center
- UNC Department of City and Regional Planning
- UNC School of Government
- UNC Kenan Flagler School of Business (NC Growth, Kenan Institute)
- NCSU College of Design (Department of Landscape Architecture, Architecture)
- NCSU College of Textiles
- UNC Pembroke
- Robeson Community College

### **Regional Organizations**

- Robeson County Long-Term Recovery Committee
- Robeson County Planning Office
- Robeson County Economic Development Commission
- Robeson County Emergency Services
- Southeastern Regional Development Commission
- Lumber River Council of Governments

### **Professional Associations**

- North Carolina Chapter, American Planning Association
- North Carolina Chapter, Association of State Floodplain Managers
- Lumberton Area Chamber of Commerce
- Triangle Chapter, Urban Land Institute

### **Private Sector**

- Contempora Fabrics
- Local builders
- Riverway Outdoor Adventure (outfitter)

## Existing Plans, Policies, and Ordinances

The recovery plan should be consistent with existing plans, policies, and ordinances to effectively guide disaster recovery decision-making. This is critically important as existing plans, policies and ordinances have been adopted by the City Council and therefore have regulatory standing. As such, an assessment of these documents is needed to ensure they help support the stated goals, policies, and projects found in this recovery plan. If they contradict one another, then existing plans, policies, and ordinances should be modified based on new information and positions assumed by the town, as reflected in the recovery plan. Next, we describe several ordinances, plans, and policies that are particularly relevant to disaster recovery efforts. Specific improvements are described in more detail in Chapter 6.

### Floodplain Damage Prevention Ordinance

The flood damage prevention ordinance contains the following provisions for structures located in the Special Flood Hazard Area.

1. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.
2. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damages.
3. All new construction or substantial improvements shall be constructed by methods and practices that minimize flood damages, to include a 2-foot freeboard.
4. Electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
5. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.
6. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into floodwaters.
7. On-site waste disposal systems shall be located and constructed in a manner that avoids impairment to them or contamination during flooding.

### Community Rating System

Lumberton currently does not participate in the CRS program, which recognizes and encourages community floodplain management activities that exceed minimum NFIP standards. The CRS provides discounts on flood insurance premiums to property owners in participating communities. Premium discounts can be as high as 45%, depending on the community's implementation of floodplain management activities. Given the benefits accrued to residents in terms of flood insurance premium reductions, as well as

providing a menu of flood risk reduction options for city officials to consider, joining the CRS is strongly recommended.

### **North Carolina State Building Code**

Lumberton has adopted the North Carolina State Building Codes and relies on contractors to issue building permits and conduct inspections. The jurisdictional limits extend 1 mile outside of the city, the area known as Lumberton's extraterritorial jurisdiction (ETJ). According to G.S. 160A-360 (a), a city can apply "zoning and subdivision regulation, building code enforcement, historic districts, and minimum housing codes. In addition, authority for planning, open space acquisition, and various community development programs can be applied by cities in the ETJ."

### **Land Use Ordinance**

In 1985, the City combined its zoning ordinance, subdivision regulations, and flood damage prevention ordinance into its Land Use Ordinance which is found in Part 4, Chapter 35 of the Municipal Code. Article IX, Zoning, describes the zoning districts and zoning map. Section 35-139 establishes floodplain and floodway districts. Provisions of these districts is detailed in Article XVI, Flood Damage Prevention. The ordinance also provides for a Lumber River Protection Overlay District (Section 35-141). The Lumber River constitutes a culturally significant and environmentally sensitive river corridor. The regulation establishes standards and requirements for the use and conservation of the land and water within the district in recognition of its National Wild and Scenic River Act status. The Land Use Ordinance also discusses the protection of water sources in Article XXIII, Watershed Protection, which addresses subdividing land within the watershed.

### **Lumberton Tomorrow Land Use Plan**

The Lumberton Tomorrow Land Use Plan (Appendix E) sets forth the "blueprint" for future development of the city. It identifies the vision of what the community wants to become and outlines the steps needed to realize that aim. The plan is composed of strategies and actions that form a broad policy-based document and guide for decision-making surrounding the long-term physical land development and economic development of the city and its environs. Lumberton's residents were engaged throughout the plan development process through public meetings, surveys, the project website, and public events.

For the purposes of the analysis, the City's overall planning area was divided into 19 planning areas to provide a more focused analysis of the city and its environs. The analysis provides additional insight into land use patterns by examining the spatial extent of potential environmental constraints in each planning area, with a focus on flood hazard areas and wetlands, which are the primary development constraints in the City's overall planning area.

Five focus areas were identified to support and strengthen the desired future land use patterns:

- Interstate 95
- Transportation corridors
- Downtown
- North Elm Street
- Lumberton Municipal Airport

Incorporating disaster recovery and hazard mitigation measures through direct inclusion in the land use plan or by reference to this disaster recovery plan as well as the Robeson County Multi-Jurisdictional Hazard Mitigation Plan provides the city with a strong and enduring foundation to advance resiliency goals.

### **2015 Robeson County Multi-Jurisdictional Hazard Mitigation Plan**

In accordance with the Disaster Mitigation Act of 2000, communities are required to identify potential hazards and prioritize actions that can be taken to mitigate those hazards before disaster strikes. Robeson County and its municipalities have joined to create a multi-jurisdictional HMP, which includes Lumberton and other municipalities located within the county.

The NC Division of Emergency Management (NCEM) summarizes hazard mitigation as follows:

"Hazard mitigation involves the use of specific measures to reduce the impact of hazards on people and the built environment. Measures may include both structural and non-structural techniques, such as protecting buildings and infrastructure from the forces of nature or wise floodplain management practices. Actions may be taken to protect both existing and/or future development. It is widely accepted that the most effective mitigation measures are implemented before an event at the local government level, where decisions on the regulation and control of development are ultimately made."

The Robeson County Multi-Jurisdictional Hazard Mitigation Plan goals include the following:

- Promote the public health, safety, and general welfare of residents and minimize public and private losses due to natural hazards.
- Reduce the risk and impact of future natural disasters by regulating development in known high-hazard areas.
- Pursue funds to reduce the risk of natural hazards to existing developments where such hazards are clearly identified and the mitigation efforts are cost effective.
- Effectively expedite post-disaster reconstruction.

- Provide education to citizens to empower them to protect themselves and their families from natural hazards.
- Protect fragile natural and scenic areas within the planning jurisdiction.
- Improve upon regional emergency service provision and response.

The HMP is composed of seven sections:

- Introduction and Planning Process
- Community Profiles
- Hazard Identification
- Capability Assessment
- Vulnerability Assessment
- Mitigation Strategies
- Plan Implementation and Implementation Procedures

Like many county-level HMPs, the Robeson County Multi-Jurisdictional HMP lacks specific hazard mitigation projects, including those identified in the Lumberton recovery plan. Future updates to the county-level HMPs should include specific projects that address flood-prone houses, the flood-retrofit of downtown businesses, the acquisition of undeveloped flood-prone land, and the implementation of a city stormwater management program.

### **North Carolina Resilient Redevelopment Planning Program – Robeson County**

The State Legislature created the North Carolina Resilient Redevelopment Planning (RRP) program to provide a roadmap for municipalities in eastern North Carolina to rebuild and revitalize their damaged communities. The program empowered communities to prepare locally driven, resilient redevelopment plans that identify redevelopment strategies, innovative reconstruction projects, and other actions to help the community thrive in an era when natural hazards are increasing in severity and frequency.

The planning objectives of the RRP program were two-fold: 1) develop strategic, resilient redevelopment plans and actions, and 2) define any unmet funding needed to implement such actions after accounting for other funding sources. While the Lumberton recovery plan reviewed and drew from the Robeson County RRP program, this plan represents a more detailed assessment of needs, including those traditionally unaddressed by FEMA and state agencies post-disaster. It also represents a plan derived from long-term, deep engagement with local officials, city residents, and an array of partners.

## Comprehensive Economic Development Strategy (2017-2022)

The Southeastern Economic Development Commission is responsible for developing and maintaining a Comprehensive Economic Development Strategy (CEDS) designed to support integrated planning, facilitate greater engagement, and promote economic prosperity. The Southeastern Economic Development Commission encompasses 12 counties, including Robeson County. The CEDS is a strategy-driven plan for regional economic development that provides the capacity-building foundation by which the public sector, working in conjunction with the private and non-profit sectors, can create an environment for regional economic prosperity. The plan is composed of four main elements, as required by the EDA:

- Summary background of economic conditions of the region;
- Analysis to identify the regional strengths, weaknesses, opportunities, and threats (SWOT);
- Strategic direction or action plan to build on findings from the SWOT analysis; and
- Evaluation framework (including performance measurements) to assess the implementation of the CEDS and its impact on the regional economy.

The CEDS identifies a series of regional measures, several of which support projects in the recovery plan (e.g., Restoration and preservation of downtowns). Under the Goal heading of Regional Infrastructure, the CEDS supports “expanding bandwidth,” digital mapping for water and wastewater systems, or inventorying available and affordable housing. Thus, the CEDS is an important supporting document when the City seeks funding for disaster recovery projects.

### *Injecting Hazard Mitigation into the Disaster Recovery Process – Housing Relocation and Stormwater Management*

Following an early visit with city officials, the HMDRRI team realized Lumberton faced several major disaster recovery-related challenges, each of which were tied to the city’s vulnerability to flooding. Challenges included: repairing damaged infrastructure and reducing future losses to existing housing stock while maintaining a viable tax base. In addition, Lumberton also needs to address its severe social and economic situation if it is to become a resilient city.

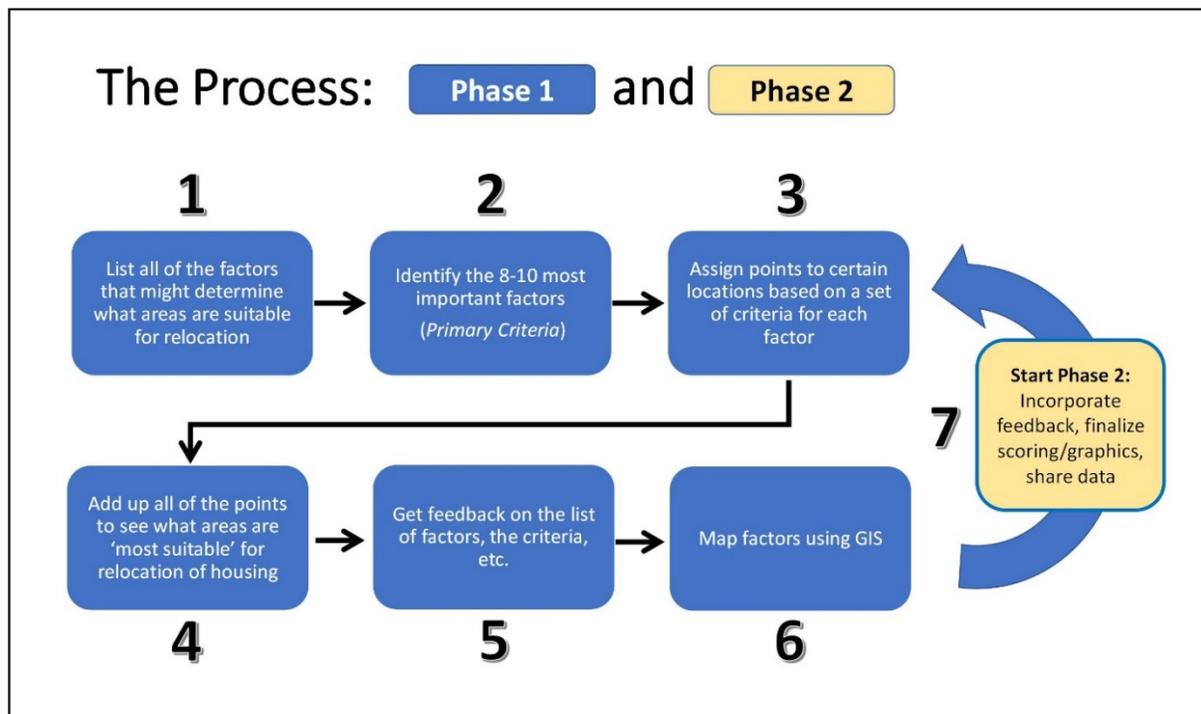
The challenges highlight a gap in existing city capabilities and the limited federal and state resources dedicated to address them. A primary aim of the HMDRRI is to address tasks not typically addressed through existing federal and state programs. Repairing damaged public infrastructure and including risk reduction measures in reconstruction are being addressed through city expenditures, and federal and state recovery programs. A resilient Lumberton will require not only repairing public infrastructure and buildings, but creating opportunities for jobs, a commitment to workforce development, raising educational levels of the population, and addressing the myriad health issues existing not only in Lumberton but throughout Robeson County.

### Housing Relocation Strategy: Land Suitability Analysis

The City has expressed concerns regarding the loss of local tax revenues following the buyout and demolition of flood-prone houses. To encourage residents pursuing the buyout to relocate within the city limits but outside the floodplain, the HMDRRI Team initiated a housing relocation strategy, to include conducting a land suitability analysis (LSA).

A multi-phased approach was used to identify land suitable for new development or redevelopment through the investment of post-disaster housing resources, including CDBG – DR funding slated for housing, non-profit and faith-based groups seeking to build replacement housing, and private developers that may choose to renovate existing housing stock or construct new neighborhoods outside the floodplain (Figure 23).

Figure 23: Land Suitability Analysis Process.



