

Floodplain Mitigation Plan

City of Wilson, NC



August 2015



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EXECUTIVE SUMMARY

The purpose of this Floodplain Management Plan is to reduce or eliminate risk to people and property from flood hazards. Every community faces different hazards and every community has different resources to draw upon in combating problems along with different interests that influence the solutions to those problems. Because there are many ways to deal with flood hazards and many agencies that can help, there is no one solution for managing or mitigating their effects. Planning is one of the best ways to develop a customized program that will mitigate the impacts of flood hazards while taking into account the unique character of a community. The plan provides a framework for all interested parties to work together and reach consensus on how to move forward. A well prepared Floodplain Management Plan will ensure that all possible activities are reviewed and implemented so that the problem is addressed by the most appropriate and efficient solutions. It can also ensure that activities are coordinated with each other and with other goals and activities, preventing conflicts and reducing the costs of implementing each individual activity.

The City of Wilson followed the planning process prescribed by the Federal Emergency Management Agency (FEMA), and this plan was developed under the guidance of a Floodplain Management Planning Committee (FMPC) comprised of representatives of City Departments, citizens and other stakeholders. The FMPC conducted a risk assessment that identified and profiled flood hazards that pose a risk to the City, assessed the City's vulnerability to these hazards, and examined the capabilities in place to mitigate them. The flood hazards profiled in this plan include:

- Flood: 100-/500-year
- Flood: Stormwater/Localized Flooding
- Stream Bank Erosion
- Dam/Levee Failure

This plan identifies activities that can be undertaken to reduce safety hazards, health hazards, and property damage caused by floods. Based on the risk assessment developed for each of the flood hazards identified above, the FMPC identified goals and objectives for reducing the City's vulnerability to the hazards. The goals and objectives are summarized as follows:

Goal 1 – Protect health and safety.

Objective 1.1: Advise the community of the safety and health precautions to implement before, during, and after a flood.

Objective 1.2: Publish the names of roads and intersections which often flood after heavy rain events or major storms.

Objective 1.3: Educate everyone on the benefits of improved water quality and associated habitat.

Objective 1.4: Identify the location of vulnerable populations to aid in emergency evacuations.

Goal 2 – Reduce flood damage through flood resilient strategies and measures.

Objective 2.1: Prioritize capital improvement projects to address areas where poor drainage causes substantial flooding

Objective 2.2: Encourage development outside of the special flood hazard area (1% annual chance flood).

Objective 2.3: Use the most effective approaches to protect buildings from flood damage, including elevation, acquisition, and other retrofitting techniques where appropriate.

Objective 2.4: Encourage property owners to assume an appropriate level of responsibilities for their own protection, including the purchase of flood insurance.

Goal 3 – Reduce damage to insurable buildings and repetitively flooded areas.

Objective 3.1: Prioritize stormwater management projects that target repetitive loss areas.

Objective 3.2: Develop a property buyout master plan to identify and purchase repetitive loss properties.

Objective 3.3: Recommend purchasing renter’s insurance and use of the Increased Cost of Compliance (ICC) provision to mitigate flood damage.

Goal 4 – Protect critical and essential facilities from flood damage.

Objective 4.1: Prioritize critical and essential facilities in need of protection from flood damage.

Objective 4.2: Provide 100- and 500-year flood protection for dry land access, where appropriate.

Objective 4.3: Leverage public funding to protect critical and essential facilities.

In order to meet the identified goals, this plan recommends 13 mitigation actions, which are summarized in the table that follows. Note: ID number does not indicate an order of priority.

ID	Action	Related to Goal	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Category
1	The City will continue on an annual basis to target all properties in the SFHA reminding them of the advantages to maintaining flood insurance through its annual outreach effort.	1, 2	✓	✓	✓	Property Protection, Public Information and Outreach
2	The City will increase its outreach efforts on an annual basis for properties located in the SFHA to educate property owners that they should not store personal property in basements and crawl spaces	1, 2	✓		✓	Property Protection, Public Information and Outreach
3	The City will promote effective flood protection measures and provide advice and assistance to property owners who may wish to implement such measures in an on-going program.	1, 2	✓	✓	✓	Property Protection, Public Information and Outreach
4	The City will continue acquisition/demolition mitigation of high-risk flood-prone properties (including repetitive loss properties). The highest priorities are properties at the greatest flood risk and where drainage improvements will not provide an adequate level of protection.	2, 3	✓			Prevention, Property Protection
5	The City will prioritize CIP projects to focus on drainage improvement projects in those basins containing repetitive loss areas.	2, 3	✓	✓		Structural Projects
6	The City will encourage property owners to elevate inside and outside mechanical equipment above the BFE and install flood resistant materials in crawl spaces.	1, 2	✓	✓		Property Protection, Public Information and Outreach
7	The City's Planning & Development	1, 2	✓		✓	Public Information and Outreach

ID	Action	Related to Goal	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Category
	Services Department will encourage renters to purchase rental insurance for their contents.					
8	The City will construct a new stormwater retention pond in Merrimont Park.	2, 3	✓	✓		Natural Resource Protection, Structural Projects
9	The City will complete the conceptual plan for the Hominy Creek Water Quality Park and Greenway.	2,3	✓	✓		Prevention, Natural Resource Protection, Structural Projects
10	The City will prepare an Emergency Action Plan for Lake Wilson Dam.	1, 2	✓	✓		Emergency Services
11	The City will develop a Program for Public Information (PPI).	1,2	✓	✓		Public Information and Outreach
12	The City will develop a Repetitive Loss Area Analysis (RLAA).	2,3	✓	✓	✓	Property Protection, Public Information and Outreach
13	Coordinate with Wilson County Emergency Management to protect vulnerable critical facilities and to identify vulnerable populations for emergency evacuation purposes.	2,4	✓			Emergency Services

The following table provides the 10-step CRS planning credit activity checklist and the section/page number within this plan that describes the completion of each planning step in more detail.

CRS Planning Credit Activity Checklist

CRS Step	Section/Page
1. Organize to prepare the plan.	
a. Involvement of office responsible for community planning	Section 2.1
b. Planning committee of department staff	Section 2.1
c. Process formally created by the community's governing board	Section 2.2.1
2. Involve the public.	
a. Planning process conducted through a planning committee	Section 2.1 / Table 2-1 / Appendix A
b. Public meetings held at the beginning of the planning process	Section 2.2.1 / Table 2-5 / Appendix A
c. Public meeting held on draft plan	Section 2.2.1 / Table 2-5 / Appendix A
d. Other public information activities to encourage input	Section 2.2.1 / Table 2-6 / Appendix A
3. Coordinate with other agencies.	
a. Review of existing studies and plans	Section 2.2.1
b. Coordinating with communities and other agencies	Section 2.2.1 / Appendix A
4. Assess the hazard.	
a. Plan includes an assessment of the flood hazard with:	Sections 3.1 – 3.2
(1) A map of known flood hazards	Sections 3.1 – 3.2
(2) A description of known flood hazard	Sections 3.1 – 3.2
(3) A discussion of past floods	Sections 3.1 – 3.2
b. Plan includes assessment of less frequent floods	Sections 3.1 – 3.2
c. Plan includes assessment of areas likely to flood	Section 3.2.5
d. The plan describes other natural hazards	----
5. Assess the problem.	
a. Summary of each hazard identified in the hazard assessment and their community impact	Section 3.3
b. Description of the impact of the hazards on:	Section 3.3
(1) Life, safety, health, procedures for warning and evacuation	Section 3.3
(2) Public health including health hazards to floodwaters/mold	Section 3.2.4
(3) Critical facilities and infrastructure	Section 3.3
(4) The community's economy and tax base	Section 1.3.5
(5) Number and type of affected buildings	Section 3.3
c. Review of all damaged buildings/flood insurance claims	Section 3.3
d. Areas that provide natural floodplain functions	Section 1.3.3 / 3.3 / Appendix B
e. Development/redevelopment/Population Trends	Sections 1.3.6 – 1.3.7
f. Impact of future flooding conditions outline in Step 4, item c	Section 3.3 / Appendix B
6. Set goals.	
Section 4.2	
7. Review possible activities.	
a. Preventive activities	Section 4.3 / Appendix B
b. Floodplain Management Regulatory/current & future conditions	Section 4.3 / Appendix B

CRS Step	Section/Page
c. Property protection activities	Section 4.3 / Appendix B
d. Natural resource protection activities	Section 4.3 / Appendix B
e. Emergency services activities	Section 4.3 / Appendix B
f. Structural projects	Section 4.3 / Appendix B
g. Public information activities	Section 4.3 / Appendix B
8. Draft an action plan.	
a. Actions must be prioritized	Sections 4.4 – 4.5 / Appendix B
(1) Recommendations for activities from two of the six categories	Sections 4.4 – 4.5 / Appendix B
(2) Recommendations for activities from three of the six categories	Sections 4.4 – 4.5 / Appendix B
(3) Recommendations for activities from four of the six categories	Sections 4.4 – 4.5 / Appendix B
(4) Recommendations for activities from five of the six categories	Sections 4.4 – 4.5 / Appendix B
b. Post-disaster mitigation policies and procedures	Sections 4.4 – 4.5 / Appendix B
c. Action items for mitigation of other hazards	Sections 4.4 – 4.5 / Appendix B
9. Adopt the plan.	
Section 5	
10. Implement, evaluate and revise.	
a. Procedures to monitor and recommend revisions	Sections 6.1 – 6.2
b. Same planning committee or successor committee that qualifies under Section 511.a.2 (a) does the evaluation	Section 6.1.1

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1 INTRODUCTION

1.1 Purpose and Authority

As defined by FEMA, “hazard mitigation” means any sustained action taken to reduce or eliminate the long-term risk to life and property from a hazard event. Hazard mitigation planning is the process through which hazards are identified, likely impacts determined, mitigation goals set, and appropriate mitigation strategies determined, prioritized, and implemented. The purpose of this plan is to identify, assess and mitigate flood risk in order to better protect the people and property of the City of Wilson from the effects of flood hazards. This plan documents the City of Wilson’s hazard mitigation planning process and identifies relevant flood hazards and vulnerabilities and strategies the City will use to decrease vulnerability and increase resiliency and sustainability.

This Plan was developed in a joint and cooperative venture by members of a Floodplain Management Planning Committee (FMPC) which included representatives of City departments, federal and state agencies, citizens and other stakeholders. This Plan will ensure Wilson’s continued eligibility for federal disaster assistance including the Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation Program (PDM), and the Flood Mitigation Assistance Program (FMA). This Plan has been prepared in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act or the Act), 42 U.S.C. 5165, enacted under Section 104 of the Disaster Mitigation Act of 2000, (DMA 2000) Public Law 106-390 of October 30, 2000, as implemented at CFR 201.6 and 201.7 dated October 2007.

1.2 Background and Scope

The City of Wilson currently participates in the National Flood Insurance Program’s (NFIP) Community Rating System (CRS), and qualifies for a Class 6 Rating. The CRS recognizes and encourages community floodplain management activities that exceed the minimum standards. Under the CRS, flood insurance premium rates are adjusted to reflect the reduced flood risk resulting from community activities that (1) reduce flood losses, (2) facilitate accurate insurance ratings, and (3) promote the awareness of flood insurance. As part of the qualification for a Class 6 Rating and having 10 or more repetitive loss properties, Wilson is required to prepare and maintain a Floodplain Management Plan (FMP).

It is the goal of the FMPC to continue to work to make improvements to this plan so as to better serve the citizens of the City of Wilson, and to strive to improve the Class Rating for the City, so that the highest reduction in flood insurance premium rates can be available for its citizens. Through the City’s participation in the NFIP and a Class 6 rating with the CRS, owners of properties in the City’s Special Flood Hazard Area (SFHA) are entitled to a 20% discount on their flood insurance premiums. Non-SFHA policies (Standard X Zone policies) receive a 10% discount, and preferred risk policies receive no discount.

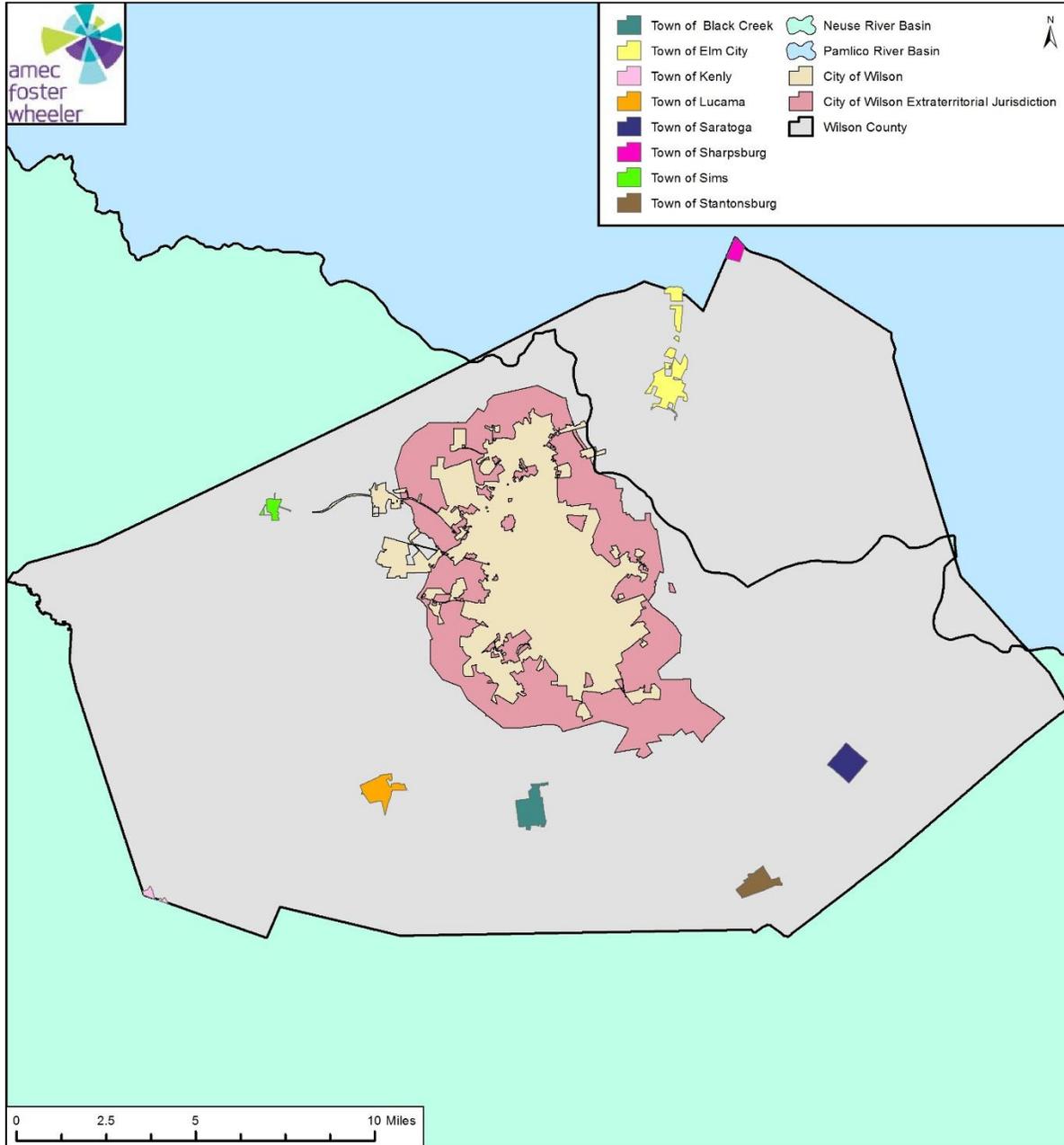
1.3 Community Profile

1.3.1 Overview of the Community

The City of Wilson, situated in eastern North Carolina, is the county seat of Wilson County. The City has a total land area of approximately 29 square miles and is located predominately in the coastal plain physiographic province of North Carolina along Interstate 95. The City of Raleigh, the State Capital, is located 40 miles to the west of the City, and the Atlantic Ocean is 100 miles to the east. The City is

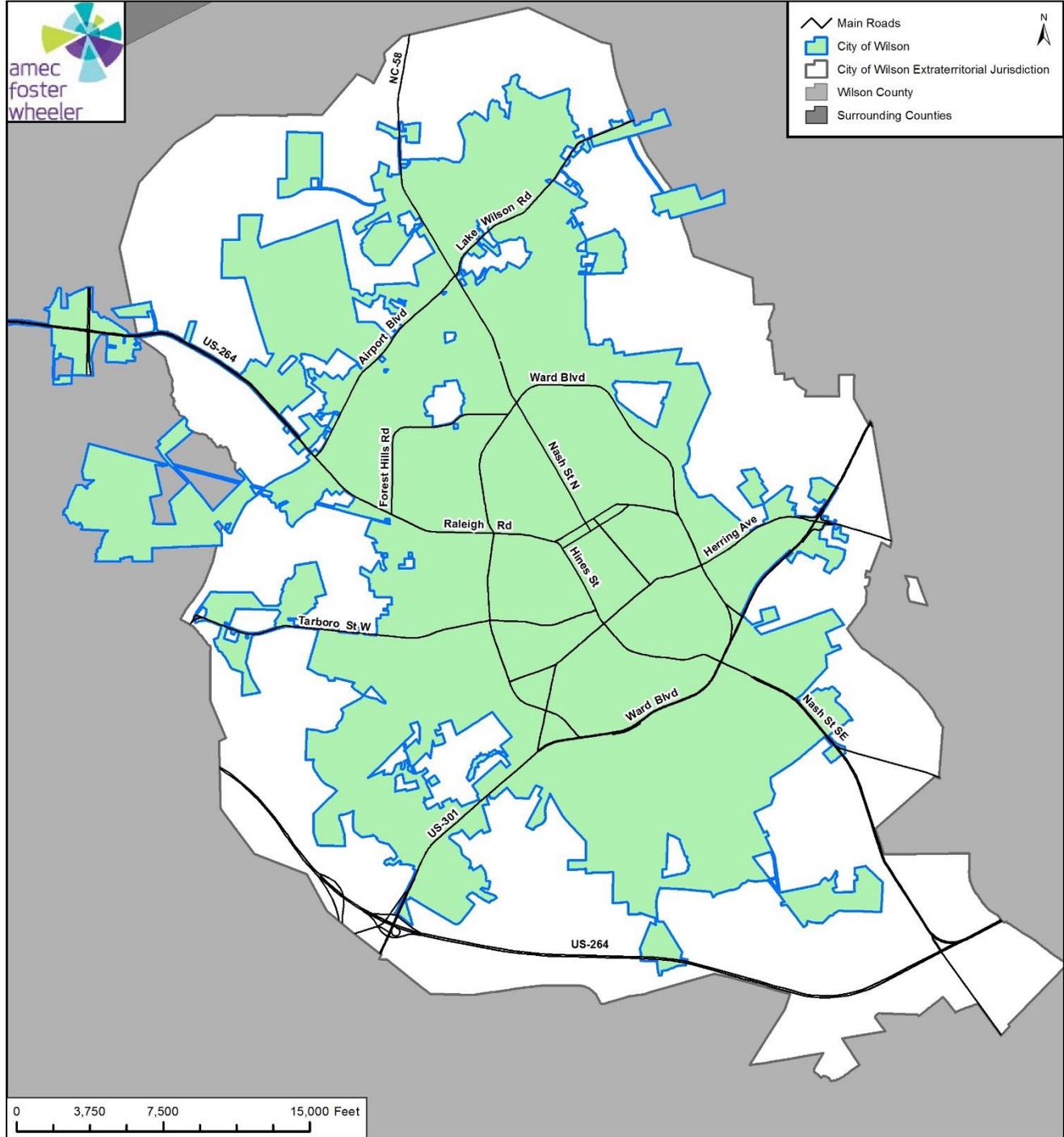
served by U.S. highways 264 and 301 and North Carolina highways 42 and 58. Interstate 795 connects Wilson to the City of Goldsboro and on to I-40 south, enhancing access to the seaports at Wilmington and Morehead City, North Carolina. U.S. 264 provides the City with an interstate grade highway connecting Greenville and the Research Triangle Park. According to the U.S. Census Bureau, the City had an estimated total population of 49,628 in 2013.

Figure 1.1 reflects the City of Wilson’s location within the County as well as the surrounding cities and towns. Figure 1.2 provides a base map for the City.



Source: FEMA DFIRM, 4/16/13

Figure 1.1 - Location Map



Data Source: City of Wilson, 2015

Figure 1.2 - Base Map

1.3.2 Topography and Climate

Wilson County has a moderate climate, with a monthly mean temperature of 60.1 degrees Fahrenheit. Average annual rainfall is approximately 47 inches. The County has a generally flat topography. The highest elevation of the County is 305 feet above sea level, in the northwestern corner of the County, with the lowest elevation at 50 feet above sea level in the southeastern portion of the County. The even topography of the land in Wilson County is supportive of the agricultural uses that played such a large role in the County’s history.

Wilson County is located in the Neuse and Tar-Pamlico River Basins. At 6,200 square miles, the Neuse River Basin is the third largest of the state’s river basins. It includes 23 counties and 78 municipalities. The City of Wilson and the majority of Wilson County falls within this basin. The Figure 1.3 illustrates the HUC-6 drainage basins and drainage features within Wilson County.

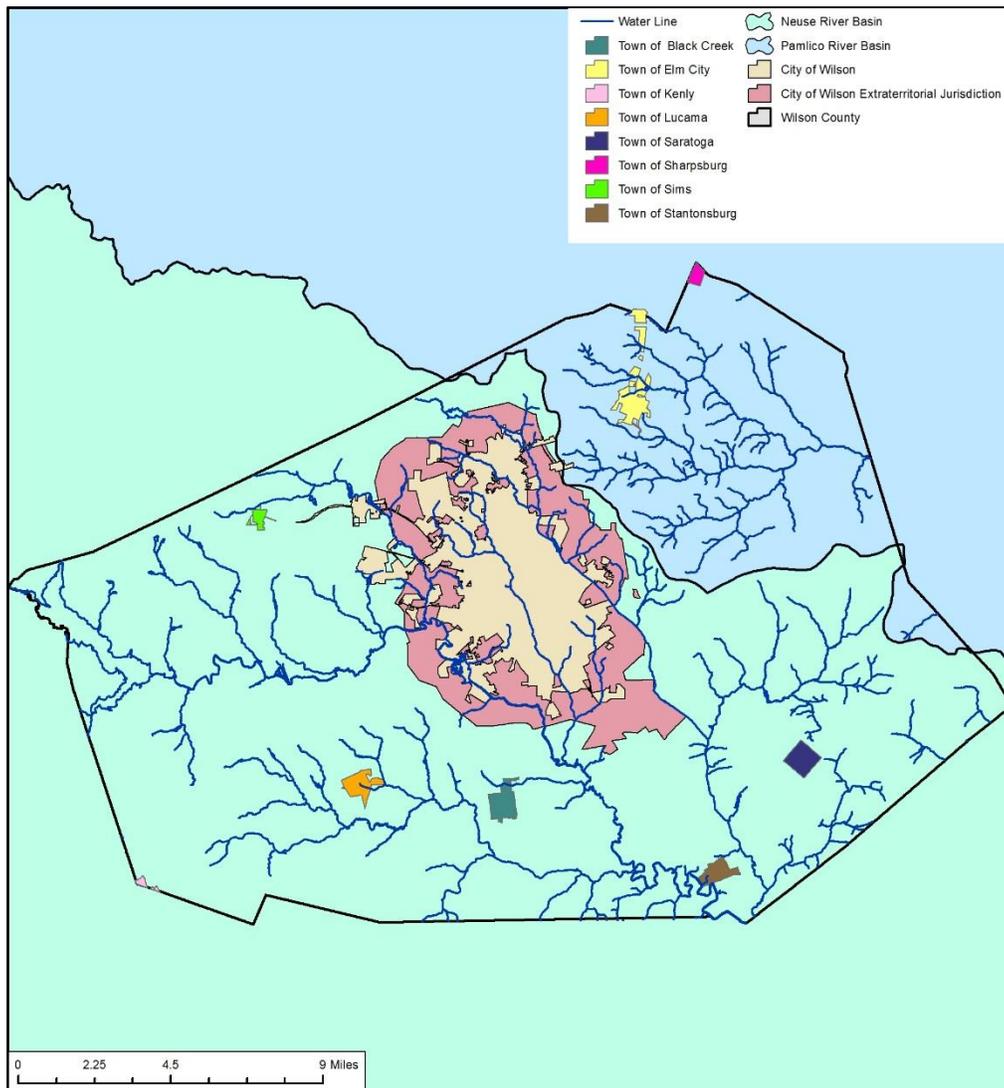


Figure 1.3 - HUC-6 Drainage Basins

1.3.3 Cultural, Historic and Natural Resources

Historic Resources

Wilson has five areas listed on the National Register of Historic Districts: Old Wilson, West Nash, Broad-Kenan, East Wilson, and the Central Business/Tobacco Warehouse districts. Listing on the National Register signifies that these districts have been researched and determined to be worthy of preservation for their historical values. In addition to being listed on the National Register, three areas are also designated as local historic districts, meaning that the City believes the architecture, history and character of the area are worthy of recognition and protection. These areas include the Old Wilson, West Nash, and Broad-Kenan Historic Districts. Development and design standards for local historic districts are enforced by means of historic district overlay zones.

In addition to historic districts, Wilson has a number of individual buildings, structures, and sites designated as historic landmarks. Most of the City's historic landmarks fall within boundaries of historic districts, and six historic landmarks have been listed individually on the National Register. These landmarks include: Branch Bank, the Cherry Hotel, the General Joshua Barnes House, the Moses Rountree House, the Davis-Whitehead-Harris House, and the Wilson County Courthouse.

Cultural Resources

The City of Wilson is the cultural center of Wilson County. Located in the center, are three gardens, six art galleries, and four museums including the North Carolina Baseball Museum and the Imagination Station Science Museum. Also located in the City of Wilson are the Wilson Arts Center, the Edna Boykin Cultural Center, the Barton College/Wilson Symphony Orchestra and the main County library. Many of the City's cultural and historical assets are located in the Ward Loop and Downtown areas, and draw visitors and residents to the area.

The Vollis Simpson Whirligig Park opened in November 2013 in the heart of downtown on a two-acre lot. The project – an outdoor display of the air-blown creations of local artist Vollis Simpson is serving as a major cultural economic development catalyst for the revitalization emerging in downtown Wilson. The whirligigs were already considered the region's top tourist attraction when they were on display in a farm field outside the city limits; now the park is expected to become an important cultural attraction for visitors on a both a state and national level.

Natural Features and Resources

Parks, Preserve and Conservation

According to the City's 2030 Comprehensive Plan, the City manages 5,133 acres of parkland. The City's Parks and Recreation Department manages and operates an array of parks and recreation facilities, including: 12 mini parks, 14 neighborhood parks, 2 community parks, 2 district parks, 1 regional park, and 2 specialty parks. Public recreational facilities include 29 playgrounds, 15 ball fields, 17 picnic areas, 13 soccer fields, as well as multi-use trails, tennis courts, and other amenities.

Water Bodies and Floodplains

Buckhorn Reservoir, located in the northwestern corner of the County, is an 850 acre lake that provides water to the City of Wilson. The reservoir is also surrounded by 350 acres of land which is managed by the City. Recreational activities at the reservoir include boating, water skiing, fishing, personal water crafts, picnicking, and camping. Because the reservoir is the water supply for Wilson, it has a protected watershed. Rules designated for this watershed govern the allowable density of new construction.

The Toisnot Reservoir is found inside the City of Wilson off on Lawndale Drive. It is the smallest lake in the County at 20 acres, and has 64 acres of land. Activities include fishing, picnicking, a playground, nature and fitness trails, and softball fields.

Almost 3,400 acres of the land within the City is located within a 100-yr or 500-yr special flood hazard area. A summary of acreage by flood zone is as follows: Zone AE (2,830 acres); Zone X 500-yr (522 acres); and Zone X Unshaded (15,284 acres).

Natural and Beneficial Floodplain Functions: Under natural conditions, a flood causes little or no damage in floodplains. Nature ensures that floodplain flora and fauna can survive the more frequent inundations, and the vegetation stabilizes soils during flooding. Floodplains reduce flood damage by allowing flood waters to spread over a large area. This reduces flood velocities and provides flood storage to reduce peak flows downstream.

Wetlands

Wetlands in Wilson County generally follow the major hydrology and are found within areas that are deemed flood hazard areas and within water supply watersheds which provide additional regulations that make these areas difficult to develop. Overall the County has 4,418 acres of various wetlands, as classified by the National Wetlands Inventory. According to the City’s 2030 Comprehensive Plan, the City’s corporate limits contain approximately 1,440 acres of wetlands, floodplain and land in the Neuse River buffer.

Natural and Beneficial Wetland Functions: The benefits of wetlands are hard to overestimate. They provide critical habitat for many plant and animal species that could not survive in other habitats. They are also critical for water management as they absorb and store vast quantities of storm water, helping reduce floods and recharge aquifers. Not only do wetlands store water like sponges, they also filter and clean water as well, absorbing toxins and other pollutants.

Threatened and Endangered Species

The U.S. Fish and Wildlife Service maintains a regular listing of threatened species, endangered species, species of concern, and candidate species for counties across the United States. Last updated in December 2012, Wilson County has nine species that are listed with the U.S. Fish and Wildlife Services. Table 1.1 below shows the species identified as threatened, endangered, or other classification in Wilson County.

Table 1.1 - Threatened and Endangered Species

Common Name	Scientific Name	Federal Status
American Eel	<i>Anguilla rostrata</i>	Species of Concern
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened
Carolina Madtom	<i>Noturus furiosus</i>	Species of Concern
Eastern Henslow’s Sparrow	<i>Ammodramus henslowii susurrans</i>	Species of Concern
Pinewoods Shiner	<i>Lythrurus matutinus</i>	Species of Concern
Red-cockaded Woodpecker	<i>Picooides borealis</i>	Endangered
Atlantic Pigtoe	<i>Fusconaia masoni</i>	Species of Concern
Dwarf Wedgemussel	<i>Alasmidonta heterodon</i>	Endangered
Michaux’s Sumac	<i>Rhus michauxii</i>	Endangered

Source: U.S. Fish & Wildlife Service (<http://www.fws.gov/raleigh/species/cntylist/wilson.html>)

1.3.4 History

American Indians inhabited the area that became Wilson County for centuries before non-natives moved into the Carolinas. In the 17th and 18th centuries, Tuscarora Indians lived in the area of eastern North Carolina that would become Wilson and its surrounding counties.

The earliest European settlers in this area arrived about 1740. Most came from Virginia or the Carolina Coast rather than directly from England. At the time of the American Revolution the area was only lightly settled. British troops under General Charles Cornwallis traveled through what would become Wilson County on their trek north from Wilmington to Yorktown during the war.

Wilson County, as established in 1855, measured about thirty miles east to west and twenty miles north to south and contained 373 square miles. Tar and turpentine were the principal cash products at the time, with cotton becoming important in the 1860s and tobacco in the 1890s. The railroad was integral to the development of Wilson in the nineteenth century. The town, officially established on January 29, 1849, was named after Louis Dicken Wilson (1789-1847). General Wilson, son of an Edgecombe planter, had been a state Representative for five terms and state Senator for fourteen terms (1820, 1824 to 1832, and 1838 to 1846).

Wilson opened its first tobacco warehouse in 1890, and by 1920 Wilson was the World's Greatest Tobacco Market. Hackney Brothers established a thriving carriage manufacturing business by the turn of the century. Barton College, formerly called Atlantic Christian College, opened in 1902 and presently serves an international student body. After World War II, Wilson County diversified its economy and is now home to large tire and pharmaceutical manufacturers, an array of smaller manufacturers, financial institutions, antique stores, and other commercial and tourist activities as well as tobacco marketing firms.