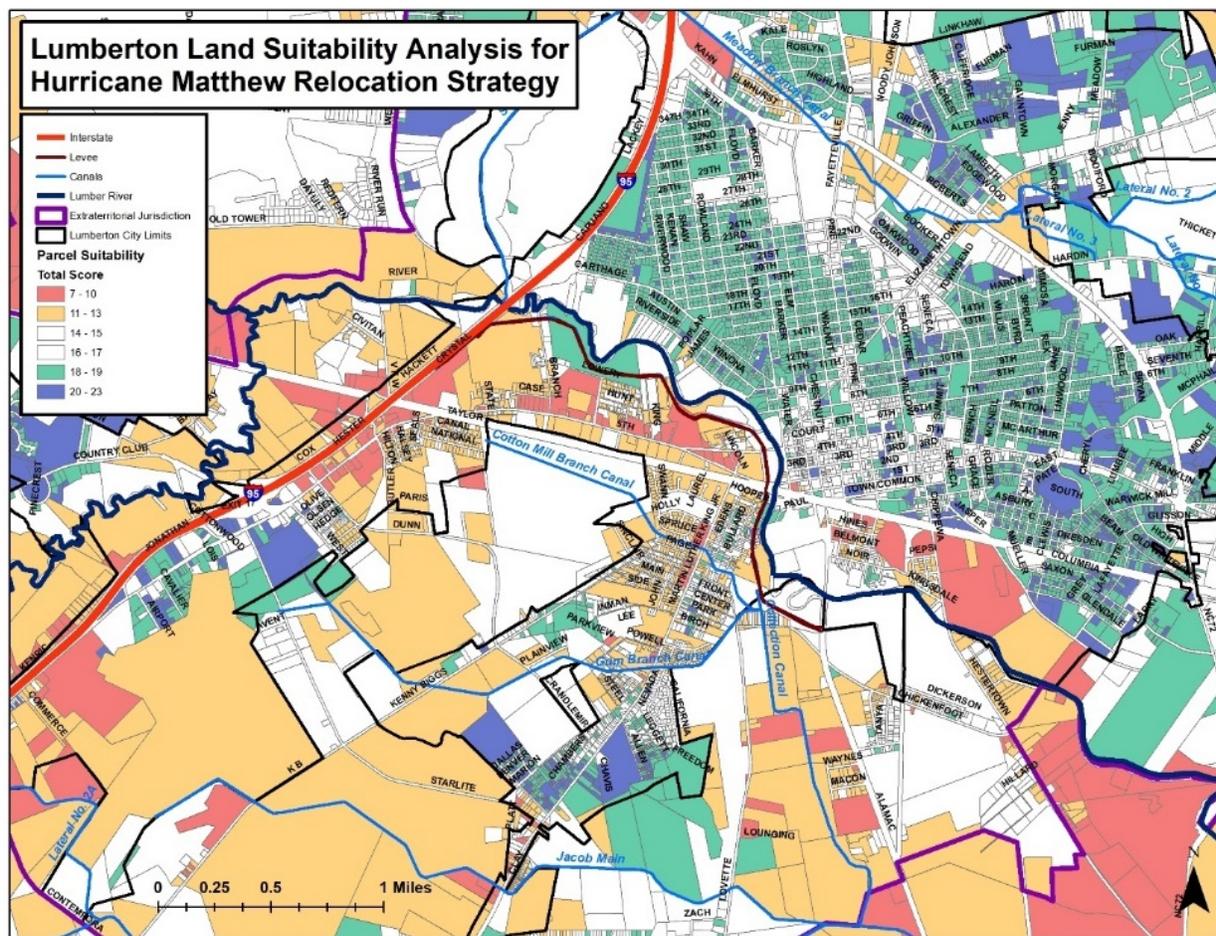
A range of factors was identified that might be used to determine areas suitable for new investment and reinvestment. The list was refined following a technical review by the HMDRRI team and local officials. This resulted in the identification of 11 criteria unique to Lumberton (Table 12).

Table 12: Primary Suitability Criteria	
Factors of Interest	Variable
Jurisdictional Boundaries	Municipal Limits Extraterritorial Jurisdiction (ETJ)
Proximity to Infrastructure	Water Sewer

Parcel Size	Infill Potential Multi-Structure Potential
Building/Land Vacancy	Vacant Land/Building
Vulnerability to Flooding	100-year Floodplain (Zone AE) 500-year Floodplain (Zone X) Hurricane Matthew Inundation Area
Areas of Future Development	Zoning

Thresholds were identified for the short list of variables, and a preliminary LSA was conducted and mapped citywide using a geographic information system (GIS) Figure 24).

Figure 24: Land Suitability Analysis Map.



The LSA was then shared and discussed with the technical advisory committee members, who have expertise and/or functional responsibility in an area related to the analysis, or expertise in the variables and data being used. A second LSA was conducted incorporating feedback on the approach, variables included (or missing), thresholds used, and possible secondary criteria to characterize other attributes of the parcels (e.g., proximity to various landmarks). Additional details associated with the methods are

included in Appendix D. The LSA is intended to serve as a general decision-making tool and its primary purpose is to identify areas that may be suitable for locating housing to replace that which is lost due to the buyout of flood-prone properties.

For clarity, land suitability is depicted in two figures. Figure 25 represents the north side of Lumberton, and Figure 26 covers the West and South Lumberton neighborhoods. The maps show the stark contrast where land is and is not suitable for development, based on the assessment.

Figure 25: Land Suitability Map of North Lumberton.

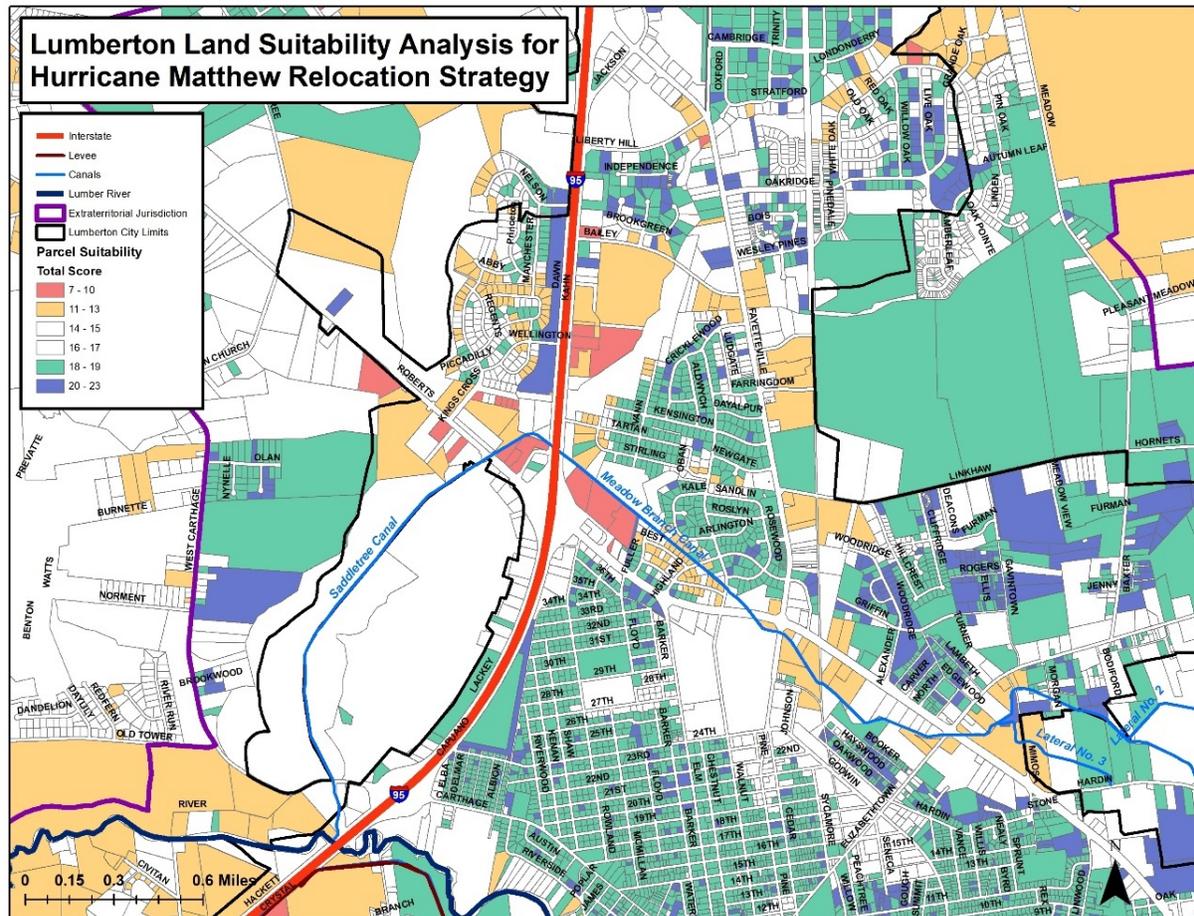
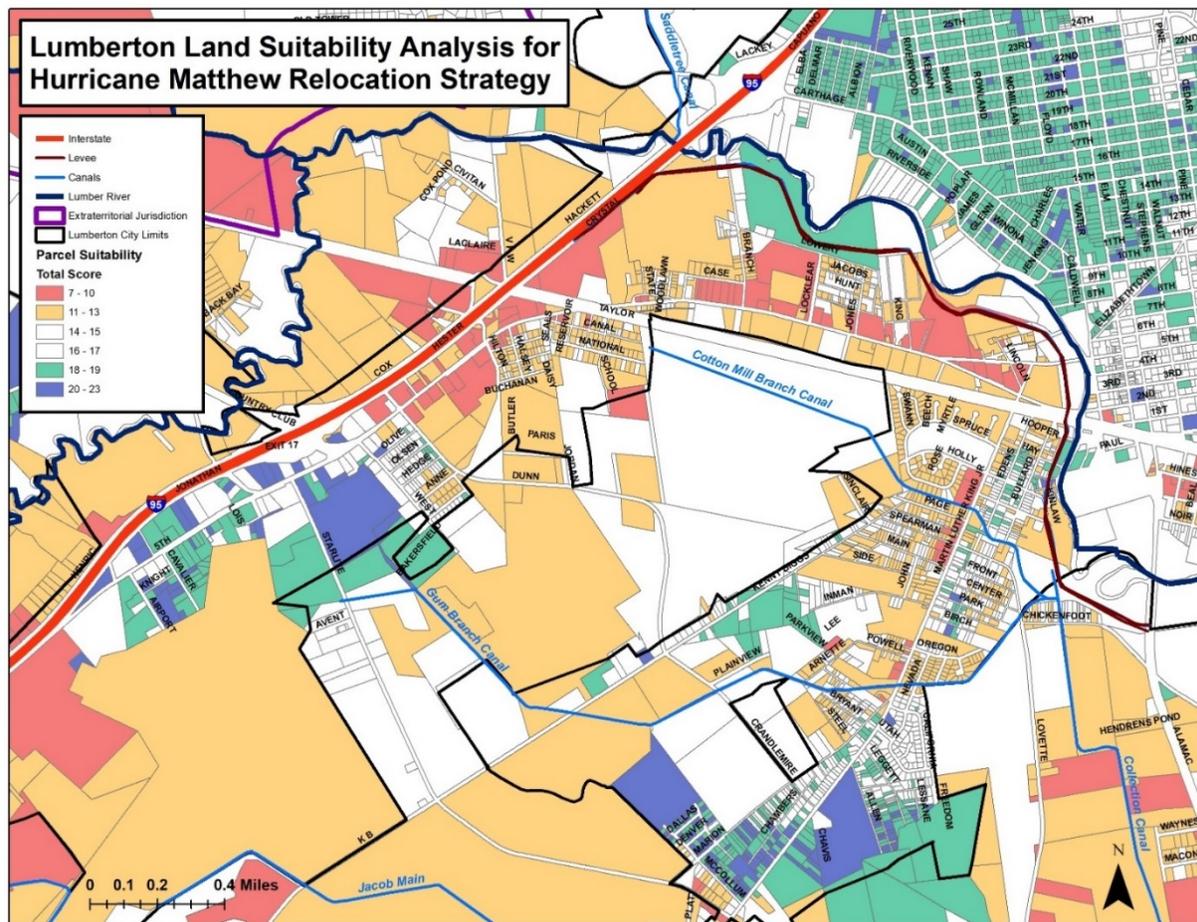


Figure 26: Land Suitability Map of West Lumberton and South Lumberton.



There are significant areas on the northern side of Lumberton suitable for housing relocation. Some of the large parcels are outside the city but within the ETJ, providing safer areas for development. On the northern side, the flood risk is limited to the various streams (i.e., Five Mile Branch, Ivy Branch, Meadow Branch, and Pole Cat Branch).

Plugging the opening in the levee will remove the major cause of flooding in the neighborhoods, but it will not completely eliminate the threat. Because of the low elevation, flooding has occurred in the past as a result of the region's drainage system. However, risk of flooding can be reduced by increasing the conveyance capacity of the Gum Branch, Cotton Mill Branch, and Collection Canal. In terms of land suitability, the most suitable area for development is on the northern side of Lumberton, which is protected from flooding by the ridgeline that follows the Lumber River.

In terms of elevation, South and West Lumberton neighborhoods have areas that are below the effective 1% annual chance BFE as measured at the 5<sup>th</sup> Street gage (120 feet). However, there are areas that are outside the 100-year flood zone that flooded during Hurricane Matthew. The City wishes to implement a strategy that will allow residents to remain in South and West Lumberton. Figure 27 presents a hypothetical rendering of a home before and after being elevated. If homeowners are repairing their home that has

sustained damage of more than 50% of the value of the home, they will have to satisfy the city's required 2-foot freeboard standard.

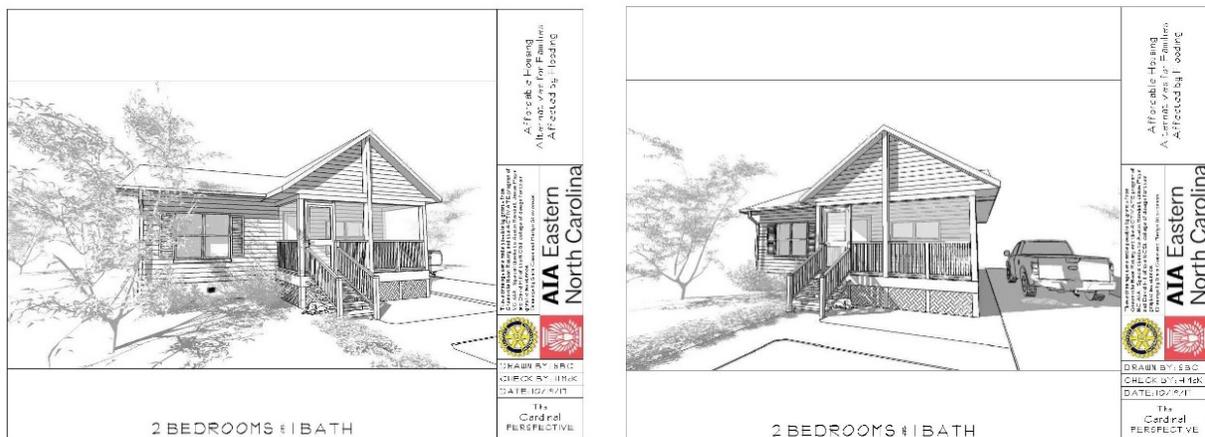
**Figure 27: Illustrative Rendering BEFORE (left) and AFTER (right) Being Elevated.**



The city is undertaking a process to determine vacant and abandoned parcels that are not approved for HMGP funding, have not had assistance from the Baptist Men, Methodist Mission, or other non-profits, and will not be receiving CDBG-DR funding. Once the list of parcels is finalized, the city will proceed with condemnation. The city is interested in clearing the structures and rebuilding or building housing on the parcels, meeting all building codes (including the 2-foot freeboard) and offering the houses for sale.

In addition to housing designs included in Appendix A, architects from the Eastern Chapter of the American Institute of Architects have developed plans, elevations, and renderings for houses less than 1,000 square feet Figure 28. They estimate the cost of construction to be between \$125 and \$150 per square foot, not including site costs.

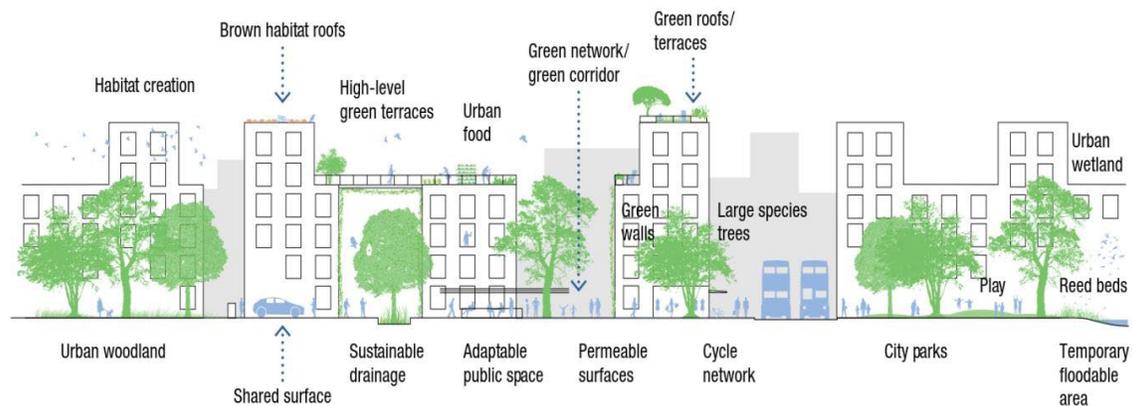
**Figure 28: Illustrative Housing Designs.**



## Stormwater Management

At the site and city scale, low-impact development (LID) practices aim to preserve, restore, and create greenspace using soils, vegetation, and rainwater harvesting techniques. LID is an approach to land development that works with nature to manage stormwater as close to its source as possible. LID employs landscape features, minimizing imperviousness to create functional and appealing site drainage that treats stormwater as a resource rather than a waste product. Figure 29 graphically depicts various LID options applicable in city settings.

**Figure 29: Design Strategies to Reduce Urban Flooding.**



Source: NCEM (2018).

Impervious surfaces include concrete or asphalt, roofs, and parking lots. Water runoff from impervious surfaces impacts receiving waters such as the Lumber River; tributary streams like Five Mile Branch, Meadow Branch, and Ivy Branch; and local lakes. Options to reduce impervious surfaces include pervious pavement (Figure 30).

**Figure 30: Pervious Pavement.**



Source: NCEM (2018).



## CHAPTER 5

### ISSUES

The following issues describe key challenges and opportunities spanning each of the goals and associated policies found in this plan. They include infrastructure, public facilities, housing, health, environment, land use, administration and finance, economic development, and workforce development.

#### Infrastructure

##### Issues

- Inadequate stormwater management system, to include the lack of needed financing.
- No flood gate at VFW Road and CSX Railroad at Interstate 95.
- Historic flooding of Cotton Mill Branch Canal, Gum Branch Canal, and Collection Canal in South and West Lumberton
- Recovering \$500,000 spent to repair collapsing sewer lines damaged by Hurricane Matthew.
- Water treatment plant located in the 100-year floodplain.
- No back-up water supply. Create a secondary water supply with additional generators/tanks to provide a backup in the event of shutdown due to flooding. This strategy would fund construction of two small treatment plants with wells and backup power, which would be activated in the event of a disaster. The City has no backup water source if water lines from the existing wellfield are interrupted or damaged; therefore, the City plans to drill two emergency wells inside the perimeter of a new protective berm to be constructed around the water treatment plant. Wells are to be used only during an emergency situation when potable water from the existing wells is interrupted.
- City canals and creeks remain full of debris which hinders the flow of water.

##### Outcomes and Opportunities

- Golden LEAF Foundation provided the City with \$3 million to repair the Tanglewood Storm Drainage project.
- Golden LEAF Foundation provided a \$100,000 grant to fund the Lumber River Flood Study. The study has been completed, and the City is seeking funding to implement the plan.
- Golden LEAF Foundation provided a \$1.25 million grant to assist in the construction of flood gates at VFW Road.
- Obtain approval from the North Carolina Division of Environmental Quality to clean all stormwater canals within the City of Lumberton.

- Fund unmet infrastructure needs, including removal of debris and expand the capacity of the Gum Branch, Cotton Mill Branch, Collection Canal, Five Mile Branch, Meadow Branch, Saddletree Canal, and Ivy Branch.
- Develop a comprehensive stormwater management program that leverages natural mitigation features.
- Create a funding mechanism to maintain the city's stormwater management system.
- Construct berm around perimeter of water treatment plant.

## Public Facilities

### Issues

- Public facilities were flooded during Hurricane Matthew, which were concentrated in South and West Lumberton.
- Meyers Park public housing was severely damaged and there are no plans to rebuild.
- Fire station in West Lumberton was flooded and has been repaired, but no mitigation measures were included in the project.
- Public works facility was severely damaged.
- Acquire a 1000-kilowatt generator for the wastewater treatment plant.
- Replace Jaycee Hut, which serves as a police substation and community center.
- Repair Luther Britt Park.
- West Lumberton Elementary School was severely flooded and is permanently closed. Students were transferred to W.H. Knuckle Elementary School, which also flooded but has been repaired and re-opened. No steps were taken to mitigate future damage.
- Provide infrastructure, including water, sewer, and electric services, to support new development outside the floodplain, including areas identified in the LSA.

### Outcomes and Opportunities

- Use LSA methodology to site new public facilities.
- Support the efforts of the Public Schools of Robeson County to build an administration building on a 47-acre site that was recently purchased. Estimated cost for the new building is between \$700 million and \$800 million.
- Golden LEAF Foundation committed \$2.76 million to replace West Lumberton Elementary School; however, the School District is considering other options.
- Golden LEAF Foundation provided \$2.02 million to meet unmet needs, including building repairs, design services, and mold remediation. Damaged facilities include a water treatment plant, a fire station, two electric utility buildings, and two recreation buildings.
- Relocate public works facility outside the 100-year floodplain.

## Housing

### Issues

- Widespread damage to single-family rental housing.
- Homeowners are still repairing damaged property and a large number of houses remain vacant.
- The city is uncertain whether to repair, reconstruct, raze, or relocate varied public housing properties.
- Poor information flow between city and state regarding operation of HMGP and CDBG-DR programs.
- Inadequate supply of housing options, including affordable single-family and rental housing.
- Managing open space following the buyout of houses through the HMGP and CDBG-DR programs.
- Creating a coordinated strategy to manage volunteers and contractors working on damaged housing.

### Outcomes and Opportunities

- Develop improved information sharing vehicles to convey information regarding HMGP and CDBG-DR funding.
- The State has allocated \$12.8 million in HMGP funding for acquisition (\$6.0 million), structure elevation (\$2.4 million), and mitigation reconstruction (\$4.4 million) in Lumberton.
- The State has allocated \$5 million in CDBG-DR funding to repair public housing units.
- Create procedures to better coordinate the roles among volunteer groups that are repairing damaged housing.
- Utilize HMDRRI's LSA to locate new housing in areas outside of the floodplain.
- Utilize the designs for affordable housing created by HMDRRI, NCEM, NCHFA, and NC Chapter of the American Institute of Architects.
- Apply the greenspace concept described in Appendix A to inform the management of land post-buyout.

## Health

### Issues

- Lumberton is particularly vulnerable to the social determinants of health due to high levels of poverty and low education attainment, which are aggravated by joblessness, stress, addictions, violence, and crime. Multifaceted solutions are needed in conjunction with healthcare, education, and community development initiatives.

- Lumberton faces several health-related problems such as low birth weight, adult smoking, drugs, obesity, and inactivity (Robeson County ranks last on the State's health rankings).
- Homes and businesses still have mold, and remediation efforts are inconsistently applied during the repair of damaged structures.
- Extremely high percentage (99%) of school children are eligible for free and/or reduced-price lunches.
- Many neighborhoods lack full service grocery stores and have few opportunities for exercise, adult education, or recreational activities.
- Special needs among the elderly population include appropriate and affordable housing and access to health and transportation services.
- Many seniors can no longer drive an automobile and therefore depend on family or friends for transportation, including trips to obtain basic needs.

### Outcomes and Opportunities

- Work with the UNC School of Public Health to improve food access.
- Support emergency food banks and pantries that operate in Lumberton.
- Raise awareness of the benefits of health programs/initiatives organized by the RCHD and Southeastern Health.
- Encourage implementation of an open space/greenway program that creates bikeways and trails to promote a healthier population.
- Establish connectivity between the proposed greenway system and pocket parks created on buyout lands.
- Increase career training and education for students who are not bound for college, displaced workers who need retraining, and existing workers who need to upgrade their skill level.
- Host career days in middle and high schools to introduce students to potential work opportunities.
- Assist individuals and families just above the poverty level who are ineligible for many services offered to the low-income population (e.g., health services, food, and exercise).
- Support organizations that promote healthy lifestyles and fitness.

## Environment

### Issues

- Fostering a community-based relationship with the Lumber River that recognizes its value as a natural resource and venue for active recreation, ecotourism, environmental, and educational opportunities.
- Managing buyout properties to include their use as a public amenity.
- Land development pattern does not fully account for flood hazards.
- Stormwater runoff flows directly into the Lumber River and tributary streams and canals.

- Debris along the Lumber River and its tributary creeks and streams.

### Outcomes and Opportunities

- Exploit the strong presence of the Lumber River and its accessibility to community residents by developing walkways and trails.
- Establish ecotourism as an important component of the local economy.
- Draw on the Lumber River's designation as a Wild and Scenic River to develop programs suited to residents and tourists, to include active and passive recreation.
- Utilize greenspace concepts in the NCSU HomePlace report (Appendix A), which shows how acquired parcels can create open space and greenway elements such as pocket parks, boat landings, camping sites, and event spaces.
- Create launch points along the Lumber River and its tributaries, including the Five Mile Branch, Ivy Branch, and Meadow Branch.

## Land Use

### Issues

- Limited interest among developers to invest in new construction outside the floodplain.
- No hazards analysis present in the 2015 Lumberton Tomorrow Land Use Plan (Appendix E).
- Extensive low-income housing development in the 100-year floodplain.
- Land use tools and techniques are largely absent from the Robeson County HMP.

### Outcomes and Opportunities

- Amend the 2015 Lumberton Tomorrow Land Use Plan (Appendix E) to include a hazards component reflecting Hurricane Matthew's impacts as well as initiatives found in this recovery plan. All changes should be reflected in the 19 planning areas found in the land use plan.
- Utilize infill and cluster development techniques when building affordable housing, guided by the findings of the LSA.
- Review and update the existing zoning ordinance to include its role in guiding development away from flood-prone areas, maximizing the benefits of open space along the Lumber River and its tributaries, and improving the natural and beneficial use of the floodplain.
- Create incentives that result in new industries/major employers locating in and around Lumberton Municipal Airport, CSX Railroad, and Interstate 95.
- Review and modify the intensity and density of land uses in flood prone areas of South and West Lumberton and along the streams and creeks on the northern side of Lumberton.

- Initiate an open space management plan that addresses use of land acquired under federal post-disaster mitigation grants and abandoned properties condemned by the city.
- Adopt policies and plans that address the loss of developable land and tax base associated with the buyout of flood-prone properties, drawing on the Land Suitability Analysis found in Appendix D.
- Encourage industrial development in areas where multi-modal transportation opportunities exist.

## Administration and Finance

### Issues

- Loss of tax base associated with the buyout of flood-prone properties.
- Potential loss of revenues from population-based revenue formula used to distribute state and federal resources.
- Limited staff capacity to administer post-disaster recovery and reconstruction efforts.
- Inadequate insurance coverage of town assets, local businesses, and individual citizens.
- Inadequate funding to rebuild city facilities, primarily in South and West Lumberton.
- Inadequate fund reserves to cover additional outlays related to the disaster.
- Inadequate communication and coordination with state and federal recovery partners.

### Outcomes and Opportunities

- Draw upon Local Government Commission of the State Treasurer's Office and the UNC School of Government to assess local government finances and offer potential solutions to post-disaster financial challenges.
- Expand staff capacity to administer post-disaster assistance by coordinating with external aid providers such as Robeson County, Golden LEAF Foundation, Lumber River Council of Governments, and others.
- Establish pre-event contracts (e.g., debris management, grants management, planning) in advance of the next disaster.
- Explore expansion or improvement of mutual aid agreements with nearby cities and counties to provide supplemental long-term disaster recovery assistance, including expertise in damage assessments, permitting, grant writing, post-disaster financial assistance, and general guidance, as identified.
- Establish ongoing assistance programs to be provided by UNC Chapel Hill and NCSU through mutually agreed upon courses and workshops focused on defined challenges such as land use planning and greenway design.

## Economic Development

### Issues

- High unemployment among African Americans and American Indians.
- Wages lag behind those statewide.
- Extensive flood damage in South and West Lumberton where many of Lumberton's poorest residents live.
- Small commercial and industrial businesses possess few financial resources to sustain themselves following a major disaster.
- Inadequate funding sources to assist small businesses looking to repair, rebuild, or relocate.
- Difficulty attracting new industry due to a workforce with limited education, chronic health issues, and exposure to gang violence.

### Outcomes and Opportunities

- Recruit and reestablish the "new" hi-tech textile industry.
- Develop a strategy to encourage businesses to invest in the Lumberton and surrounding area.
- Create a manufacturing task force to develop economic strategies that will create industrial hubs at the Lumberton Municipal Airport and along the CSX Railroad connecting Charlotte to Wilmington.
- Convene a conference to re-establish the textile industry in Lumberton and Robeson County. Participants should include county and city officials, with representatives from the NCSU College of Textiles, Hometown Strong, Public Schools of Robeson County, Robeson Community College, and Contempora Fabrics, among others.
- Work with the Robeson County School District to build a high-tech high school in Com Tech.
- Work with the North Carolina Small Business Technology Development Center and Business Continuity Planners of the Carolinas to develop a business continuity planning, outreach, and education program.
- Promote business incubator(s) in downtown Lumberton.

## Workforce Development

### Issues

- Low educational attainment among working-age residents.
- High rates of poor health, unemployment, and poverty.
- Low levels of vehicle ownership.
- Limited availability of high-paying jobs.

### Outcomes and Opportunities

- Take advantage of the resources available through the Lumber River Workforce Development Board which includes members representing business and industry, economic development agencies, community-based organizations, education, and organized labor whose primary role is developing solutions to meet workforce training and development needs.
- Assist business owners and individuals in taking advantage of workforce development programs at Robeson Community College for retraining or supplementing existing skills.
- Tailor workforce opportunities via communication methods to ensure displaced workers are aware of available job openings and training opportunities.
- Ensure local businesses are aware of training programs available to their employees.
- Create workforce training programs to focus on skills by workers to better compete for jobs in the workplace, today and in the future.
- Work with the Public Schools of Robeson County (Career Center) and the Robeson Community College's Workforce program to develop the skills sets needed by the manufacturing businesses being recruited to Robeson County and Lumberton.
- Reach out to residents normally unaware of workforce development program opportunities available to them.
- Establish career days in middle and high school to introduce students to new industry coming to Lumberton.
- Encourage development of apprenticeship programs with local manufacturers like Contempora Fabrics.

## CHAPTER 6

# RECOMMENDED ACTION ITEMS, FUNDING, AND IMPLEMENTATION

This chapter describes the overall implementation framework of the Lumberton recovery plan. The structure and organization presented here is intended to guide the implementation of topic-specific action items. Major topics include Infrastructure, Public Facilities, Housing, Health, Environment, Land Use, Administration and Finance, Economic Development, and Workforce Development.