1.3.5 Economy

Once widely known as the World's Greatest Tobacco Market, Wilson enjoys a diverse economy today, including a healthy mix of agriculture, manufacturing, commercial, and service businesses. According to the City's June 2014 Comprehensive Annual Financial Report (CAFR), more than 1,830 private businesses were located in Wilson as of July 2012.

Wilson is the birthplace of Branch Banking and Trust Corporation (BB&T), which is among the nation's top financial-holding companies. BB&T operates approximately 1,800 financial centers in 12 states and offers a full range of consumer and commercial banking, security brokerage, asset management, mortgage and insurance products and services. BB&T remains among Wilson County's top employers with around 2,200 people working in various financial services.

Bridgestone Americas operates a plant in Wilson that employs around 1,800 people making radial tires for cars and light trucks. The Bridgestone Wilson plant is still seeing an infusion of capital investment money to modernize the facility. This includes capital investment to aid in the modernization in their final inspection department and tire room department, as well as the installation of an auto retrieval handling system.

Other large employers include Wilson County Schools, 1,500 employees; Wilson Medical Center, 1,400 employees; S.T. Wooten, 1,300 employees; the City of Wilson, 730 employees; Smithfield Packing Co. (pork products), 700 employees; Wilson County, 700 employees; Kidde Aerospace/Fenwal Safety Systems (aircraft fire protection systems), 600 employees; Sandoz (generic prescription drugs), 460 employees; Southern Piping Co. (heating contractors), 450 employees; Merck Manufacturing Division

(pharmaceutical drugs), 350 employees; Wilson Community College, 350 employees; and Saint Gobain Containers (glass containers), 319 employees.

A New Jersey-based Fortune 500 company, Becton, Dickinson (BD) is in the research and development phase of operation at their new plant in Wilson Corporate Park. The \$108.6 million, 120,000 square foot industrial unit will manufacture medical devices and instrument systems for healthcare institutions, life science researchers, clinical laboratories, industry and the general public. The plant is expected to employ more than 100 employees within five years, earning an average salary of greater than \$46,000 per year.

As stated in the City’s June 2014 CAFR, Wilson ranks among the top 13 percent of small cities for economic strength, according to Policom Corporation, an independent research firm that analyzes state and local economies. In May 2012, the annual report rated Wilson the 72nd best economy of 576 micropolitan areas, based on worker earnings, per capita income and standard of living, among other factors. Also, Policom Corporation ranked Wilson in May 2012 as the third strongest economy among 26 small micropolitan areas in North Carolina.

Wages and Employment

According to the 2009-2013 American Community Survey 5-Year Estimates, the mean household income for the City of Wilson is \$53,157. 26.5% of the population is considered to be living below the poverty level. Table 1.2 shows employment and unemployment rates along with industry employment by major classification for the City.

Table 1.2 - Employment and Occupation Statistics for Wilson, NC

Employment Status	Percentage
In labor force	61.5
Employed	52.3
Unemployed	9.1
Armed Forces	0.1
Not in labor force	38.5
Occupation	
Management, business, science and arts	33.6
Service	19.5
Sales and office	24.4
Natural resources, construction and maintenance	9.2
Production, transportation and material moving	13.3

Source: U.S. Census Bureau 2009-2013 American Community Survey 5-Year Estimates

1.3.6 Population

The City of Wilson had 49,167 residents at the time of the 2010 U.S. Census and an estimated population of 49,628 in 2013. The Wilson population density is 1,710 persons per square mile, which is much higher than the state average density of 196 persons per square mile. Table 1.3 provides demographic profile data from the 2010 Census.

Table 1.3 - Wilson Demographic Profile Data, 2010

Demographic	Number
Gender/Age	
Male	46.6%
Female	53.4%
Median Age (years)	37.2
Under 5 Years	7.2%
65 Years and Over	14.1%

Demographic	Number
Race/Ethnicity (One Race)	
White	42.9%
Asian	1.2%
Black or African American	47.9%
American Indian/Alaska Native	0.3%
Other Race	6.0%
Hispanic or Latino	9.4%
Education	
High School Graduate or Higher	78.5%
Bachelor's Degree or Higher	23.1%

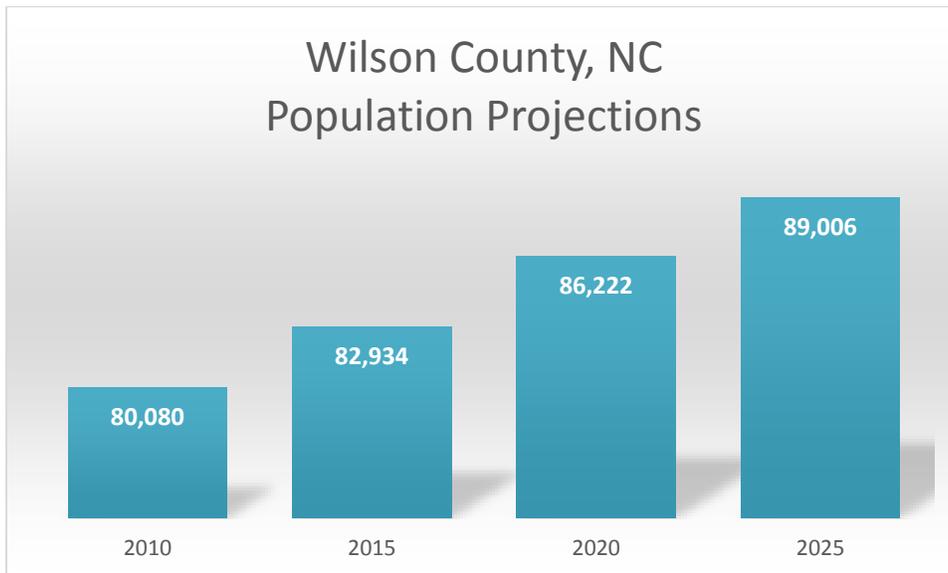
Source: U.S. Census Bureau, 2010, www.census.gov

¹Hispanics may be of any race, so also are included in applicable race categories.

1.3.7 Growth and Development Trends

As of the 2010 census, the City of Wilson ranked 18th in size among North Carolina’s 500-plus municipalities. The City has added more than 40 percent in population since 1990, primarily due to construction of new subdivisions and an influx of new residents. This has attracted new retail and shopping construction, primarily in the northwestern parts of the city. By 2020 the population within the Wilson Downtown trade area is projected to increase 9.5 percent, and the number of households is forecasted to increase 10 percent.

Population projections compiled by the State of North Carolina’s Demographer’s Office shows the growth in Wilson County will slow from the pace of growth it has experienced in the previous 15 years. As shown in Figure 1.4, Wilson County is projected to grow 11.1 percent between 2010 and 2025 which is five percent less than the growth seen in the 15 year period between 1990 and 2005. However, land prices and the demand to be in close proximity to regional centers, such as the Research Triangle, will keep Wilson’s population increasing at a steady pace. The projected growth may occur at a manageable pace for Wilson County to appropriately plan ahead.



Source: State of North Carolina Demographer’s Office

Figure 1.4 - Population Projections for Wilson County, NC

1.4 Plan Organization

The City of Wilson Floodplain Management Plan is organized as follows:

- Chapter 2: Planning Process
- Chapter 3: Flood Risk Assessment
- Chapter 4: Mitigation Strategy
- Chapter 5: Plan Adoption
- Chapter 6: Plan Implementation and Maintenance
- Appendix A: Planning Process
- Appendix B: Mitigation Strategy
- Appendix C: References

2 PLANNING PROCESS

Requirement §201.6(b): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

- 1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- 2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and nonprofit interests to be involved in the planning process; and
- 3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Requirement §201.6(c)(1): The plan shall include the following:

- 1) Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

This Floodplain Management Plan was developed under the guidance of a Floodplain Management Planning Committee (FMPC). The Committee's representatives included representatives of City Departments, federal and state agencies, citizens and other stakeholders.

Information in this plan will be used to help guide and coordinate mitigation activities and decisions for local land use policy in the future. Proactive mitigation planning will help reduce the cost of disaster response and recovery to communities and their residents by protecting critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruptions. This plan identifies activities that can be undertaken by both the public and the private sectors to reduce safety hazards, health hazards, and property damage caused by floods.

2.1 Local Government Participation

The DMA planning regulations and guidance stress that each local government seeking FEMA approval of their mitigation plan must participate in the planning effort in the following ways:

- Participate in the process as part of the FMPC;
- Detail where within the planning area the risk differs from that facing the entire area;
- Identify potential mitigation actions; and
- Formally adopt the plan.

For the City of Wilson FMPC, "participation" meant the following:

- Providing facilities for meetings;
- Attending and participating in the FMPC meetings;
- Completing and returning the Amec Foster Wheeler Data Collection Guide;
- Collecting and providing other requested data (as available);
- Managing administrative details;
- Making decisions on plan process and content;
- Identifying mitigation actions for the plan;

- Reviewing and providing comments on plan drafts;
- Informing the public, local officials, and other interested parties about the planning process and providing opportunity for them to comment on the plan;
- Coordinating, and participating in the public input process; and
- Coordinating the formal adoption of the plan by the City Council.

The FMPC met all of the above participation requirements. The FMPC included representatives from key City departments, city stakeholders, the insurance and real estate industries as well as mortgage lenders. The participants comprising the Wilson FMPC included the following:

1. Daryl Norris, P.E., CFM – City of Wilson Engineering Services Department
2. Janet Holland, AICP – City of Wilson Planning & Development Services Department
3. Josh Jurius, CFM - City of Wilson Planning & Development Services Department
4. Matt Shaw – City of Wilson Public Information Office
5. Adam Rech – City of Wilson Safety & Risk Coordinator
6. Kelly Vick – Wilson Housing Authority
7. Terri Stutts – Southern Bank
8. Eva Smithwick – Wells Fargo
9. Alan Winstead – Farm Bureau Insurance
10. Penny Whitfield – The Whitfield Agency

Table 2.1 details the FMPC meeting dates and the FMPC members in attendance. A more detailed summary of FMPC meeting dates including topics discussed and meeting locations follows in Table 2.4. Meeting sign-in sheets have been included in Appendix A.

Table 2.1 - FMPC Meeting Attendance Record

Member Name	Affiliation	Meeting Date				
		2/19/15	4/2/15	5/12/15	6/11/15	8/20/15
Daryl Norris, P.E., CFM	City of Wilson	✓	✓	✓	✓	✓
Janet Holland, AICP	City of Wilson	✓	✓	✓	✓	✓
Josh Jurius, CFM	City of Wilson		✓	✓	✓	✓
Matt Shaw	City of Wilson	✓	✓	✓	✓	✓
Adam Rech	City of Wilson	✓	✓	✓	✓	
Kelly Vick	Wilson Housing Authority	✓	✓	✓	✓	✓
Terri Stutts	Southern Bank	✓		✓	✓	✓
Eva Smithwick	Wells Fargo	✓	✓		✓	
Alan Winstead	Farm Bureau Insurance	✓		✓	✓	✓
Penny Whitfield	The Whitfield Agency	✓	✓		✓	✓

Based on the area of expertise of each City representative participating on the FMPC, Table 2.2 demonstrates each member’s expertise in the six mitigation categories (Prevention, Property Protection, Natural Resource Protection, Emergency Services, Structural Flood Control Projects and Public Information). The City of Wilson Planning & Development Services Department is responsible for community land use and comprehensive planning and was an active participant on the FMPC and provided data and information to support development of the plan.

Table 2.2 - City of Wilson Staff Capability with Six Mitigation Categories

Community Department/Office	Prevention	Property Protection	Natural Resource Protection	Emergency Services	Structural Flood Control Projects	Public Information
Planning & Development Services	✓	✓	✓	✓	✓	✓
Public Information	✓	✓		✓		✓
Engineering Services	✓	✓	✓	✓	✓	✓
Fire & Rescue Services				✓	✓	
Public Services		✓	✓		✓	

Appendix A provides additional information and documentation of the planning process that was implemented for the development of this FMP.

2.2 The 10-Step Planning Process

The planning process for preparing the City of Wilson Floodplain Management Plan was based on DMA planning requirements and FEMA’s associated guidance. This guidance is structured around a four-phase process:

- 1) Planning Process;
- 2) Risk Assessment;
- 3) Mitigation Strategy; and
- 4) Plan Maintenance.

Into this process, the City integrated a more detailed 10-step planning process used for FEMA’s Community Rating System (CRS) and Flood Mitigation Assistance programs. Thus, the modified 10-step process used for this plan meets the requirements of six major programs: FEMA’s Hazard Mitigation Grant Program; Pre-Disaster Mitigation Program; Community Rating System; Flood Mitigation Assistance Program; Severe Repetitive Loss Program; and new flood control projects authorized by the U.S. Army Corps of Engineers.

Table 2.3 shows how the 10-step CRS planning process aligns with the four phases of hazard mitigation planning pursuant to the Disaster Mitigation Act of 2000.

Table 2.3 Mitigation Planning and CRS 10-Step Process Reference Table

DMA Process	CRS Process
Phase I – Planning Process	
§201.6(c)(1)	Step 1. Organize to Prepare the Plan
§201.6(b)(1)	Step 2. Involve the Public
§201.6(b)(2) & (3)	Step 3. Coordinate
Phase II – Risk Assessment	
§201.6(c)(2)(i)	Step 4. Assess the Hazard
§201.6(c)(2)(ii) & (iii)	Step 5. Assess the Problem
Phase III – Mitigation Strategy	
§201.6(c)(3)(i)	Step 6. Set Goals
§201.6(c)(3)(ii)	Step 7. Review Possible Activities
§201.6(c)(3)(iii)	Step 8. Draft an Action Plan
Phase IV – Plan Maintenance	
§201.6(c)(5)	Step 9. Adopt the Plan
§201.6(c)(4)	Step 10. Implement, Evaluate and Revise the Plan

2.2.1 Phase I – Planning Process

Planning Step 1: Organize to Prepare the Plan

With the City of Wilson’s commitment to participate in the DMA planning process and the CRS, City officials worked to establish the framework and organization for development of the plan. An initial meeting was held with key community representatives to discuss the organizational aspects of the plan development process. At the beginning of this planning process, the City of Wilson passed a resolution establishing the planning process and the FMPC. This resolution is included in Appendix A.

Invitations to participate on the FMPC were extended to City officials, citizens, and federal, state, and local stakeholders that might have an interest in participating in the planning process. The list of initial invitees is included in Appendix A. The following local stakeholders were invited to participate on the FMPC:

City of Wilson

City of Wilson Development Services Department
City of Wilson Parks and Recreation Department
City of Wilson Fire/Rescue Services
City of Wilson Airport Authority

Wilson County

Wilson County Emergency Management Agency
Wilson County Development Services
Wilson County Public School System
Wilson County Economic Development Council

Neighboring Communities

Town of Elm City
Town of Lucama
Town of Stantonsburg
Town of Black Creek
Town of Sims
Town of Saratoga
Nash County
Edgecombe County
Pitt County
Greene County
Wayne County
Johnston County

State and Federal Government

North Carolina Division of Emergency Management
North Carolina Department of Environment and Natural Resources
FEMA Region IV
USGS

Educational Institutions

Barton College
Wilson Community College
Eastern North Carolina School for the Deaf

Sallie B. Howard School for the Arts

Other Stakeholder Representatives

- American Red Cross
- Sierra Club – Medoc Group
- BB&T
- The Wilson Times

The FMPC kick-off meeting was held on February 19, 2015 at 11:45AM in the Wilson City Hall Second Floor Conference Room. The meeting covered the scope of work and an introduction to the DMA, CRS, and FMA requirements. During the planning process, the FMPC communicated through face-to-face meetings, email and telephone conversations. Draft documents were posted on the City’s website so that the FMPC members could easily access and review them. The formal FMPC meetings followed the CRS Planning Steps. Agendas and sign in sheets for the FMPC meetings are included in Appendix A. The meeting dates and topics discussed are summarized below in Table 2.4. All FMPC meetings were open to the public.

Table 2.4 - Summary of FMPC Meeting Dates

Meeting Type	Meeting Topic	Meeting Date	Meeting Location
FMPC #1 (Kick-off)	1) Introduction to DMA, CRS and the planning process	February 19, 2015	City of Wilson City Hall Second Floor Conference Rm
	2) Organize resources: the role of the FMPC, planning for public involvement, and coordinating with other agencies and stakeholders		
FMPC #2	1) Discussion of Program for Public Information (PPI)	April 2, 2015	City of Wilson City Hall Second Floor Conference Rm
	2) Discussion of flood hazards for the 2015 FMP		
	3) Discussion of mitigation projects for the 2015 FMP		
FMPC #3	1) Discussion of Repetitive Loss Areas	May 12, 2015	City of Wilson City Hall Second Floor Conference Rm
	2) Development of goals for the 2015 FMP		
FMPC #4	1) Review/discussion of Flood Risk Assessment (Assess the Hazard)	June 11, 2015	Virtual Meeting
	2) Review/discussion of Vulnerability Assessment (Assess the Problem)		
FMPC #5	1) Review “Draft” Floodplain Management Plan	August 20, 2015	City of Wilson City Hall Second Floor Conference Rm
	2) Solicit comments and feedback from the FMPC		

Planning Step 2: Involve the Public

The planning process officially began with a public meeting held on February 19, 2015 at 5:00PM. A public notice was posted in the local newspaper, The Wilson Times, on February 16, 2015 inviting members of the public to attend this kickoff meeting as documented in Appendix A. The formal public meetings held during the planning process are summarized in Table 2.5.

Table 2.5 - Summary of Public Meeting Dates

Meeting Type	Meeting Topic	Meeting Date	Meeting Locations
Public Meeting #1	1) Introduction to DMA, CRS and the planning process	February 19, 2015	Wilson City Hall Second Floor Conference Rm
	2) Introduction to hazard identification		
Public Meeting #2	1) Review "Draft" Floodplain Management Plan	August 26, 2015	Wilson City Hall Second Floor Conference Rm
	2) Solicit comments and feedback from the FMPC		

Involving the Public beyond Attending Public Meetings

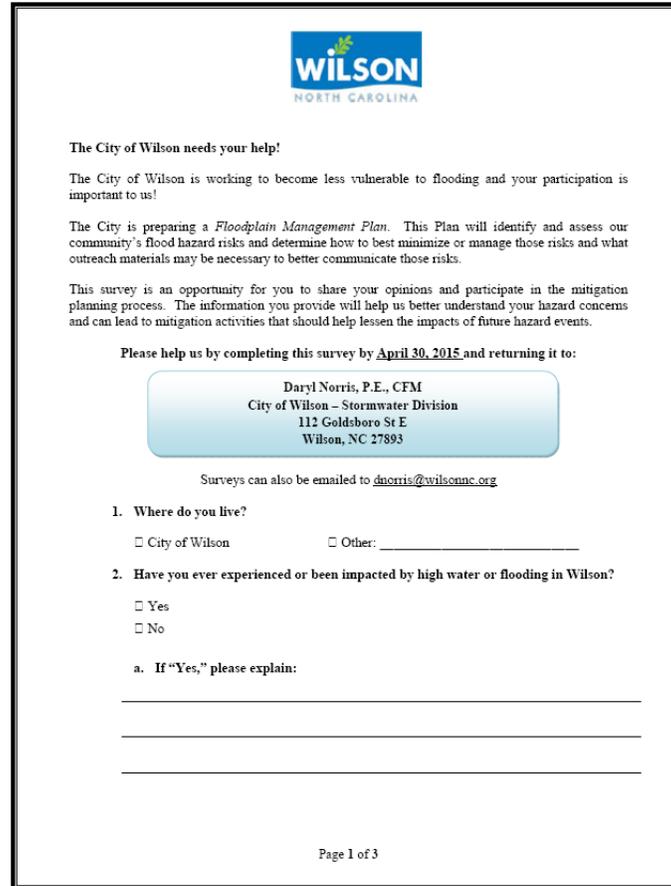
Early discussions with the FMPC established the initial plan for public involvement. The FMPC agreed to an approach using established public information mechanisms and resources within the community. Public involvement activities for this plan update included press releases, stakeholder and public meetings, public surveys, and the collection of public and stakeholder comments on the draft plan.

The FMPC found seven different ways to involve the public beyond attending public meetings. Documentation to support the additional public outreach efforts can be found in Appendix A. The public outreach activities beyond the formal public meetings are summarized below in Table 2.6.

Table 2.6 - Public Outreach Efforts

	Location	Event/Message	Date
1	Stormwater Advisory Committee meeting	Request for input into FMP planning process shared at meeting	March 2015
2	City of Wilson website	Public Survey requesting public input into FMP planning process posted on website	April 2015
3	City of Wilson website	Draft Risk Assessment posted on website with request for public review/comment	June 2015
4	City Hall	Hard copy of complete draft Plan made available for public review/comment	August 2015
5	City of Wilson website	Digital copy of complete draft plan posted on website with request for public review/comment	August 2015
6	Article in Wilson Time	News article providing information on final public meeting. The article also provided statistics for flood insurance and flood losses in the City.	August 2015
7	Public Service Announcement on Channel 8	Flood risk announcement and invitation to final public meeting.	August 2015

The public survey which requested public input into the Floodplain Management Plan planning process and the identification of mitigation activities that could lessen the risk and impact of future flood hazard events is shown in Figure 2.1. A summary of the completed survey results has been included in Appendix A.



The City of Wilson needs your help!

The City of Wilson is working to become less vulnerable to flooding and your participation is important to us!

The City is preparing a *Floodplain Management Plan*. This Plan will identify and assess our community's flood hazard risks and determine how to best minimize or manage those risks and what outreach materials may be necessary to better communicate those risks.

This survey is an opportunity for you to share your opinions and participate in the mitigation planning process. The information you provide will help us better understand your hazard concerns and can lead to mitigation activities that should help lessen the impacts of future hazard events.

Please help us by completing this survey by **April 30, 2015** and returning it to:

Daryl Norris, P.E., CFM
City of Wilson – Stormwater Division
112 Goldsboro St E
Wilson, NC 27893

Surveys can also be emailed to dnorris@wilsonnc.org

1. Where do you live?

City of Wilson Other: _____

2. Have you ever experienced or been impacted by high water or flooding in Wilson?

Yes
 No

a. If "Yes," please explain:

Page 1 of 3

Figure 2.1 - Public Survey

Planning Step 3: Coordinate

Early in the planning process, the FMPC determined that the risk assessment, mitigation strategy development, and plan approval would be greatly enhanced by inviting other local, state and federal agencies and organizations to participate in the process. A detailed list of agency coordination is provided above under Planning Step 1: Organize to Prepare the Plan.

Coordination involved contacting these agencies through a variety of mechanisms and informing them on how to participate in the plan development process. Coordination with these groups included holding face-to-face meetings, sending outreach letters, and making phone calls alone to out of area agencies. All of these groups and agencies were solicited asking for their assistance and input and telling them how to become involved in the plan development process. A sample coordination letter is provided in Appendix A.

Coordination with Other Community Planning Efforts and Hazard Mitigation Activities

Coordination with other community planning efforts is also paramount to the success of this plan. Mitigation planning involves identifying existing policies, tools, and actions that will reduce a community's risk and vulnerability to hazards. The City of Wilson uses a variety of comprehensive planning mechanisms, such as a Comprehensive Plan and land development regulations and ordinances to guide growth and development. Integrating existing planning efforts and mitigation policies and action strategies into this plan establishes a credible and comprehensive plan that ties into and supports other

community programs. The development of this plan incorporated information from the following existing plans, studies, reports, and initiatives as well as other relevant data from neighboring communities and other jurisdictions.

- City of Wilson Comprehensive Plan, Adopted 2010
- City of Wilson Unified Development Ordinance, Adopted 2013
 - Zoning Ordinance
 - Subdivision Ordinance
 - Flood Damage Prevention Ordinance
 - Stormwater Management Ordinance
 - Soil Erosion and Sedimentation Control Ordinance
- City of Wilson Capital Improvement Plan, FY2015-2019
- Wilson County Flood Insurance Study, Revised 2013
- Wilson County Comprehensive Plan, 2008
- Wilson County Multi-Jurisdictional Hazard Mitigation Plan, Updated 2009

These and other documents were reviewed and considered, as appropriate, during the collection of data to support Planning Steps 4 and 5, which include the hazard identification, vulnerability assessment, and capability assessment. Data from these plans and ordinances were incorporated into the risk assessment and hazard vulnerability sections of the plan as appropriate. The data was also used in determining the capability of the community in being able to implement certain mitigation strategies. The Capability Assessment can be found in Section 3.4.

2.2.2 Phase II – Risk Assessment

Planning Steps 4 and 5: Identify/Assess the Hazard and Assess the Problem

The FMPC completed a comprehensive effort to identify, document, and profile all flood hazards that have, or could have, an impact on the planning area. Data collection worksheets were developed and used in this effort to aid in determining hazards and vulnerabilities and where the risk varies across the planning area. Geographic information systems (GIS) were used to display, analyze, and quantify hazards and vulnerabilities. A draft of the risk and vulnerability assessment was posted on the City’s website for FMPC and public review and comment.

The FMPC also conducted a capability assessment to review and document the planning area’s current capabilities to mitigate risk from and vulnerability to hazards. By collecting information about existing government programs, policies, regulations, ordinances, and emergency plans, the FMPC could assess those activities and measures already in place that contribute to mitigating some of the risks and vulnerabilities identified. A more detailed description of the risk assessment process and the results are included in Section 3 Flood Risk Assessment.

2.2.3 Phase III – Mitigation Strategy

Planning Steps 6 and 7: Set Goals and Review Possible Activities

Amec Foster Wheeler facilitated brainstorming and discussion sessions with the FMPC that described the purpose and process of developing planning goals and objectives, a comprehensive range of mitigation alternatives, and a method of selecting and defending recommended mitigation actions using a series of selection criteria. This information is included in Section 4 Mitigation Strategy. Additional documentation on the process the FMPC used to develop the goals and strategy has been included in Appendix B.

Planning Step 8: Draft an Action Plan

A complete first draft of the plan was prepared based on input from the FMPC regarding the draft risk assessment and the goals and activities identified in Planning Steps 6 and 7. This complete draft was posted for FMPC and public review and comment on the City’s website. Other agencies were invited to comment on this draft as well. FMPC, public and agency comments were integrated into the final draft for the NCEM and FEMA Region IV to review and approve, contingent upon final adoption by the City.

2.2.4 Phase IV – Plan Maintenance

Planning Step 9: Adopt the Plan

In order to secure buy-in and officially implement the plan, the plan was reviewed and adopted by the City of Wilson on the dates included in the corresponding resolution in Section 5 Plan Adoption.

Planning Step 10: Implement, Evaluate and Revise the Plan

Implementation and maintenance of the plan is critical to the overall success of hazard mitigation planning. Up to this point in the planning process, all of the FMPC’s efforts have been directed at researching data, coordinating input from participating entities, and developing appropriate mitigation actions. Section 6 Plan Implementation and Maintenance provides an overview of the overall strategy for plan implementation and maintenance and outlines the method and schedule for monitoring, updating, and evaluating the plan. The Section also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

3 FLOOD RISK ASSESSMENT

Requirement §201.6(c)(2): [The plan shall include] A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

This section describes the Risk Assessment process for the development of the City of Wilson Floodplain Management Plan. It describes how the City met the following requirements from the 10-step planning process:

- Planning Step 4: Assess the Hazard
- Planning Step 5: Assess the Problem

As defined by FEMA, risk is a combination of hazard, vulnerability, and exposure. “It is the impact that a hazard would have on people, services, facilities, and structures in a community and refers to the likelihood of a hazard event resulting in an adverse condition that causes injury or damage.”

This flood risk assessment covers the entire geographical area of the City of Wilson, NC. The risk assessment process identifies and profiles relevant hazards and assesses the exposure of lives, property, and infrastructure to these hazards. The process allows for a better understanding of a jurisdiction’s potential risk to natural hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events. This risk assessment followed the methodology described in the FEMA publication Understanding Your Risks—Identifying Hazards and Estimating Losses (FEMA 386-2, 2002), which breaks the assessment down to a four-step process:

- 1) Identify Hazards;
- 2) Profile Hazard Events;
- 3) Inventory Assets; and
- 4) Estimate Losses.

Data collected through this process has been incorporated into the following sections of this chapter:

Section 3.1: Hazard Identification identifies the natural flood hazards that threaten the planning area.

Section 3.2: Hazard Profiles discusses the threat to the planning area and describes previous occurrences of flood hazard events and the likelihood of future occurrences.

Section 3.3: Vulnerability Assessment assesses the planning area’s exposure to natural flood hazards; considering assets at risk, critical facilities, and future development trends.

Section 3.4: Capability Assessment inventories existing mitigation activities and policies, regulations, and plans that pertain to mitigation and can affect net vulnerability.

3.1 Hazard Identification

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the type...of all natural hazards that can affect the jurisdiction.

The City of Wilson’s FMPC conducted a hazard identification study to determine the natural flood hazards that threaten the planning area.

3.1.1 Results and Methodology

Using existing flood hazard data and input gained through planning meetings, the FMPC agreed upon a list of natural flood hazards that could affect the City. Flood hazard data from the Wilson County Multi-Jurisdictional Hazard Mitigation Plan, the North Carolina Division of Emergency Management (NCEM), FEMA, the National Climatic Data Center (NCDC), the Spatial Hazards Events and Losses Database for the United States (SHELDUS™) and many other sources were examined to assess the significance of these hazards to the planning area. Significance was measured in general terms and focused on key criteria such as frequency and resulting damage, which includes deaths and injuries, as well as property and economic damage.

The flood hazards identified in Table 3.1 were evaluated as part of this plan. Only the more significant hazards with the potential to cause significant human and/or monetary losses in the future have a more detailed hazard profile and are analyzed further in Section 3.3 Vulnerability Assessment.

Table 3.1 Flood Hazard Summary

Hazard	Frequency of Occurrence	Spatial Extent	Potential Magnitude	Significance
Flood: 100-/500-year	Occasional	Significant	Limited	Medium
Flood: Stormwater/Localized Flooding	Highly Likely	Limited	Limited	Medium
Major Stream Bank Erosion	Unlikely	Limited	Negligible	Low
Dam/Levee Failure	Unlikely	Limited	Negligible	Low
<p>Guidelines: Frequency of Occurrence: Highly Likely: Nearly 100% probability within the next year. Likely: Between 10 and 100% probability within the next year. Occasional: Between 1 and 10% probability within the next year. Unlikely: Less than 1% probability within the next year.</p> <p>Potential Magnitude: Catastrophic: More than 50% of the area affected. Critical: 25 to 50% of the area affected. Limited: 10 to 25% of the area affected. Negligible: Less than 10% of the area affected.</p> <p>Spatial Extent: Limited: Less than 10% of planning area. Significant: 10-50% of planning area. Extensive: 50-100% of planning area.</p> <p>Significance: Low Medium High</p>				

Source: Amec Foster Wheeler Data Collection Guide

3.1.2 Disaster Declaration History

The FMPC researched past events that resulted in a federal and/or state emergency or disaster declaration in the planning area for Wilson in order to identify known flood hazards. Federal and/or state disaster declarations may be granted when the Governor certifies that the combined local, county and state resources are insufficient and that the situation is beyond their recovery capabilities. When the local

government’s capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. If the disaster is so severe that both the local and state government capacities are exceeded, a federal emergency or disaster declaration may be issued allowing for the provision of federal assistance.

Table 3.2 displays flood related major disaster declarations that included Wilson County as a designated area. This table reflects the vulnerability and historic patterns of flood hazards for the County.

Table 3.2 FEMA Major Disaster Declarations including Wilson County, 1960 - 2014

Hazard Type	Disaster #	Date
Severe Storms, Tornadoes and Flooding	DR-1969	April 19, 2011
Hurricane Irene	DR-4019	August 31, 2011
Hurricane Isabel	DR-1490	September 18, 2003
Hurricane Floyd & Irene	DR-1292	September 16, 1999
Hurricane Fran	DR-1134	September 6, 1996

Source: FEMA (<https://www.fema.gov/disasters>)

Note: The date column indicates the date of the disaster declaration, which may not coincide with the actual date of the event.