### Infrastructure

#### Initiate Sewer Repairs

The sewer lines in Lumberton are old and have collapsed in the past. The ongoing collapse of sewer lines has occurred as a result of the heavy rainfall during Hurricane Matthew. The city has spent more than \$500,000 repairing cracked sewer lines by inserting an epoxy-saturated felt tube, inflating it, and letting it cure in place. While the city has sought reimbursement from NCEM, it remains uncertain whether this will happen.

#### Establish “Rainy Day” Fund

The city should set aside funds to cover repair costs to critical facilities (e.g., the water treatment plant, sewer lines, roads, electric utilities), while awaiting potential outside funding from state and federal agencies and in anticipation of future events, including non-declared emergencies. This “rainy day” fund would help the city rebound more quickly following events of varying types. Additional uses of the funds may include the expansion and maintenance of the city’s water and stormwater systems. Funds should be accrued gradually while accounting for overall revenue demands.

#### Install Flood Gate at VFW Road and CSX Railroad Interstate I-95 Underpass

The first point of failure in the levee system protecting the West Lumberton and South Lumberton neighborhoods was the underpass at VFW Road (AECOM Technical Services of North Carolina, Inc., 2017). However, with the installation of swing flood gates (Figure 31) at the VFW Road underpass and CSX Railroad, the direct losses avoided during a 1% annual chance of flooding would total more than \$1.9 million (AECOM Technical Services of North Carolina, Inc., 2017). According to cost estimates made in 2017, the swing flood gates would cost approximately \$2.5 million (Presray Corporation, 2017).

**Figure 31: Swing Flood Gates.**



### **Enhance and Accredit Levee System**

The Lumberton levee is not certified by FEMA, but apparently suffered no structural distress associated with the flooding event on October 2016 (AECOM Technical Services of North Carolina, Inc., 2017). The AECOM study states the levee, “appears to be well maintained and only routine maintenance and upkeep is required.” However, the levee needs to meet the requirements of 44 CFR 65.10 of the NFIP regulations which entails protecting against a 1-percent-annual-chance flood event. There are several places along the levee system that were not overtopped, while other places do not meet the required freeboard requirement (AECOM Technical Services of North Carolina, Inc., 2017). Further engineering studies are needed to accurately detail the necessary improvements. Once the recommendations for improvements are complete, the levee can be certified by FEMA.

### **Conduct Jacob Swamp Interior Drainage Channel Improvements**

South and West Lumberton are comprised of extensive flood-prone areas. Much of the land is within the 100-year floodplain. The breach in the levee at VFW Road and the CSX Railroad contributed to the flooding in these neighborhoods. South and West Lumberton are within the Jacob Swamp Watershed. The 1966 Jacob Swamp Watershed Improvement Plan included provisions for improvements to existing drainage channels. However, not all the improvements were completed and the channels remain susceptible to flooding. The proposed project involves widening the existing channels that were constructed by the NCRS and upgrading bridges and culverts along channels, as appropriate. The improvements are estimated to cost \$19.5 million (AECOM Technical Services of North Carolina, Inc., 2017).

### **Conduct North Side Storm Drainage Improvements**

In addition to the projects in South Lumberton, several drainage improvements are needed to the streams and creeks on the northern side of Lumberton, including:

- Five Mile Branch (approximately 3,500 linear feet of stream channel between Interstate 95 and Bailey Road);
- Meadow Branch Ecosystem Enhancements (approximately 4,500 linear feet from Interstate 95 to Highway 211);

- Culvert Improvements Along Linkhaw Road; and
- Highway 301 Branch off Saddletree Gardens and the Faith Canal.

The city submitted an application to the Golden LEAF Foundation, but the project was not funded. The city plans to resubmit the application for next round of funding.

## Public Facilities

### Implement Water Plant Improvements

The City of Lumberton water treatment plant was inundated with water as a result of Hurricane Matthew. Damage occurred to structural components which impacted the integrity of the plant. Getting the plant back online was one of the city's highest priorities following Hurricane Matthew. The cost of repairing the plant was covered by FEMA PA and Golden LEAF Foundation funds. A berm around the plant was approved and fully funded as a mitigation project through FEMA. The berm is being designed and the project is scheduled to bid in fall 2018.



The city also proposed drilling two potable wells inside the berm and creating a package treatment plan in order to enhance redundancy. These projects have not been funded and are considered unmet needs. City officials are focused on finding necessary funding and constructing the two potable water wells and package plant to back up the main water system.

### Rebuild Jaycee Hut

The City of Lumberton has a 3,200-square-foot community building/police substation called Jaycee Hut in West Lumberton. The structure was inundated by more than 3 feet of water and was declared substantially damaged (the cost to repair exceeds 50% of the pre-disaster value of the structure). Because of the extent of damages the city will be required to elevate the structure 2 feet above base flood elevation (BFE) as part of renovating the facility. Because the Jaycee Hut was built using slab-on-grade construction, achieving the required elevation to the existing building is technically challenging and very expensive. Therefore, the city will demolish the building, place structural fill on the site, and then construct a new facility on an elevated foundation. The cost of reconstruction will exceed \$500,000.

Moving the Jaycee Hut to a location outside of the 100-year floodplain was considered but discounted because the facility needs to stay in or near its current location. The Jaycee Hut has served as a community resource center for West Lumberton, providing much needed meeting space for a multitude of neighborhood activities (e.g., Community Watch). In addition, it has served as a substation for the Lumberton Police

Department in an area with a high crime rate. The city petitioned NCEM for additional CDBG-DR Community Facilities funding in February 2018.

### **Relocate Public Works and Electric Utilities Relocation**

This project would involve relocating the public works and city electric utility facilities out of the 100-year flood zone. The city received funding from the Golden LEAF Foundation and the FEMA-PA program to repair the existing facilities. However, the city plans to relocate both facilities out of the 100-year floodplain. No funding has been identified for this project and they remain unmet needs.

### **Relocate Robeson County School Central Office Facility**

The central office complex is located at the intersection of Caton Road and NC 74, which is within the 100-year floodplain. In addition to the central administration building, the office complex includes structures housing child nutrition services, purchasing warehouse, parent student center, and school health services. Because the damaged facilities are in the 100-year floodplain and the damage exceeded 50% of the value of structure, the new buildings will have to meet current code. The cost to rebuild was determined to be prohibitive, and the School District decided to relocate to a site outside the 100-year floodplain (ESP Associates, 2018b).



A 47-acre site has been purchased at the intersection of Highway 711 and Deep Branch Road to build the new administration building, which is estimated to cost \$25 million (H. McIlwain, personal communication, 2018). No funding has been identified when this plan was written.

### **Demolish West Lumberton and Replace W.H. Knuckles Elementary**

West Lumberton Elementary and W.H. Knuckles Elementary schools are on the southern side of Lumberton in the Cotton Mill Branch Watershed. Both schools are within the 100-year floodplain. Damage experienced at West Lumberton Elementary was more extensive than at W.H. Knuckles Elementary. The School District decided to abandon West Lumberton Elementary because the damages exceeded 78% of the pre-disaster value, requiring the lowest floor (including basement) to be elevated at least 2 feet above the 100-year floodplain or be adequately flood-proofed and certified (ESP Associates, 2018b). While the School District plans to demolish West Lumberton Elementary, there are no funds available at this time to cover these costs.

W.H. Knuckles Elementary School experienced modest flooding which inundated the cafeteria building and kitchen with 20 inches of water. The School District spent \$740,000 repairing the facility and the school is now fully operational. However, according to school administrators, the School District is planning to close W.H. Knuckles Elementary and build a new school in South Lumberton outside the 100-year flood zone. They expect

to have the new school designs completed by the end of 2018. To date, no funding has been identified to construct the new school (ESP Associates, 2018b). Both elementary school initiatives are considered unmet needs (H. McIlwain, personal communication, 2018).

### **Relocate Robeson Planetarium**

Part of the planetarium was inundated for several days, while a portion of the main structure which is elevated, was not damaged. A section of the facility continues to function as a pre-K school.

The School District views the planetarium as an important asset and would like to relocate the structure to the new administrative complex site. However, there is no funding for the project at this time and it is considered an unmet need (H. McIlwain, personal communication, 2018).

## *Housing*

### **Ensure Effective Housing Communication**

Post-disaster housing programs are complex and require direct, sustained assistance to help explain them, including how varied types of assistance fit together to meet unique local needs. This is true not only for the applicants but also for city staff. This initiative is intended to result in a clear line of communication between state and local governments.

### **Determine Abandoned Properties**

Lumberton has a large number of abandoned structures scattered throughout the city that they want to either demolish or repair and reuse as affordable housing. The first step in this process is to identify these structures. Employees working for the electric utility are in the community on a daily basis to read meters and are able to identify vacant or abandoned structures, as well as those without power. Structures that have been approved for HMGP funding or have received assistance from the North Carolina Baptist Men on Mission, Mennonites, and the United Methodist Volunteers in Missions are excluded from this review. The remaining properties will be considered abandoned and condemned. Disposition of these cases will depend on a neighborhood design plan to determine appropriate future uses (e.g., redevelopment for housing, open space, or other community purposes).

### **Create South Lumberton Neighborhood Design Plan**

Once the city has determined the ownership of abandoned properties that experienced less than 2 feet of flooding during Hurricane Matthew, and the location of properties acquired with HMGP or CDBG-DR funding, the information will be plotted on a map of South Lumberton. A comprehensive analysis of the existing land use pattern will lead to

the development of options for how the acquired properties can be used to create viable and walkable neighborhoods. The plan will combine affordable housing with greenspace, which could lead to a neighborhood-oriented park, including bike paths linking the areas where the schools once sat to other schools (W.H. Knuckles Elementary and Lumberton Junior High), a community center, or community garden. In addition, efforts should be made to connect the design plan with the greenspace concept found in Appendix A. This will involve consulting with local builders, Habitat for Humanity, the NCHFA, the North Carolina Department of Commerce, the NCEM Housing Coordinator, and others as identified. A full-fledged community participation process would guide plan preparation so residents and the larger community can contribute knowledge of local conditions, ideas, concerns, reactions to alternative plan concepts, and potentially interested funders. To the extent possible, community organizations involved in education, public health, public safety, housing, and social services should be active participants in the process, resulting in a multipurpose revitalization outcome.

### **Repair or Relocate Public Housing Projects**

During Hurricane Matthew, five public housing properties, totaling 152 buildings were flooded, forcing 264 families to evacuate. The HACL plans to relocate the Myers Park complex, drawing on insurance and FEMA funds to underwrite the cost of the new project. While the Hilton Heights property will not be rebuilt, the HACL plans to reconstruct the administrative and maintenance building, which is estimated to cost of \$157,000 (funded through the CDBG-DR program). A decision has not been made whether to rebuild or relocate the Lumbee Homes complex (ESP Associates, 2018a).

### **Exercise Emergency Management Plans for Nursing Homes & Assisted Care Facilities**

There are several nursing homes and assisted care facilities in Lumberton. These facilities are required by federal law to have an emergency management plan that outlines the rules and procedures the property administration must follow during the disaster event. These plans should be reviewed annually and updated as needed. Each plan should be exercised annually to ensure that when the plan is activated, staff members understand their responsibilities and are able to carry out the plan efficiently and effectively. While the State Division of Health Certification verifies the exercise has been held, this initiative will direct each nursing home and assisted care facility to report to the city's Emergency Management Department that they have conducted an annual exercise.

### **Maintain Buyout/Other Acquired Properties**

As the city acquires property through buyouts or other means, officials should consider minimizing the cost of maintaining these properties. This can be done by leasing the lots to neighbors or community groups (e.g., to create a community garden) for a nominal fee. Allowing portions of acquired land to return to its natural state also can minimize costs. Additional options include identifying non-profits, land trusts, or other organizations willing to own and/or maintain the properties.

## Health

### Conduct Annual Countywide Health Workshop

In an effort to become a more resilient city, Lumberton must address the severe and pervasive health conditions found throughout the city and Robeson County. The list of health-related issues is extensive and includes drug abuse, obesity, diabetes, gang crime, low educational attainment levels, and teen pregnancy. The RCHD and Southeastern Health are two major health providers in the county that deliver a wide range of services. Other organizations include nursing homes, assisted care facilities, fitness groups, Center for Community Action, NC Youth Violence Prevention Center, and food pantries. This project envisions holding annual countywide workshops to assemble all groups, organizations, and agencies involved in providing health services. The workshops would allow agencies to work together to identify healthcare needs and solutions to address them.

### Create Community Gardens

This project involves building a community garden in South Lumberton from the number of HMGP buyout parcels that will become city property. Creating a community garden is a multistep process starting with the city and Robeson County Extension Office forming a planning committee to tackle the following tasks: funding and partnerships, youth activities, construction, maintenance, and outreach.



Other steps include identifying existing skills and resources in the community that can aid in the garden's creation and maintenance. Stakeholders possessing key resources include local farmers, the Robeson County Extension Office (soil testing, expertise), the Robeson County Master Gardener Program, the Robeson Community College horticulture program, the Robeson County School District,

local church groups, local garden clubs, and landscape companies and garden centers that may be willing to donate tools, supplies, free labor, and expertise.

### Adopt Healthy Community Initiatives

A healthy population is a resilient population able to sustain themselves daily and during disaster events. In Lumberton and surrounding Robeson County, the magnitude of health issues is extreme. The CHNA Advisory Group identified three priority areas: obesity, substance misuse/mental health, and social determinants (e.g., low income, lack of educational attainment, median household income). Both Southeastern Health and the RCHD have programs addressing health issues. Opportunities to further promote healthy lifestyles, include healthier eating, as promoted by the Campbell's Soup Foundation;

paddling and canoeing on the Lumber River, creating community gardens, participating in run/walk events like Rumba on the Lumber and Chevy on the Levee, and participating in an annual 50-mile back country bike race sponsored by the RCHD and Southeastern Health, with proceeds going to non-profit organizations.



## Environment

### Organize Environmental/Historical Tours and Encourage Outfitter Opportunities

While the Lumber River has caused extensive flood damage, it also is a unique environmental and economic asset that could support ecotourism opportunities. In Lumberton, the Riverwalk trail along the northern side of the Lumber River connects downtown with the old water treatment plant at 5<sup>th</sup> Street. On the southern side of the river, starting downtown and extending to Luther Britt Park, there is a walking trail and bike path. The trail is popular for walking, fishing, and birding.

The northern side of Lumberton is characterized by a series of streams and creeks. The Meadow Branch has experienced severe flooding in the past, especially around Best Drive. During Hurricane Matthew, the Meadow Branch overflowed its banks and caused several property owners to seek HMGP funding for buyouts. As in other communities, the acquisition of damaged properties can provide the city an opportunity to create a protective buffer along the creek, with the possibility of a trail or walkway that could serve as a recreational and educational asset. The Master Gardener Program operated by the Robeson County Extension Office could lead efforts to create the trail. Maintenance could be undertaken by the city or a local volunteer organization.



The Riverway Adventure Company provides opportunities to paddle and canoe on the Lumber River. As other greenways are established, the city needs to create access points along the waterways where the public as well as outfitters can launch kayaks and canoes.