3.2 Hazard Profiles

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the...location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

The hazards identified in Section 3.1 Hazard Identification, are profiled individually in this section. Information provided by members of the FMPC has been integrated into this section with information from other data sources.

Each hazard is profiled in the following format:

Hazard/Problem Description

This section provides a description of the hazard followed by details specific to the Wilson planning area. Where available, this section also includes information on the hazard extent, seasonal patterns, speed of onset/duration, magnitude and any secondary effects.

Past Occurrences

This section contains information on historical events, including the extent or location of the hazard within or near the Wilson planning area.

Frequency/Likelihood of Future Occurrence

This section gauges the likelihood of future occurrences based on past events and existing data. The frequency is determined by dividing the number of events observed by the number of years on record and multiplying by 100. This provides the percent chance of the event happening in any given year (e.g. 10 hurricanes or tropical storms over a 30-year period equates to a 33 percent chance of experiencing a hurricane or tropical storm in any given year). The likelihood of future occurrences is categorized into one of the classifications as follows:

- **Highly Likely** – Near 100 percent chance of occurrence within the next year
- **Likely** – Between 10 and 100 percent chance of occurrence within the next year (recurrence interval of 10 years or less)
- **Occasional** – Between 1 and 10 percent chance of occurrence within the next year (recurrence interval of 11 to 100 years)
- **Unlikely** – Less than 1 percent chance or occurrence within the next 100 years (recurrence interval of greater than every 100 years)

Those hazards determined to be of high or medium significance were characterized as priority hazards that required further evaluation in Section 3.3 Vulnerability Assessment. Significance was determined by frequency of the hazard and resulting damage, including deaths/injuries and property, crop and economic damage. Hazards occurring infrequently or having little to no impact on the Wilson planning area were determined to be of low significance and not considered a priority hazard. These criteria allowed the FMPC to prioritize hazards of greatest significance and focus resources where they are most needed.

The National Oceanic and Atmospheric Administration's National Climatic Data Center (NCDC) has been tracking severe weather since 1950. Their Storm Events Database contains an archive of destructive storm or weather data and information which includes local, intense and damaging events. NCDC

receives storm data from the National Weather Service (NWS). The NWS receives their information from a variety of sources, which include but are not limited to: county, state and federal emergency management officials, local law enforcement officials, SkyWarn spotters, NWS damage surveys, newspaper clipping services, the insurance industry and the general public, among others. This database contains 34 flood related severe weather events that occurred in Wilson County between January 1950 and November 2014. Table 3.3 summarizes these events.

Table 3.3 NCDC Severe Weather Reports for Wilson County, January 1950 – November 2014

Type	# of Events	Property Damage	Crop Damage	Deaths	Injuries
Flash Flood	24	\$0	\$0	0	0
Flood	1	\$0	\$0	0	0
Heavy Rain	2	\$0	\$0	0	0
Hurricane/Typhoon	6	\$1.2M	\$50M	0	0
Tropical Storm	1	\$0	\$0	0	0
Total:	34	\$1.2M	\$50M	0	0

Source: National Climatic Data Center Storm Events Database, September 2014

Note: Losses reflect totals for all impacted areas within Wilson County.

The FMPC supplemented NCDC data with data from SHELDUS™ (Spatial Hazard Events and Losses Database for the United States). SHELDUS™ is a county-level data set for the United States that tracks 18 types of natural hazard events along with associated property and crop losses, injuries, and fatalities for the period 1960-present. Produced by the Hazards Research Lab at the University of South Carolina, this database combines information from several sources (including the NCDC). Weather-related loss information originates from the National Climatic Data Center's Storm Data. Losses information for geological hazards comes from the National Geophysical Data Center. As needed, SHELDUS™ supplements with additional sources such as U.S. Geological Survey and others.

With the release of SHELDUS 13.1, the database includes every loss causing and/or deadly event between 1960 through present. SHELDUS™ reports losses in current and real dollars. Losses for multi-county events are distributed equally across counties with the exception of fatalities and injuries. If details on the location of fatalities and injuries are provided in the original data, SHELDUS™ will reflect it. SHELDUS™ contains information on 76 flood related severe weather events that occurred in Wilson County, NC between January 1960 and March 2015. Table 3.4 provides a summary of these events.

Table 3.4 SHELDUS Severe Weather Reports for Wilson County, January 1960 – March 2015

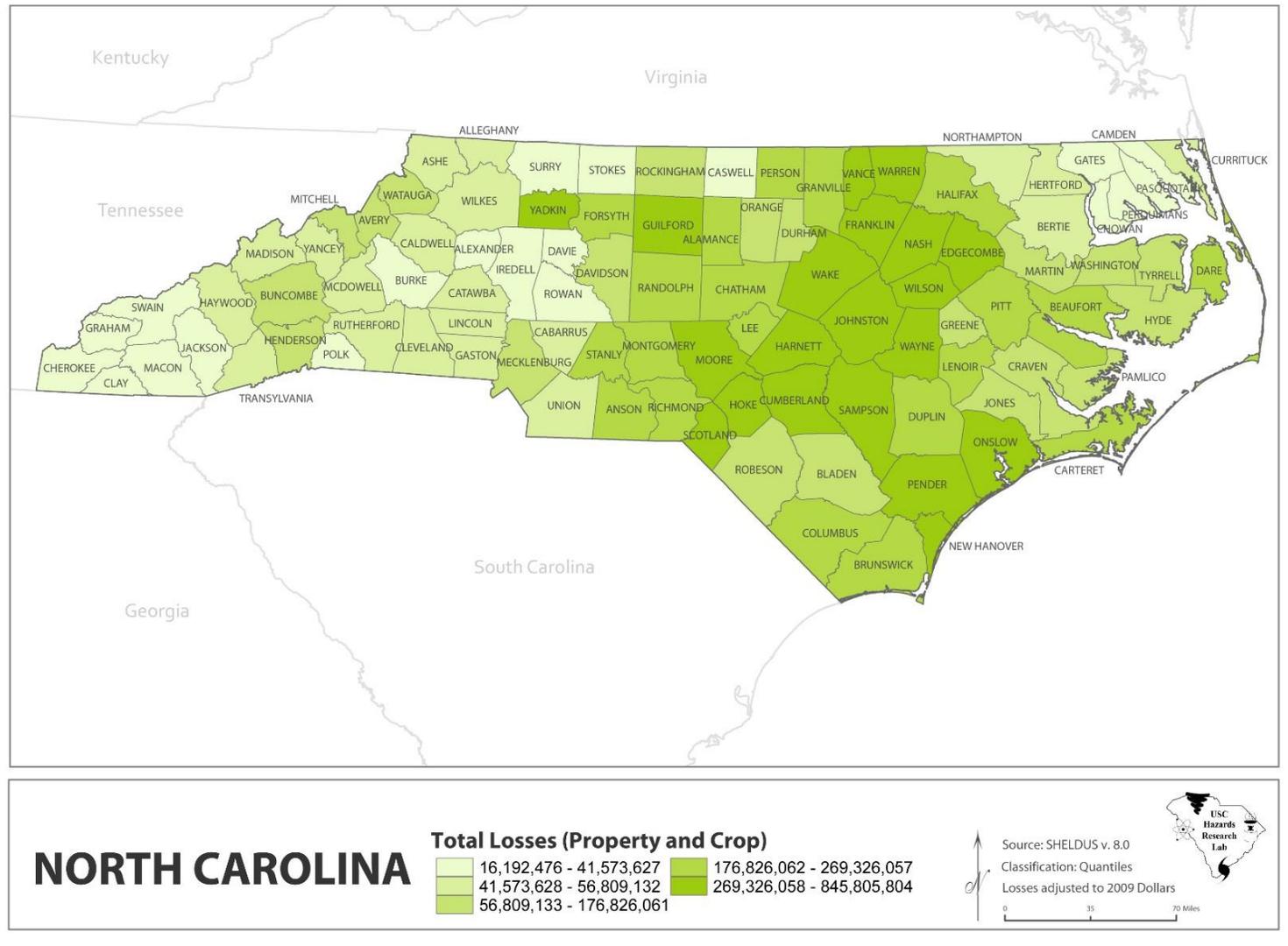
Type	# of Events	Property Loss	Crop Loss	Deaths	Injuries
Coastal	2	\$9,036	\$803,622	0	0
Flooding	6	\$450,682	\$65,495	1	0
Hurricane/Tropical Storm	10	\$276,902,878	\$71,979,524	1	1
Severe Storm/Thunder Storm	58	\$943,535	\$2,353,772	3	3
Total:	76	\$278,306,131	\$75,202,413	5	4

Source: Hazards & Vulnerability Research Institute (2014). The Spatial Hazard Events and Losses Database for the United States, Version 13.1 [Online Database]. Columbia, SC: University of South Carolina. Available from <http://www.sheldus.org>

Note: Losses have been adjusted for inflation to 2013 dollars.

The figure below reflects economic losses from hazard events contained within the SHELDUS data set for the entire State of North Carolina from 1960 - 2009. Wilson County ranks among one of the highest tiers in the State for total property and crop losses.

Economic Losses from Hazard Events, 1960-2009



Source: SHELDUS v8.0

Figure 3.1 – North Carolina Economic Losses from Hazard Events, 1960-2009

The following sections provide profiles of the natural flood hazards that the FMPC identified in Table 3.1 Flood Hazard Summary.

3.2.1 Flood: 100-/500-year

Hazard/Problem Description

Flooding is defined by the rising and overflowing of a body of water onto normally dry land. As defined by FEMA, a flood is a general and temporary condition of partial or complete inundation of 2 or more acres of normally dry land area or of 2 or more properties. Flooding can result from an overflow of inland waters or an unusual accumulation or runoff of surface waters from any source.

Certain health hazards are also common to flood events. While such problems are often not reported, three general types of health hazards accompany floods. The first comes from the water itself. Floodwaters carry anything that was on the ground that the upstream runoff picked up, including dirt, oil, animal waste, and lawn, farm and industrial chemicals. Pastures and areas where farm animals are kept or their wastes are stored can contribute polluted waters to the receiving streams.

Floodwaters also saturate the ground, which leads to infiltration into sanitary sewer lines. When wastewater treatment plants are flooded, there is nowhere for the sewage to flow. Infiltration and lack of treatment can lead to overloaded sewer lines that can back up into low-lying areas and homes. Even when it is diluted by flood waters, raw sewage can be a breeding ground for bacteria such as e.coli and other disease causing agents.

The second type of health problem arises after most of the water has gone. Stagnant pools can become breeding grounds for mosquitoes, and wet areas of a building that have not been properly cleaned breed mold and mildew. A building that is not thoroughly cleaned becomes a health hazard, especially for small children and the elderly.

Another health hazard occurs when heating ducts in a forced air system are not properly cleaned after inundation. When the furnace or air conditioner is turned on, the sediments left in the ducts are circulated throughout the building and breathed in by the occupants. If the City water system loses pressure, a boil order may be issued to protect people and animals from contaminated water.

The third problem is the long-term psychological impact of having been through a flood and seeing one's home damaged and personal belongings destroyed. The cost and labor needed to repair a flood-damaged home puts a severe strain on people, especially the unprepared and uninsured. There is also a long-term problem for those who know that their homes can be flooded again. The resulting stress on floodplain residents takes its toll in the form of aggravated physical and mental health problems.

Sources and Types of Flooding

Flooding within the City of Wilson can be attributed to two sources: 1) flash flooding resulting from heavy rainfall that overburdens the drainage system within the community; and 2) riverine flooding resulting from heavy and prolonged rainfall over a given watershed which causes the capacity of the main channel to be exceeded. According to FEMA's Flood Insurance Study (FIS) for Wilson County, NC revised April 16, 2013, low lying areas of the County flood periodically. Flooding on the larger streams results primarily from hurricanes, tropical storms and other major weather fronts, while flooding on the smaller streams is due mainly to localized thunderstorms.

Riverine Flooding: The City of Wilson has numerous streams and tributaries running throughout its jurisdiction 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 Wilson, riverine flood events (such as the “100-year flood”) will cause significantly more damage and economic disruption for the area. Wilson’s floodplains have been studied and mapped by FEMA.

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 most common in urbanized cities, where greater population density generally increases the amount of impervious surface (e.g., pavement and buildings) which increases the amount of surface water generated. Flooding can occur when the capacity of the stormwater system is exceeded or if conveyance is obstructed by debris, sediment and other materials that limit the volume of drainage.

Flooding and Floodplains

The area adjacent to a channel is the floodplain, as shown in Figure 3.2. A floodplain is flat or nearly flat land adjacent to a stream or river that experiences occasional or periodic flooding. It includes the floodway, which consists of the stream channel and adjacent areas that carry flood flows, and the flood fringe, which are areas covered by the flood, but which do not experience a strong current. Floodplains are made when floodwaters exceed the capacity of the main channel or escape the channel by eroding its banks. When this occurs, sediments (including rocks and debris) are deposited that gradually build up over time to create the floor of the floodplain. Floodplains generally contain unconsolidated sediments, often extending below the bed of the stream.

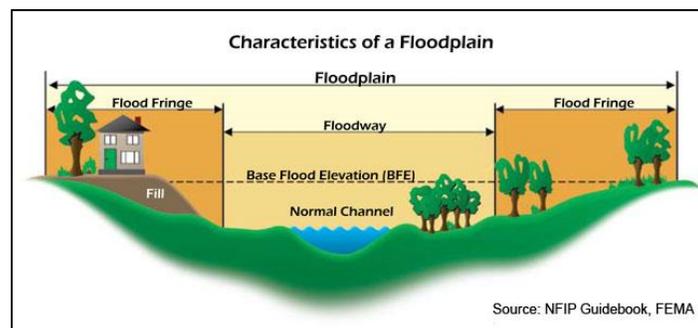


Figure 3.2 - Characteristics of a Floodplain

In its common usage, the floodplain most often refers to that area that is inundated by the 100-year flood, the flood that has a 1% chance in any given year of being equaled or exceeded. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the NFIP. The 500-year flood is the flood that has a 0.2 percent chance of being equaled or exceeded in any given year. The potential for flooding can change and increase through various land use changes and changes to land surface, which result in a change to the floodplain. A change in environment can create localized flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. These changes are most often created by human activity.

The 100-year flood, which is the minimum standard used by most federal and state agencies, is used by the NFIP as the standard for floodplain management and to determine the need for flood insurance. Participation in the NFIP requires adoption and enforcement of a local floodplain management ordinance which is intended to prevent unsafe development in the floodplain, thereby reducing future flood damages. Participation in the NFIP allows for the federal government to make flood insurance available

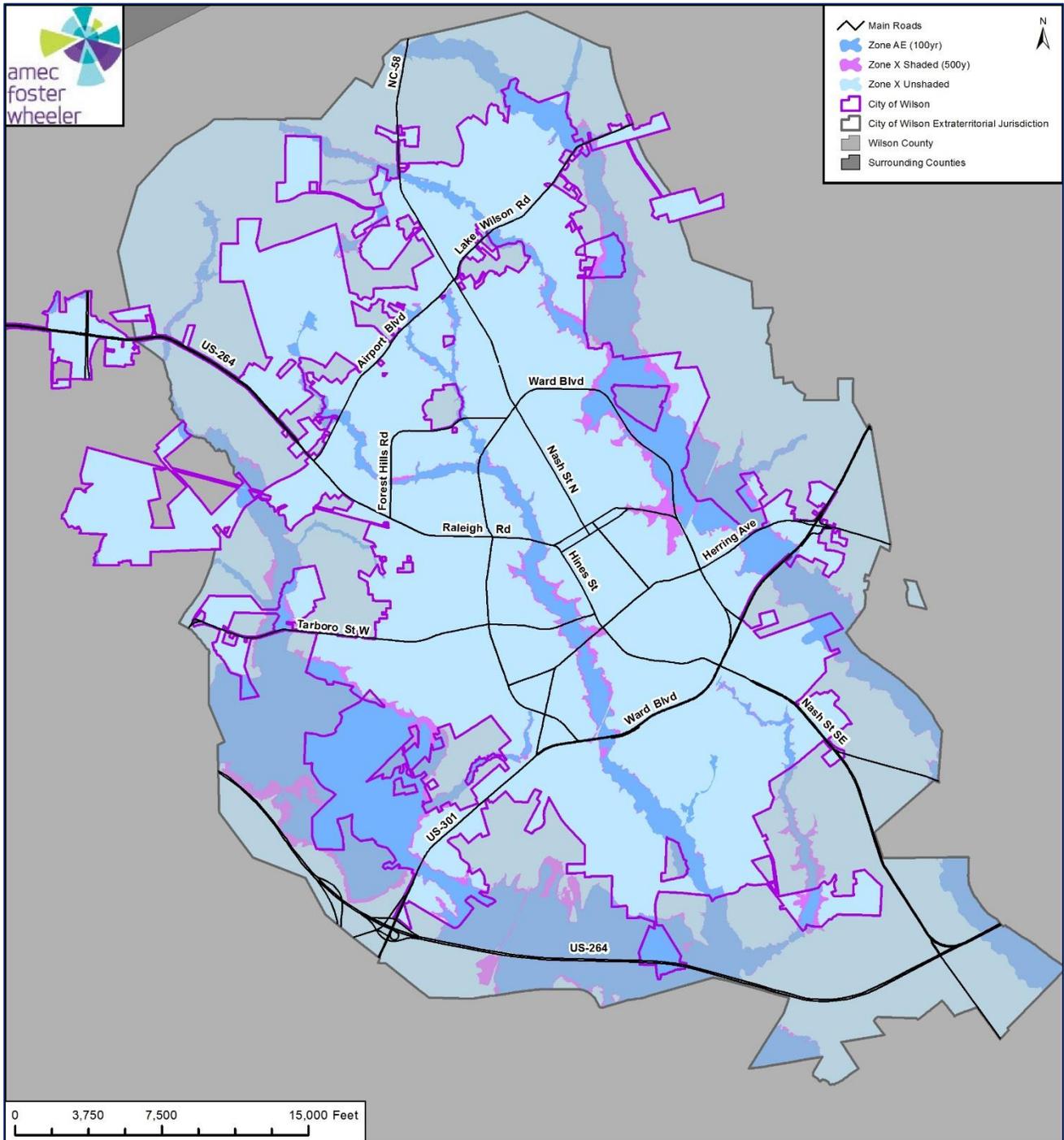
within the community as a financial protection against flood losses. Since floods have an annual probability of occurrence, have a known magnitude, depth and velocity for each event, and in most cases, have a map indicating where they will occur, they are in many ways often the most predictable and manageable hazard.

Regulated floodplains are illustrated on inundation maps called Flood Insurance Rate Maps (FIRMs). It is the official map for a community on which FEMA has delineated both the SFHAs and the risk premium zones applicable to the community. SFHAs represent the areas subject to inundation by the 100-year flood event. Structures located within the SFHA have a 26-percent chance of flooding during the life of a standard 30-year mortgage. Flood prone areas were identified within Wilson using the most current FIS and associated FIRMs developed by FEMA for Wilson County effective on April 16, 2013. Table 3.5 summarizes the flood insurance zones identified by the DFIRMs.

Table 3.5 – Mapped Flood Insurance Zones within City of Wilson, NC

Zone	Description
AE	AE Zones, also within the 100-year flood limits, are defined with BFEs that reflect the combined influence of stillwater flood elevations and wave effects less than 3 feet. The AE Zone generally extends from the landward VE zone limit to the limits of the 100-year flood from coastal sources, or until it reaches the confluence with riverine flood sources. The AE Zones also depict the SFHA due to riverine flood sources, but instead of being subdivided into separate zones of differing BFEs with possible wave effects added, they represent the flood profile determined by hydrologic and hydraulic investigations and have no wave effects.
0.2% Annual Chance (shaded Zone X)	Moderate risk areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by a levee. No BFEs or base flood depths are shown within these zones. (Zone X (shaded) is used on new and revised maps in place of Zone B.)
Zone X (unshaded)	Minimal risk areas outside the 1-percent and .2-percent-annual-chance floodplains. No BFEs or base flood depths are shown within these zones. Zone X (unshaded) is used on new and revised maps in place of Zone C.

Figure 3.3 reflects the mapped flood insurance zones for the City of Wilson. Approximately 15% of the City of Wilson political area falls within the 100-yr floodplain. A summary of acreage by flood zone is as follows: Zone AE (2,830 Acres); Zone X 500-yr (522 Acres); and Zone X Unshaded (15,284 Acres).



Source: FEMA DFIRM, 4/16/13

Figure 3.3 - Wilson DFIRM Flood Zones

The NFIP utilizes the 100-year flood as a basis for floodplain management. The FIS defines the probability of flooding as flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 100 year period (recurrence intervals). Or considered another way, properties within a 100-year flood zone have a one percent probability of being equaled or exceeded during any given year. Mortgage lenders require that owners of properties with federally-backed mortgages located within SFHAs purchase and maintain flood insurance policies on their properties. Consequently, newer and recently purchased properties in the community are typically insured against flooding.

Past Occurrences

Table 3.6 shows detail for flood events reported by the NCDC since 1950 for Wilson County. Table 3.7 shows detail for flood events reported by SHELUDS from 1960 through present.

Table 3.6 - NCDC Flooding in Wilson County – January 1950 to November 2014

Location	Date	Event Type	Injuries /Deaths	Property Damage	Crop Damage	Source
Countywide	7/24/1997	Flash Flood	0/0	\$0	\$0	Not available
Lucama	1/27/1998	Flash Flood	0/0	\$0	\$0	Not available
Countywide	9/15/1999	Flash Flood	0/0	\$0	\$0	Emergency Manager
Countywide	9/21/1999	Flash Flood	0/0	\$0	\$0	Emergency Manager
Countywide	9/27/1999	Flash Flood	0/0	\$0	\$0	Gov't Official
Countywide	9/28/1999	Flash Flood	0/0	\$0	\$0	Gov't Official
Countywide	9/28/1999	Flash Flood	0/0	\$0	\$0	Gov't Official
Countywide	9/28/1999	Flash Flood	0/0	\$0	\$0	Gov't Official
Countywide	10/17/1999	Flash Flood	0/0	\$0	\$0	Gov't Official
Countywide	6/16/2001	Flash Flood	0/0	\$0	\$0	Trained Spotter
Wilson	7/5/2002	Flash Flood	0/0	\$0	\$0	Broadcast Media
Wilson	8/26/2002	Flash Flood	0/0	\$0	\$0	Law Enforcement
Wilson	8/31/2002	Flash Flood	0/0	\$0	\$0	Law Enforcement
Wilson	5/22/2004	Flash Flood	0/0	\$0	\$0	Law Enforcement
Northwest portion	6/14/2006	Flash Flood	0/0	\$0	\$0	Law Enforcement
Wilson	7/25/2006	Flash Flood	0/0	\$0	\$0	Newspaper
Evansdale	8/26/2007	Flash Flood	0/0	\$0	\$0	Dept of Highways
Wilson	6/16/2009	Flash Flood	0/0	\$0	\$0	Emergency Manager
Lucama	7/25/2009	Flash Flood	0/0	\$0	\$0	Emergency Manager
Wilson Airport	5/17/2010	Flash Flood	0/0	\$0	\$0	Law Enforcement
Lucama	9/30/2010	Flash Flood	0/0	\$0	\$0	Law Enforcement
Buckhorn Crossroads	9/30/2010	Flash Flood	0/0	\$0	\$0	Law Enforcement
Wilson	6/7/2013	Flash Flood	0/0	\$0	\$0	Trained Spotter
Lamm	4/29/2014	Flash Flood	0/0	\$0	\$0	Emergency Manager
Wilson (Zone)	1/27/1998	Flood	0/0	\$0	\$0	Not available
Wilson	2/3/1998	Heavy Rain	0/0	\$0	\$0	Not available
Wilson	2/16/1998	Heavy Rain	0/0	\$0	\$0	Not available
Wilson (Zone)	7/12/1996	Hurricane	0/0	\$0	\$0	Not available
Wilson (Zone)	9/5/1996	Hurricane	0/0	\$0	\$0	Not available
Wilson (Zone)	8/27/1998	Hurricane	0/0	\$0	\$50M	Official NWS Obs.
Wilson (Zone)	9/4/1999	Hurricane	0/0	\$0	\$0	Gov't Official
Wilson (Zone)	9/15/1999	Hurricane	0/0	\$0	\$0	Gov't Official
Wilson (Zone)	9/18/2003	Hurricane	0/0	\$1.2M	\$0	Emergency Manager
Wilson (Zone)	9/1/2006	Tropical Storm	0/0	\$0	\$0	Emergency Manager

Source: NCDC, March 2015

Table 3.7 - SHELDUS Flooding in Wilson County – January 1960 to March 2015

Date		Hazard Type	Injuries/Fatalities	Crop Damage	Property Damage
Month	Year				
June	1962	Coastal	0/0	\$803,522	\$8,035
October	1970	Coastal	0/0	\$100	\$1,001
February	1966	Flooding	0/0	\$240	\$13,182
March	1966	Flooding	0/0	\$180	\$17,975
September	1979	Flooding	0/1	\$39,131	\$391,314
March	1983	Flooding	0/0	\$0	\$812
August	1992	Flooding	0/0	\$25,944	\$25,944
March	1994	Flooding	0/0	\$0	\$1,455
October	1964	Hurricane/Tropical Storm	0/0	\$3,757	\$3,757
September	1971	Hurricane/Tropical Storm	0/0	\$252,282	\$2,523
September	1979	Hurricane/Tropical Storm	0/0	\$16,044	\$160,439
August	1981	Hurricane/Tropical Storm	0/0	\$400,435	\$0
July	1985	Hurricane/Tropical Storm	1/1	\$0	\$49,962
July	1996	Hurricane/Tropical Storm	1/1	\$22,964,106	\$13,887,345
September	1996	Hurricane/Tropical Storm	0/0	\$19,158,042	\$126,768,421
August	1998	Hurricane/Tropical Storm	0/0	\$6,496,291	\$0
September	1999	Hurricane/Tropical Storm	0/0	\$22,688,567	\$135,319,483
September	2003	Hurricane/Tropical Storm	0/0	\$0	\$710,947
April	1961	Severe Storm/Thunder Storm	0/0	\$0	\$130
January	1962	Severe Storm/Thunder Storm	0/0	\$0	\$201
June	1962	Severe Storm/Thunder Storm	0/0	\$803,522	\$8,035
November	1962	Severe Storm/Thunder Storm	0/0	\$0	\$2,504
May	1963	Severe Storm/Thunder Storm	0/0	\$1,252	\$1,252
July	1963	Severe Storm/Thunder Storm	0/0	\$49,847	\$35,573
November	1963	Severe Storm/Thunder Storm	0/0	\$0	\$1,269
August	1964	Severe Storm/Thunder Storm	0/0	\$3,757	\$3,757
September	1964	Severe Storm/Thunder Storm	0/0	\$375,737	\$375,737
June	1965	Severe Storm/Thunder Storm	0/0	\$4,350	\$4,350
July	1965	Severe Storm/Thunder Storm	0/0	\$52,081	\$7,092
August	1965	Severe Storm/Thunder Storm	0/0	\$2,054	\$2,054
February	1966	Severe Storm/Thunder Storm	0/0	\$240	\$13,182
March	1966	Severe Storm/Thunder Storm	0/0	\$180	\$17,975
June	1967	Severe Storm/Thunder Storm	0/0	\$8,303	\$8,303
August	1967	Severe Storm/Thunder Storm	0/0	\$0	\$4,359
March	1968	Severe Storm/Thunder Storm	0/0	\$0	\$1,674
June	1968	Severe Storm/Thunder Storm	0/0	\$1,992	\$1,992
August	1968	Severe Storm/Thunder Storm	0/0	\$12,087	\$37,190
November	1968	Severe Storm/Thunder Storm	0/0	\$1,116	\$11,157
July	1969	Severe Storm/Thunder Storm	0/0	\$2,366	\$2,366
August	1969	Severe Storm/Thunder Storm	0/0	\$317	\$317
July	1970	Severe Storm/Thunder Storm	0/0	\$751	\$751
October	1970	Severe Storm/Thunder Storm	0/0	\$100	\$1,001
January	1971	Severe Storm/Thunder Storm	0/0	\$0	\$5,752
March	1971	Severe Storm/Thunder Storm	0/0	\$96	\$959
April	1971	Severe Storm/Thunder Storm	0/0	\$0	\$96
May	1971	Severe Storm/Thunder Storm	0/0	\$7,015	\$7,015
June	1971	Severe Storm/Thunder Storm	0/0	\$5,531	\$5,531
July	1971	Severe Storm/Thunder Storm	1/0	\$1,754	\$1,987
September	1971	Severe Storm/Thunder Storm	0/0	\$252,354	\$3,242

Date		Hazard Type	Injuries/Fatalities	Crop Damage	Property Damage
Month	Year				
October	1971	Severe Storm/Thunder Storm	0/0	\$764,035	\$14,758
January	1972	Severe Storm/Thunder Storm	0/0	\$0	\$697
August	1972	Severe Storm/Thunder Storm	0/0	\$0	\$2,322
December	1972	Severe Storm/Thunder Storm	0/0	\$0	\$680
February	1973	Severe Storm/Thunder Storm	0/0	\$2,623	\$26,234
March	1975	Severe Storm/Thunder Storm	0/0	\$0	\$108
August	1981	Severe Storm/Thunder Storm	0/0	\$313	\$3,125
June	1986	Severe Storm/Thunder Storm	0/0	\$0	\$531
July	1986	Severe Storm/Thunder Storm	0/0	\$0	\$53,138
May	1987	Severe Storm/Thunder Storm	0/0	\$0	\$6,836
January	1988	Severe Storm/Thunder Storm	0/0	\$0	\$62,317
February	1989	Severe Storm/Thunder Storm	0/0	\$0	\$4,697
January	1992	Severe Storm/Thunder Storm	1/0	\$0	\$415
January	1993	Severe Storm/Thunder Storm	0/0	\$0	\$403
July	1993	Severe Storm/Thunder Storm	0/0	\$0	\$8,061
April	1996	Severe Storm/Thunder Storm	0/0	\$0	\$7,424
May	1996	Severe Storm/Thunder Storm	0/0	\$0	\$97,993
May	1997	Severe Storm/Thunder Storm	2/0	\$0	\$36,286
August	1999	Severe Storm/Thunder Storm	0/0	\$0	\$3,496
June	2010	Severe Storm/Thunder Storm	0/0	\$0	\$2,671
March	2011	Severe Storm/Thunder Storm	0/0	\$0	\$4,143
July	2011	Severe Storm/Thunder Storm	0/0	\$0	\$5,178
August	2011	Severe Storm/Thunder Storm	0/0	\$0	\$16,311
May	2012	Severe Storm/Thunder Storm	0/0	\$0	\$1,268
July	2012	Severe Storm/Thunder Storm	0/0	\$0	\$9,639
June	2013	Severe Storm/Thunder Storm	0/0	\$0	\$7,500
August	2013	Severe Storm/Thunder Storm	0/0	\$0	\$500

Source: SHELDUS v13.1, March 2015

The following provides details on select flood events recorded in the NCDC database and from FEMA’s FIS for Wilson County, NC. These scenarios represent the types of flood events that can be expected in the future in the City of Wilson.

September 5, 1996 – The copious amount of rainfall associated with Hurricane Fran produced many severe flash and river floods.

January 27, 1998 - Flooding caused many rural county roads to become impassable and many had to be closed. In addition to the rapid rises in streams and creeks, river flooding was well underway due to the excessive rainfall for the month of January. Continuous storm systems brought heavy precipitation to central North Carolina during the month, with a major storm ending the month with flooding and river flooding.



Flash flood on July 25, 2006 closes U.S. Hwy 301.
(AP Photo/The Wilson Times)

August 27, 1998 - Torrential rains and strong gusty winds accompanied Hurricane Bonnie through the night on the 27th and into the daylight hours on the 28th. There were numerous reports of trees being blown down across Sampson, Wayne, Johnston, Wilson, Harnett, and Cumberland counties. About ten thousand people lost power in these areas sometime during

the storm. Tobacco losses were extensive. The estimated total value of the tobacco crop lost due to Bonnie ranged from 25 to 50 million dollars. The City of Wilson recorded 4.94 inches of rain.

September 15, 1999 - Hurricane Floyd produced 15-20 inches of rain that fell across the eastern half of the state, causing every river and stream to flood. Many rivers set new flood records. Whole communities were underwater for days, even weeks in some areas. Thousands of homes were lost. Crop damage was extensive. The infrastructure of the eastern counties, mainly roads, bridges, water plants, etc., was heavily damaged. Even worse was the loss of life, mainly due to flooding. Many Carolinians did not heed the call to evacuate and many more drove into flooded streams and rivers. In the central part of the state, 21 people lost their lives. Also, the loss of livestock was significant, mainly swine and poultry.



Tropical Storm Andrea floods sections of Singletary Street and Elvie Street. (AP Photo/The Wilson Times)

September 18, 2003 - Hurricane Isabel made landfall along the Outer Banks just north of Cape Lookout around 1 pm on September 18, 2003. Up to 6 inches of rain fell across Edgecombe, Halifax and Wilson counties resulting in flooding of several roads.

July 25, 2006 – Flash flooding resulted in the closure of about 10 streets and several stalled cars including US Hwy 301 and Ward Boulevard.

June 7, 2013 - Tropical Storm Andrea tracked northeast up the East Coast and through North Carolina on June 7th, bringing a swath of heavy rain of 3 to 6 inches across central and eastern portions of the area. This heavy rain resulted in numerous road closures and brought several small creeks and streams out of their banks.

Frequency/Likelihood of Future Occurrence

Occasional - By definition of the 100-year flood event, SFHAs are defined as those areas that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. Properties located in these areas have a 26 percent chance of flooding over the life of a 30-year mortgage.

The 500-year flood area is defined as those areas that will be inundated by the flood event having a 0.2-percent chance of being equaled or exceeded in any given year; it is not the flood that will occur once every 500 years.

Given the 10 hurricane and tropical storm occurrences recorded by NCDC and SHELDUS within a period of 39 years (1964 - 2003), the County has a 26 percent chance of experiencing a hurricane or tropical storm in any given year.

3.2.2 Flood: Stormwater/Localized Flooding

Hazard/Problem Description

Localized stormwater flooding can also occur throughout the City of Wilson. Localized stormwater flooding occurs when heavy rainfall and an accumulation of runoff overburden the stormwater drainage system. The cause of localized stormwater flooding in Wilson can be attributed to its generally flat topography, abundance of water features, and the large amount of developed and impervious land, which limits ground absorption and increases surface water runoff.

Past Occurrences

Figure 3.4 depicts the areas of localized stormwater flooding identified by the FMPC. The areas of localized flooding are listed below in Table 3.8.

Table 3.8 - Areas of Localized Flooding

Area	Street Name or Intersection
1	Solaris Drive and Durban Drive
2	Wimbledon Court N
3	Saint Andrews Drive N and Pine Needles Lane N
4	Prestwick Lane N, Dewfield Drive N and Chandler Drive N
5	Saddle Run Road N and Riverbirch Road N
6	Burkam Court N
7	Brentwood Drive N, Fieldstream Drive N and Westshire Drive N
8	Buckingham Road NW, Whipporwill Lane NE and Nottingham Road NW
9	Brook Ln NW and Lancaster Road NW
10	Ridge Road NW, Canal Drive NW and Buckingham Road NW
11	Parkside Drive NW and Forest Hills Road NW
12	Arbor Rd N
13	Brentwood Circle N and Brentwood Drive
14	Raleigh Road Pkwy
15	Ripley Road NW, Canal Drive NW, Kincaid Avenue NW and Mt. Vernon Drive NW
16	Vance St N, Cone Street N and Lee Street
17	Raleigh Road Parkway North and Nash Street N
18	Raleigh Road Parkway North and Rountree Street NE
19	London Church Rd
20	Gold Street N
21	Crescent Drive
22	Glendale Drive , Katherine Court W, Medical Park Drive W and Pinecrest Drive W
23	Willbrook Lane SW, Glendale Drive SW, Trull Street SW and McNair Street SW
24	Winding Creek Drive SW and Crystal Drive SW
25	Beacon Street W and Park Avenue W
26	Mercer Street SW
27	Mercer Street SW and Spruce Street SW
28	Lodge Street S, Norris Blvd S, and Meadow Street
29	Ward Blvd
30	New Bern Street SE, Spaulding Street SW and Elvie Street SE
31	Stantonsburg Road SE, E Trail Drive SE

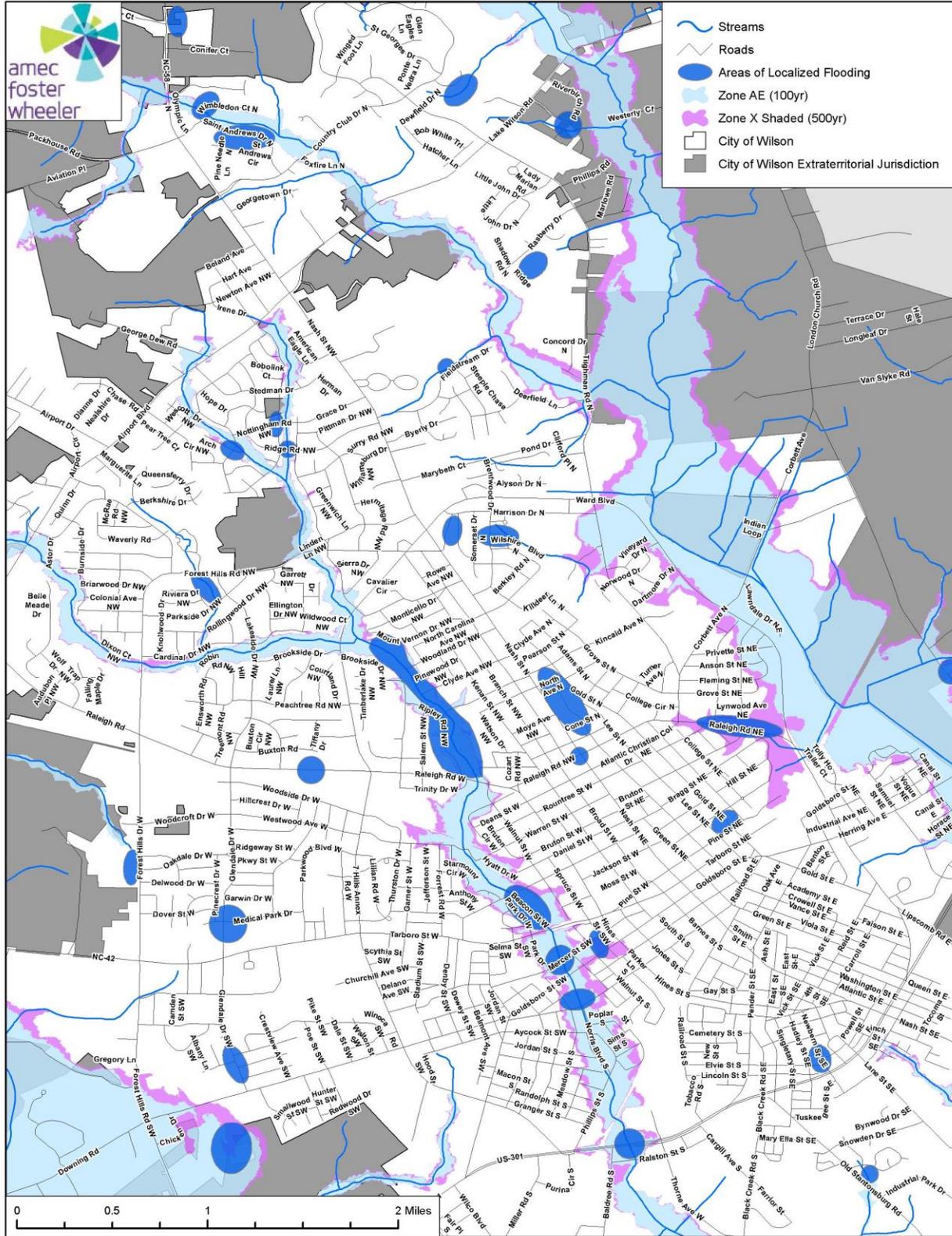
Localized flooding may be caused by the following issues:

Inadequate Capacity – An undersized/under capacity pipe system can cause water to back-up behind a structure which can lead to areas of ponded water and/or overtopping of banks.

Clogged Inlets – debris covering the asphalt apron and the top of grate at catch basin inlets may contribute to an inadequate flow of stormwater into the system. Debris within the basin itself may also reduce the efficiency of the system by reducing the carrying capacity.

Blocked Drainage Outfalls – debris blockage or structural damage at drainage outfalls may prevent the system from discharging runoff, which may lead to a back-up of stormwater within the system.

Improper Grade – poorly graded asphalt around catch basin inlets may prevent stormwater from entering the catch basin as designed. Areas of settled asphalt may create low spots within the roadway that allow for areas of ponded water.



Source: City of Wilson, 2015

Figure 3.4 - Localized Flooding Locations

Frequency/Likelihood of Future Occurrence

Highly Likely - Given the 24 flash flood events recorded in NCDC over a 17 year period, there is a near 100 percent chance of occurrence within the next year. Precipitation resulting from heavy rainstorms, tropical storms, and hurricanes makes it highly likely that unmitigated properties will continue to experience localized flooding.

3.2.3 Stream Bank Erosion

Hazard/Problem Description

Stream banks erode by a combination of direct stream processes, like down cutting and lateral erosion, and indirect processes, like mass-wasting accompanied by transportation. When the channel bends, water on the outside of the bend (the cut-bank) flows faster and water on the inside of the bend (the point) flows slower as shown in Figure 3.5. This distribution of velocity results in erosion occurring on the outside of the bend and deposition occurring on the inside of the bend.

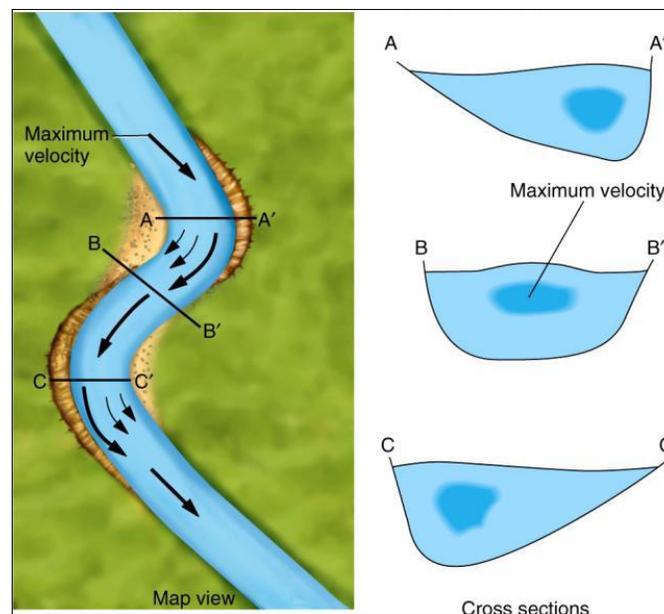


Figure 3.5 - Stream Meanders

Stream bank erosion is a natural process, but acceleration of this natural process leads to a disproportionate sediment supply, stream channel instability, land loss, habitat loss and other adverse effects. Stream bank erosion processes, although complex, are driven by two major components: stream bank characteristics (erodibility) and hydraulic/gravitational forces. Many land use activities can affect both of these components and lead to accelerated bank erosion. The vegetation rooting characteristics can protect banks from fluvial entrainment and collapse, and also provide internal bank strength. When riparian vegetation is changed from woody species to annual grasses and/or forbs, the internal strength is weakened, causing acceleration of mass wasting processes. Stream bank aggradation or degradation is often a response to stream channel instability. Since bank erosion is often a symptom of a larger, more complex problem, the long-term solutions often involve much more than just bank stabilization. Numerous studies have demonstrated that stream bank erosion contributes a large portion of the annual sediment yield.

Determining the cause of accelerated streambank erosion is the first step in solving the problem. When a stream is straightened or widened, streambank erosion increases. Accelerated streambank erosion is part

of the process as the stream seeks to re-establish a stable size and pattern. Damaging or removing streamside vegetation to the point where it no longer provides for bank stability can cause a dramatic increase in bank erosion. A degrading streambed results in higher and often unstable, eroding banks. When land use changes occur in a watershed, such as clearing land for agriculture or development, runoff increases. With this increase in runoff the stream channel will adjust to accommodate the additional flow, increasing streambank erosion. Addressing the problem of streambank erosion requires an understanding of both stream dynamics and the management of streamside vegetation.

For the purposes of this Floodplain Management Plan, stream bank erosion can be categorized as minor or major:

Minor stream bank erosion results in movement of the streambed and bank soils, but does not have an impact on the built (structural) environment and does not result in risk life or property.

Major stream bank erosion does result in an impact on the built environment, especially roads and any infrastructure that requires relatively stable ground. Major erosion near roads can require continuous repairs to stabilize the ground. Furthermore, sudden emergency incidents such as a strong storm causing bluff failure could result in injury or loss of life.

Past Occurrences

Minor stream bank erosion is occurring in the City, and was noted as a concern by several homeowners who completed a Flood Projection Questionnaire as part of the Repetitive Loss Area Analysis (RLAA) prepared by the City in July 2015. The City is currently working with several homeowners regarding minor stream bank erosion complaints.

Several sources were vetted to identify areas of major erosion in the City. This included searching local newspapers, interviewing City officials, and reviewing the State of North Carolina Hazard Mitigation Plan. Minimal information could be found regarding the occurrence of major erosion within the City.

Frequency/Likelihood of Future Occurrence

Unlikely - Erosion is a natural, dynamic, and continuous process that can be expected to occur on a small scale within the City of Wilson in the future. The annual probability level assigned for major erosion events is less than 1% probability within the next year. Given the lack of threat to life or property, major stream bank erosion will not be included in Section 3.3 Vulnerability Assessment. However, minor stream bank erosion is a priority for the City, and City staff will continue to work with homeowners to monitor and address this issue in the future.

3.2.4 Dam/Levee Failure

Hazard/Problem Description

Dam Failure

A dam is a barrier constructed across a watercourse that stores, controls, or diverts water. Dams are usually constructed of earth, rock, or concrete. The water impounded behind a dam is referred to as the reservoir and is measured in acre-feet. One acre-foot is the volume of water that covers one acre of land to a depth of one foot. Dams can benefit farm land, provide recreation areas, generate electrical power, and help control erosion and flooding issues.

A dam failure is the collapse or breach of a dam that causes downstream flooding. Dam failures may be caused by natural events, human-caused events, or a combination. Due to the lack of advance warning,

failures resulting from natural events, such as hurricanes, earthquakes, or landslides, may be particularly severe. Prolonged rainfall and subsequent flooding is the most common cause of dam failure.

Dam failures usually occur when the spillway capacity is inadequate and water overtops the dam or when internal erosion in dam foundation occurs (also known as piping). If internal erosion or overtopping cause a full structural breach, a high-velocity, debris-laden wall of water is released and rushes downstream, damaging or destroying anything in its path. Overtopping is the primary cause of earthen dam failure in the United States.

Dam failures can result from any one or a combination of the following:

- Prolonged periods of rainfall and flooding;
- Inadequate spillway capacity, resulting in excess overtopping flows;
- Internal erosion caused by embankment or foundation leakage or piping;
- Improper maintenance, including failure to remove trees, repair internal seepage problems, replace lost material from the cross-section of the dam and abutments, or maintain gates, valves, and other operational components;
- Improper design, including the use of improper construction materials and construction practices;
- Negligent operation, including the failure to remove or open gates or valves during high flow periods;
- Failure of upstream dams on the same waterway; and
- High winds, which can cause significant wave action and result in substantial erosion.

Water released by a failed dam generates tremendous energy and can cause a flood that is catastrophic to life and property. A catastrophic dam failure could challenge local response capabilities and require evacuations to save lives. Impacts to life safety will depend on the warning time and the resources available to notify and evacuate the public. Major casualties and loss of life could result, as well as water quality and health issues. Potentially catastrophic effects to roads, bridges, and homes are also of major concern. Associated water quality and health concerns could also be issues. Factors that influence the potential severity of a full or partial dam failure are the amount of water impounded; the density, type, and value of development and infrastructure located downstream; and the speed of failure.

Each state has definitions and methods to determine the Hazard Potential of a dam. In North Carolina, dams are regulated by the state if they are 25 feet or more in height and impound 50 acre-feet or more. Dams and impoundments smaller than that may fall under state regulation if it is determined that failure of the dam could result in loss of human life or significant damage to property below the dam. The height of a dam is from the highest point on the crest of the dam to the lowest point on the downstream toe, and the storage capacity is the volume impounded at the elevation of the highest point on the crest of the dam.

Dam Safety Program engineers determine the "hazard potential" of a dam, meaning the probable damage that would occur if the structure failed, in terms of loss of human life and economic loss or environmental damage. Dams are assigned one of three classes based on the nature of their hazard potential:

1. Class A (Low Hazard) includes dams located where failure may damage uninhabited low value non-residential buildings, agricultural land, or low volume roads.
2. Class B (Intermediate Hazard) includes dams located where failure may damage highways or secondary railroads, cause interruption of use or service of public utilities, cause minor damage to isolated homes, or cause minor damage to commercial and industrial buildings. Damage to these structures will be considered minor only when they are located in backwater areas not subjected

to the direct path of the breach flood wave; and they will experience no more than 1.5 feet of flood rise due to breaching above the lowest ground elevation adjacent to the outside foundation walls or no more than 1.5 feet of flood rise due to breaching above the lowest floor elevation of the structure.

- Class C (High Hazard) includes dams located where failure will likely cause loss of life or serious damage to homes, industrial and commercial buildings, important public utilities, primary highways, or major railroads.

Table 3.9 - Dam Hazards Classification

Hazard Classification	Description	Quantitative Guidelines
Low	Interruption of road service, low volume roads	Less than 25 vehicles per day
	Economic damage	Less than \$30,000
Intermediate	Damage to highways, interruption of service	25 to less than 250 vehicles per day
	Economic damage	\$30,000 to less than \$200,000
	Loss of human life*	Probable loss of 1 or more human lives
High	Economic damage	More than \$200,000
	*Probable loss of human life due to breached roadway or bridge on or below the dam	250 or more vehicles per day

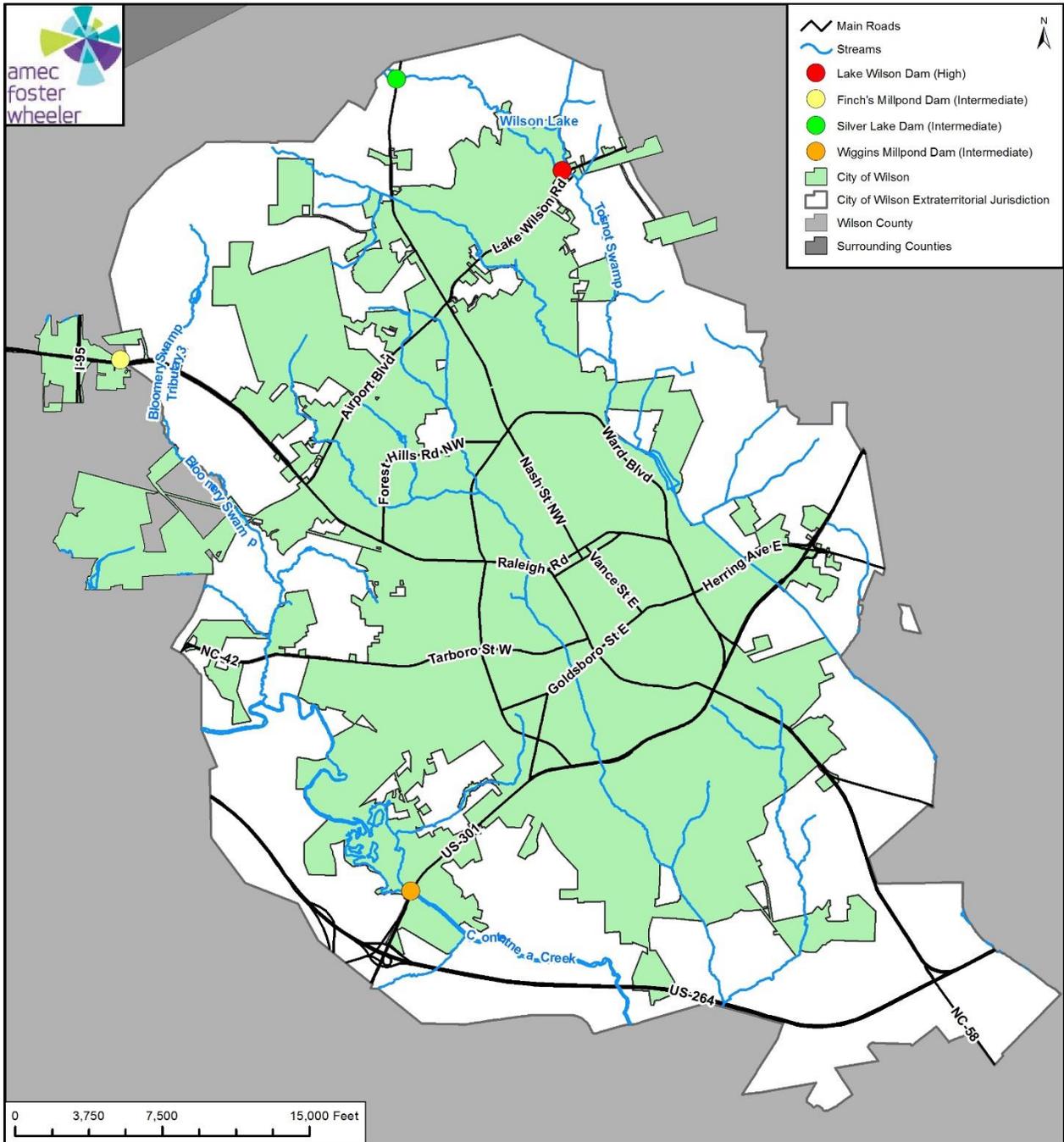
Source: NCDENR

Table 3.10 provides details for four dams included in the North Carolina Dam Inventory that are located within the City of Wilson and/or have the potential to affect the City if a breach were to occur. The City of Wilson owns two of the dams; one is classified as high hazard and one is classified as intermediate hazard. The two additional dams are classified as intermediate hazard and are privately owned. Figure 3.6 reflects the location of the dams within the City.

Table 3.10 - North Carolina Dam Inventory for City of Wilson, NC

Dam Name	NIDID	Owner	Height (Ft.)	NID Storage (acre-feet)	Hazard Description	Primary Purpose	River
Lake Wilson	NC00894	City of Wilson	20	998	High	Water Supply	Toisnot Swamp
Wiggins Mill Pond	NC00895	City of Wilson	17	1,020	Intermediate	Water Supply	Contentnea Creek
Finch's Mill Pond	NC00891	Private	15	469	Intermediate	Recreation	Bloomery Swamp
Silver Lake	NC00896	Private	13	538	Intermediate	Recreation	Toisnot Swamp

Source: North Carolina Dam Inventory, December 2014



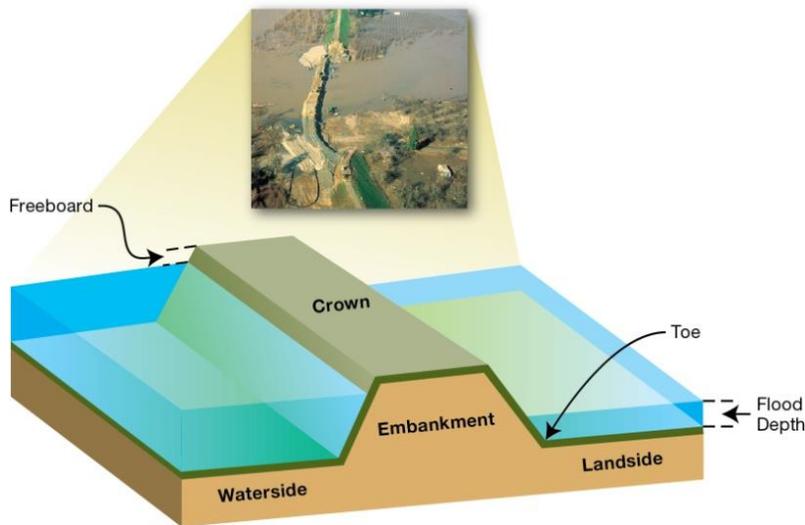
Source: North Carolina Dam Inventory, December 2014

Figure 3.6 – North Carolina Dam Inventory for City of Wilson, NC

Levee Failure

FEMA defines a levee as “a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water in order to reduce the risk from temporary flooding.” Levee systems consist of levees, floodwalls, and associated structures, such as closure and drainage devices, which are constructed and operated in accordance with sound engineering practices. Levees often have “interior drainage” systems that work in conjunction with the levees to take water from the landward side to the water side. An interior drainage system may include culverts, canals, ditches, storm sewers, and/or pumps.

Levees and floodwalls are constructed from the earth, compacted soil or artificial materials, such as concrete or steel. To protect against erosion and scouring, earthen levees can be covered with grass and gravel or hard surfaces like stone, asphalt, or concrete. Levees and floodwalls are typically built parallel to a waterway, most often a river, in order to reduce the risk of flooding to the area behind it. Figure 3.7 below shows the components of a typical levee.



Source: FEMA, *What is a Levee Fact Sheet*, August 2011

Figure 3.7 - Components of a Typical Levee

Levees provide strong flood protection, but they are not failsafe. Levees are designed to protect against a specific flood level and could be overtopped during severe weather events. Levees reduce, not eliminate, the risk to individuals and structures behind them. A levee system failure or overtopping can create severe flooding and high water velocities. It is important to remember that no levee provides protection from events for which it was not designed, and proper operation and maintenance are necessary to reduce the probability of failure.

Past Occurrences

The U.S. Army Corps of Engineers National Levee Database (NLD) does not identify any levees within Wilson County. There are no past reported dam breaches or levee failures within the City of Wilson.

Frequency/Likelihood of Future Occurrence

Unlikely – There is one high hazard dam and one intermediate hazard dam located within Wilson County that could impact the City. A flooding hazard from future dam failure is unlikely. There are no significant levees located within the County.

3.2.5 Assessment of Areas Likely to Flood

The following targeted areas are identified by the FMPC as areas likely to flood in the future. Changes in the watershed (an increase in impervious area) could make these targeted areas more likely to flood in the future.

Identified Area #1: 100-year SFHAs

According to the April 16, 2013 Flood Insurance Study prepared by FEMA, approximately 18% of the parcel acreage within the City is located within a Zone AE or Zone X Shaded (500-year) flood zone. Changes in floodplain development and future development within the watershed in general is likely to increase the size of the SFHAs due to an increase in impervious area.

Identified Area #2: Areas of Localized Stormwater Flooding

Due to the level topography and the heavy precipitation resulting from thunderstorms, tropical storms, and hurricanes, it is highly likely that unmitigated properties will continue to experience localized flooding. An increase in impervious area due to future development could exacerbate the localizing flooding issues unless measures are taken to reduce the volume of runoff.

Identified Area #3: Repetitive Loss Areas

Repetitive loss properties have a greater need for flood protection. Repetitive loss can be attributed to development within the 100-year floodplain as well as localized stormwater flooding. As mentioned above, both types of flooding could increase in the future if measures are not taken to mitigate the effects of development. Therefore, it is very likely that unmitigated repetitive loss properties will continue to flood in the future.

3.2.6 Flood Hazards Profile Summary

Table 3.11 summarizes the results of the hazard profile for the City of Wilson based on hazard identification data and input from the FMPC. For each hazard profiled within Section 3.2, this table includes the likelihood of future occurrence and whether or not the hazard has been included in Section 3.3 Vulnerability Assessment.

Table 3.11 Summary of Flood Hazard Profile Results

Hazard	Likelihood of Future Occurrence	Vulnerability Assessment
Flood: 100-/500-year	Occasional	Yes
Flood: Stormwater/Localized Flooding	Highly Likely	Yes
Major Stream Bank Erosion	Unlikely	No
Dam/Levee Failure	Unlikely	Yes

3.3 Vulnerability Assessment

Requirement §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction’s vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. Plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of:

- A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;
- (B): An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate; and
- (C): Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

The FMPC conducted a vulnerability assessment of the hazards identified as a priority in order to assess the impact that each hazard would have on the City. The vulnerability assessment quantifies, to the extent feasible using best available data, assets at risk to natural hazards and estimates potential losses.

Vulnerability assessments followed the methodology described in the FEMA publication *Understanding Your Risks—Identifying Hazards and Estimating Losses*. The vulnerability assessment first describes the total vulnerability and values at risk and then discusses vulnerability by hazard.

Wilson’s GIS-based flood risk assessment was completed using the best data made available at the time of the analysis. Digital data was collected from local, regional and national sources that included the City of Wilson, the North Carolina Emergency Management Agency, and the Federal Emergency Management Agency. This analysis took advantage of FEMA’s recently revised Flood Insurance Study for Wilson County dated April 2013.

Properties at Risk

The 2010 building footprint layer for the City of Wilson was used as the basis for determining properties at risk to flood damage. Building counts by FEMA flood zone were determined using a spatial intersection of building footprints provided by North Carolina Emergency Management and the effective FEMA flood zones provided in the Wilson County DFIRM Database effective 4/16/2013. Table 3.12 shows the building count, improved value, content value and total value for all buildings located within a SFHA.