### De-snag the Lumber River

The flooding and high winds associated with Hurricane Matthew downed trees and vegetation along the river banks. Vegetative debris in the river can exacerbate flooding and hinder access to and travel on the river. While there is a need to remove vegetative debris from the river, snags also provide habitat for fish and any river clearance effort should seek to balance these issues. City officials, working with the North Carolina Department of Environmental Quality, environmental and recreational groups, and others should solicit funding and volunteer resources needed for this effort.



### Create Greenway Program

There are elements of a greenway system in place in Lumberton. The NCSU College of Design is working on an open space initiative focused on analyzing the pattern of HMGP buyout properties, abandoned properties, and houses to be elevated or reconstructed to develop potential design scenarios that link to a larger greenspace system, to include building on the greenspace concept found in Appendix A.

### Develop Signage Program and Flood Memorial

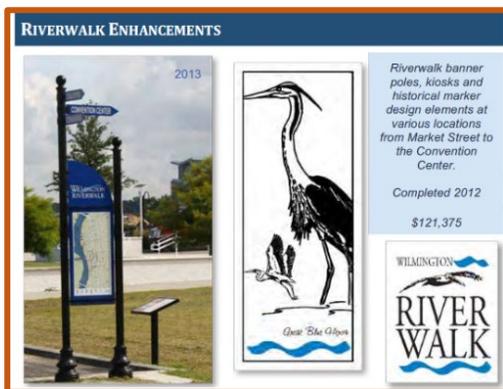


Image from: Creative Commons CC0

Signage is important to raise awareness and direct visitors to places of interest, including historic sites and places tied to commemorating Hurricane Matthew. A comprehensive city-wide signage program should be created to promote places of interest along the Riverwalk and other trails as well as historic sites and structures like the Luther Henry Caldwell house and the Carolina Civic Center. At this time, tours of historic buildings are accommodated by request only. Creating materials for self-guided tours and distributing them at the Visitors Centers could further promote tourism in Lumberton. There are several historic buildings in Lumberton, and the downtown area has been designated as a Commercial Historic District by the State Historic Preservation Office. The historic district



encompasses 64 buildings (built between 1840 and 1941 in a variety of architectural styles) and 1 site in the central business district of Lumberton.

## *Land Use*

### **Incorporate Flood Recovery Element into the Lumberton Tomorrow Land Use Plan**

The Lumberton Tomorrow Land Use Plan (Appendix E) was prepared in 2015, prior to Hurricane Matthew. The plan contains maps depicting environmental features citywide, including the 19 planning areas. This initiative will review the existing plan and make revisions to reflect the information generated by the flood recovery planning effort. A flood recovery element will be integrated into the land use plan, including provisions such as:

- Development and redevelopment principles, strategies, and engineering solutions that reduce the flood risk in areas susceptible to riverine flooding, resulting from flash floods, stormwater runoff, and periods of sustained rainfall.
- Temporary building moratorium.
- Recovery management committee, including participants and their roles.
- Damage assessment protocols.
- Mutual aid agreements.
- Debris clearance procedures

### **Update Land Use Ordinance**

The city land use ordinance was prepared in 1985 and includes zoning, subdivision regulations, and flood provisions. The ordinance should be reviewed and modified, as needed, to ensure existing flood risks in the city are adequately addressed to avoid future flooding.

## *Administration and Finance*

### **Enhance Communication and Coordination**

Following a disaster, local governments are often overwhelmed by having to manage existing responsibilities as well as new disaster-related activities, of which they may have little or no experience. In Lumberton, a major concern has been the lack of responsiveness of the state, especially when the city asks a question or submits a proposal requested by the state and they receive no response, sometimes for months. This initiative suggests establishing a state disaster recovery ombudsman position(s) whose primary job is to respond to questions or disseminate relevant information to local governments during the post-disaster recovery period.

### Enhance Plans & Regulations

In addition to updating the Lumberton Tomorrow Land Use Plan and its land use ordinance, the city is committed to the following tasks:

1. Integrating a flood recovery element into the Land Use Plan when the plan is updated;
2. Augmenting the NFIP program by joining the CRS;
3. Adopting a temporary building moratorium ordinance that allows the city time to study the impacts of the storm event and make modifications to existing development regulations, if deemed necessary; and
4. Incorporating the National Incident Management System (NIMS) into the updated Emergency Operations Plan, which will facilitate coordination between responders at all levels of government with public, private, and non-governmental organizations.

### Increase Staffing Levels

The city has limited staff capacity and revenue to hire additional personnel to assist in implementing the recovery plan. The city plans to request funding from the state for 2 to 3 years because effective implementation will require a sustained effort over that period. Of high priority to the city is hiring a planner or independent consultant team with the skills needed to oversee coordination and implementation of the recovery plan, spearhead special initiatives, and/or prepare grant applications. The city is also exploring augmenting staffing through the NCSU Rural Works internship program.

### Update Emergency Operations Plan

The Lumberton Emergency Services Director has indicated the existing Emergency Operations Plan needs to be updated. The plan is dated, has no procedures on how to organize volunteers and donations following a storm, and lacks the NIMS guidelines. During the update process, the city will work closely with the Robeson County Office of Emergency Management (B. French, personal communication, 2018).

## Economic Development

### Create Manufacturing Task Force

According to local leaders, a key issue tied to Lumberton's Recovery and Resilience involves the creation of jobs. Historically, the city's economy has been tied to manufacturing. Many of the displaced textile workers never left Lumberton. With the support of the Robeson County Economic Director, the NCSU College of Textiles, and the city, there is strong interest in re-establishing the textile industry in Lumberton and Robeson County.

The initial step will involve organizing a Task Force of interested business representatives (e.g., Contempora Fabrics, Ron Roach, President); NCSU College of Textiles (Dr. Hinks, Dean); state agencies coordinated through North Carolina Hometown Strong (Pryor Gibson); and key local officials (e.g., Wayne Horne, Lumberton City Manager; Brandon Love, Lumberton Planning Director; Connie Russ, Lumberton Downtown Development Coordinator; Channing Jones, Robeson County Economic Director).

### **Organize a Textile Conference**

Since the closure of most textile plants in Lumberton, the textile industry has reinvented itself using state-of-the-art technology. A textile conference would assemble industry leaders to discuss the potential for re-establishing the textile industry in Lumberton. The conference would explore new technology, needed skills, and resources/training available in the local school system, including Robeson Community College and NCSU. Furthermore, the conference would discuss how to retool the educational process in order to train students and displaced workers in the skills needed by the industry, and a plan of action could be prepared during the event that defines the path forward.

### **Encourage Small Business Incubator Facilities**

The Robeson County Department of Economic Development, in partnership with the city, should explore the possibility of creating a large incubator facility in Lumberton similar to the Thomas Entrepreneurship Hub in Pembroke, which provides the aspiring entrepreneur with the necessary skills and training to achieve career success.

Another option would be to establish a smaller incubator in downtown Lumberton. There are vacant storefronts that could be renovated to house startup businesses while the business owner is creating a market for their product or service. If the concept proves successful, other businesses may be encouraged to move into adjacent buildings.

### **Transform Lumberton Municipal Airport and the Surrounding Area into an Industrial Park**

The Lumberton Tomorrow Land Use Plan (Appendix E) identified five focus areas important to the future development of Lumberton. One is the Lumberton Regional Airport. The airport is bordered on the west by Interstate 95, on the south by Interstate 74, on the north by Dunn Road, and on the east by Kenny Biggs Road. This area's strategic location beside national thoroughfares makes it an ideal industrial location, as indicated by the predominant land uses: commercial, manufacturing, and logistics. Interstate 74 leads to the Port of Wilmington to the east and Charlotte's national intermodal rail hub to the west. Strengthening the existing infrastructure in this area will be conducive to future development and growth. By extending nearby rail service into the area around the airport, an intermodal transportation hub could be created to support additional manufacturing and logistic industry needs. This project envisions creating an industrial park encompassing the airport and surrounding area. The city's land use ordinance permits the creation of a manufacturing/processing planned unit development (PUD).

As stated in the ordinance, a manufacturing PUD is intended to encourage the development of a well-planned industrial park.

### **Create Multimedia Promotional Program**

Lumberton has untapped potential as an ecotourism destination. The city has significant environmental assets and a rich history dating back to 1787 when it was designated the county seat of Robeson County. While a couple of outfitters provide canoe and kayak tours of the Lumber River, there appears to be no concerted effort to maximize the use of the unique waterways in and around Lumberton.

The Mayor has noted in comments on the city webpage that there has been strong citizen involvement in recent years to refurbish the city's historic district. A centerpiece in downtown is the Carolina Civic Center. The facility opened its doors for the first time on June 18, 1928 as a vaudeville and silent film house. It was closed in 1975 but has avoided demolition through the efforts of a group of concerned citizens. The center has been providing programming since 2009. The essence of this project is to promote the city's cultural and environmental assets through development of a multimedia campaign program.

## *Workforce Development*

### **Establish Hi-Tech Technology School**

Historically, Robeson County and Lumberton's economies have been tied to manufacturing. While manufacturing accounted for 31% of all jobs in Robeson County in 1993, by 2003 it accounted for only 18% of jobs. Manufacturing still is an important component of the county's economy, and the County wishes to re-establish itself as a manufacturing hub. Since the departure of the textile industry in the late 1990s, a new generation has grown up without much exposure to Lumberton as a textile hub. A trained work force is needed that has the skills for the new generation of textile manufacturing. The School District owns 45 acres in Com Tech Industrial Park where a high-technology high school could be built. Lack of available funding has been the obstacle to establishing the new school.

### **Establish Career Day**

The Robeson County Career Center, operated by the Robeson County School District, offers 12 curriculums that provide students with the skills needed for 21<sup>st</sup> century industries, including auto technology, computer maintenance, metals and manufacturing, welding, carpentry, public safety, Emergency Medical Technicians (EMTs), drafting, plumbing, masonry, electrical trades, network engineering, and digital media. The Career Center holds career days annually; however, students may be unaware of career opportunities in the field of textiles and food processing. Career day is a way to expose students to non-traditional career paths.

### Enhance Workforce Coordination/Collaboration

Multiple agencies and organizations are involved in workforce development in Robeson County and Lumberton, including the Thomas Entrepreneurship Hub at UNC Pembroke, NC Work Center – Robeson County, Lumber River Workforce Development Board, and Robeson County School District – Career Center. Also, there is a proposed textile initiative that will require the knowledge and expertise of the NCSU College of Textiles and Lumberton's major textile company, Contempora Fabrics. This initiative would involve convening an annual workshop bringing together all workforce development agencies and organizations that can inform one another of the status of their programs and provide an opportunity to discuss where there are gaps in training as well as new trends or initiatives in workforce development.

### Establish an Apprenticeship Program

The Robeson School District operates the Career Center, which includes academic subjects as well as curriculum for 16 career clusters, ranging from agriculture, food, natural resources, arts, audio-visual technology, communication, health science, architecture, and construction. The curriculum includes job shadowing and internships. Apprenticeships strengthen classroom training by engaging students, taking what was learned in the classroom and applying it to specific job tasks. In an effort to revitalize apprenticeships, the U.S. Department of Labor initiated the American Apprenticeship Grant program in 2015 (J. Schiavone, 2018). This initiative encourages the School District, through the Career Center, to develop an apprenticeship program, to include identifying private sector partners like Contempora Fabrics, who are looking to hire appropriately trained employees.



## Implementation Matrix

The Implementation Matrix describes each action in the Lumberton recovery plan as organized under goals identified in Chapter 3. For each action, there is a brief description and a list of interdependent policies (denoted by abbreviations for each goal: IN = Infrastructure, PF = Public Facilities, HO = Housing, HE = Health, EN = Environment, LU = Land Use, AF = Administration and Finance, ED = Economic Development, WD = Workforce Development). This is followed by a list of resources needed to implement the action, to include technical assistance (TA), funding (F), and policy adoption (P). Then, potential funding sources are identified, the agency or group assigned the primary or shared responsibility for its implementation, and when the action is to be completed.

Proj. No.	Recovery Action	Description of Action	Policies	Required Resources	Potential Funding	Administration/ Agency Responsible	Timeline
<b>PUBLIC INFRASTRUCTURE</b>							
1	Sewer System Repair	Due to excessive rainfall resulting from Hurricane Matthew the aging sewer lines have been collapsing. Many have been repaired; however, sewer lines continue to collapse.	(IN)4 (IN)5 (PF)6	TA: Assess condition of sewer lines; Identify best practices. F: Repair sewer lines; Equipment, materials, manpower. P: Seek reimbursement from state.	NCEM/General Revenue; Rainy Day Fund once established	City Manager and Public Works Director	Ongoing
3	Establish "Rainy Day" Fund	Establish local fund for infrastructure repairs.	(IN)5 (AF)3 (AF)6	F: Set aside funds in annual budget. P: Create revenue generating vehicles.	Local Revenue	City Council	2019
4	Install Flood Gate at VFW Road and CSX Railroad Underpass	Install VFW/CSX Railroad flood gate.	(IN)1	TA: Engineering and construction services. F: Fund construction. P: Establish emergency installation protocols.	Golden LEAF Foundation	City Manager & City Engineer	2018 - 2019
5	Enhance Levee and Accredited Levee System	Make levee improvements needed to achieve FEMA certification.	(IN)3	TA: Engineering and construction services. F: Fund construction. P: Adopt monitoring protocols.	Golden LEAF Foundation; USDOT	City Manager & City Engineer	Undetermined
6	Improve Jacob Swamp Interior Drainage Channels	Make improvements to South Lumberton drainage canals.	(IN)2 (IN)7	TA: Engineering and construction services. F: Fund construction. P: Adopt monitoring and maintenance protocols.	Golden LEAF Foundation; NCDEQ 319 Program	City Manager & Public Works Director	Undetermined
7	Improve North Side Storm Drainage	Complete stormwater enhancements to increase capacity.	(IN)2 (IN)4	TA: Engineering and design services. F: Resubmit funding request to Golden LEAF Foundation. P: Adopt monitoring and maintenance protocols.	Golden LEAF Foundation; NCDEQ 319 Program	City Manager & Public Works Director	2019-2020

Proj. No.	Recovery Action	Description of Action	Policies	Required Resources	Potential Funding	Administration/ Agency Responsible	Timeline
<b>PUBLIC FACILITIES</b>							
8	Improve Water Plant	Drill two wells inside the berm surrounding the primary water treatment plant. Create emergency potable water source and treatment plant.	(PF)1 (PF)3 (PF)4 (PF)5	TA: Engineering and design services. F: Seek funding to construct. P: Adopt 2 foot freeboard or higher standards (for berm construction); Develop monitoring protocol to include assessing vulnerability of wells over time.	North Carolina Disaster Recovery Act	Public Works Director	2019 - 2020
9	Rebuild Jaycee Hut	Demolish and rebuild Jaycee Hut.	(PF)2 (PF)6	TA: CDBG-DR application approval. F: Rebuild facility. P: Elevate 2 feet above BFE.	Golden LEAF Foundation; CDBG-DR	City Manager & Planning Director	2019 - 2020
10	Relocate Public Works and Electric Utilities	Relocate both facilities (unmet need).	(PF)1 (PF)3 (PF)4 (PF)5	TA: Locate location(s) to move facilities. F: Engineering and design services. P: Relocate out of 100-year floodplain.	Golden LEAF Foundation, CDBG-DR	City Manager, Electric Utilities Director and Public Works Director	2020
11	Relocate Robeson County School Central Office Facility Relocation	Relocate and build new Administration Center and demolish flooded facilities (unmet need).	(PF)1 (PF)4 (PF)5	TA: Engineering and Design Services needed to develop on 47 acre site. F: Land Preparation; Construction Service; Demolish Central Facility. P: Build critical facility outside 100-year flood plain.	NC DRA, Golden LEAF Foundation, CDBG-DR	School Superintendent and Internal Auditor	2020
11	Demolish Two Elementary Schools, Replace with new Elementary School in South Lumberton	Close and demolish West Lumberton Elementary and close W.H. Knuckles Elementary. Build new elementary	(PF)1 (PF)4 (PF)5	TA: Engineering and design services; Identify land for new school. F: Land purchase and preparation; Construction service; Demolish West Lumberton and potentially repurpose W.H. Knuckles. P: Build new facility outside 100-year flood plain.	Golden Leaf Foundation committed \$2.76 million to rebuild West Lumberton	School Superintendent and Internal Auditor	2019-2020

Proj. No.	Recovery Action	Description of Action	Policies	Required Resources	Potential Funding	Administration/ Agency Responsible	Timeline
		school (unmet need).			Golden Leaf Foundation, CDBG-DR; NC State Board of Education Needs-Based Public School Capital Fund		
12	Repair and Eventually Relocate Planetarium	Repair existing facility, but plan for relocation to new Administration Center (unmet need).	(PF)1 (PF)4 (PF)5	TA: Engineering and design services needed to develop on 47 acre site. F: Relocate old planetarium facility to new site. P: Relocate existing facility outside 100-year flood plain.	Golden LEAF Foundation, CDBG-DR; NC State Board of Education Needs-Based Public School Capital Fund	School Superintendent and Internal Auditor	2019
<b>HOUSING</b>							
13	Ensure Effective Housing Communication	Work to create a better recovery communication process between state and city.	(HO)2 (HO)5 (HO)13	TA: Time commitment from City of Lumberton staff and state agency representatives from NCEM (Housing Coordinator and Case Managers) and NCDOC.	No out-of-pocket costs	Member of City Council or its representative (City Official) in conjunction with key church officials	2018
15	Identify and Condemn Abandoned Properties	Identify and condemn abandon properties where city could construct affordable housing.	(HO)1 (HO)2 (HO)3 (HO)7 (H)9 (HO)10 (HO)11	TA: Identify abandon properties. F: Demolition of structures; Build affordable housing through entities like Habitat for Humanity and local builders. P: Develop condemnation policy; ensure new homes meet 2 foot freeboard requirement.	HMGP; CDBG; local banks	City Official in conjunction with contractor(s) and financial entity	2018 through 2020

Proj. No.	Recovery Action	Description of Action	Policies	Required Resources	Potential Funding	Administration/ Agency Responsible	Timeline
16	Write South Lumberton Neighborhood Design and Implementation Plan	Comprehensive rebuild of South Lumberton neighborhood, to include preparing Neighborhood Design Plan and creating non-profit entity to implement project.	(HE)4 (HE)6 (HE)12 (HO)1 (HO)2 (HO)3 (HO)7 (HO)11 (HO)15 (HO)16 (LU)6	TA: Consult with Purpose Built Communities, SE Raleigh Promise, city staff, neighborhood organizations, designers, NCSU – College of Design, Kate B. Reynolds Charitable Foundation. Write implementation plan. P: Integrate with Comprehensive Plan.	Local Revenue; CDBG-DR; Foundations	City Manager and City Planning Director	2019
17	Repair and Relocate Public Housing Projects	Repair existing housing complex. Relocate Myers Park.	(HO)1 (HO)5 (HO)7	F: Write and implement plan. P: Adopt plan and its policies. TA: Identify construction site, design new school. F: Repair school, demolish and relocate school. P: Inject hazard mitigation techniques into repair and relocation projects.	\$5 million CDBG-DR funds provided for repair of buildings; Golden LEAF Foundation; CDBG-DR	Housing Authority Executive Director and City Planning Director	2018-2020
18	Enhance Emergency Management Plans for Nursing Homes, Assisted Care Facilities	Notify city Emergency Services Office that annual exercise of disaster emergency plans has occurred.	(AF)11 (HO)5	TA: Assess current status of current plans. P: Amend plans to include notification procedures.	General operating revenue	Owner and property managers	Start 2018; then on-going
19	Maintain Buyout/Other Acquired Properties	Identify and implement options for city- acquired properties	(HO)15 (AF)4	TA: Refine Greenspace Concept to include cost estimation. F: Implement Greenspace Concept. P: Incorporate Greenspace Concept into existing plans.	HMGP; CDBG-DR; NCDEQ Clean Water Management Trust Fund (CWMTF)	HMGP; CDBG-DR; NCDEQ CWMTF	2018 – 2019

Proj. No.	Recovery Action	Description of Action	Policies	Required Resources	Potential Funding	Administration/ Agency Responsible	Timeline
<b>HEALTH</b>							
20	Conduct Annual Countywide Health Workshop	Organize and implement health workshop.	(HE)1 (HE)2 (HE)3 (HE)4 (HE)5 (HE)8 (HE)11 (HE)13	TA: Organize and host workshop with the assistance of Southeastern Health and Robeson County Health Department and Kate B. Reynolds representative. F: Organize and host conference. P: Write conference proceedings, adopt and implement recommendations.	Kate B. Reynolds Charitable Trust; United Health Group	Robeson County Health Department & Southeastern Health	2019 then annually
21	Create Community Gardens	Develop community gardens in South Lumberton on parcels sized 0.25 acre to 1 acre.	(HE)1 (HE)3 (HE)4 (HE)5 (HE)11 (HE)15	TA: Identify garden plot sites, soil testing, construction and maintenance of gardens. F: Site construction, purchase of soil, plants, tools, fertilizer. P: Adopt community gardening policies.	City, Rotary, Campbell Soup Foundation; Private Donations; Home improvement retailers.	County Extension Director, local churches, prospective non-profit (e.g., Carrboro and Maxon Community Gardens)	2019-2020
22	Enhance Healthy Community Initiatives	Augment existing healthy initiatives through active living and healthy eating.	(HE)1 (HE)3 (HE)4 (HE)5 (HE)7 (HE)11 (HE)12 (HE)15 (HE)16	TA: Create program guidelines, implement program. F: Program maintenance. P: Integrate initiative with ongoing greenspace, ecotourism, and economic development efforts.	Southern Health; Campbell Soup Foundation; United Health Group; The Kresge Foundation; Robeson County Health Department	The Healthy Robeson Task Force	2018 & Ongoing
<b>ENVIRONMENT</b>							
23	Establish Environmental/ Historical Tours	Promote the unique beauty of the Lumber River by establishing	(EN)2 (EN)3 (EN)5 (EN)6	TA: Create tours and recruit outfitter. F: Advertising costs, business start-up. P: Incorporate strategy into economic development plans and programs.	NCDOC; EDA Revolving Loan Fund;	Lumberton Chamber of Commerce; Lumberton	2018-2019

Proj. No.	Recovery Action	Description of Action	Policies	Required Resources	Potential Funding	Administration/ Agency Responsible	Timeline
	and Outfitter Opportunities	environmental tours and promoting river activities such as canoeing and kayaking. Also promote activities that highlight the city's history.			NCSBTDC; NC Rural Center	Visitors Center; Downtown Coordinator	
24	De-snag the Lumber River	Eliminate large woody debris from Lumber River.	(EN)1 (EN)2 (EN)3	TA: Assess snagging eligibility questions and costs. F: Contract with de-s snagging firm. P: Develop local criteria for soliciting future de-s snagging efforts.	Clean Water Management Trust Fund- Stream Restoration Projects	City Official; De-s snagging company; NCDEQ	2018-2020
25	Create Greenway Program	Create a long-term strategy that results in comprehensive greenway system encompassing the Lumber River and its tributaries and wetlands.	(LU)1 (LU)3 (LU)6 (EN)9 (EN)7 (HE)5 (AF)5 (AF)6 (LU)1 (LU)2 (LU)4 (LU)6 (AF)5	TA: Operationalize greenway program to include cost estimation; Services of NCSU College of Design. F: Implement greenway program. P: Incorporate greenway program into updated Tomorrow Land Use Plan and other city policies.	DEQ: Clean Water Management Trust Fund; Division of Parks and Recreation (State Trails Program); CDBG-DR; HMGP; Disaster Recovery Act funding	City Planning Department and Recreation Department	Design 2018 Seek Funding – 2019 Construct – 2020
26	Develop Signage Program and Flood Memorial	Promote ecotourism by establishing a signage program and a flood memorial. Expand signage for historical structures	(EN)2, (EN)5, (EN)6, (EN)9 (ER)10, (HE)9	TA: Create signage and flood memorial, identification of roadway sites for sign placement. F: Construction of signs and flood memorial. P: Coordinate actions with NCDOT.	NCDOC; NC Department of Parks & Recreation; NCDEQ: Clean Water Management Trust Fund,	Lumberton Visitor's Center; Downtown Development Coordinator	2018 and as needed in future years

Proj. No.	Recovery Action	Description of Action	Policies	Required Resources	Potential Funding	Administration/ Agency Responsible	Timeline
		that support the idea of self-guided tours.			Division of Parks and Recreation – State Trails Program; HMGP; CDBG-DR; NC Disaster Recovery Act funding; NC Tobacco Trust Commission		
<b>LAND USE</b>							
27	Incorporate Flood Recovery Element into Lumberton Tomorrow Land Use Plan	Incorporate flood recovery element into Land Use Plan. Also integrate the Open Space Plan to promote the development of trails and bikeways in the city.	(LU)1 (LU)2 (LU)3 (LU)4 (LU)5 (LU)7 (LU)8	TA: Evaluate existing Land Use Plan; identify places in plan that address flood recovery issues. P: Modify and add policies in plan.	North Carolina Disaster Recovery Act funding; EDA; CDBG-DR (planning)	Lumberton Planning Director	2018 and on-going
28	Update Land Use Ordinance Update	Assess and modify the Land Use Ordinance so it protects the natural environment and the waterways present throughout the city.	(LU)1 (LU)2 (LU)7 (LU)8 (AF)2 (AF)7 (AF)9	TA: Assess and identify deficiencies in existing ordinance relative to flood impacts. P: Incorporate changes into zoning ordinance as appropriate.	North Carolina Disaster Recovery Act funding; EDA; CDBG-DR (planning)	City Council; City Planning Director; City Attorney	2018 - 2020

Proj. No.	Recovery Action	Description of Action	Policies	Required Resources	Potential Funding	Administration/ Agency Responsible	Timeline
<b>ADMINISTRATION AND FINANCE</b>							
29	Enhance Communication and Coordination	NCEM should create an ombudsman office to more effectively respond to recovery issues and questions.	(AF)1	TA: Time commitment from City Manager and Planning Director, state agency representatives from NCEM (Housing Coordinator and Case Managers), NC Housing Recovery Centers and NC DOC. P: NCEM and local government establish MOU; NCEM considers establishing ombudsman function.	North Carolina Disaster Recovery Act funding	City Council or its representative (City Manager) in conjunction with NCEM	2018 - 2019
30	Enhance Plans and Regulations	Join CRS, adopt temporary building moratorium, and incorporate NIMS into updated Emergency Operations Plan.	(LU)1 (LU)2 (LU)3 (LU)5 (LU)6 (AF)8 (AF)9 (AF)10 (AF)6 (AF)2	TA: Join CRS program; adopt NIMS. F: Incorporate changes into ordinances, plans, and relevant polices.	General Operating Budget; CDBG-DR (planning)	City Planning Director; Emergency Operations Director	2019 - 2020
31	Increase Staffing Levels	Augment existing staff to implement the city Recovery Plan and associated projects.	(AF)1	TA: Develop position duties. F: Hire staff. P: Implement associated policies.	North Carolina Disaster Recovery funding	City Manager; Treasurer's Office of Local Government Commission; UNC School of Government's Environmental Finance Center	2018
32	Update Emergency Operations Plan	Update existing Emergency Operations Plan – incorporate NIMS standards and develop the means to improve	(HO)6 (HE)7 (AF)2 (AF)10 (AF)11	TA: Update Emergency Operations Plan. F: Hire consultant. P: Coordinate with NCEM and Robeson County Emergency Management	EMPG	Emergency Services Director	2019 - 2020

Proj. No.	Recovery Action	Description of Action	Policies	Required Resources	Potential Funding	Administration/ Agency Responsible	Timeline
		coordination with volunteers.					
<b>ECONOMIC DEVELOPMENT</b>							
34	Create Manufacturing Task Force	Organize Manufacturing Task Force, identify members, define mission, and develop work plan	(ED)1 (ED)2 (ED)3 (ED)5 (ED)4 (ED)13	TA: Organize Task Force. F: Consult with NCSU, Dean of College of Textiles and R. Roach, President, Contempora Fabrics. P: Transfer findings of task force into policy.	NC Rural Center	Robeson County Office of Economic Development; City Downtown Development	2018
35	Convene Textile Conference	Organize and host conference.	(ED)1 (ED)2 (ED)3 (ED)13	TA: Organize conference. F: Host conference arrangements. P: Transfer proceedings into policy.	NC Rural Center; Golden LEAF Foundation	Robeson County Office of Economic Development; City Downtown Development	2018
36	Create Small Businesses and Small Business Incubator Facilities	Create small business incubator facilities in downtown Lumberton and at Lumberton Municipal Airport.	(ED)8 (ED)9 (ED)10 (ED)12 (ED)13	TA: Create strategy. F: Implement strategy, prepare out-reach materials, develop training program. P: Expand businesses and entrepreneurship opportunities.	State Legislature; Golden LEAF Foundation; NC Rural Center, USDA Rural Business Development Grant; NCDOC Rural Economic Development Division	Robeson County Office of Economic Development; City Downtown Development, UNC Pembroke Entrepreneurship Incubator	2019
37	Transform Lumberton Municipal Airport into Industrial park	Establish airport industrial park.	(ED)6 (ED)7 (ED)8 (ED)12 (ED)13	TA: Promote concept, gain support of business community, and develop Manufacturing PUD. F: Hire consultant team. P: Expand industrial base; increase tax base; create job opportunities.	NCDOC Rural Economic Development Division; EDA	Robeson County Office of Economic Development; City Downtown Development	2020

Proj. No.	Recovery Action	Description of Action	Policies	Required Resources	Potential Funding	Administration/ Agency Responsible	Timeline
38	Develop Multimedia Promotional Program to Promote Lumberton's ecotourism sector	Create multimedia ecotourism promotional program in partnership with Lumberton Chamber of Commerce, Lumberton Visitor's Center, and Downtown Coordinator.	(ED)1 (ED)14	TA: Create committee. F: Hire media consulting firm. P: Align campaign with policies found in this plan.	NC Rural Center; USEPA; NCDOC	Lumberton Chamber of Commerce; Downtown Economic Coordinator	2019
<b>WORKFORCE DEVELOPMENT</b>							
39	Establish High-Tech Technology School	Build High-Tech High School on school property in Com Tech Park.	(ED)4 (WD)7	TA: Organize support and define school curriculum. F: Design and build school.	Public School Building Capital fund	Public Schools of Robeson County Superintendent	2023
40	Expand Career Day	Expand Career Day program at the Career Center and Lumberton High School. Integrate robotics, computer-aided-design, computer-aided-manufacturing, and industrial engineering.	(WD)1 (WD)3 (WD)4 (WD)6	TA: Organize career days; Involve local business community. F: Organize and host event.	Local revenue	Public Schools of Robeson County Career Center; Manufacturing Task Force	Ongoing
41	Enhance Workforce Coordination/ Collaboration	Convene all agencies and organizations involved in workforce	(WD)1 (WD)2 (WD)3 (WD)4	TA: Convene annual meeting. F: Host events. P: Expand training opportunities.	Lumberton River Workforce Development Board	Lumber River Council of Governments	2018 & Ongoing

Proj. No.	Recovery Action	Description of Action	Policies	Required Resources	Potential Funding	Administration/ Agency Responsible	Timeline
		development on annual basis.	(WD)5 (WD)6				
42	Develop Apprenticeship Program	Establish a textile apprenticeship program.	(WD)5 (WD)6	TA: Develop Program. F: Operate Program. P: Train workers with high-tech skills.	U.S. Department of Labor; NCDOC; EDA	Lumber River Council of Governments	2019 & 2020

AF = Administration and Finance; ED = Economic Development; EN = Environment; F = funding; HE = Health; HO = Housing; IN = Infrastructure; LU = Land Use; PF = Public Facilities; WD = Workforce Development.