Table 3.12 – City of Wilson Properties at Risk by Occupancy Type

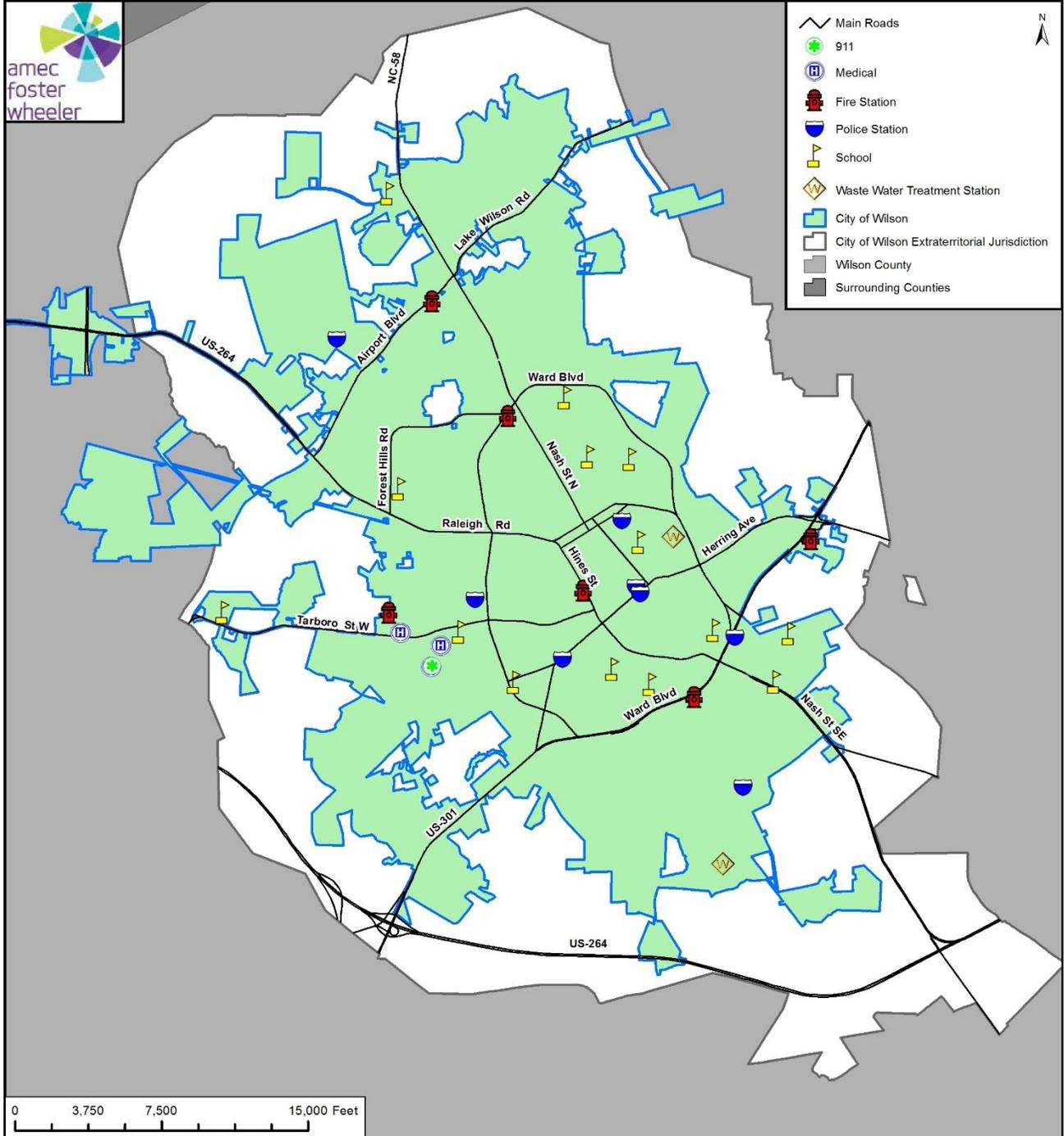
Occupancy Type	Total Number of Buildings in Floodplain	Total Building Value	Estimated Content Value	Total Value
Zone AE				
Agricultural	1	\$7,320	\$22,784	\$30,104
Commercial	177	\$81,173,318	\$91,632,038	\$172,805,356
Education	1	\$153,832	\$153,832	\$307,664
Government	12	\$2,726,995	\$2,498,694	\$5,225,689
Industrial	11	\$6,550,839	\$20,140,265	\$26,691,105
Religious	7	\$1,294,551	\$950,413	\$2,244,964
Residential	829	\$95,806,117	\$47,922,169	\$143,728,286
Total	1,038	\$187,712,972	\$163,320,195	\$351,033,167

Occupancy Type	Total Number of Buildings in Floodplain	Total Building Value	Estimated Content Value	Total Value
Zone X (500-yr)				
Agricultural	0	\$0	\$0	\$0
Commercial	41	\$23,149,342	\$23,373,183	\$46,522,525
Education	0	\$0	\$0	\$0
Government	10	\$13,208,366	\$14,637,171	\$27,845,537
Industrial	23	\$27,008,813	\$50,500,777	\$77,509,590
Religious	3	\$709,764	\$709,764	\$1,419,528
Residential	369	\$43,646,915	\$22,386,146	\$66,033,061
Total	446	\$107,723,200	\$111,607,040	\$219,330,241
Zone X (Unshaded)				
Agricultural	0	\$0	\$0	\$0
Commercial	35	\$31,365,323	\$31,365,277	\$62,730,600
Education	4	\$590,341	\$590,340	\$1,180,681
Government	14	\$60,909,291	\$2,838,053	\$63,747,344
Industrial	6	\$8,415,883	\$17,410,225	\$25,826,108
Religious	2	\$1,480,332	\$1,480,332	\$2,960,664
Residential	365	\$45,541,191	\$23,520,365	\$69,061,556
Total	426	\$148,302,361	\$77,204,592	\$225,506,953

Source: North Carolina Emergency Management, Risk Management, 2013

Critical Facility Inventory

Of significant concern with respect to any disaster event is the location of critical facilities in the planning area. Critical facilities are often defined as those essential services and facilities in a major emergency which, if damaged, would result in severe consequences to public health and safety or a facility which, if unusable or unreachable because of a major emergency, would seriously and adversely affect the health, safety, and welfare of the public. Critical facilities within the City are shown in Figure 3.8.



Data Source: City of Wilson, 2015

Figure 3.8 - Critical Facilities in Wilson, NC

Land Use

Existing land use is based on data contained within the 2010 Wilson Comprehensive Plan. The land use classifications are grouped into general activity categories from the American Planning Association’s Land Based Classification System (LBCS). Table 3.13 below shows the approximate acreages and percentages of each general land use activity category within the City of Wilson’s planning and zoning jurisdiction. Figure 3.9 shows the locations of these existing land use activities.

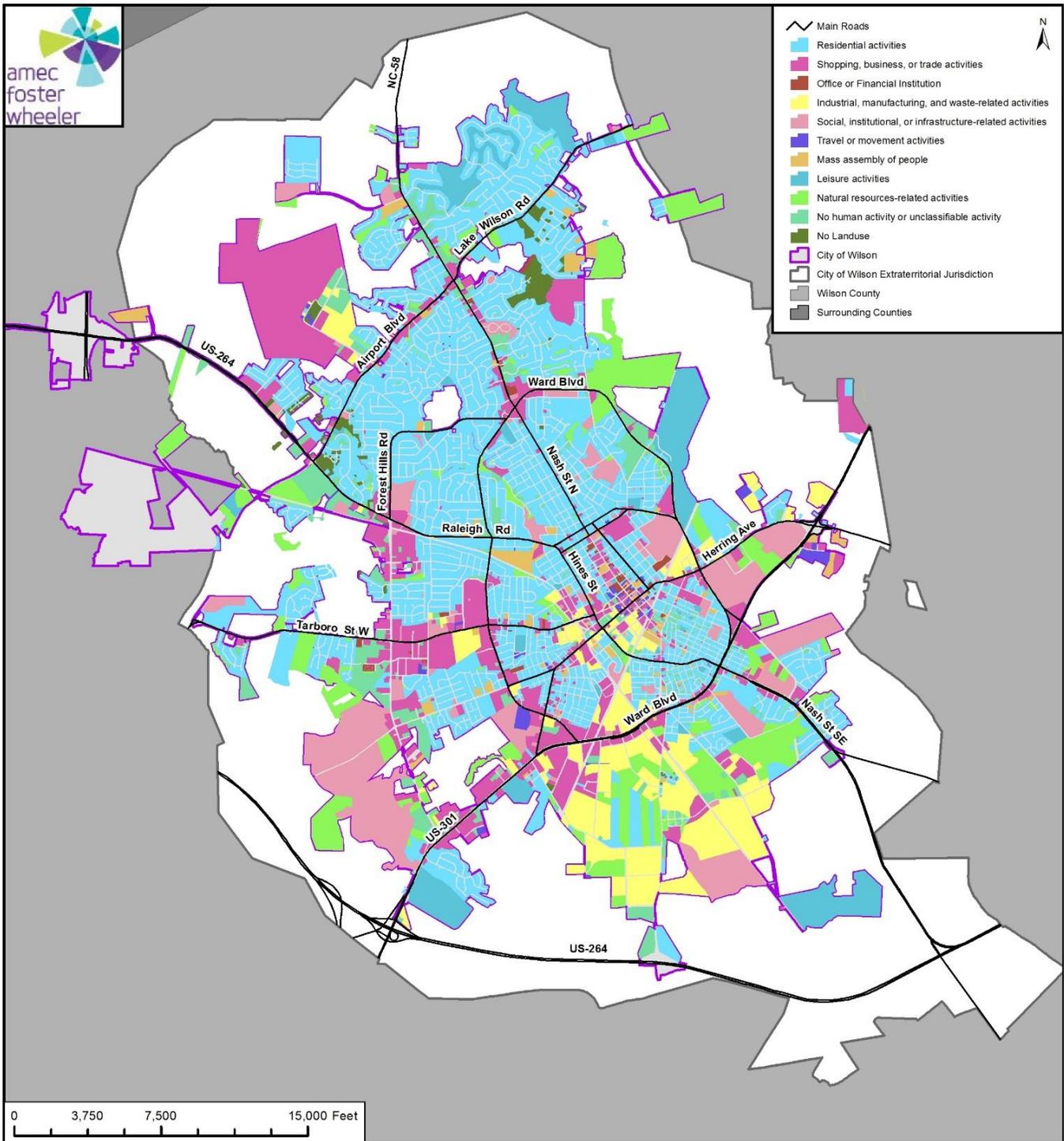
Table 3.13 - Existing Land Use Activities in the City's Planning Jurisdiction

Existing Land Use Activity	Acres*	% of Total Acres
No Human Activity or Unclassifiable Activity	2,809	7.2
Natural Resources Related Activities	13,883	35.7
Residential Activities	14,248	36.7
Leisure Activities	1,116	2.9
Mass Assembly of People	292	0.8
Shopping, Business or Trade Activities	2,502	6.4
Office or Financial Institution	60	0.2
Social, Institutional or Infrastructure-Related Activities	1,725	4.4
Industrial, Manufacturing, and Waste-Related Activities	2,140	5.5
Travel or Movement Activities	91	0.2
Total	38,870	100

*Based on site surveys by City Planning and Development Services staff.
Source: Wilson Comprehensive Plan, 2010

The most predominant land use in the City is residential, with more than one third of the City (approximately 37 percent) devoted to single and multi-family residential development. More than 40 percent of land in Wilson’s planning and zoning jurisdiction is estimated to be in natural resource related activities or unclassified, leaving much opportunity for new development and growth within the existing City’s planning jurisdiction. Income-producing land uses, including shopping, business, and trade; office or financial institution; industrial, manufacturing, and waste-related activities; and leisure activities comprise approximately 15 percent of Wilson’s land use activities.

Within recent years, the growth pattern in Wilson has been focused to the north and west toward Interstate 95. Much of the City’s new commercial development has been along the Raleigh Road Corridor west of Forest Hills Road. In the wake of this new growth, some older corridors and areas of the community have experienced disinvestment and are prime opportunities for redevelopment. Such areas include the Highway 301 Corridor, Five Points, Historic Warehouse District, Downtown Wilson, and Center City neighborhoods.



Source: City of Wilson, 2015

Figure 3.9 - City of Wilson Existing Land Use Activities

3.3.1 Vulnerability of the City of Wilson to Specific Hazards

The Disaster Mitigation Act regulations require that the FMPC evaluate the risks associated with each of the hazards identified in the planning process. This section summarizes the possible impacts and quantifies the City's vulnerability to each of the hazards identified as a priority hazard in Table 3.11 in Section 3.2.6 Flood Hazards Profile Summary. The hazards evaluated as part of this vulnerability assessment include:

- Flood: 100-/500-year
- Flood: Stormwater/Localized Flooding
- Dam Failure

Vulnerability is measured in general, qualitative terms and is a summary of the potential impact based on past occurrences, spatial extent, and damage and casualty potential. It is categorized into the following classifications:

- **Extremely Low** - The occurrence and potential cost of damage to life and property is very minimal to nonexistent.
- **Low** - Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.
- **Medium** - Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **High** - Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.
- **Extremely High** - Very widespread with catastrophic impact.

Vulnerability can be quantified in those instances where there is a known, identified hazard area, such as a mapped floodplain. In these instances, the numbers and types of buildings subject to the identified hazard can be counted and their values tabulated. Other information can be collected in regard to the hazard area, such as the location of critical community facilities (e.g., a fire station), historic structures, and valued natural resources (e.g., an identified wetland or endangered species habitat). Together, this information conveys the impact, or vulnerability, of that area to that hazard.

3.3.2 Flood: 100-/500-year Vulnerability Assessment

Likelihood of Future Occurrence—Occasional
Vulnerability—Medium

Flood damage is directly related to the depth of flooding by the application of a depth damage curve. In applying the curve, a specific depth of water translates to a specific percent damage to the structure, which translates to the same percentage of the structure's replacement value. Figure 3.10 depicts the depth of flooding that can be expected within the City during the 100-year flood event.

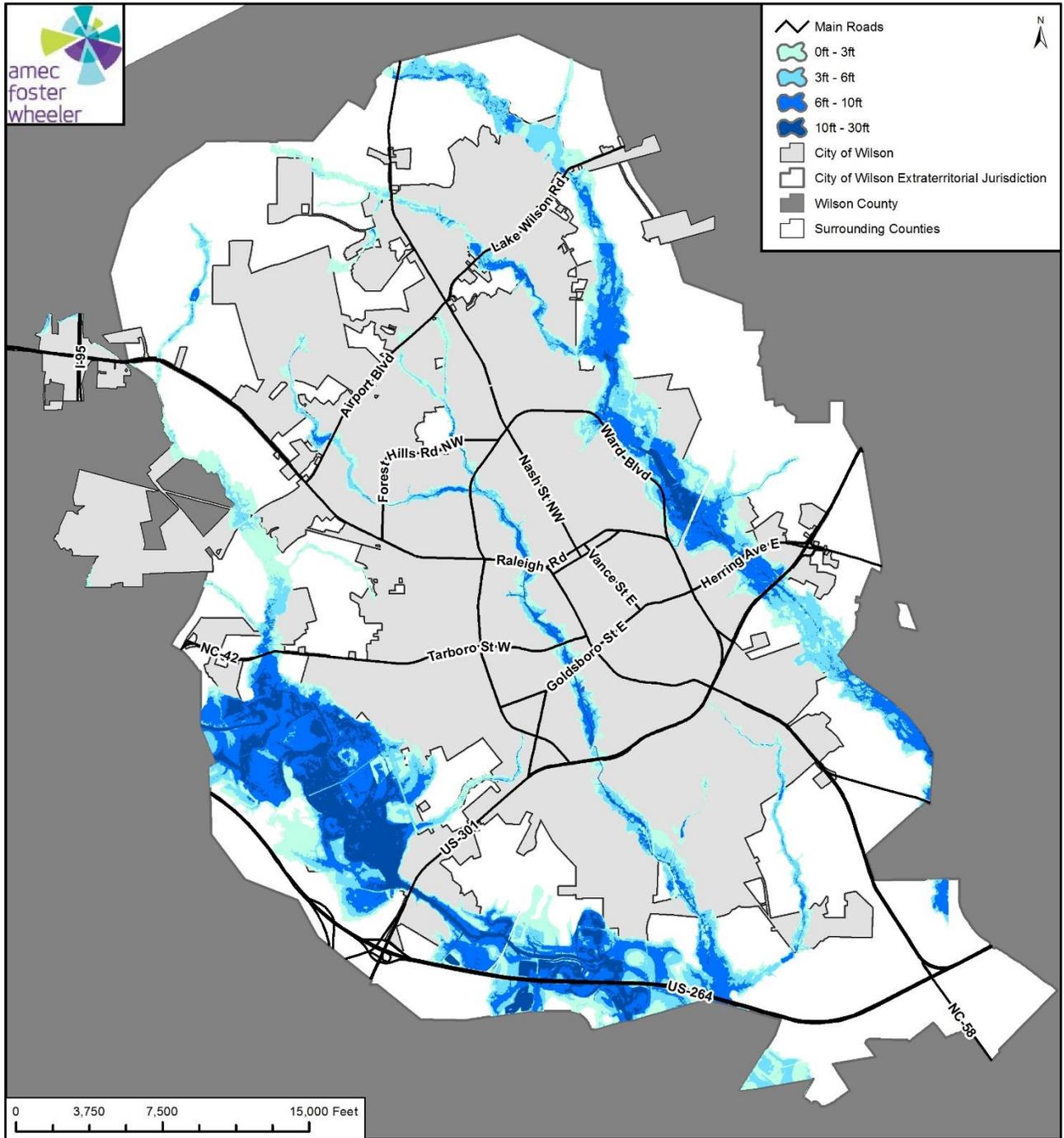


Figure 3.10 – 100-yr Flood Depths for the City of Wilson

Methodology

A flood risk assessment for Wilson County was performed by NCEM Risk Management in 2013. The risk assessment data was requested and received by the City of Wilson in March 2015. All building attribute data and estimated flood damages are derived from the NCEM Risk Management iRisk database.

NCEM utilized land use codes provided in the Wilson parcel data to assign each building footprint a specific occupancy class (i.e. RES1, COM4, EDU2, etc.). An occupancy class is required in order to apply the correct depth damage factor which ensures the most accurate damage assessment.

Table 3.14 provides the depth damage factors that were used in calculating flood losses for the City. The depth damage factors were developed based on the Wilmington Corps depth damage curve. All depths assume the structure has no basement.

Table 3.14 - Wilson Flood Loss Damage Factors

Depth (ft)	Percent Damaged (%)						
	Agricultural	Commercial	Education	Government	Industrial	Religious	Residential
0	0	15	4	5	2	12	9
1	6	20	22	8	7	17	14
2	11	29	29	10	12	19	23
3	15	37	34	10	19	22	28
4	19	44	39	11	25	25	32
5	25	50	44	13	30	28	36
6	30	55	48	14	36	32	39
7	35	62	53	15	41	37	43
8	41	67	57	16	46	43	46
9	46	71	62	17	51	48	49
10	51	75	66	18	56	53	52
11	57	79	70	20	61	58	56
12	63	84	75	21	66	63	60
13	70	88	79	22	71	68	64
14	75	97	83	24	76	73	68
15	79	100	87	25	81	78	73
16	82	100	91	26	86	83	80
17	84	100	95	27	91	88	81
18	87	100	99	28	96	93	83
19	89	100	100	29	100	98	84
20	90	100	100	30	100	100	85
21	92	100	100	31	100	100	85
22	93	100	100	32	100	100	85
23	95	100	100	33	100	100	85
24	96	100	100	34	100	100	85

Source: Hazus 2.1

Note: Government structures include pump stations, water treatment plants, etc. which accounts for the low percent damaged values.

Content value estimations are based on FEMA Hazus methodologies of estimating value as a percent of improved structure values by property type. Table 3.15 shows the breakdown of the different property types in Wilson and their estimated content replacement value percentages.

Table 3.15 - Content Replacement Factors

Property Type	Content Replacement Values
Residential	50%
Commercial	100%
Education	100%
Government	100%
Religious	100%
Industrial	150%

Source: Hazus 2.1

Values at Risk

The loss estimate for flood is based on the total of improved building value and contents value. Land value is not included in any of the loss estimates as generally the land is not subject to loss from floods. Once the potential value of affected parcels was calculated, damage factors were applied to obtain loss estimates by flood zone.

Table 3.16 shows the building count, total value, estimated damages and loss ratio for buildings that fall within the 100-year floodplain by flood zone and land use type. The loss ratio is the loss estimate divided by the total potential exposure (i.e., total of improved and contents value for all buildings located within the 100-year floodplain) and displayed as a percentage of loss. FEMA considers loss ratios greater than 10% to be significant and an indicator a community may have more difficulties recovering from a flood.

Table 3.16 – Estimated Building Damage and Content Loss

Occupancy Type	Total Number of Buildings with Loss	Total Value (Building & Contents)	Estimated Building Damage	Estimated Content Loss	Estimated Total Damage	Loss Ratio
Zone AE						
Agricultural	1	\$30,104	\$9,354	\$15,962	\$25,316	84.1%
Commercial	103	\$172,805,356	\$3,603,056	\$12,478,978	\$16,082,034	9.3%
Education	1	\$307,664	\$4,472	\$24,151	\$28,623	9.3%
Government	8	\$5,225,689	\$214,328	\$949,866	\$1,164,193	22.3%
Industrial	3	\$26,691,105	\$788,474	\$1,824,015	\$2,612,488	9.8%
Religious	7	\$2,244,964	\$166,413	\$722,420	\$888,833	39.6%
Residential	680	\$143,728,286	\$13,443,010	\$8,742,402	\$22,185,412	15.4%
Total	803	\$351,033,167	\$42,986,900	\$42,986,900	\$42,986,900	12.2%
Zone X (500-yr)						
Agricultural	0	\$0	\$0	\$0	\$0	0.0%
Commercial	5	\$46,522,525	\$113,982	\$420,327	\$534,309	1.1%
Education	0	\$0	\$0	\$0	\$0	0.0%
Government	0	\$27,845,537	\$0	\$0	\$0	0.0%
Industrial	0	\$77,509,590	\$0	\$0	\$0	0.0%
Religious	0	\$1,419,528	\$0	\$0	\$0	0.0%
Residential	139	\$66,033,061	\$1,972,807	\$594,458	\$2,567,265	3.9%
Total	144	\$219,330,241	\$2,086,790	\$1,014,785	\$3,101,574	1.4%
Zone X (Unshaded)						
Agricultural	0	\$0	\$0	\$0	\$0	0.0%
Commercial	3	\$62,730,600	\$160,611	\$547,856	\$708,467	1.1%
Education	0	\$1,180,681	\$0	\$0	\$0	0.0%
Government	0	\$63,747,344	\$0	\$0	\$0	0.0%
Industrial	1	\$25,826,108	\$647,841	\$1,943,522	\$2,591,362	10.0%

Occupancy Type	Total Number of Buildings with Loss	Total Value (Building & Contents)	Estimated Building Damage	Estimated Content Loss	Estimated Total Damage	Loss Ratio
Religious	0	\$2,960,664	\$0	\$0	\$0	0.0%
Residential	162	\$69,061,556	\$1,370,075	\$155,795	\$1,525,870	2.2%
Total	166	\$225,506,953	\$2,178,527	\$2,647,173	\$4,825,699	2.1%

Source: North Carolina Emergency Management, Risk Management, 2013

Flooded acres

Also of interest is the land area affected by the various flood zones. The following is an analysis of flooded acres in the City in comparison to total area within the City limits.

Methodology

GIS was used to calculate acres flooded by FEMA flood zones. The City parcel layer and effective DFIRM were intersected and the flooded parcel area was calculated in acres. The flood zone was assigned to any given parcel based on the intersection of the parcel with a flood zone. Parcels can be located in multiple flood zones, and only the flooded acreage within the parcel was counted for each flood zone.

Limitations

One limitation to be made from this analysis is that the parcel layer does not include right-of-way areas. Due to this, there are voids of land that are not accounted for; therefore, this analysis only represents total parcel acres. Table 3.17 represents a detailed and summary analysis of total improved flooded acres by FEMA DFIRM flood zone for the City.

Table 3.17 - Total Parcel Acres to Improved Flooded Acres by Flood Zone

Flood Zone	Total Parcel Acres	Improved Flooded Acres
Zone AE	2,588	2,167
Zone X (500-yr)	620	471
Zone X (Unshaded)	15,105	13,871
Total	18,314	16,509

Source: Wilson 2015 Tax Assessor's Data, FEMA 2013 DFIRM

Population at Risk

A separate analysis was performed to determine the population at risk to the individual FEMA flood zones. Using GIS, the DFIRM flood zones were intersected with the building footprint layer. Those residential buildings that intersected the flood zones were counted and multiplied by the 2009-2013 Census Bureau household factor for the City of Wilson (2.49) as shown in Table 3.18.

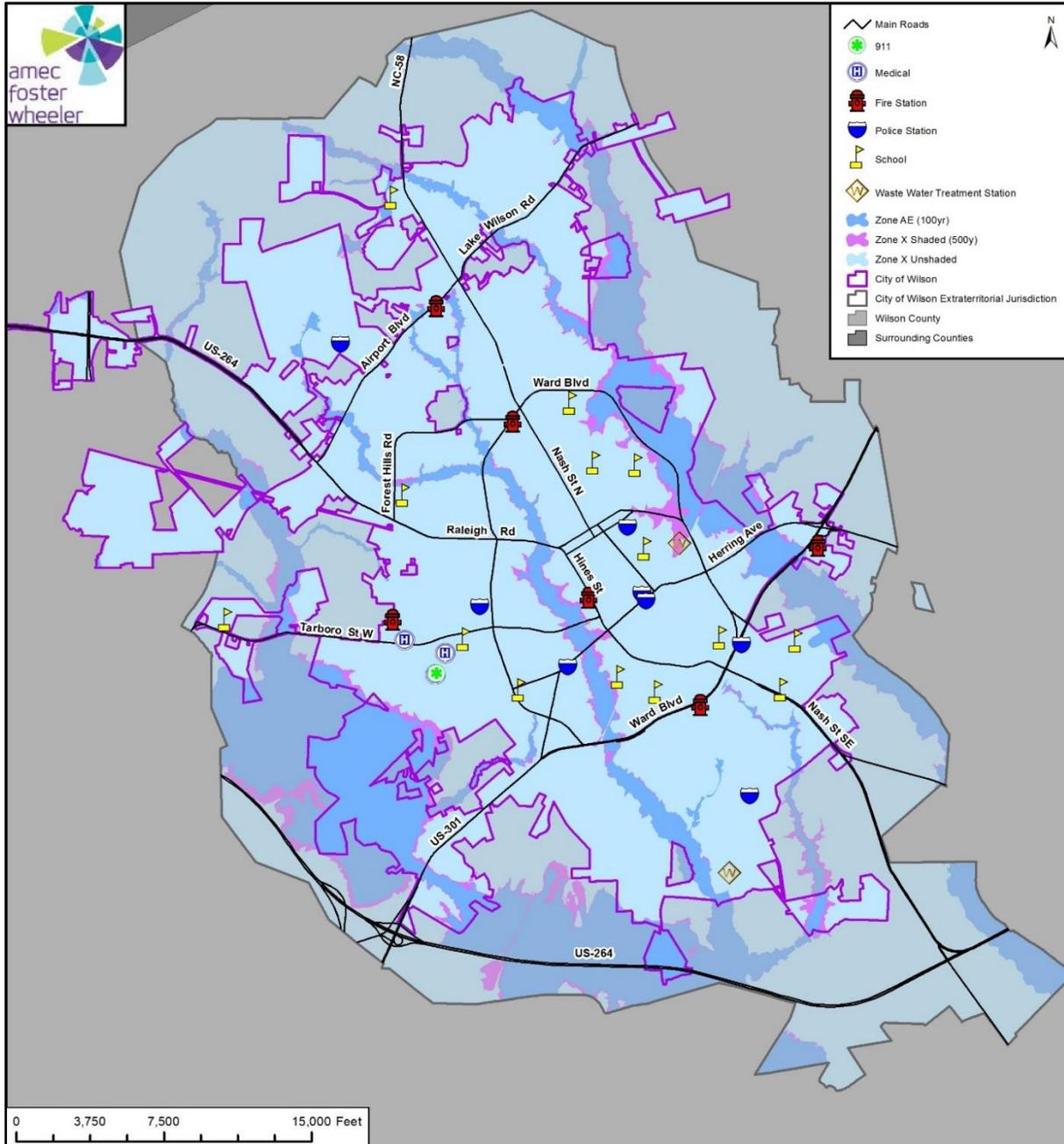
Table 3.18 - Wilson Population at Risk to Flood

Flood Zone	Residential Property Count	Population at Risk
Zone AE	829	2,064
Zone X (500-yr)	369	919
Zone X (unshaded)	365	909
Total	1,563	3,892

Source: Wilson 2015 Tax Assessor's Data, FEMA 2013 DFIRM, U.S. Census Bureau 5-year Community Survey (2009-2013)

Critical Facilities at Risk

A separate analysis was performed to determine critical facilities located in the 100- and 500-year floodplains. Using GIS, the DFIRM flood zones were overlaid on the critical facility location data. Figure 3.11 shows critical facilities and DFIRM flood zones. Table 3.19 details critical facilities by facility type and flood zone.



Source: City of Wilson, FEMA 2013 DFIRM

Figure 3.11 - Critical Facilities and FEMA Flood Zones

Table 3.19 - Critical Facilities by Flood Zone

Facility Name	Facility Type	Address/Coordinates	Flood Zone
Wilson County E-911	911	1817 Glendale Dr SW	Zone X Unshaded
Wilson County Rescue	EMS	1902 Tarboro St SW	Zone X Unshaded
Wilson EMS HQ	EMS	1817 Glendale Dr SW	Zone X Unshaded
Wilson FD Station 2	Fire	1807 Forest Hills Rd W	Zone X Unshaded
Wilson FD Station 4	Fire	109 Forest Hills Rd NW	Zone X Unshaded
Wilson FD Station 5	Fire	3530 Airport Blvd NW	Zone X Unshaded
Wilson FD Station 1	Fire	307 W Hines St	Zone X Unshaded
Wilson FD Station 3	Fire	6111 Ward Blvd	Zone X Unshaded
Wilson Medical Center	Hospital	1705 Tarboro St S	Zone X Unshaded
Wilson PD West District	Police	1501 Ward Blvd	Zone X Unshaded
Wilson PD North District Barton College	Police	200 A C College Dr NE	Zone X Unshaded
Wilson PD Central District	Police	1001 Goldsboro St S	Zone X Unshaded
Wilson PD Main	Police	120 Goldsboro St E	Zone X Unshaded
Wilson PD South District	Police	700 US 301 N	Zone X Unshaded
Wilson PD Annex	Police	2313 Stantonsburg Rd SE	Zone X Unshaded
East Nash Substation	RVFD	2237 Whitley Road E Ste A	Zone X Unshaded
New Hope Elementary	School	4826 Packhouse Rd	Zone X Unshaded
Fike High	School	500 Harrison Dr	Zone X Unshaded
Wells Elementary	School	1400 Grove St	Zone X Unshaded
Toisnot Middle	School	1301 Corbett Ave	Zone X Unshaded
Hearne Elementary	School	300 NE Gold St	Zone X Unshaded
Vick Elementary	School	504 N Carroll St	Zone X Unshaded
Adams Learning Center	School	639 Walnut St	Zone X Unshaded
Daniels Learning Center	School	723 Elvie St	Zone X Unshaded
Vinson-Bynum Elementary	School	1601 Tarboro St	Zone X Unshaded
Winstead Elementary	School	1713 Downing St	Zone X Unshaded
Forest Hills Middle	School	1210 Forest Hills Rd	Zone X Unshaded
Darden Middle	School	1665 Lipscomb Rd	Zone X Unshaded
Jones Elementary	School	4028 NC 42 W	Zone X Unshaded
Barnes Elementary	School	1913 Martin Luther King Jr. Pkwy SE	Zone X Unshaded
Sheriff's Dept	Sheriff	100 Green St E	Zone X Unshaded
Animal Enforcement	Sheriff	4001 Airport Dr NW	Zone X Unshaded

Source: City of Wilson, FEMA 2013 DFIRM

Future Development

A GIS analysis was performed to quantify parcels within potential future development areas that are located within a special flood hazard area.