## CHAPTER 7

# PLANNING PROCESS

A good planning process provides a proven problem-solving approach guided by a set of agreed-upon goals, policies, and projects created to address identified issues in this plan. Figure 32 provides a general overview of the process.

Figure 32: Planning Process.



## Summary of the Planning Process

Figure 32 presents a logical sequence by which a community periodically takes stock, assess future conditions, and updates its long-range plan. During disaster recovery, planning processes are frequently amended. A primary goal during this period of increased financial assistance is to invest special disaster funds in ways that are guided by a long-term vision. Furthermore, implementation of this plan is performed according to the city's tradition of good management practices and routine consideration of many factors such as:

- Capacity of infrastructure operated by special districts and the county;
- Conditions of systems and needs for repair;
- Operational reliability and efficiency;
- Suitable public services and public safety;
- Risk management and hazard awareness, including floodplain concerns;
- Orderly growth and adaptation to change;
- Attention to issues of obsolescence, vacant buildings, and deterioration;
- Promotion of harmonious activity patterns versus conflicting land uses; and
- Pursuit of upgrades and amenities for a livable and attractive community.

The Lumberton recovery plan supports a variety of community policies and practices as organized in the Implementation Matrix located in Chapter 6 and the general planning methods depicted in Figure 32. Detailed steps used to develop this recovery plan are shown in Figure 33. Extra attention is paid to the damage pattern, disruption of the economy, and other changes brought about by the flood, plus efforts to enhance resiliency.

## The Disaster Recovery Planning Process Following Hurricane Matthew in Lumberton

The steps described below show how the elements are interconnected and build on one another as part of a larger whole.

### Organizing for Recovery Planning

When a community is hit with a disaster, it goes through phases of immediate response, cleanup, repairs, and long-term recovery. Throughout this process, the governing body, to include the mayor and city council, is responsible for decisions and oversight. Committees composed of local and county officials, non-profits, technical specialists, and citizens assist the governing body by focusing on special needs and available resources. As Lumberton enters the long-term recovery phase, a structured approach enables the city to recover in a more resilient manner given the complexities of rebuilding and coordinating the many sources of assistance.

### **Set Up Organization and Procedures to Foster Public Participation**

The City Manager and Planning Director, along with department heads shown in Figure 22, have been functioning as a recovery committee in Lumberton. Special events have been arranged to foster public participation, including displays, questionnaires, and workshops. In the future, the City Council may amend the committee structure as the pace and complexity of recovery increases. An advisory committee provides a recognized team focused on administering the recovery plan over time. Creating clear procedures to implement that plan includes ensuring the participation of those affected by the policies and projects located in this document.

### **Identify Issues and Opportunities**

The identification of issues represents the “problems” or challenges facing the community as it seeks to recover from Hurricane Matthew. Public discussions and analyses of these ideas and data inform options, including solutions to problems. Examples of issues in Lumberton include whether to revitalize and flood retrofit historic downtown buildings, ways to encourage the development of new housing out of the floodplain, and ways to relocate salvageable historic properties. The identified issues and alternatives include those that can be addressed by local entities and those that require external assistance by organizations within the larger disaster recovery assistance network. External help typically comes from county, state and federal agencies as well as nonprofits and public-private partnerships such as economic development organizations or a Council of Governments. The selection of issues reflect meaningful involvement of the public and those who will be tasked with addressing community needs.

### **Identify Goals, Policies, and Projects**

Documentation of the community setting and assets sets the stage for the creation of a vision and series of associated goals as well as the analysis that underlies them. The vision provides the overarching aim of the plan, and goals are developed across broad identified themes (Chapter 3).

### **Collect and Analyze Data**

Collecting and analyzing data provides the fact base on which the direction-setting elements (i.e., goals, policies, and projects) are developed. The plan’s assemblage of data also can be extracted by city staff and others for inclusion in grant applications, project proposals, and other plans.

### **Document Community Setting and Assets**

It is vital to understand the conditions found in the community, including existing assets unique to the planning area. Information includes flood damage to housing and commercial centers as well as impacts on environmental resources, infrastructure (e.g., roads, sewer, water), and public facilities (e.g., city hall, emergency medical services,

public safety buildings). Much of the information comes from within the community, including that provided by leaders and residents. Additional information is found in reports and plans written by the city, county, state and federal agencies as well as regional organizations (e.g., Council of Governments).

This information provides a description of the historic, cultural, economic, and environmental conditions in the area. While the HMDRRI team does the data gathering, the city provides validation and balance. These steps are described in Figure 33, first by determining key issues and opportunities, then depicting a better future, choosing that to which the community aspires, as reflected in a vision statement. Such steps have been followed by Lumberton and the HMDRRI, as highlighted in the following specific activities.

### **Prepare the Plan**

Preparing the plan involves assembling the materials gathered in the steps noted above and writing the plan in a coherent manner that is useful for decision-making. The basic elements of the plan are described in Chapter 1.

### **Develop Implementation Strategy**

The plan implementation strategy is found in Chapter 6. In this chapter, recommended actions are identified and described in a brief narrative spanning each goal/topic area. The Implementation Matrix details specific recovery actions, supporting policies, potential funding sources, those responsible for administering the action, and an estimated timeline for completion.

### **Review and Adopt the Plan**

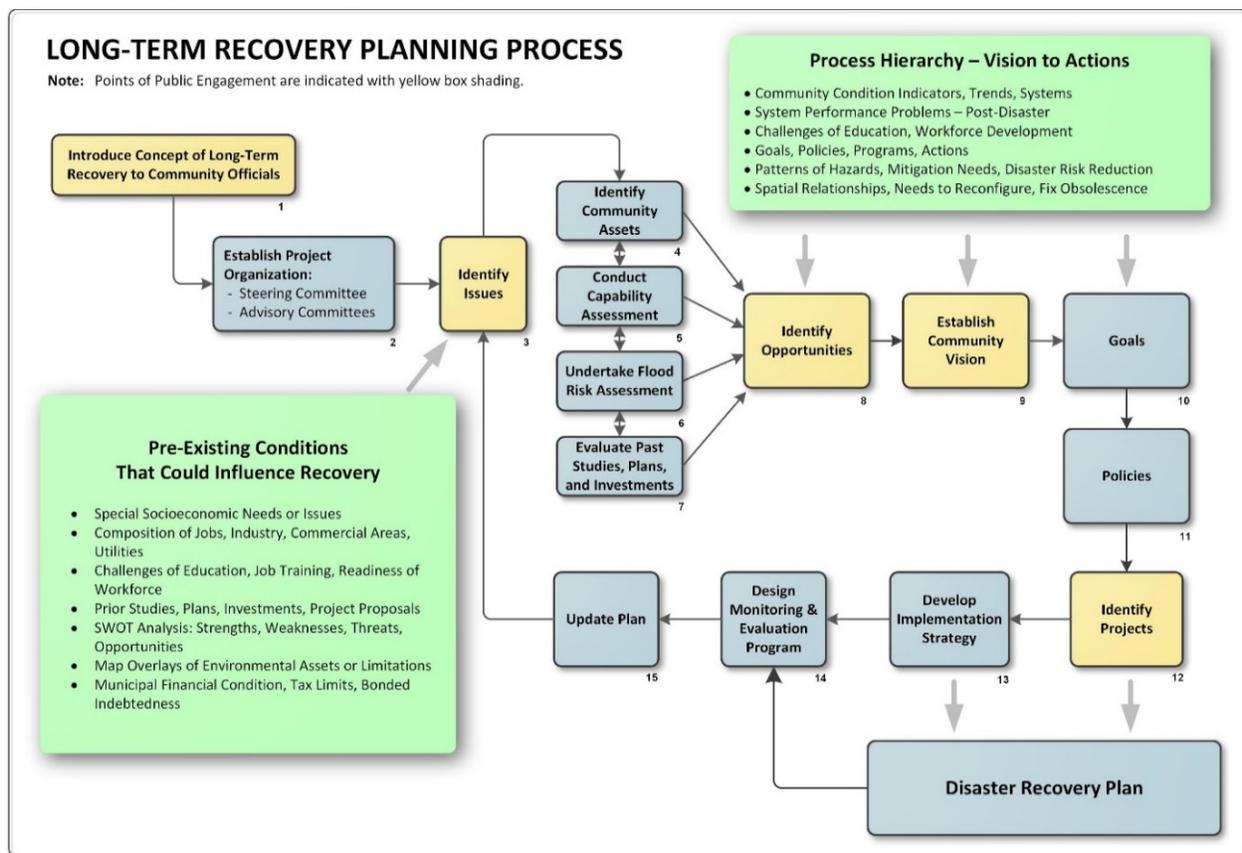
In order to maintain legal standing and administrative legitimacy, the plan has been reviewed and adopted by the city's governing body.

### **Administer Plan through Monitoring and Update Schedule**

Good plans have clear implementation mechanisms in place, with defined monitoring and update schedules. This provides a process that can be agreed to and followed over time by those responsible for carrying out identified goals, policies, and projects. It is imperative that the community leadership evaluates the plan on a regular basis so progress is accurately monitored by those responsible for implementing the recovery program. Plan updates should be undertaken on an agreed upon time schedule as well as following future disasters or obtaining key background information such as new hazard data or changes in local policy that is relevant to recovery goals.

## Detailed Descriptions of Planning Steps

Figure 33: Long-Term Recovery Planning Process.



Steps shown in **Figure 33** describe the detailed process followed during the development of the Lumberton Recovery Plan.

### 1 Introduce Concept of Long-Term Recovery to Community Officials

Present to the governing body about the history of recovery planning, connections to emergency management, definitions of disaster phases, and examples of successful community recovery plans.

### 2 Establish Project Organization

Explore with the governing body and appointed officials different types of organizational arrangements based on the size of the community, nature of the disaster, extent of damage, socioeconomic conditions, and institutions active in community affairs. Discuss preferences for naming individuals to serve in various capacities. Consider optimum size of committees and methods to involve individuals and organizations, including the private sector.

### **3 Identify Issues**

Using community engagement techniques such as open houses, surveys, and social media, prepare a list of key issues. The list reflects perceptions of elected officials, appointed officials, community groups, and the general citizenry.

### **4 Identify Community Assets**

Draw on prior studies and reports to develop a list of community assets, including socioeconomic factors, facilities, programs, and cultural resources. Consider institutional interactivity, including connections to regional and state entities, because they play a prominent role in disaster recovery.

### **5 Conduct Capability Assessment**

Collect and analyze data related to financial resources; administrative arrangements and staffing; and plans, policies, and ordinances. Assess overall recovery capacity in relation to the scale of the disaster, patterns of damage, and the scope of redevelopment needed to support meaningful community recovery. For unmet needs or deficient resources, identify alternative arrangements such as surge staffing, contracted expertise, or interagency resource sharing.

### **6 Undertake Flood Risk Assessment**

Collect and interpret post-disaster flood data from FEMA, NCEM, U.S. Geological Survey, and others to inform programs and projects. Integrate risk factors into recovery policies and strategies to be implemented by redevelopment programs, construction standards, zoning, or other means.

### **7 Evaluate Past Studies, Plans, and Investments**

Collect and interpret past studies, plans, and capital improvement programs to include their relevance to recovery. Seek synergies between existing community goals and current post-disaster needs. Link recovery issues with previously identified needs such as blight, substandard housing, economic disparity, unemployment, and obsolescent infrastructure.

### **8 Identify Opportunities**

Through interactive public engagement and collaboration with public and private sector organizations, solicit ideas that address fixing pre- and post-disaster problems through programs, policies, and projects.

### **9 Establish Community Vision**

As a consolidated review of all needs and opportunities, facilitate public participation to generate themes about collective aspirations for the future. The vision statement may

evolve during the recovery planning process as the original ideas prove to be more or less feasible or as new projects emerge.

## **10 Develop Goals**

From the community's collective vision statement, it is imperative to establish goals that build a foundation for more detailed recommendations in the plan. The community may wish to delegate goal writing to a steering committee or advisory group, subject to review and comment by a larger representative cross-section of the population.

## **11 Establish Policies**

Goals should inform policies. Local governments rely on policies to administer regulations, set standards, and make investments in community programs and facilities. The task of writing policies typically falls to an advisory group selected by the governing body, sometimes supported by a technical committee of urban planners, administrators, engineers, financial experts, and others from within the community or aided by regional organizations actively involved with the community.

## **12 Identify Projects**

Projects comprise investments and other actions to address post-disaster needs and opportunities. These may include construction and reconstruction of public facilities, housing and infrastructure, and the provision of services. Service may include a new initiative for seniors or improvements to operations.

## **13 Develop Implementation Strategy**

To implement the recovery plan, the community needs to specify steps to be followed, accompanied by a designation of responsible entities. The plan's Implementation Matrix provides a composite view of projects and policies. After the plan is adopted, the matrix can be used as a tracking device to aid in project management.

## **14 Design Monitoring & Evaluation Program**

Depending on the scale of the disaster and the size of the community, protocols for monitoring recovery and evaluating progress should be set up as workable steps suited to the resources of available staff or volunteer advisors. A time table should be established in keeping with other management protocols. The frequency of performance review should be adopted by the governing body, mirroring other municipal performance measurements such as annual financial audits, when practical.