Methodology

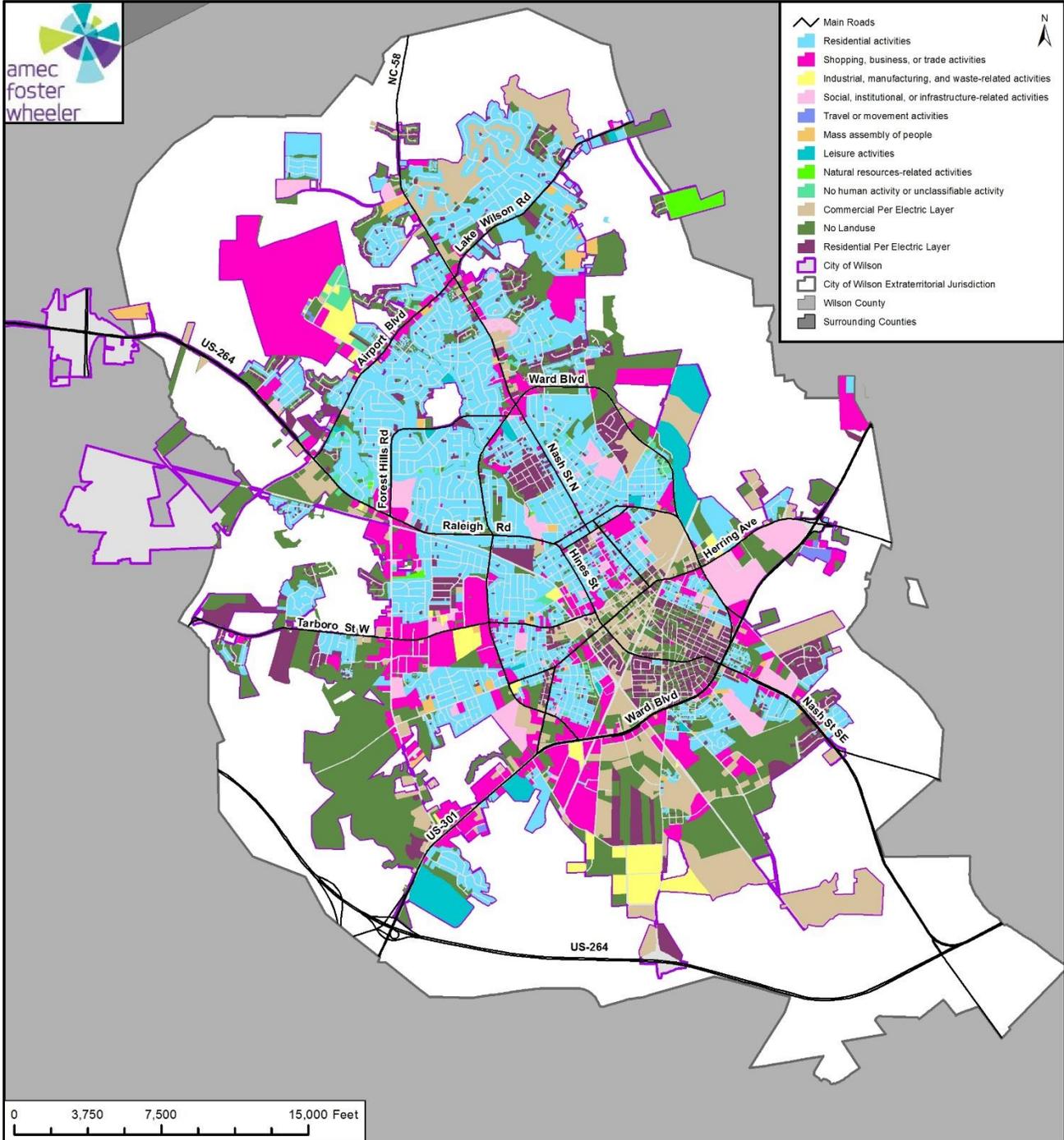
The 2015 Wilson parcel layer was used to identify potential areas of future development located within FEMA flood zones. Parcel counts by FEMA flood zone were determined using a spatial intersection of the tax parcels and the effective flood hazard area provided in the Wilson County DFIRM Database, effective 4/16/2013. In the event that a parcel was affected by multiple zones, the flood zone covering the majority of the parcel was assigned to the parcel. Table 3.20 delineates the future development areas by flood zone and land use. Figure 3.12 reflects the City’s future land use designations.

Table 3.20 - Future Land Use and FEMA Flood Zones

Future Land Use	Unimproved Parcel Count	Unimproved Acreage
Zone AE		
Residential activities	1	0
Shopping, business, or trade activities	3	1
Industrial, manufacturing, and waste-related activities	0	0
Social, institutional, or infrastructure-related activities	0	0
Travel or movement activities	0	0
Mass assembly of people	0	0
Leisure activities	0	0
Natural resources-related activities	0	0
No human activity or unclassifiable activity	2	0
Commercial Per Electric Layer	4	0
NOLANDUSE	230	474
Residential Per Electric Layer	10	0
Total	250	476
Zone X (500-yr)		
Residential activities	1	0
Shopping, business, or trade activities	1	12
Social, institutional, or infrastructure-related activities	0	0
Mass assembly of people	0	0
Leisure activities	0	0
No human activity or unclassifiable activity	0	0
Commercial Per Electric Layer	0	0
NOLANDUSE	24	132
Residential Per Electric Layer	2	0
Total	28	143
Zone X (Unshaded)		
Residential activities	20	3
Shopping, business, or trade activities	14	13
Industrial, manufacturing, and waste-related activities	0	0
Social, institutional, or infrastructure-related activities	4	9
Travel or movement activities	0	0
Mass assembly of people	1	0
Leisure activities	1	0
Natural resources-related activities	0	0
No human activity or unclassifiable activity	0	0
Commercial Per Electric Layer	23	51

Future Land Use	Unimproved Parcel Count	Unimproved Acreage
NOLANDUSE	704	996
Residential Per Electric Layer	27	46
Total	794	1,117

Source: Wilson 2014 Tax Assessor's Data, FEMA 2013 DFIRM



Source: City of Wilson

Figure 3.12 - City of Wilson Future Land Use

Flood Insurance Analysis

One valuable source of information on flood hazards is current flood insurance data for active policies and past claims. Flood insurance is required as a condition of federal aid or a mortgage or loan that is federally insured for a building located in a FEMA flood zone.

The City of Wilson has been a Regular participant in the NFIP since July 1982. Wilson has achieved a Class 6 flood insurance rating through participation in the NFIP's Community Rating System which rewards all policyholders in the City with a 20 percent reduction in their flood insurance premiums. Tables 3.21 through 3.24 reflect NFIP policy and claims data for the City categorized by structure type, flood zone, Pre-FIRM and Post-FIRM.

Table 3.21 - NFIP Policy and Claims Data by Occupancy Type – City of Wilson

Occupancy	Number of Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Single Family	407	\$248,583	\$83,749,700	161	\$3,075,601
2-4 Family	25	\$15,304	\$3,667,800	21	\$654,913
All Other Residential	14	\$11,516	\$3,191,700	6	\$258,586
Non-Residential	77	\$189,417	\$25,515,400	49	\$1,324,554
Total	523	\$464,820	\$116,124,600	237	\$5,313,654

Source: FEMA Community Information System as of 02/28/2015

Table 3.22 - NFIP Policy and Claims Data by Flood Zone – City of Wilson

Flood Zone	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Total of Closed Paid Losses
A01-30 & AE Zones	311	\$340,679	\$60,909,100	142	\$3,716,157
A Zones	1	\$1,078	\$151,300	4	\$25,322
AO Zones	0	\$0	\$0	0	\$0
AH Zones	0	\$0	\$0	0	\$0
AR Zones	0	\$0	\$0	0	\$0
A99 Zones	0	\$0	\$0	0	\$0
V01-30 & VE Zones	0	\$0	\$0	0	\$0
V Zones	0	\$0	\$0	0	\$0
D Zones	0	\$0	\$0	0	\$0
B, C & X Zone					
Standard	33	\$30,853	\$4,689,200	44	\$1,234,611
Preferred	178	\$92,210	\$50,375,000	34	\$298,196
Total	523	\$464,820	\$116,124,600	224	\$5,274,286

Source: FEMA Community Information System as of 02/28/2015

Table 3.23 - NFIP Policy and Claims Data Pre-FIRM – City of Wilson

Flood Zone	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Total of Closed Paid Losses
A01-30 & AE Zones	164	\$230,504	\$31,067,300	117	\$3,194,396
A Zones	1	\$1,078	\$151,300	4	\$25,322
AO Zones	0	\$0	\$0	0	\$0
AH Zones	0	\$0	\$0	0	\$0
AR Zones	0	\$0	\$0	0	\$0
A99 Zones	0	\$0	\$0	0	\$0
V01-30 & VE Zones	0	\$0	\$0	0	\$0
V Zones	0	\$0	\$0	0	\$0
D Zones	0	\$0	\$0	0	\$0
B, C & X Zone					
Standard	19	\$18,435	\$2,860,900	41	\$1,206,330
Preferred	81	\$47,917	\$24,248,000	26	\$247,934
Total	265	\$297,934	\$58,327,500	188	\$4,673,982

Source: FEMA Community Information System as of 02/28/2015

Table 3.24 - NFIP Policy and Claims Data Post-FIRM – City of Wilson

Flood Zone	Number of Policies in Force	Total Premium	Total Coverage	Number of Closed Paid Losses	Total of Closed Paid Losses
A01-30 & AE Zones	147	\$110,175	\$29,841,800	25	\$521,762
A Zones	0	\$0	\$0	0	\$0
AO Zones	0	\$0	\$0	0	\$0
AH Zones	0	\$0	\$0	0	\$0
AR Zones	0	\$0	\$0	0	\$0
A99 Zones	0	\$0	\$0	0	\$0
V01-30 & VE Zones	0	\$0	\$0	0	\$0
V Zones	0	\$0	\$0	0	\$0
D Zones	0	\$0	\$0	0	\$0
B, C & X Zone					
Standard	14	\$12,418	\$1,828,300	3	\$28,280
Preferred	97	\$44,293	\$26,127,000	8	\$50,262
Total	258	\$166,886	\$57,797,100	36	\$600,304

Source: FEMA Community Information System as of 02/28/2015

Repetitive Loss Analysis

A repetitive loss property is a property for which two or more flood insurance claims of more than \$1,000 have been paid by the NFIP within any 10-year period since 1978. An analysis of repetitive loss was completed by the City to examine repetitive loss properties against FEMA flood zones.

Methodology

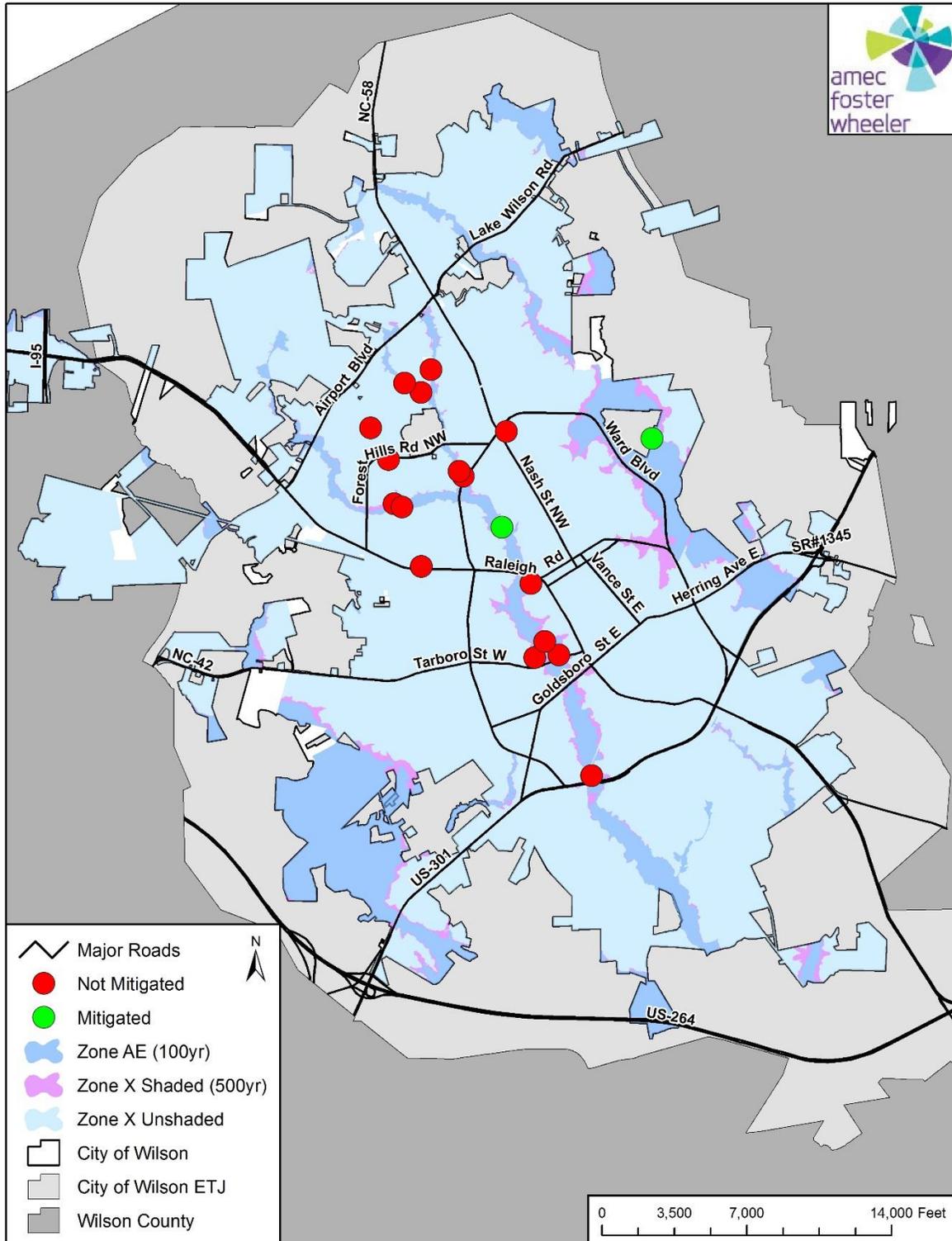
According to 2015 NFIP records, there are a total of two mitigated and 16 unmitigated repetitive loss properties within the City of Wilson. Three of the properties are classified as severe repetitive loss. Table 3.25 details repetitive loss building counts, FEMA flood zones and total payment for the unmitigated properties.

Table 3.25 – Unmitigated Repetitive Loss Summary – City of Wilson

Flood Zone	Building Count		Total Building Payment	Total Content Payment	Total Paid
	Insured	Uninsured			
AE	7	6	\$591,371	\$283,326	\$874,697
X (Unshaded)	1	4	\$36,955	\$208,872	\$245,827
Total	8	10	\$628,326	\$492,198	\$1,120,524

Source: NFIP Repetitive Loss Data, February 2015

Figure 3.13 illustrates the location of unmitigated repetitive loss properties in relation to mapped FEMA flood zones within the City.



Source: NFIP Repetitive Loss Data, February 2015; FEMA DFIRM, 4/16/13

Figure 3.13 – City of Wilson Repetitive Loss Properties and FEMA Flood Zones



3.3.3 Flood: Stormwater/Localized Flooding Vulnerability Assessment

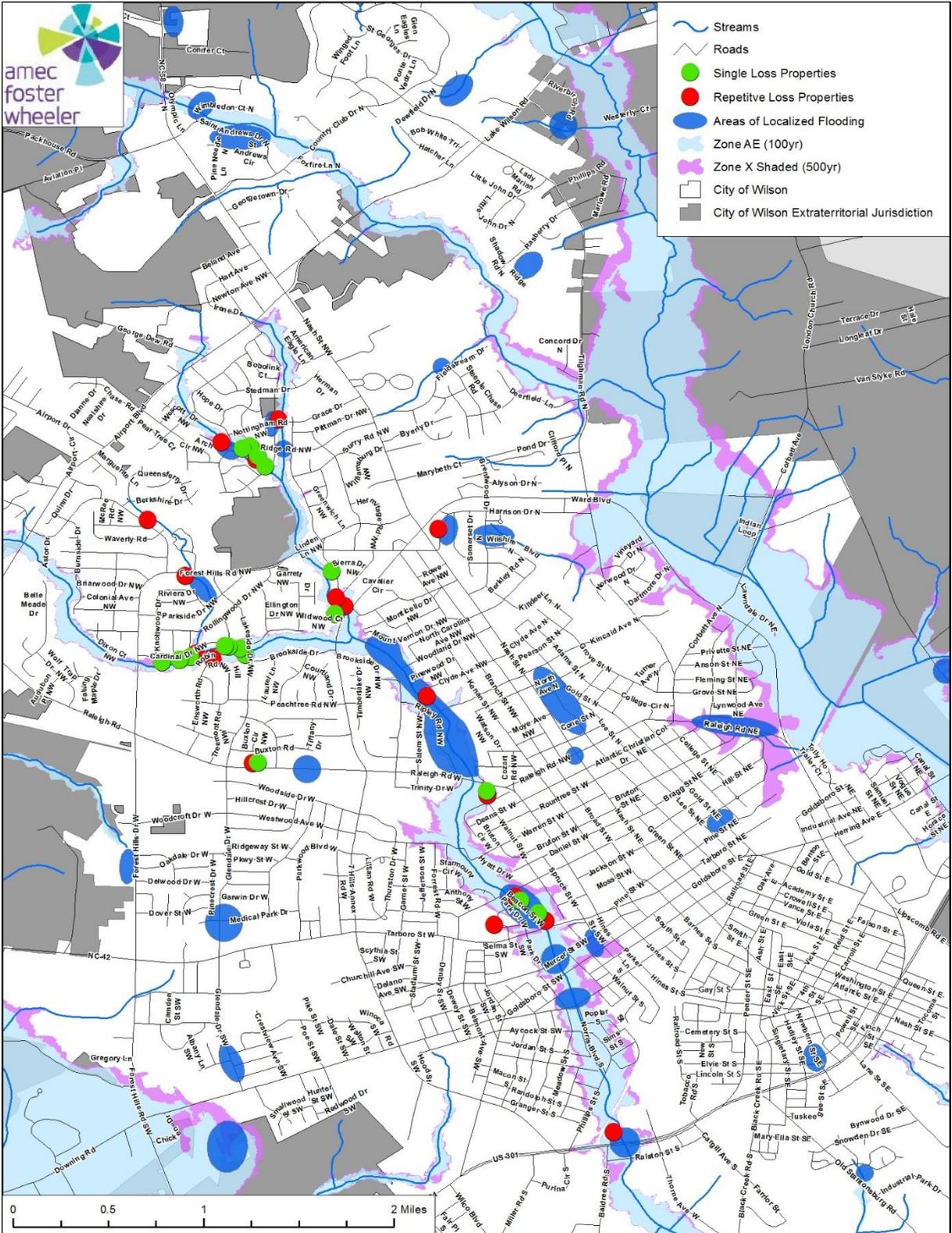
Likelihood of Future Occurrence—Highly Likely

Vulnerability—Medium

Localized flooding occurs at various times throughout the year with several areas of primary concern to the City. Localized flooding and ponding affect streets and property. Figure 3.14 below shows localized flooding locations, repetitive loss areas and FEMA flood zones.

Future Development

The risk of localized flooding to future development can be minimized by accurate recordkeeping of repetitive localized storm activity and an evaluation of regional drainage issues. Mitigating the root causes of the localized flooding or choosing not to develop in areas that often are subject to localized flooding will reduce future risks of losses due to this hazard.



Source: City of Wilson, FEMA 2013 DFIRM

Figure 3.14- Localized Flooding Locations, Repetitive Loss Areas and FEMA Flood Zones

3.3.4 Dam/Levee Failure Vulnerability Assessment

Likelihood of Future Occurrence—Unlikely
Vulnerability—Low

Given the current dam inventory and historic data, a dam breach is unlikely (less than 1 percent annual probability) in the future. However, regular monitoring is necessary to prevent these events and they can occur.

As noted in Section 3.2.4, there is one high hazard dam (Lake Wilson) with the potential to affect the City of Wilson in the event of a dam failure. Lake Wilson’s dam height is 19.7 feet based on the NC Dam Safety database. In the unlikely event that the dam would fail, it is estimated that a flood wave with a maximum height of 9 feet would be generated. This flood height ranges from 25-50% less than the 10% annual chance flood (10-year recurrence interval) elevations developed by the NC Floodplain Mapping Program for this reach of Toisnot Swamp. Given the unpredictable nature of dam failure, the estimated number of impacted buildings and resultant damages utilized the more conservative 10% annual chance flood (10-year recurrence interval).

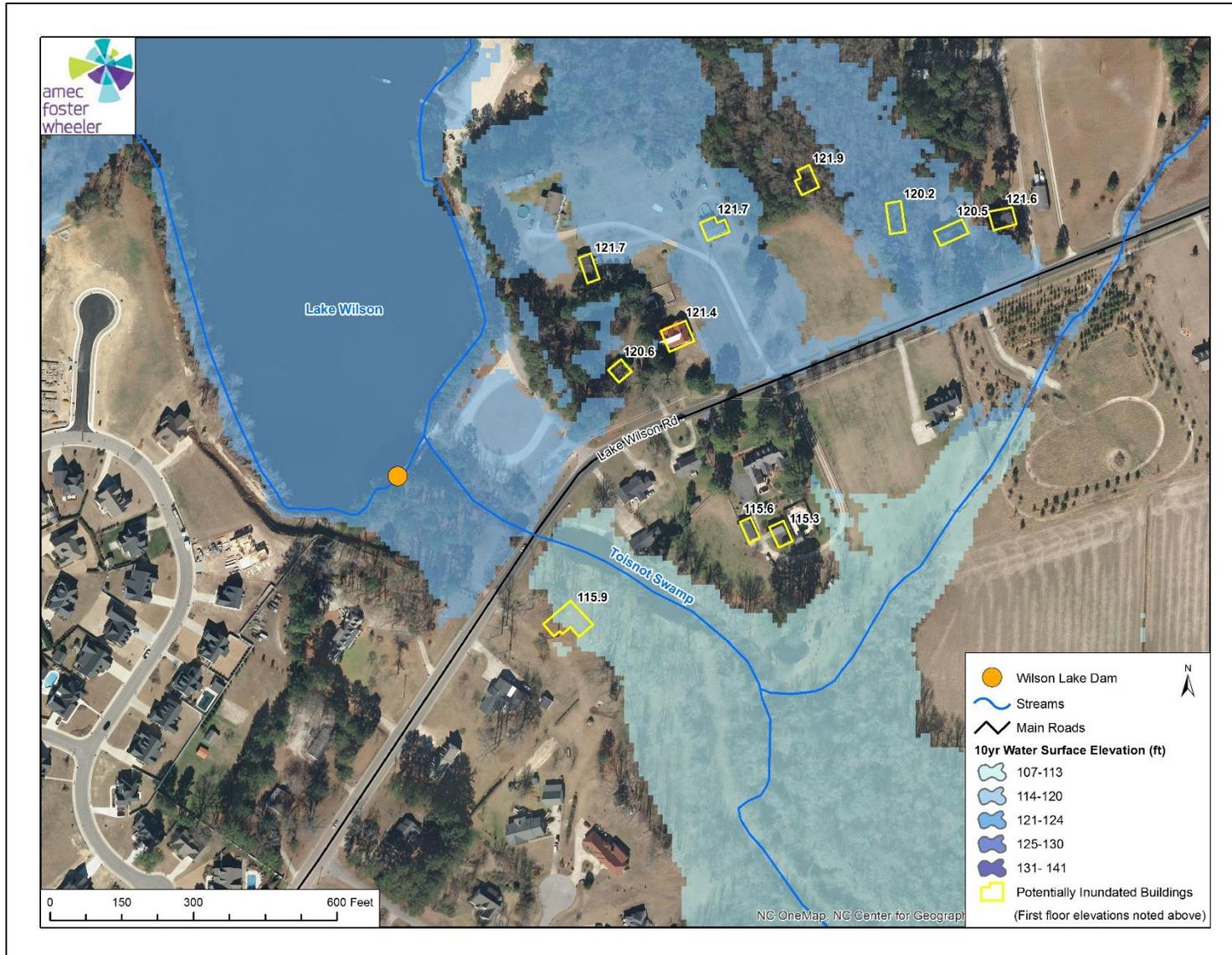
The estimated number and characteristics of buildings that could potentially be impacted by a failure of Lake Wilson Dam are shown in Table 3.26. Figure 3.15 shows the potential inundation area for a dam failure at Lake Wilson based on the 10-yr water surface elevation and first-floor elevations of the surrounding structures. **Note: the numbers presented in Table 3.26 and the inundation area shown in Figure 3.15 are estimated based on the methodology described above. A dam inundation study including a hydrologic and hydraulic analysis was not performed.**

Table 3.26 - Properties Potentially at Risk to Lake Wilson Dam Failure

Occupancy Type	Total Number of Buildings in Estimated Inundation Area	Total Building Value	Estimated Content Value	Total Value	Estimated Total Damage (10-yr recurrence interval)	Loss Ratio
Residential	11	\$999,388	\$502,192	\$1,501,580	\$27,369	1.8%

Source: North Carolina Emergency Management, Risk Management, 2013

Citizens displaced from their homes due to a dam failure may require accommodations in temporary emergency shelters. An estimated 11 households may be displaced in the event of a Lake Wilson dam failure. Using the 2009-2013 U.S. Census household factor for the City of Wilson (2.49), an estimated 28 people could seek shelter.



Source: North Carolina Emergency Management, Risk Management, 2013

Figure 3.15- Potential Inundation Map for Lake Wilson Dam

3.4 Capability Assessment

Table 3.27 lists regulatory mitigation capabilities, including planning and land management tools, typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in the City of Wilson.

Table 3.27 - Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Y/N	Date	Comments
Comprehensive Plan	Y	2010	Comprehensive Plan 2030
Zoning Ordinance	Y	2013	City of Wilson Unified Development Ordinance (UDO)
Subdivision Ordinance	Y	2013	City of Wilson UDO
Floodplain Ordinance	Y	2013	City of Wilson UDO
Stormwater Ordinance	Y	2013	City of Wilson UDO
Erosion, Sedimentation and Pollution Control Ordinance	Y	2013	City of Wilson UDO, City Code
Building Code	Y	2015	State of NC Building Code
BCEGS Rating	Y	2009	4 – Residential, 4 - Commercial
Stormwater Management Program	Y	2013	City of Wilson Manual of Specifications, Standards & design (MSSD), UDO, City Code Chap. 46 Article I & II
Site Plan Review Requirements	Y		Per Section 10.E.1 of the Zoning Ordinance
Capital Improvements Plan	Y	2015-2019	
Local Emergency Operations Plan	Y	2012	Wilson County Emergency Operations Plan
Flood Insurance Study or Other Engineering Study for Streams	Y	April 2013	FEMA Flood Insurance Study
Repetitive Loss Plan	Y	2015	Repetitive Loss Area Analysis
Elevation Certificates	Y		

3.4.1 Administrative/Technical Mitigation Capabilities

Table 3.28 identifies personnel responsible for activities related to mitigation and loss prevention in the City of Wilson.

Table 3.28 - Administrative/Technical Capabilities

Resource	Y/N	Responsible Department
Planner/Engineer with knowledge of land development/land management practices	Y	City of Wilson Planning & Development
Engineer/Professional trained in construction practices related to buildings and/or infrastructure	Y	City of Wilson Engineering Services
Planner/Engineer/Scientist with an understanding of natural hazards	Y	City of Wilson Planning & Development
Personnel skilled in GIS	Y	City of Wilson Planning & Development
Full time building official	Y	City of Wilson Planning & Development
Floodplain Manager	Y	City of Wilson Engineering Services
Emergency Manager	Y	City of Wilson Fire & Rescue Services
Grant writer	Y	City of Wilson Planning & Development
GIS data – Hazard areas	Y	City of Wilson Planning & Development
GIS data – Critical facilities	Y	City of Wilson Planning & Development

Resource	Y/N	Responsible Department
GIS data – Land use	Y	City of Wilson Planning & Development
GIS data – Building footprints	Y	City of Wilson Planning & Development
GIS data – Links to Assessor’s data	Y	City of Wilson Planning & Development
Warning Systems/Services (CTY System)	Y	City of Wilson Fire & Rescue Services

3.4.2 Fiscal Mitigation Capabilities

Table 3.29 identifies financial tools or resources that the City could potentially use to help fund mitigation activities.

Table 3.29 - Fiscal Mitigation Capabilities

Resource	Accessible/Eligible to Use (Y/N)
Community Development Block Grants	Y
Capital improvements project funding	Y
Authority to levy taxes for specific purposes	Y
Fees for water, sewer, gas or electric services	Y
Impact fees for new development	N
Incur debt through general obligation bonds	Y
Incur debt through special tax bonds	Y
Incur debt through private activity bonds	Y

4 MITIGATION STRATEGY

Requirement §201.6(c)(3): [The plan shall include] a mitigation strategy that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section describes the mitigation strategy process and mitigation action plan for the City of Wilson Floodplain Management Plan. It describes how the City met the following requirements from the 10-step planning process:

- Planning Step 6: Set Goals
- Planning Step 7: Review Possible Activities
- Planning Step 8: Draft an Action Plan

4.1 Mitigation Strategy: Overview

The results of the planning process, the risk assessment, the goal setting, and the identification of mitigation actions led to the mitigation strategy and mitigation action plan for this FMP. Section 4.2 below identifies the goals and objectives of this plan and Section 4.4 details the new mitigation action plan. The following umbrella mitigation strategy was developed for this FMP:

Communicate the hazard information collected and analyzed through this planning process as well as FMPC success stories so that the community better understands what can happen where and what they themselves can do to be better prepared.

Implement the action plan recommendations of this plan.

Use existing rules, regulations, policies, and procedures already in existence.

Monitor multi-objective management opportunities so that funding opportunities may be shared and packaged and broader constituent support may be garnered.

4.1.1 Continued Compliance with the NFIP

Given the flood hazards in the planning area, an emphasis will be placed on continued compliance with the NFIP and participation in the CRS. The City meets or exceeds the following minimum requirements as set by the NFIP:

- Issuing or denying floodplain development/building permits
- Inspecting all development to assure compliance with the local ordinance
- Maintaining records of floodplain development
- Assisting in the preparation and revision of floodplain maps
- Helping residents obtain information on flood hazards, floodplain map data, flood insurance and proper construction measures

The City's Development Services Department is responsible for the review and approval of all development applications to the City. The Department also coordinates the issuance of the Certificate of Occupancy for all new or renovated building construction. Once a development begins actual construction, there are a number of periodic on-site inspections performed by trained inspection staff to ensure compliance before the construction can proceed toward completion. The Development Services Department also maintains the record of all map revisions and changes received from FEMA. As a part of the services offered to the public, the Development Services Department provides FEMA floodplain mapping information, flood insurance program information, flooding hazards, and proper construction methods within the special flood hazard area.

The CRS was created in 1990. It is designed to recognize floodplain management activities that are above and beyond the NFIP's minimum requirements. The City of Wilson is currently classified as a Class 6 community, which gives a 20% premium discount to individuals in the Special Flood Hazard Area, and a 10% discount to policyholders outside the Special Flood Hazard Area. The following is a summary of the CRS Activities for which the City of Wilson currently receives credit based on the 2010 verification report:

Activity 310 – Elevation Certificates: The Building Department maintains elevation certificates for new and substantially improved buildings. Elevation certificates are also kept for post-FIRM buildings. Copies of elevation certificates are made available upon request.

Activity 320 – Map Information Service: Credit is provided for furnishing inquirers with flood zone information from the community's latest FIRM, publicizing the service annually and maintaining records.

Activity 330 – Outreach Projects: A community brochure is mailed to all properties in the SFHA on an annual basis. The community also provides flood information through displays in public buildings.

Activity 340 – Hazard Disclosure: Credit is provided for state and community regulations requiring disclosure of flood hazards.

Activity 350 – Flood Protection Information: Documents relating to floodplain management are available in the Wilson County Public Library. Credit is also provided for floodplain information displayed on the community's website.

Activity 410 – Additional Flood Data: Credit is provided for a cooperating technical partnership agreement with FEMA.

Activity 420 – Open Space Preservation: Credit is provided for preserving approximately 240 acres in the SFHA as open space. Credit is also provided for open space land that is deed restricted.

Activity 430 – Higher Regulatory Standards: Credit is provided for enforcing regulations that require freeboard for new and substantial improvement construction, protection of natural and beneficial functions, land development criteria and state mandated regulatory standards. Credit is also provided for a Building Code Effectiveness Grading Schedule (BCEGS) Classification of 4/4 and for staff education and certification as a floodplain manager.

Activity 440 – Flood Data Maintenance: Credit is provided for maintaining and using GIS maps in the day to day management of the floodplain.

Activity 450 – Stormwater Management: The community enforces regulations for soil and erosion control and water quality.

Activity 510 – Floodplain Management Planning: Based on the updates made to the NFIP Report of Repetitive Losses as of August 31, 2009, the City of Wilson has 14 repetitive loss properties and is a Category C community for CRS purposes. All requirements for the 2010 cycle have been met. Credit is provided for the adoption and implementation of the Floodplain Management Plan/Hazard Mitigation. Since the City of Wilson is a Category C community with an approved Floodplain Management Plan/Hazard Mitigation Plan, a progress report must be submitted on an annual basis.

Activity 520 – Acquisition and Relocation: Credit is provided for acquiring and relocating buildings from the community's flood hazard area.

Activity 540 – Drainage System Maintenance: A portion of the community's drainage system is inspected regularly throughout the year and maintenance is performed as needed by City of Wilson Stormwater Division. Records are being maintained for both inspections and required maintenance. The community also enforces a regulation prohibiting dumping in the drainage system.

Activity 630 – Dam Safety: All North Carolina communities currently receive CRS credit for the State's dam safety program.

4.2 Goals and Objectives

Requirement §201.6(c)(3)(i): [The mitigation strategy section shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Section 3.0 documents the flood hazards and associated risks that threaten the City of Wilson including the vulnerability to structures, infrastructure, and critical facilities. Section 3.4 evaluates the capacity of the City to reduce the impact of those hazards. The intent of Goal Setting is to identify areas where improvements to existing capabilities (policies and programs) can be made so that community vulnerability is reduced. Goals are also necessary to guide the review of possible mitigation measures. This Plan needs to make sure that recommended actions are consistent with what is appropriate for the City. Mitigation goals need to reflect community priorities and should be consistent with other plans in the City.

Goals are general guidelines that explain what is to be achieved. They are usually broad-based policy type statements, long term and represent global visions. Goals help define the benefits that the plan is trying to achieve.

Objectives are short term aims, when combined, form a strategy or course of action to meet a goal. Unlike goals, objectives are specific and measurable.

4.2.1 Coordination with Other Planning Efforts

The goals of this plan need to be consistent with and complement the goals of other planning efforts. The primary planning document where the goals of this Plan must complement and be consistent with is the City of Wilson Comprehensive Plan. The Comprehensive Plan is important as it is developed and designed to guide future growth within the community. Therefore, there should be some consistency in the overall goals and how they relate to each other. Likewise, the goals of the County's Hazard Mitigation Plan play an important role as it also focuses on flood hazards and mitigation projects.

4.2.2 Goal Setting Exercise

On May 12, 2015, the FMPC conducted an exercise to outline goals for this Floodplain Management Plan. The first part of the exercise involved asking each committee member: *"What would you most like to see in Wilson's future?"* Each member was given a handout which appears in Figure 4.1.

Committee members discussed their choices with the larger committee membership. There was some consistency in the members' topics. The committee members' discussion topics are listed below:

- Educate children
- Improved/more open space
- New development confined to areas already developed

A second exercise was then conducted to recommend mitigation goals. Each member was given the hand out that appears in Figure 4.2 which asks *"What should be the goals of the mitigation program?"* Committee members again discussed their choices with the larger committee membership. The resulting goals are listed below:

- Help people protect themselves
- Make sure future development doesn't make things worse

- Minimize public expenditures
- Protect repetitively flooded areas
- Use public/private partnerships
- Acquire and preserve floodplains as open space
- Educate realtors
- Educate homebuilders
- Educate children
- Provide citizens with flood insurance information
- Team Department of Insurance and realtors for education/training

The goal statements selected by committee members were in line with what they wanted to see in Wilson’s future. The exercise revealed important information to guide the planning effort. For example, members stressed the importance of protecting lives and property, even though improving the economy and increasing the number of jobs was an important part of their vision for the future.

4.2.3 Resulting Goals and Objectives

At the end of the exercises, the FMPC agreed upon four general goals for this planning effort. The FMPC also included objectives in support of the goals. The refined goals and objectives include:

Goal 1 - Protect health and safety.

Objective 1.1: Advise the community of the safety and health precautions to implement before, during, and after a flood.

Objective 1.2: Publish the names of roads and intersections which often flood after heavy rain events or major storms.

Objective 1.3: Educate everyone on the benefits of improved water quality and associated habitat.

Objective 1.4: Identify the location of vulnerable populations to aid in emergency evacuations.

Goal 2 - Reduce flood damage through flood resilient strategies and measures.

Objective 2.1: Prioritize capital improvement projects to address areas where poor drainage causes substantial flooding.

Objective 2.2: Encourage development outside of the special flood hazard area (1% annual chance flood).

Objective 2.3: Use the most effective approaches to protect buildings from flood damage, including elevation, acquisition, and other retrofitting techniques where appropriate.

Objective 2.4: Encourage property owners to assume an appropriate level of responsibilities for their own protection, including the purchase of flood insurance.

Goal 3 – Reduce damage to insurable buildings in repetitively flooded areas.

Objective 3.1: Prioritize stormwater management projects that target repetitive loss areas.

Objective 3.2: Develop a property buyout master plan to identify and purchase repetitive loss properties.

Objective 3.3: Recommend purchasing renter’s insurance and use of the Increased Cost of Compliance (ICC) provision to mitigate flood damage.

Goal 4 - Protect critical and essential facilities from flood damage.

Objective 4.1: Prioritize critical and essential facilities in need of protection from flood damage.

Objective 4.2: Provide 100- and 500-year flood protection for dry land access, where appropriate.

Objective 4.3: Leverage public funding to protect critical and essential facilities.

Goals Exercise – Part 1

What would you most like to see in Wilson’s future?

Here are possible answers to this question, listed in alphabetical order. Pick three that you think are most important. You may reword them or add new ones if you want.

- Educated children
- Improved air quality
- Improved water quality
- Less new development
- Less traffic congestion
- Improved/more businesses
- Improved/more cultural facilities
- Improved/more housing
- Improved/more public transportation
- Improved/more job opportunities
- Improved/more knowledgeable residents
- Improved/more open space
- Improved/more shopping
- New development confined to areas already developed
- Preserved historical/cultural sites
- Special attention given to elderly/disabled
- Special attention given to lower income areas
- Special attention given to newer shopping areas
- Special attention given to older business areas
- Younger people staying/moving into the area
- Other _____

Figure 4.1 - Handout for Goals Exercise – Part 1

Goals Exercise – Part 2

What should be the goals of our mitigation program?

Here are possible answers to this question, listed in alphabetical order. Pick three that you think are most important. You may reword them or add new ones if you want.

- Help people protect themselves
- Make sure future development doesn't make things worse
- Maximize the share paid by benefiting property owners
- Maximize use of state and federal funds
- Minimize property owner's expenditures
- Minimize public expenditures
- New developments should pay the full cost of protection measures
- Protect businesses from damage
- Protect cars and other vehicles
- Protect centers of employment
- Protect critical facilities
- Protect forests
- Protect homes
- Protect new/future buildings
- Protect people's lives
- Protect power stations and power lines
- Protect public health
- Protect public services (fire, police, etc.)
- Protect repetitively flooded areas
- Protect scenic areas, greenways, etc.
- Protect schools
- Protect shopping areas
- Protect streets
- Protect utilities (power, phone, water, sewer, etc.)
- Protect wetlands/environmentally sensitive areas
- Protect a particular area_____
- Protect a particular property_____
- Restrict development in hazardous areas
- Use public/private partnerships
- Other_____

Figure 4.2 - Handout for Goals Exercise – Part 2

4.3 Identification and Analysis of Mitigation Activities

Requirement §201.6(c)(3)(ii): [The mitigation strategy section shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

In order to identify and select mitigation projects to support the mitigation goals, each hazard identified in Section 3.1 Hazard Identification was evaluated. The following were determined to be priority flood-related hazards:

- Flood: 100-/500-year
- Flood: Stormwater/ Localized Flooding
- Dam/Levee Failure

Once it was determined which flood hazards warranted the development of specific mitigation actions, the FMPC analyzed viable mitigation options that supported the identified goals and objectives. The FMPC was provided with the following list of mitigation categories which are utilized as part of the CRS planning process.

- Prevention (Required to be evaluated)
- Property Protection
- Natural Resource Protection
- Emergency Services
- Structural Projects
- Public Information and Outreach

The FMPC was also provided with examples of potential mitigation actions for each of the above categories. The FMPC was instructed to consider both future and existing buildings in evaluating possible mitigation actions. A facilitated discussion then took place to examine and analyze the options. Appendix B, Mitigation Strategy, provides a detailed discussion organized by CRS mitigation category of possible mitigation alternatives to assist the City in the review and identification of possible mitigation activities. This comprehensive review of possible mitigation activities details why some were appropriate for implementation and why others were not. As promoted by CRS, Prevention type mitigation alternatives were discussed for the flood hazards. This discussion was followed by a brainstorming session that generated a list of preferred mitigation actions by hazard.

4.3.1 Prioritization Process

Once the mitigation actions were identified, the FMPC was provided with several decision-making tools, including FEMA's recommended prioritization criteria, STAPLEE sustainable disaster recovery criteria; Smart Growth principles; and others, to assist in deciding why one recommended action might be more important, more effective, or more likely to be implemented than another. STAPLEE stands for the following:

- Social: Does the measure treat people fairly? (e.g. different groups, different generations)

- Technical: Is the action technically feasible? Does it solve the problem?
- Administrative: Are there adequate staffing, funding and other capabilities to implement the project?
- Political: Who are the stakeholders? Will there be adequate political and public support for the project?
- Legal: Does the jurisdiction have the legal authority to implement the action? Is it legal?
- Economic: Is the action cost-beneficial? Is there funding available? Will the action contribute to the local economy?
- Environmental: Does the action comply with environmental regulations? Will there be negative environmental consequences from the action?

In accordance with the DMA requirements, an emphasis was placed on the importance of a benefit-cost analysis in determining action priority. It was agreed that the following four criteria would be used to determine the priority of the action items:

- Contribution of the action to save life or property
- Availability of funding and perceived cost-effectiveness
- Available resources for implementation
- Ability of the action to address the problem

With these criteria in mind, FMPC members were asked to prioritize each mitigation project based on whether the project should be considered a short term, medium range or long range priority. The priority time frames for project implementation were determined to be as follows:

- Short Range** = Project should be completed in less than one year
- Medium Range** = Project should be completed in two to three years
- Long Range** = Project should be completed in more than four years

The process of identification and analysis of mitigation alternatives allowed the FMPC to come to consensus and to prioritize recommended mitigation actions. The FMPC discussed the contribution of the action to saving lives or property as first and foremost, with additional consideration given to the benefit-cost aspect of a project; however, this was not a quantitative analysis. The team agreed that prioritizing the actions collectively enabled the actions to be ranked in order of relative importance and helped steer the development of additional actions that meet the more important objectives while eliminating some of the actions which did not garner much support. Benefit-cost was also considered in greater detail in the development of the Mitigation Action Plan detailed below in Section 4.4. The cost-effectiveness of any mitigation alternative will be considered in greater detail through performing benefit-cost project analyses when seeking FEMA mitigation grant funding for eligible actions associated with this plan.

4.4 Mitigation Action Plan

Requirement §201.6(c)(3)(iii): [The mitigation strategy section shall include an] action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

This action plan was developed to present the recommendations developed by the FMPC for how the City of Wilson can reduce the risk and vulnerability of people, property, infrastructure, and natural and cultural resources to future disaster losses. Emphasis was placed on both future and existing development. The action plan summarizes who is responsible for implementing each of the prioritized actions as well as when and how the actions will be implemented. Each action summary also includes a discussion of the benefit-cost review conducted to meet the regulatory requirements of the Disaster Mitigation Act. Table 4.1 identifies the mitigation actions.

It is important to note that the City of Wilson has many existing, detailed action descriptions, which include benefit-cost estimates, in other planning documents, such as, stormwater plans, and capital improvement budgets and reports. These actions are considered to be part of this plan, and the details, to avoid duplication, should be referenced in their original source document. The FMPC also realizes that new needs and priorities may arise as a result of a disaster or other circumstances and reserves the right to support new actions, as necessary, as long as they conform to the overall goals of this plan.

Further, it should be clarified that the actions included in this mitigation strategy are subject to further review and refinement; alternatives analyses; and reprioritization due to funding availability and/or other criteria. The City is not obligated by this document to implement any or all of these projects. Rather this mitigation strategy represents the desires of the community to mitigate the risks and vulnerabilities from identified hazards. The actual selection, prioritization, and implementation of these actions will also be further evaluated in accordance with the CRS mitigation categories and criteria contained in Appendix B.

Table 4.1 - Summary of City of Wilson Mitigation Actions

ID	Action	Related to Goal	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Category
1	The City will continue on an annual basis to target all properties in the SFHA reminding them of the advantages to maintaining flood insurance through its annual outreach effort.	1, 2	✓	✓	✓	Property Protection, Public Information and Outreach
2	The City will increase its outreach efforts on an annual basis for properties located in the SFHA to educate property owners that they should not store personal property in basements and crawl spaces	1, 2	✓		✓	Property Protection, Public Information and Outreach
3	The City will promote effective flood protection measures and provide advice and assistance to property owners who may wish to implement such measures in an on-going program.	1, 2	✓	✓	✓	Property Protection, Public Information and Outreach
4	The City will continue acquisition/demolition mitigation of high-risk flood-prone properties (including repetitive loss properties). The highest priorities are properties at the greatest flood risk and where drainage improvements will not provide an adequate level of protection.	2, 3	✓			Prevention, Property Protection
5	The City will prioritize CIP projects to focus on drainage improvement projects in those basins containing repetitive loss areas.	2, 3	✓	✓		Structural Projects
6	The City will encourage property owners to elevate inside and outside mechanical equipment above the BFE and install flood resistant materials in crawl spaces.	1, 2	✓	✓		Property Protection, Public Information and Outreach

ID	Action	Related to Goal	Address Current Development	Address Future Development	Continued Compliance with NFIP	Mitigation Category
7	The City's Planning & Development Services Department will encourage renters to purchase rental insurance for their contents.	1, 2	✓		✓	Public Information and Outreach
8	The City will construct a new stormwater retention pond in Merrimont Park.	2, 3	✓	✓		Natural Resource Protection, Structural Projects
9	The City will complete the conceptual plan for the Hominy Creek Water Quality Park and Greenway.	2,3	✓	✓		Prevention, Natural Resource Protection, Structural Projects
10	The City will prepare an Emergency Action Plan for Lake Wilson Dam.	1, 2	✓	✓		Emergency Services
11	The City will develop a Program for Public Information (PPI).	1,2	✓	✓		Public Information and Outreach
12	The City will develop a Repetitive Loss Area Analysis (RLAA).	2,3	✓	✓	✓	Property Protection, Public Information and Outreach
13	Coordinate with Wilson County Emergency Management to protect vulnerable critical facilities and to identify vulnerable populations for emergency evacuation purposes.	2,4	✓			Emergency Services

4.5 Detailed Mitigation Actions

1. **Property owners should obtain and keep a flood insurance policy on their structures (building and contents coverage). The City will continue on an annual basis to target all properties in the SFHA reminding them of the advantages to maintaining flood insurance through its annual outreach effort.**

Hazards Addressed: Flood: 100-/500-year, Flood: Stormwater/Localized Flooding

Issue/Background: The City currently provides flood insurance information to property owners in the SFHA, individuals who walk-in for flood related questions, and civic and other organizations which seek information and updates on flood insurance.

Other Alternatives: No action; however, this is an on-going effort and is requested by the public.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Planning & Development Services staff capabilities

Responsible Office: The City's Planning & Development Services Department will provide the most relevant up-to-date flood insurance information to all property owners within the SFHA through annual outreach and other efforts.

Priority (H, M, L): High

Cost Estimate: Staff time, funds for informational mailings

Benefits (Losses Avoided): Local property owners are equipped with the information to allow them to protect themselves from losses and more quickly recover from a flood event.

Potential Funding: The cost will be paid for by the City of Wilson's operating budget.

Timeframe: Annually

2. **The City will increase its outreach efforts on an annual basis for properties located in the SFHA to educate property owners that they should not store personal property in basements and crawl spaces.**

Hazards Addressed: Flood: 100-/500-year, Flood: Stormwater/Localized Flooding

Issue/Background: Property owners should not store personal property in basements and crawl spaces since personal property is not covered by a flood insurance policy.

Other Alternatives: No action; provide information on City website only.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Planning & Development Services staff capabilities

Responsible Office: The City's Planning & Development Services Department will provide the most relevant up-to-date information to all property owners within the SFHA.

Priority (H, M, L): High

Cost Estimate: Staff time, funds for informational mailings

Benefits (Losses Avoided): Local property owners are equipped with the information to allow them to protect themselves from losses.

Potential Funding: The cost will be paid for by the City of Wilson's operating budget.

Timeframe: Annually

3. The City will promote effective flood protection measures and provide advice and assistance to property owners who may wish to implement such measures in an on-going program.

Hazards Addressed: Flood: 100-/500-year, Flood: Stormwater/Localized Flooding

Issue/Background: When appropriate for commercial buildings, property owners should consider floodproofing measures such as flood gates or shields, flood walls, and hydraulic pumps.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Planning & Development Services staff capabilities

Responsible Office: The City's Planning & Development Services & Engineering Services Departments

Priority (H, M, L): High

Cost Estimate: The cost will be paid for by individual property owners. Advice and assistance will require staff time. Promotion of existing floodproofing measures may require some additional funds from the City's operating budget.

Benefits (Losses Avoided): Local businesses are protected from flood losses which helps contribute to a sustainable business community.

Potential Funding: The cost will be paid for by the City of Wilson's operating budget.

Timeframe: On-going

4. The City will continue acquisition/demolition mitigation of high-risk flood-prone properties (including repetitive loss properties). The highest priorities are properties at the greatest flood risk and where drainage improvements will not provide an adequate level of protection.

Hazards Addressed: Flood: 100-/500-year, Flood: Stormwater/Localized Flooding

Issue/Background: There are a total of 16 unmitigated repetitive loss properties in the City of Wilson. The City has already acquired and demolished 12 properties.

Other Alternatives: No action; properties continue to be repetitively flooded.

Existing Planning Mechanism(s) through which Action Will Be Implemented: FEMA mitigation grant

Responsible Office: The City's Planning & Development Services & Engineering Services Departments

Priority (H, M, L): High

Cost Estimate: \$2M

Benefits (Losses Avoided): Properties are no longer repetitively flooded; community gains open space/recreational area which is a benefit to all citizens in the community.

Potential Funding: The acquisition and demolition will be paid for using FEMA mitigation grant funds. Staff time to develop the list of target properties will require funds from the City's operating budget.

Timeframe: Five years

5. The City will prioritize CIP projects to focus on drainage improvement projects in those basins containing repetitive loss areas.

Hazards Addressed: Flood: 100-/500-year, Flood: Stormwater/Localized Flooding

Issue/Background: There are a total of 16 unmitigated repetitive loss properties in the City of Wilson.

Other Alternatives: No action; reliance on property owners to take action

Existing Planning Mechanism(s) through which Action Will Be Implemented: City's Capital Improvement Program

Responsible Office: The City's Engineering Services & Water Resources Departments.

Priority (H, M, L): High

Cost Estimate: \$10M

Benefits (Losses Avoided): Properties are no longer repetitively flooded; community gains open space/recreational area which is a benefit to all citizens in the community; City gains trust of citizens.

Potential Funding: The project will be funded through the City's stormwater utility fee.

Timeframe: Five years

6. The City will encourage property owners to elevate inside and outside mechanical equipment above the BFE and install flood resistant materials in crawl spaces.

Hazards Addressed: Flood: 100-/500-year, Flood: Stormwater/Localized Flooding

Issue/Background: The City’s Planning & Development Services Department will promote effective flood protection measures and provide advice and assistance to property owners who may wish to implement such measures in an on-going program.

Other Alternatives: No action; provide information on City’s website only.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Planning & Development Services staff capabilities

Responsible Office: The City’s Planning & Development Services Department

Priority (H, M, L): High

Cost Estimate: The cost will be paid for by individual property owners. Advice and assistance will require staff time. Promotion of existing floodproofing measures may require some additional funds from the City’s operating budget.

Benefits (Losses Avoided): Citizens are educated and better protected from costly flood losses.

Potential Funding: The cost will be paid for by the City of Wilson’s operating budget.

Timeframe: On-going.

7. The City’s Planning & Development Services Department will encourage renters to purchase rental insurance for their contents.

Hazards Addressed: Flood: 100-/500-year, Flood: Stormwater/Localized Flooding

Issue/Background: There are a high number of rental properties identified within the repetitive loss areas.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Planning & Development Services staff capabilities

Responsible Office: The City’s Planning & Development Services Department along with local insurance agents will promote the benefits of renters insurance.

Priority (H, M, L): High

Cost Estimate: Staff time, funds for informational mailings

Benefits (Losses Avoided): Renters are protected from content losses in repetitively flooded areas.

Potential Funding: The cost will be paid for by the City’s operating budget.

Timeframe: Annually

8. The City will construct a new stormwater retention pond in Merrimont Park.

Hazards Addressed: Flood: 100-/500-year, Flood: Stormwater/Localized Flooding

Issue/Background: The tributary of Hominy Creek just below Merrimont Park is impacted by peak flows which leads to nuisance flooding and heavy stream bank erosion. The proposed project will intercept and capture about 18 acres of drainage area and includes an in-stream diversion to manage excess flow. This project is intended to lessen the peak flows downstream, mitigating flooding, erosion, and improving water quality.

Other Alternatives: No action; reliance on property owners to take action

Existing Planning Mechanism(s) through which Action Will Be Implemented: The City's Stormwater Management Program

Responsible Office: City of Wilson Engineering, Water Resources and Parks and Recreation Departments.

Priority (H, M, L): High

Cost Estimate: \$800,000

Benefits (Losses Avoided): Mitigation and avoidance of flood losses in repetitively flooded areas.

Potential Funding: The project will be funded entirely through the City's stormwater utility fee.

Timeframe: Five years

9. The City will complete the conceptual plan for the Hominy Creek Water Quality Park and Greenway.

Hazards Addressed: Flood: 100-/500-year, Flood: Stormwater/Localized Flooding

Issue/Background: The proposed project includes stream and buffer restorations, side stream flood retention, floodplain reconnection, infiltration basins, wetlands, wet ponds, permeable pavement, paved greenway, and an environmental education center. The retrofits in whole will result in a linear water quality park for roughly three miles of Hominy Creek, crossing through downtown Wilson from Ward Boulevard to Ward Boulevard. The different elements will be designed to maximize flood mitigation and water quality benefit while providing recreational amenities.

Other Alternatives: No action; reliance on property owners to take action

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: The City of Wilson Engineering Services, Planning & Development Services, Water Resources, and Parks and Recreation Departments.

Priority (H, M, L): High

Cost Estimate: \$2M

Benefits (Losses Avoided): Mitigation and avoidance of flood losses in repetitively flooded areas. Citizens gain open space/recreational area which improves quality of life in the City.

Potential Funding: The project will be funded through a variety of means, private and public. The City has currently received a planning grant from the Clean Water Management Trust Fund to complete the conceptual plan. Implementation will require future grant and private funding as well as stormwater utility fee.

Timeframe: Five years

10. The City will prepare an Emergency Action Plan for Lake Wilson Dam.

Hazards Addressed: Dam Failure

Issue/Background: Lake Wilson Dam is classified as high hazard dam by the North Carolina Department of Environment and Natural Resources. The Lake Wilson Emergency Action Plan will identify the estimated number of buildings that could potentially be impacted by a failure of Lake Wilson Dam as well as emergency procedures that should be implemented in the event of a dam failure.

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Emergency Action Plan

Responsible Office: City of Wilson Engineering Services Department.

Priority (H, M, L): High

Cost Estimate: \$30,000

Benefits (Losses Avoided): Areas of risk downstream of dam are identified; emergency responders are provided with a plan of action.

Potential Funding: The cost will be paid for by the City's Water Resources Fund.

Timeframe: Six months

11. The City will develop a Program for Public Information (PPI).

Hazards Addressed: All flood hazards

Issue/Background: The PPI committee will delineate areas that are subject to flooding/flooding concerns, identify target audiences and develop messages/projects

Other Alternatives: Rely on on-going outreach efforts for flood insurance and flood protection measures

Existing Planning Mechanism(s) through which Action Will Be Implemented: New plan will be developed.

Responsible Office: City of Wilson Planning and Development Services Department.

Priority (H, M, L): High

Cost Estimate: \$5,000

Benefits (Losses Avoided): Citizens are educated and better protected from costly flood losses

Potential Funding: The cost will be paid for by the City's operating budget.

Timeframe: Three months

12. The City will develop a Repetitive Loss Area Analysis (RLAA).

Hazards Addressed: Flood: 100-/500-year, Flood: Stormwater/Localized Flooding

Issue/Background: Planning is the key to reducing future damage to repetitive loss structures. By undertaking these planning efforts, the City will have a multi-objective approach to floodplain management. When combined with its floodplain management plan, the community at large and individual buildings will be evaluated and examined in the planning context.

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented: New plan will be developed.

Responsible Office: City of Wilson Planning and Development Services Department.

Priority (H, M, L): High

Cost Estimate: \$5,000

Benefits (Losses Avoided): Reduce damage to repetitive loss properties.

Potential Funding: The cost will be paid for by the City's operating budget.

Timeframe: Three months.

13. Coordinate with Wilson County Emergency Management to protect vulnerable critical facilities and to identify vulnerable populations for emergency evacuation purposes.

Hazards Addressed: All flood hazards

Issue/Background: Critical facilities which operate as either evacuation centers or pump flood waters, or sewage should be protected from flood damage so they perform without interruption. Vulnerable populations may require additional evacuation assistance.

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Wilson County Emergency Operations Plan

Responsible Office: City of Wilson Planning and Development Services Department.

Priority (H, M, L): High

Cost Estimate: Staff time

Benefits (Losses Avoided): Reduce potential damage to critical facilities.

Potential Funding: The cost will be paid for by the City's operating budget.

Timeframe: Five years.

5 PLAN ADOPTION

Requirement §201.6(c)(5): [The plan shall include] documentation that the plan has been formally approved by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).

The purpose of formally adopting this plan is to secure buy-in from the City of Wilson, raise awareness of the plan, and formalize the plan's implementation. The adoption of this plan completes Planning Step 9 of the 10-step planning process: Adopt the Plan, in accordance with the requirements of DMA 2000. The Wilson City Council has adopted the Floodplain Management Plan by passing a resolution. A copy of the executed resolution is shown below.

Note to Reviewers: When this plan has been reviewed and approved pending adoption by FEMA Region IV, the adoption resolutions will be signed and added here.

6 PLAN IMPLEMENTATION AND MAINTENANCE

Requirement §201.6(c)(4): [The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

Implementation and maintenance of the plan is critical to the overall success of hazard mitigation planning. This is Planning Step 10 of the 10-step planning process. This section provides an overview of the overall strategy for plan implementation and maintenance and outlines the method and schedule for monitoring, updating, and evaluating the plan. The section also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

6.1 Implementation

Once adopted, the plan must be implemented in order to be effective. While this plan contains many worthwhile actions, the City of Wilson will need to decide which action(s) to undertake first. The priority assigned the actions in the planning process and funding availability will affect that decision. Low or no-cost actions most easily demonstrate progress toward successful plan implementation.

An important implementation mechanism that is highly effective and low-cost is incorporation of the Floodplain Management Plan recommendations and their underlying principles into other plans and mechanisms, such as the Wilson Comprehensive Plan. The City already implements policies and programs to reduce losses to life and property from hazards. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through these other program mechanisms.

Mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government. Implementation will be accomplished by adhering to the schedules identified for each action and through constant, pervasive, and energetic efforts to network and highlight the multi-objective, win-win benefits to each program and the community. This effort is achieved through the routine actions of monitoring agendas, attending meetings, and promoting a safe, sustainable community. Additional mitigation strategies could include consistent and ongoing enforcement of existing policies and vigilant review of programs for coordination and multi-objective opportunities.

Simultaneous to these efforts, it is important to maintain a constant monitoring of funding opportunities that can be leveraged to implement some of the more costly recommended actions. This will include creating and maintaining a bank of ideas on how to meet local match or participation requirements. When funding does become available, the City will be in a position to capitalize on the opportunity. Funding opportunities to be monitored include special pre- and post-disaster funds, state and federal earmarked funds, benefit assessments, and other grant programs, including those that can serve or support multi-objective applications.

Responsibility for Implementation of Goals and Activities

Elected officials, officials appointed to head community departments and community staff are charged with implementation of various activities in the plan. During the quarterly reviews as described later in this section, an assessment of progress on each of the goals and activities in the plan will be determined and noted. At that time, recommendations will be made to modify timeframes for completion of activities, funding resources, and responsible entities. On a quarterly basis, the priority standing of various activities may also be changed. Some activities that are found not to be doable may be deleted

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from the plan entirely and activities addressing problems unforeseen during plan development may be added.

6.1.1 Role of Floodplain Management Planning Committee in Implementation, Monitoring and Maintenance

With adoption of this plan, the City will be responsible for the plan implementation and maintenance. The FMPC identified in Section 2 will reconvene **quarterly** each year to ensure mitigation strategies are being implemented and the City continues to maintain compliance with the NFIP. As such, the City agrees to continue its relationship with the FMPC and:

- Act as a forum for flood mitigation issues;
- Disseminate flood mitigation ideas and activities to all participants;
- Pursue the implementation of high-priority, low/no-cost recommended actions;
- Ensure flood mitigation remains a consideration for community decision makers;
- Maintain a vigilant monitoring of multi-objective cost-share opportunities to help the community implement the plan’s recommended actions for which no current funding exists;
- Monitor and assist in implementation and update of this plan;
- Report on plan progress and recommended revisions to the City Council; and
- Inform and solicit input from the public.

The primary duty is to see the plan successfully carried out and report to the City Council, NCEM, FEMA, and the public on the status of plan implementation and mitigation opportunities. Other duties include reviewing and promoting mitigation proposals, considering stakeholder concerns about flood mitigation, passing concerns on to appropriate entities, and posting relevant information on the City’s website (and others as appropriate).

6.2 Maintenance

Plan maintenance implies an ongoing effort to monitor and evaluate plan implementation and to update the plan as progress, roadblocks, or changing circumstances are recognized.

6.2.1 Maintenance Schedule

The City of Wilson’s Planning & Development Services Department is responsible for initiating plan reviews. In order to monitor progress and update the mitigation strategies identified in the action plan, the City will revisit this plan quarterly and following a hazard event. The City will submit a five-year written update to NCEM and FEMA Region IV, unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule. With this plan update anticipated to be fully approved and adopted in 2015, the next plan update for Wilson will occur in 2020.

6.2.2 Maintenance Evaluation Process

Evaluation of progress can be achieved by monitoring changes in vulnerabilities identified in the plan. Changes in vulnerability can be identified by noting:

- Decreased vulnerability as a result of implementing recommended actions;
- Increased vulnerability as a result of failed or ineffective mitigation actions; and/or
- Increased vulnerability as a result of new development (and/or further annexation).

Updates to this plan will:

- Consider changes in vulnerability due to action implementation;
- Document success stories where mitigation efforts have proven effective;
- Document areas where mitigation actions were not effective;
- Document any new hazards that may arise or were previously overlooked;
- Incorporate new data or studies on hazards and risks;
- Incorporate new capabilities or changes in capabilities;
- Incorporate growth and development-related changes to infrastructure inventories; and
- Incorporate new action recommendations or changes in action prioritization.

Changes will be made to the plan during the update process to accommodate for actions that have failed or are not considered feasible after a review of their consistency with established criteria, time frame, community priorities, and/or funding resources. Actions that were not ranked high but were identified as potential mitigation activities will be reviewed as well during the monitoring and update of this plan to determine feasibility of future implementation. Updating of the plan will be by written changes and submissions, as is appropriate and necessary, and as approved by the City Council. In keeping with the five-year update process, the FMPC or similar committee will convene public meetings to solicit public input on the plan and its routine maintenance and the final product will be adopted by the City Council.