## **15 Update Plan**

A recovery plan must be periodically updated to account for progress made as well as the identification of new information. The frequency and scope of plan updates are important policy considerations of the governing body. Alterations should occur

whenever a disaster strikes or when other plan updates are scheduled, such as preparation of a revised HMP.

## Community Engagement

The development of the recovery plan involved significant community engagement throughout the process. In Lumberton, community engagement was used to gain insights about the issues facing the city, potential policy and project options, and the capacity of those involved in recovery to implement identified actions. The HMDRRI Team employed a variety of methods to collect information, including:

- City Council meetings,
- Recovery Committee meetings,
- General meetings,
- Conference calls with textile representatives and South Lumberton non-profits,
- Open houses; and
- Interviews with local officials.

### Recovery Committee

A Recovery Committee was formed at the outset of the project and included the City Manager, Planning Director, City Attorney, Public Works Director, City Emergency Services Director, Electric Utility Director, Director of Finance, Fire Chief, Downtown Coordinator, and Parks & Recreation Director. The group provided information regarding their various functions, served as a sounding board for ideas, participated in a SWOT analysis, and reviewed and responded to drafts of the recovery plan. Other meetings were held at key points in the planning process, including the presentation of the draft LSA.

### General Meetings

A series of meetings were conducted with local officials, including the city council, mayor, city manager, city attorney, and city planner as well as federal, state, and regional officials. Meetings introduced city officials to the HMDRRI approach to recovery, sought to identify issues unaddressed by federal and state officials, and described the content of the draft recovery plan.

### Textile Conference Call

Historically, Lumberton has been a textile town; however, during the late 1990s and early 2000s, textile companies moved out of the country. In recent years, technological advances in textile machines has provided an opportunity for the reintroduction of textile companies in old textile towns like Lumberton. A conference call was organized among the NCSU College of Textiles, Southeastern Economic Development Commission, and Robeson County Office of Economic Development to explore whether re-establishment of the textile industry in Lumberton was possible. The response was positive and supported

the creation of a manufacturing task force as well as the organization of a textile conference in Lumberton.

### **South Lumberton Non-Profit Conference Call**

This conference call explored the possibility of creating a non-profit organization that would select a neighborhood like South Lumberton and redevelop the neighborhood physically, socially, and economically. One participant, the Kate B. Reynolds Charitable Foundation, is doing similar work in Winston-Salem with the support of the North Carolina Office of Economic Development. Based on the call as well as other interviews, the idea has been added as a project in the recovery plan.

### **Interviews**

The HMDRRI Team met with several local officials and city staff over the course of more than one year. To gain an understanding of Hurricane Matthew and the impacts to Lumberton and the surrounding area, the HMDRRI Team met with local officials, residents, as well as agencies and organizations that play a role in assisting the city recover. Interviews were conducted with the RCHD Director; Robeson County Economic Development Director; Assistant Director; Robeson County Emergency Management; Robeson County School District Director of Internal Affairs and Finance; Robeson County School District Director of Student Services; Southeastern Health CEO; Southeastern Economic Development Commission Executive Director; Lumber River Council of Governments Executive Director; Visitors Council Executive Director; and Lumberton County Chamber of Commerce Executive Director. The HMDRRI Team also spoke with the deans of the NCSU College of Textiles and College of Design, the President of Contempora Fabrics, the Director of Hometown Strong, the Region 4 Liaison at the North Carolina Governor's Office, the Program Officer for the Kate B. Reynolds Charitable Trust, and the North Carolina Economic Development representative.



## CHAPTER 8

# MONITORING, EVALUATION, AND UPDATING

A good plan should serve as a living document. It should be regularly monitored, evaluated, and updated to address changing conditions in the community, county, region, and state. The plan also should serve as a means to incorporate new analytical techniques and information, including those created before and after disasters. The following section describes important elements of this process; how and when the recovery plan should be monitored, evaluated, and updated; and who should assume responsibility for these tasks over time.

### *Plan Monitoring and Evaluation*

#### **Changes in Land Use, Population, and the Economy**

Important conditions relevant to disaster recovery planning include changes in growth and land use (i.e., increase/decrease in housing, businesses, and public facilities), population changes (i.e., increase/decrease in population size and makeup to include socially vulnerable populations like the elderly, poor, single mothers, and non-English speaking residents), and changes in the local economy (e.g., loss/gain in new businesses or investments, changes in the regional economy).

#### **Changes in Hazard Risk**

The recovery plan should be updated when new information about a community's hazard risk is obtained through new analyses and mapping techniques. While information about a community's risk often is found in their hazard mitigation plan, a more accurate assessment of risk may be undertaken after a disaster occurs. Evaluating this information and incorporating it into the recovery plan is critically important.

The recovery plan should be updated following a disaster because extreme events often expose parts of a plan that need to be improved based on new information, types of damages, and new partnerships. New information often results in the need to create new goals, policies, and projects to better reflect these conditions. This also requires accounting for different issues, needs, and resources available from aid providers like state and federal agencies.

#### **Changes in Local Policies and Plans**

The community may create new policies or plans over time that should be reflected in updates to the recovery plan. For instance, if a new comprehensive land use plan or downtown redevelopment plan is adopted, its goals, policies, and actions should be

accounted for and complement those found in the recovery plan. If elements in the plans contradict one another, they should be amended to reflect agreed upon goals.

### **Changes in Technology and Data**

An important reason to update the recovery plan includes the creation of new technology and analytical tools. In North Carolina communities, the state is fortunate to have access to cutting-edge floodplain mapping and risk assessment tools provided by the North Carolina Division of Emergency Management. The Flood Risk Information System should be used, as appropriate, to assess flood hazard risk following a disaster. Additional data may be drawn from other sources, such as new or updated plans or information collected by the county, Council of Governments, universities, or other organizations.

## *Tracking Plan Monitoring, Evaluating, and Updating*

This section of the plan addresses the process by which the plan is monitored and evaluated. Important questions include:

- Who will monitor and evaluate the recovery plan?
- When will the recovery plan be updated (pre- and post-event)?
- How will the recovery plan be updated?

### **Plan Monitoring and Evaluation Process**

It is the responsibility of the City Council, in coordination with the Recovery Committee and City Planner or their designee, to monitor and evaluate the recovery plan over time. The city should assign an individual and an alternate to commit to this process. Changes to the recovery plan should be documented, incorporated into plan revisions, and voted on by the City Council. The City Council and Recovery Committee may also propose changes following the adoption of new policies and plans, public investments, and growth. A broader description of the overall planning process is provided in Chapter 7, including a discussion of the Recovery Committee.

### **Plan Monitoring and Evaluation Schedule**

Given this plan is focused on the recovery from Hurricane Matthew, the description of the monitoring of the recovery plan will focus on this disaster. Monitoring of the plan will rely on the use of the implementation matrix found in Chapter 6.

### **Updating the Disaster Recovery Plan**

The recovery plan should be updated every 5 years unless a federal disaster declaration occurs in the county or a non-declared disaster occurs that the City Council and Recovery Committee believe merits changes to the plan. Efforts should be made to update the recovery plan at the same time the Robeson County Multi-Jurisdictional Hazard Mitigation Plan is updated. When possible, updating the plan may be informed

by community-level exercises held in partnership with the county and other participants. The city should update the plan no later than 6 months following a disaster. The Recovery Committee will be responsible for assessing and suggesting changes, and the City Council will be responsible for approving these changes, subject to their input and deliberation. At a minimum, actions should include reviewing the vision, evaluating current goals as well as existing policies and projects, assessing community setting and assets, and recommending action items and associated funding. A report should be provided to the City Council once a year to review the plan's progress, including obstacles and suggested solutions.



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## APPENDICES

Below are brief descriptions and web links to HMDRRI ancillary studies and resources developed in preparation or support of this Lumberton Recovery Plan.

## APPENDIX A: HOMEPLACE

The HomePlace document's primary focus is on community-specific designs to include open space management and residential construction. The greenspace concept emphasizes an expanded trails network that takes advantage of the community's location on the Lumber River, and additional greenspace resulting from voluntary relocation and residential buyouts. In addition, several housing designs were developed to offer possible options for those choosing to build replacement housing. The Lumberton HomePlace document can be accessed at: <http://coastalresiliencecenter.unc.edu/wp-content/uploads/2017/10/HomePlace-Lumberton.pdf>

## APPENDIX B: HURRICANE MATTHEW: SOURCES OF FLOODING AND MITIGATION STRATEGIES IN LUMBERTON, NC

The Lumber River and Jacob Swamp watersheds in Robeson County have a long history of flooding problems. On October 8, 2016, intense rain from Hurricane Matthew began to fall in the City of Lumberton and across the Lumber River watershed. Rainfall continued through October 9 and resulted in Lumberton receiving a total of approximately 12 inches of rain. This amount of rain resulted in widespread flooding. In the early morning of October 10, the Lumber River overwhelmed the sandbagging effort at the VFW Road underpass, and water began flowing into the area ostensibly protected by the levee system. The floodwaters washed out the railroad and overtopped VFW Road, resulting in floodwater depths greater than 4 feet in many areas, including the City's water treatment plant. Flooding in the city was tied to several contributing factors, including flood waters entering interior drainage channels and backwater flows from the Lumber River. However, the major contributing factor to the devastation was the inflow of floodwater through the VFW Road underpass. Investigation of the levee between Interstate 95 and Alamac Road did not show any signs the structure was compromised. Five mitigation options were investigated. This report included a discussion of each option as well as rough costs and losses that would be avoided during a 1% annual chance flood were the mitigation options in place. [https://files.nc.gov/rebuildnc/documents/files/lumber\\_mitigation\\_report.pdf](https://files.nc.gov/rebuildnc/documents/files/lumber_mitigation_report.pdf).

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## APPENDIX C: LUMBER RIVER BASIN FLOOD ANALYSIS AND MITIGATION STRATEGIES STUDY

Communities along the Tar, Neuse, Lumber, and Cashie rivers have experienced major flooding events over the past 25 years, with Hurricanes Fran (1996), Floyd (1999), and Matthew (2016) ranking among the most destructive storms in state history. In response to Hurricane Matthew, and due to the need to improve the resiliency of communities to flooding, the Governor set in motion river basin studies on the Tar, Neuse, Lumber, and Cashie. The objectives of these studies were to identify the primary sources of flooding and assess possible mitigation strategies to prevent future flood damage. These studies were performed by the North Carolina Division of Emergency Management, in partnership with the North Carolina Department of Transportation, and the River Basin advisory committees. This report provides assessments of flooding sources, structural flood impact, and hazard mitigation strategies for the Lumber River Basin. <https://www.ncleg.net/documentsites/committees/house2017-188/2018>.

## APPENDIX D: LAND SUITABILITY ANALYSIS

The land suitability analysis (LSA) developed for this plan is designed to identify and prioritize the most appropriate areas for development or redevelopment outside of hazardous areas that are also within the community and close to existing infrastructure. This type of analysis can inform communities as they try to develop relocation strategies for those who are displaced or are considering permanent moves while alleviating some of the negative effects described throughout this plan. Two documents are found in Appendix D. They include the Technical Memo: Land Suitability Analysis for Post-Disaster Housing Recovery (found at: <http://coastalresiliencecenter.unc.edu/wp-content/uploads/2018/11/LSA-Technical-Memo.pdf>) and the Briefing for the City of Lumberton, N.C.: Land Suitability Analysis for Post-Disaster Housing Relocation (found at: <http://coastalresiliencecenter.unc.edu/wp-content/uploads/2018/11/Lumberton-LSA-Briefing.pdf>).

## APPENDIX E: LUMBERTON TOMORROW LAND USE PLAN

The Lumberton Tomorrow Land Use Plan sets forth the “blueprint” for future development. It provides the vision of what the community wishes to become and the steps needed to realize that aim. The plan is composed of strategies and actions that form a broad policy-based document and guide for decision-making that targets the long-term physical land development and economic development of the city. The Land Use Plan builds on the existing assets in the city and establishes a framework for taking advantage of opportunities as they arise. The plan can be accessed at: [www.benchmarkplanning.com/lumbertontomorrow](http://www.benchmarkplanning.com/lumbertontomorrow).

## APPENDIX F: COMPREHENSIVE PLAN WITH A HEALTH & WELLNESS COMPONENT – ROBESON COUNTY (DRAFT)

The Robeson County Comprehensive Plan draws from health information gained from the 2011 Robeson County Community Health Assessment. A traditional plan addresses demographics, housing, economy, environment, transportation, and future land use. A reference to health and wellness are less common. Sections and components of the traditional planning model are included and coordinated with identified health issues/needs. The plan can be accessed at: <http://publichealth.southernregionalahec.org/robeson/docs/3-10-2014%20DRAFT%20Robeson%20County%20Comp%20Plan.pdf>.

## APPENDIX G: RESILIENT REDEVELOPMENT PLAN – ROBESON COUNTY

Due to the widespread effects of Hurricane Matthew, the State Legislature created the North Carolina Resilient Redevelopment Planning (RRP) program in order to provide a roadmap for municipalities in eastern North Carolina for rebuilding and revitalizing their damaged communities. The program empowered communities to prepare locally driven, resilient redevelopment plans to identify reconstruction projects and other actions to allow each community to thrive in an era when natural hazards are increasing in severity and frequency. The report for Robeson County can be accessed at: [https://files.nc.gov/rebuildnc/documents/matthew/rebuildnc\\_robeson\\_plan\\_combined.pdf](https://files.nc.gov/rebuildnc/documents/matthew/rebuildnc_robeson_plan_combined.pdf).

## APPENDIX H:

# HURRICANE MATTHEW: ROBESON COUNTY SCHOOL FACILITY ASSESSMENT & FLOOD MITIGATION STRATEGIES

During Hurricane Matthew, the Robeson County School District received damage to 15 different facilities, including 12 schools. This report details the findings of ESP Associates' assessment of five of the most heavily damaged facilities. This report also summarizes mitigation alternatives for these facilities and provides recommendations on the best course of action to reduce future damages. The plan can be accessed at: <https://www.dropbox.com/s/kchmphu91o1tcie/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan.pdf?dl=0>.

## APPENDIX I:

# HURRICANE MATTHEW: HOUSING AUTHORITY OF THE CITY OF LUMBERTON FLOOD MITIGATION STRATEGIES

During Hurricane Matthew, the Housing Authority of the City of Lumberton received damage to five public housing properties, totaling 152 building and forcing 264 families to evacuate. This report details the findings of an assessment of the five damaged sites. The study includes field reconnaissance and coordination meetings with the Housing Authority of the City of Lumberton; compilation of numerous flood hazard, hurricane impact, and supporting data sets; and a review of previous mitigation studies, flood hazard assessments, site-specific mitigation alternatives, and study recommendations, to include conceptual schematics and estimated costs.

## APPENDIX J:

# CRC HMDRRI POSTER

This graphic provides an overview of the Hurricane Matthew Disaster Recovery and Resilience Initiative (HMDRRI) as well as how the individual initiatives undertaken by the HMDRRI team fit together and inform the disaster recovery plans for Fair Bluff, Lumberton, Princeville, and Seven Springs. The poster can be accessed at: <http://coastalresiliencecenter.unc.edu/wp-content/uploads/2018/04/HMDRRI-Poster.pdf>.