Specifically, the City will adhere to the following process for the next update of this FMP:

Quarterly Plan Review Process

For the 2015 Floodplain Management Plan update review process, the City of Wilson's Planning & Development Services Department will be responsible for facilitating, coordinating, and scheduling reviews and maintenance of the plan. The review of the Floodplain Management Plan will be conducted as follows:

- The City's Planning & Development Services Department will reconvene the FMPC or similar committee to meet and review the progress toward implementation of the plan's mitigation action plan. This review will evaluate the progress made on implementation of each mitigation action listed in Section 4.4 Mitigation Action Plan.
- Meetings of the FMPC shall be published in accordance with local rules regarding public notice.
- Prior to the review, department heads and others tasked with implementation of the various activities will be queried concerning progress on each activity in their area of responsibility and asked to present a report at the review meeting.
- After each quarterly meeting, minutes of the meeting and a status report will be prepared by the City's Planning & Development Services Department.
- The results of each quarterly FMPC meeting will be made available to the local news media and the City Council for informational purposes.
- The City's Planning & Development Services Department will maintain copies of minutes and status reports to provide to ISO/FEMA as part of the community's annual recertification to the CRS program.

Criteria for Annual Reviews in Preparation for 5-Year Update

The criteria recommended in 44 CFR 201 and 206 will be utilized in reviewing and updating the plan. More specifically, annual reviews will monitor changes to the following information:

- Community growth or change in the past quarter.
- The number of substantially damaged or substantially improved structures by flood zone.

- The renovations to public infrastructure including water, sewer, drainage, roads, bridges, gas lines, and buildings.
- Natural hazard occurrences that required activation of the Emergency Operations Center (EOC) and whether or not the event resulted in a presidential disaster declaration.
- Natural hazard occurrences that were not of a magnitude to warrant activation of the EOC or a federal disaster declaration but were severe enough to cause damage in the community or closure of businesses, schools, or public services.
- The dates of hazard events descriptions.
- Documented damages due to the event.
- Closures of places of employment or schools and the number of days closed.
- Road or bridge closures due to the hazard and the length of time closed.
- Assessment of the number of private and public buildings damaged and whether the damage was minor, substantial, major, or if buildings were destroyed. The assessment will include residences, mobile homes, commercial structures, industrial structures, and public buildings, such as schools and public safety buildings.
- Review of any changes in federal, state, and local policies to determine the impact of these policies on the community and how and if the policy changes can or should be incorporated into the Floodplain Management Plan. Review of the status of implementation of projects (mitigation strategies) including projects completed will be noted. Projects behind schedule will include a reason for delay of implementation.

6.2.3 Incorporation into Existing Planning Mechanisms

Another important implementation mechanism that is highly effective and low-cost is incorporation of the Floodplain Management Plan recommendations and their underlying principles into other plans and mechanisms. Where possible, plan participants will use existing plans and/or programs to implement hazard mitigation actions. As previously stated, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development. As described in this plan's capability assessment, the City of Wilson already implements policies and programs to reduce losses to life and property from hazards. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through these other program mechanisms. These existing mechanisms include:

- Hazard Mitigation Plans
- Comprehensive Plans
- Emergency Management Plans
- Ordinances
- Flood/stormwater management/master plans
- Other plans, regulations, and practices with a mitigation focus

Those involved in these other planning mechanisms will be responsible for integrating the findings and recommendations of this plan with these other plans, programs, etc., as appropriate. As described in Section 6.1 Implementation, incorporation into existing planning mechanisms will be done through the routine actions of:

- Monitoring other planning/program agendas;
- Attending other planning/program meetings;
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this mitigation strategy will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community.

Efforts should continuously be made to monitor the progress of mitigation actions implemented through other planning mechanisms and, where appropriate, their priority actions should be incorporated into updates of this Floodplain Management Plan.

6.2.4 Continued Public Involvement

Continued public involvement is imperative to the overall success of the plan's implementation. The update process provides an opportunity to solicit participation from new and existing stakeholders and to publicize success stories from the plan implementation and seek additional public comment. The plan maintenance and update process will include continued public and stakeholder involvement and input through attendance at designated committee meetings, web postings, press releases to local media, and through public hearings.

Public Involvement Process for Quarterly Reviews

The public will be noticed by placing an advertisement on the city's website specifying the date and time for the review and inviting public participation.

Public Involvement for Five-year Update

When the FMPC reconvenes for the five-year update, they will coordinate with all stakeholders participating in the planning process—including those that joined the committee since the planning process began—to update and revise the plan. In reconvening, the FMPC plans to identify a public outreach subcommittee, which will be responsible for coordinating the activities necessary to involve the greater public. The subcommittee will develop a plan for public involvement and will be responsible for disseminating information through a variety of media channels detailing the plan update process. As part of this effort, public meetings will be held and public comments will be solicited on the plan update draft. The subcommittee will also coordinate this public outreach process with the public information program established pursuant to the most current guidelines from the CRS.

Appendix A: Planning Process

Planning Step 1: Organize to Prepare the Plan

Resolution Creating the FMPC

R-005-15

**RESOLUTION OF THE CITY COUNCIL
OF THE CITY OF WILSON, NORTH CAROLINA
SUPPORTING THE CREATION OF A FLOODPLAIN MANAGEMENT
PLAN, PROGRAM FOR PUBLIC INFORMATION AND
REPETITIVE LOSS AREA ANALYSIS**

WHEREAS, the City of Wilson and its residents have exposure to flood hazards that increase the vulnerability of life, property, environment and the City's economy; and

WHEREAS, the City of Wilson participates in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) Program to reduce the cost of flood insurance to City residents; and

WHEREAS, the City of Wilson entered into the Community Rating System Program on October 1, 1991;

WHEREAS, the City of Wilson is currently a CRS Classification 6 saving residents with the 100-year FEMA mapped floodplain twenty percent (20%) of the cost of flood insurance and those outside the mapped floodplain of ten percent (10%) cost of flood insurance; and

WHEREAS, the CRS Program requires the City to adopt a Floodplain Management Plan based on the number of repetitively flooded properties in the City; and

WHEREAS, FEMA and the CRS Program encourage public participation and involvement from citizens and other stakeholders throughout the planning process; and

WHEREAS, the Floodplain Management Planning Committee (FMPC) will be involved in the development of the floodplain management plan through assessment of the flooding problems in the City, development of goals that address the identified flood hazards and creation of various mitigation strategies that will be implemented to reduce damage to insurable structures and help protect lives; and

WHEREAS, members of the FMPC shall include the following: a local insurance agent, local realtor, local lender and/or local business owner, and a member from the Wilson Housing Authority. Additional committee membership will include city staff from land development, engineering, fire marshal and public information. The members shall be elected at its initial meeting; and

1

WHEREAS, the FMPC has the responsibility to meet and fulfill the obligations of the CRS Program and its floodplain management planning process shall commence on January 16, 2015 with completion by July 31, 2015; and

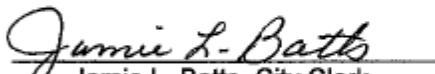
NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Wilson, North Carolina that the City Council establishes the City of Wilson Floodplain Management Planning Committee and the creation of a Floodplain Management Plan, Program for Public Information and Repetitive Loss Area Analysis.

Duly adopted this 15th day of January 2015.



C. Bruce Rose, Mayor

ATTEST:



Jamie L. Batts, City Clerk



Table A-1: FMPC Meeting Dates

Note: All FMPC Meetings were open to the public.

Meeting Type	Meeting Topic	Meeting Date	Meeting Location
FMPC #1 (Kick-off)	1) Introduction to DMA, CRS and the planning process	February 19, 2015	City of Wilson City Hall Second Floor Conference Rm
	2) Organize resources: the role of the FMPC, planning for public involvement, and coordinating with other agencies and stakeholders		
FMPC #2	1) Discussion of Program for Public Information (PPI)	April 2, 2015	City of Wilson City Hall Second Floor Conference Rm
	2) Discussion of flood hazards for the 2015 FMP		
	3) Discussion of mitigation projects for the 2015 FMP		
FMPC #3	1) Discussion of Repetitive Loss Areas	May 12, 2015	City of Wilson City Hall Second Floor Conference Rm
	2) Development of goals for the 2015 FMP		
FMPC #4	1) Review/discussion of Flood Risk Assessment (Assess the Hazard)	June 11, 2015	Virtual Meeting
	2) Review/discussion of Vulnerability Assessment (Assess the Problem)		
FMPC #5	1) Review "Draft" Floodplain Management Plan	August 20, 2015	City of Wilson City Hall Second Floor Conference Rm
	2) Solicit comments and feedback from the FMPC		

Table A-2: FMPC Invitation List

	Name	Organization	Address 1
1	Gordon Deno	Wilson County Emergency Management Agency	1817 Glendale Drive Wilson, NC 27893
2	Mark Johnson	Wilson County Development Services	2201 Miller Road S. Wilson, NC 27893
3	Eric Davis	Wilson County Schools Emergency Response	117 N. Tarboro Street Wilson, NC 27894
4	David Lee	City of Wilson Parks and Recreation	1800 Herring Avenue Wilson, NC 27893
5	Ben Huston	City of Wilson Fire/Rescue Services	307 W Hines Street Wilson, NC 27893
6	Gronna Jones	City of Wilson Airport	Wilson Industrial 4545 Airport Dr. Wilson, NC 27893
7	Vicki Labelle	American Red Cross	1500 N. Queen Street Kinston, NC 28501
8	Margi Sowerwine	Sierra Club – Medoc Group	19 W. Hargett Street, Suite 210, Raleigh, NC 27601
9	Norval Kneten	Barton College	PO Box 5000 Wilson, NC 27893
10	Rusty Stephens	Wilson Community College	PO Box 4305 Wilson, NC 27893
11	Carter Bearden	Eastern North Carolina School for the Deaf	1311 US Hwy 301 South Wilson, NC 27893
12	JoAnne Woodard	Sallie B. Howard School for the Arts	1004 Herring Avenue East Wilson, NC 27893
13	Grady Smith	Mayor, Town of Elm City	117 S. Railroad Street Elm City, NC 27822
14	Dolan Atkinson	Mayor, Town of Lucama	111 South Main Street Lucama, NC 27851
15	William Edmundson	Mayor, Town of Stantonsburg	108 Commercial Avenue Stantonsburg, NC 27883
16	Roland Godwin	Mayor, Town of Black Creek	112 West Center Street Black Creek, NC 27813
17	Dana Hewitt	Mayor, Town of Sims	PO Box 161 Sims, NC 27880
18	Charles Hawkins	Mayor, Town of Saratoga	6904 Main Street Saratoga, NC 27873
19	Brian Brantley	Nash County Emergency Management	120 W. Washington Street, Suite 1102, Nashville, NC 27856
20	Butch Beach	Edgecombe County Emergency Management	201 Andrew Street, Room 233, Tarboro, NC 27886
21	Noel Lee	Pitt County Emergency Management	1717 W. 5 th Street Greenville, NC 27834-1696
22	Randy Skinner	Greene County Emergency Management	201 Martin Luther King, Jr. Pkwy Snow Hill, NC 28580
23	Jeremy Hill	Wayne County Emergency Management	134 N. John Street Goldsboro, NC 27530
24	Kim Robertson	Johnston County Emergency Management	120 S. Third Street Smithfield, NC 27577
25	Susan Wilson	FEMA Region IV, Floodplain Management & Insurance Branch	3003 Chamblee Tucker Road Atlanta, GA 30341
26	Janie Mitchell	FEMA Region IV, Mitigation Division	3003 Chamblee Tucker Road Atlanta, GA 30341
27	Mandy Todd	ISO/CRS Specialist	1993 Meadowood Lane Longs, SC 29568
28	Mike Bratcher	ISO/CRS Specialist	163 Arliss Albertson Road Beulaville, NC 28518
29	Sherry Harper	ISO/CRS Technical Coordinator	2382 Susan Drive Crestview, FL 32536

	Name	Organization	Address 1
30	Eric Strom	USGS – Raleigh Field Office	3916 Sunset Ridge Road Raleigh, NC 27607
31	John Gerber	State NFIP Coordinator	4218 Mail Service Center Raleigh, NC 27699-4218
32	Chris Crew	State Hazard Mitigation Officer	4218 Mail Service Center Raleigh, NC 27699-4218
33	Ryan Cox	State Hazard Mitigation Planning Supervisor	4218 Mail Service Center Raleigh, NC 27699-4218
34	John Holley	NCDENR – Land Quality Section Regional Office	1628 Mail Service Center Raleigh, NC 27699-1626
35	Crystal Harris	BB&T Insurance Services	223 Nash Street, 4 th Floor, East Tower Wilson, NC 27893
36	Jennifer Lantz	Wilson Economic Development Council	405 West Nash Street, Suite 210, Wilson, NC 27894
37	Janet Conner-Knox	The Wilson Times	2001 Downing Street, Wilson, NC 27893

FMPC Meeting Agendas, Minutes and Sign-in Sheets



Agenda

City of Wilson Floodplain Management Planning Committee (FMPC) Meeting

February 19, 2015 at 11:45 AM
City of Wilson City Hall Second Floor Conference Room

1. Welcome and introductions
2. Background on the CRS Program
3. CRS Activity 510 – Floodplain Management Planning
4. CRS Activity 510 – Repetitive Loss Area Analysis
5. CRS Activity 330 – Program for Public Information
6. Questions and answers
7. Set date for next FMPC meeting

Lunch will be available and served beginning at 11:45 am.
The meeting will start promptly at 12 pm.

CITY OF WILSON
INCORPORATED 1849

PLANNING & DEVELOPMENT SERVICES | P.O. BOX 10 | WILSON, NORTH CAROLINA 27794-0010 | TELEPHONE (252) 999-2220 | FACSIMILE (252) 249-2223
EQUAL OPPORTUNITY EMPLOYER

City of Wilson, NC

Floodplain Management Planning Committee (FMPC)

Committee Meeting February 19th, 2015

Name	Organization	Phone	E-mail
Alan B. Winkler	Pro. Acct	252-220-1701	alan.winkler@carfax.com
David Steward	AMEC	919-325-6497	David.Steward@amec.com
Kelly Vick	WHA	291-2245	Kvick@wilsonbo.org
Eric Skifford	Wells Fargo	399-6210	eric.skifford@wellsfargo.com
Teresa Styke	Southwest Bank	290 0750	terestylkes@swbank.com
Matt Shaw	Carw	252-399-2311	mattshaw@car.com
Janet Holland	city of Wilson	252-399-2215	jnholland@wilsonnc.org
Adam Rect	City of Wilson	252-205-2871	arech@wilsonnc.org
Darryl Norris	City of Wilson	252-296-3305	dnorris@wilsonnc.org

Meeting Minutes February 19, 2015

City of Wilson Floodplain Management Planning Committee Planning & Development Services Department

A meeting of the City of Wilson's Floodplain Management Planning Committee (FMPC) was held on February 19, 2015 at 12:00 PM in the 2nd floor conference room of the City's Planning & Development Services Department. Mr. Stroud opened the meeting by providing an overview of the products currently under development: Floodplain Management Plan (FMP), Repetitive Loss Area Analysis (RLAA) and Program for Public Information (PPI).

Mr. Stroud provided a Power Point presentation of the three Community Rating System (CRS) projects that Amec Foster Wheeler is preparing for the City of Wilson. The presentation covered the 10-step CRS planning process under Activity 510 which included a discussion of preparing a resolution for adoption by the City Council recognizing this planning process and members of the FMPC. The presentation gave a timeline and framework for completion of the project.

The presentation went on to discuss those 10 CRS planning steps including how the local City of Wilson departments would be involved, how the FMPC would function throughout the planning committee, what the responsibilities of the FMPC would, the various flood hazards that would be profiled in the floodplain management plan and how goals and projects would be developed for the plan.

The second part of the presentation covered the development of the Repetitive Loss Area Analysis (RLAA). This planning process was also included within CRS Activity 510. Mr. Stroud explained that the RLAA would require the examination of all FEMA identified repetitive loss properties (those properties in the City of Wilson which have had 2 paid claims against the NFIP of \$1,000 or more in any given 10-year period). Additionally, those properties with only one loss would also be identified so that repetitive loss areas could be developed. Repetitive loss areas are required to meet the requirements of the RLAA. Mr. Stroud went on to indicate that all property owners in these identified areas would need to receive a letter indicating the specifics of the project and that field survey crews would be collecting data on their buildings.

The third part of the presentation covered the Program for Public Information (PPI). This CRS activity is a part of Activity 330 Outreach Projects and replaces the former credit for CRS Outreach Project Strategy. Mr. Stroud explained that the objective of this project is to develop an overall outreach program in the City of Wilson that best meets the needs and objectives of the community by leveraging both public and private resources where messages can be relayed to the public in the most effective manner. Mr. Stroud went on to describe the process for developing this PPI.

There were several logistical questions and specific questions from both staff and committee members. After a questions and answer period the meeting ended at 1:15 PM

City of Wilson

Floodplain Management Planning Committee Agenda

April 2, 2015

1. Discussion of Program for Public Information (PPI)
2. Discussion of data sources and flood hazards to be included in Floodplain Management Plan (FMP)
3. Discussion of potential mitigation projects to be included in FMP
4. Questions

City of Wilson, NC

Floodplain Management Planning Committee (FMPC)

Committee Meeting April 2, 2015

Name	Organization	Phone	E-Mail	Initial
Alan B. Winstead	Farm Bureau Insurance	252-230-1704	alan.winstead@ncfbinc.com	AW
Penny Whitfield	The Whitfield Agency	252-315-9318	pennywhitfield@em-barqmail.com	PW
David Stroud	AMEC	919-325-6497	david.stroud@amexfw.com	DS
Kelly Vick	Wilson Housing Authority	252-291-2245	kvick@wilsonho.org	KV
Eva Southard Smithwick	Wells Fargo <i>Wells Fargo</i>	252-399-6210	eva_southard@wellsfargo.com	MS
Terri Stutts	Southern Bank	252-290-0750	terristutts@southernbank.com	TS
Matt Shaw	City of Wilson Public Information	252-399-2311	mattshaw@wilsonnc.org	MS
Janet Holland, AICP	City of Wilson Land Development Mgr	252-399-2215	jholland@wilsonnc.org	JH
Adam Reck	City of Wilson Safety & Risk Coordinator	252-399-2871	areck@wilsonnc.org	AR
Daryl Norris, P.E., CFM	City of Wilson Stormwater Program Mgr	252-296-3305	dnorris@wilsonnc.org	DN
Josh Jurius, CFM	City of Wilson Land Development Planner	252-399-2387	jjurius@wilsonnc.org	JJ

Meeting Minutes April 2, 2015

City of Wilson Floodplain Management Planning Committee Planning & Development Services Department

A meeting of the City of Wilson's Floodplain Management Planning Committee (FMPC) was held on April 2, 2015 at 12:00 PM in the 2nd floor conference room of the City's Planning & Development Services Department. This meeting has two primary purposes to work on establishing messages to be included in the City's Program for Public Information (PPI) and to discuss additional data sources need for the City's Floodplain Management Plan (FMP) along with a discuss of goals and objectives and potential projects to be included in the FMP.

Mr. Stroud provided some background on the PPI process as some members were not present at the first meeting. Some members wanted to be provide the presentations in advance and avoid the basic discussion. Mr. Stroud indicated that the intent was to make sure that everyone was on a level playing field and had a thorough understanding of the material. It was suggested that for future meetings that a Power Point presentation would be provided in advance of the meeting.

After the background information was provided there were good ideas brought forward in terms of potential messages including promoting the purchase of renter's insurance coverage since a large percentage of properties in the repetitive loss areas were rental units owned by someone else. Therefore, a target audience besides the entire City of Wilson would be the repetitive loss areas. The Public Information Officer for the city provided some good points and discussion topics for this PPI effort.

Mr. Stroud discussed the need to acquire some additional data to support the risk assessment in the FMP. Specifically detail about some Capital Improvement Projects in the City's CIP along Hominy Creek and a dam inundation study that is being conducted by another firm on a dam owned by the City of Wilson. Mr. Daryl Norris indicated that the study of the dam was not far enough along at this point to provide information.

Mr. Stroud went on to discuss the need to establish some goals for the plan. The FMC provided some ideas including that there should be a goal of protecting all properties within the City of Wilson. Mr. Stroud mentioned that there should be a goal specifically targeting repetitive loss properties and repetitive loss areas since they are spread out all along Hominy Creek from the norther part of the city to the southern part of the city. Mr. Stroud also mentioned the need to have a general health, safety and welfare goal in the plan and another one to protect critical facilities and infrastructure. Mr. Stroud indicated that based on these ideas he would develop goals and objectives and distribute them for review.

The next part of this FMPC meeting was devoted to a discussion of potential mitigation projects that could be implemented to address the goals and to mitigate against future flood damage. Daryl Norris indicated that there were 3 projects underway along Hominy Creek that were intended to reduce flooding to buildings and that the total project had almost 10 phases. So this is a long-term capital improvements program.

Other potential projects were also discussed. Mr. Stroud indicated that this review of potential mitigation projects would be included as a section in the plan to comply with CRS step 7 – Review of Possible Activities.

There were questions from staff and committee members throughout this meeting. The meeting ended at 1:10 PM.

City of Wilson

Floodplain Management Planning Committee Agenda

May 12, 2015

1. Status update of the floodplain management plan
2. Setting goals for the floodplain management plan
3. Repetitive loss areas defined for the Repetitive Loss Area Analysis
4. Questions

City of Wilson, NC

Floodplain Management Planning Committee (FMPC)

Committee Meeting: Tuesday, May 12, 2015

Name	Organization	Phone	E-Mail	Initial
 Alan B. Winstead	Farm Bureau Insurance	252-230-1704	alan_winstead@ncfbinc.com	
 Penny Whitfield	The Whitfield Agency	252-315-9318	pennywhitfield@embarqmail.com	
 David Stroud	AMEC	919-325-6497	david_stroud@amecfw.com	
 Kelly Vick	Wilson Housing Authority	252-291-2245	kvick@wilsonho.org	
 Eva Smithwick	Wells Fargo	252-399-6210	eva.smithwick@wellsfargo.com	
 Terri Stutts	Southern Bank	252-290-0750	terristutts@southernbank.com	
 Matt Shaw	City of Wilson Public Information	252-399-2311	mattshaw@wilsonnc.org	
 Janet Holland, AICP	City of Wilson Land Development Mgr	252-399-2215	jholland@wilsonnc.org	
 Adam Reck	City of Wilson Safety & Risk Coordinator	252-399-2871	areck@wilsonnc.org	
 Daryl Norris, P.E., CFM	City of Wilson Stormwater Program Mgr	252-296-3305	dnorris@wilsonnc.org	
 Josh Jurius, CFM	City of Wilson Land Development Planner	252-399-2387	jurius@wilsonnc.org	
 Susan Keillum	City of Wilson Public Information	252-	skeillum@wilsonnc.org	

Meeting Minutes May 12, 2015

City of Wilson Floodplain Management Planning Committee Planning & Development Services Department

A meeting of the City of Wilson's Floodplain Management Planning Committee (FMPC) was held on May 12, 2015 at 12:00 PM in the 2nd floor conference room of the City's Planning & Development Services Department. Mr. Stroud opened the meeting by providing an overview of the products currently under development: Floodplain Management Plan (FMP), Repetitive Loss Area Analysis (RLAA) and Program for Public Information (PPI).

Mr. Stroud provided an overview map of the areas identified for RLAA field survey. It was discussed that a property owner notification letter and flood protection questionnaire will need to be mailed to the 134 property owners identified within the repetitive loss areas. The field work is scheduled to begin in early June 2015, and it was decided that property owner notification letters will be mailed by May 21, 2015. A sample letter and questionnaire were provided to the City.

Mr. Norris noted that all repetitive loss areas lie along Hominy Creek which is prone to overtop its banks during flash storm events. It was stated that the City currently has three projects underway to alleviate repetitive flooding along this stream.

Mr. Stroud led a discussion regarding the establishment of goals for the FMP. Mr. Stroud handed out a list of the goals from the existing City of Wilson Comprehensive Plan. Mr. Stroud stated that the goals for the FMP should align with the goals in the City's Comprehensive Plan, especially land use goals that steer development away from hazardous and environmentally sensitive areas.

The FMPC then examined two handouts. The first handout prompted the committee to examine a list of possible answers to the question "What would you like to see most in Wilson's future?" Answers such as improved water quality or improved recreational facilities were included on the handout. The FMPC members were tasked with choosing their top answers. Mr. Stroud also indicated that their answer did not have to appear on the sample list, and members were encouraged to create their own. Answers received from FMPC members are listed below:

- Educate children
- Improved/more open space
- New development confined to areas already developed

The second handout provided a sample of possible answers to the question "What should be the goals of our mitigation program?" Once again, FMPC members were asked to choose their top answers and were again encouraged to create their own answer. Answers received from FMPC members are listed below:

- Help people protect themselves
- Make sure future development doesn't make things worse
- Minimize public expenditures

- Protect repetitively flooded areas
- Use public/private partnerships
- Acquire and preserve floodplains as open space
- Educate realtors
- Educate homebuilders
- Educate children
- Provide citizens with flood insurance information
- Team Department of Insurance and realtors for education/training

Mr. Stroud indicated that he would prepare draft goals and objectives based on the answer choices provided by the FMPC. The draft goals will be distributed to the FMPC for review and comment.

It was decided that the next FMPC meeting would be held on Thursday, June 11. The next meeting will cover the final goals and objectives based on comments received from the FMPC review as well as the draft Risk Assessment from the FMP.

The meeting ended at 1:00 PM.

City of Wilson

Floodplain Management Planning Committee Agenda

June 11, 2015

1. Review/discussion of Flood Risk Assessment (Assess the Hazard)
2. Review/discussion of Vulnerability Assessment (Assess the Problem)
3. Questions

Meeting Minutes June 11, 2015

City of Wilson Floodplain Management Planning Committee Planning & Development Services Department

A meeting of the City of Wilson's Floodplain Management Planning Committee (FMPC) was held on June 11, 2015 as a virtual electronic meeting. Mr. Stroud distributed copies of the City of Wilson's Hazard Identification and Risk Assessment (HIRA) sections of the Floodplain Management plan (FMP).

Mr. Stroud indicated that each committee member and staff member were to review these two sections of the FMP and provide comments by June 30th, 2015. Mr. Stroud went on to indicate that their comments would be incorporated into the draft version of the FMP where the staff and committee members would get to review it once more.

Mr. Stroud indicated that the City of Wilson's hazard identification included the following flood hazards:

1. 100-/500year
2. Stormwater/localized
3. Stream bank erosion
4. Dam/levee failure

With these hazards, Mr. Stroud asked the FMPC and staff members to comment on the Frequency of Occurrence, Spatial Extent, Potential Magnitude, and Significance. They were to follow the guidelines on page 21 and Table 3.1. Consensus is needed for each of the four flood hazard identified in the plan.

Each flood hazard has a detailed section which profiles that hazard and brings past disaster declarations, local information, state and regional data to define what is the overall extent of the hazard and how it impacts residents and property within the overall City of Wilson.

The hazard vulnerability or risk assessment section expands on the profiled hazard and background information to more clearly define "what is at risk." This section describes loss estimates on buildings and infrastructure including critical and essential facilities along with repetitive loss properties. There are many data tables which indicate the potential damage that could occur if the City were to experience a specific type of flood event. The state of North Carolina's I-Risk data was used for Wilson County to complete this hazard vulnerability section of the FMP.

Mr. Stroud emphasized a need to get comments on this draft HIRA by the end of June.

Agenda

City of Wilson Floodplain Management Planning Committee Meeting

Thursday August 20th, 2015

1. Review the final draft City of Wilson Floodplain Mitigation Plan (FMP)
2. Questions on the FMP
3. Review the final draft of the Repetitive Loss Area Analysis (RLAA)
4. Questions on the RLAA
5. Review the final draft of the Program for Public Information (PPI)
6. Questions on the PPI
7. Next steps for the 3 plans
8. Questions and answers

City of Wilson, NC
Floodplain Management Planning Committee (FMPC)

Committee Meeting: August 20, 2015

Name	Organization	Phone	E-Mail	Initial
Alan B. Winstead	Farm Bureau Insurance	252-230-1704	alan.winstead@ncfbinc.com	AW
Penny Whitfield	The Whitfield Agency	252-315-9318	pennywhitfield@embarqmail.com	PW
David Stroud	AMEC	919-325-6497	david.stroud@amexfw.com	DS
Kelly Vick	Wilson Housing Authority	252-291-2245	kvick@wilsonho.org	KV
Eva Smithwick	Wells Fargo	252-399-6210	eva.smithwick@wellsfargo.com	ES
Terri Stutts	Southern Bank	252-290-0750	terristutts@southernbank.com	TS
Matt Shaw	City of Wilson Public Information	252-399-2311	mattshaw@wilsonnc.org	MS
Janet Holland, AICP	City of Wilson Land Development Mgr	252-399-2215	jholland@wilsonnc.org	JH
Adam Reck	City of Wilson Safety & Risk Coordinator	252-399-2871	arech@wilsonnc.org	AR
Daryl Norris, P.E., CFM	City of Wilson Stormwater Program Mgr	252-296-3305	dnorris@wilsonnc.org	DN
Josh Jurius, CFM	City of Wilson Land Development Planner	252-399-2387	jjurius@wilsonnc.org	JJ
Susan Kellum	City of Wilson Public Information	252-399-2387	skellum@wilsonnc.org	SK
Amy Crowder	AMEC	919-381-1361	amy.crowder@amec.com	AC

Meeting Minutes August 20, 2015

City of Wilson Floodplain Management Planning Committee Planning & Development Services Department

A meeting of the City of Wilson's Floodplain Management Planning Committee (FMPC) was held on August 20, 2015 at 12:00 PM in the second floor conference room of the Planning & Development Services Department. Janet Holland, Land Development Manager, welcomed committee members to the fifth and final meeting on the update to the City's Floodplain Management Plan (FMP).

Mr. David Stroud, CFM with Amec Foster Wheeler, a consultant for the City, presented on the completed draft plan. Mr. Stroud provided a Power Point presentation to cover the following objectives:

1. Organization of the Plan
2. Review Goals and Objectives of Plan
3. Completion of 10-Step CRS Planning Process
4. Review Flood Hazards (Problems)
5. Review Flood Hazard Impacts
6. Ranking of Flood Hazards
7. Review Mitigation Actions
8. Questions and Discussion

The presentation went on to discuss the profiling of each flood-related hazard that was captured in the plan. These flood-related hazards include:

1. Flood: 100-/500-Year
2. Stormwater/Localized Flooding
3. Major Stream Bank Erosion
4. Dams and Levees

The next portion of the presentation discussed the vulnerability of each flood hazard. The information included the impact on people, buildings, and infrastructure and associated past damages that have occurred in the City. Detail was provided on the overall extent of the hazard including how much of the planning area is covered by the hazard. For example, the 100 and 500 year flood extent included a map showing each flood zone and data which indicated the total number of acres for each of those flood zones. Tables containing estimated building and content losses were presented to the FMPC. A map depicting the depth of flooding was provided as well as a map of critical facilities. There was also a discussion on repetitive loss properties within the City and the correlation between those properties and areas known to experience localized stormwater flooding.

Following the presentation of the draft FMP, Mr. Stroud presented on the complete draft Repetitive Loss Area Analysis (RLAA). It was explained that 13 Repetitive Loss Areas were identified which include 16 unmitigated repetitive loss properties, 18 historic repetitive loss properties (those with one paid claim against the NFIP), plus an additional 100 properties that have the same or similar flood conditions but have not had any claims paid against the NFIP. Therefore, a total of 134 properties were included within the RLAA.

Following the presentation of the RLAA, Mr. Stroud presented on the complete draft Program for Public Information (PPI). The presentation included target areas, target audiences, messages and outreach projects to convey the messages.

After the presentation several questions were addressed. All comments received will be incorporated in the final versions of the FMP, RLAA and PPI. The meeting adjourned at approximately 1:05 PM.

FMPC Meeting Pictures



August 20, 2015



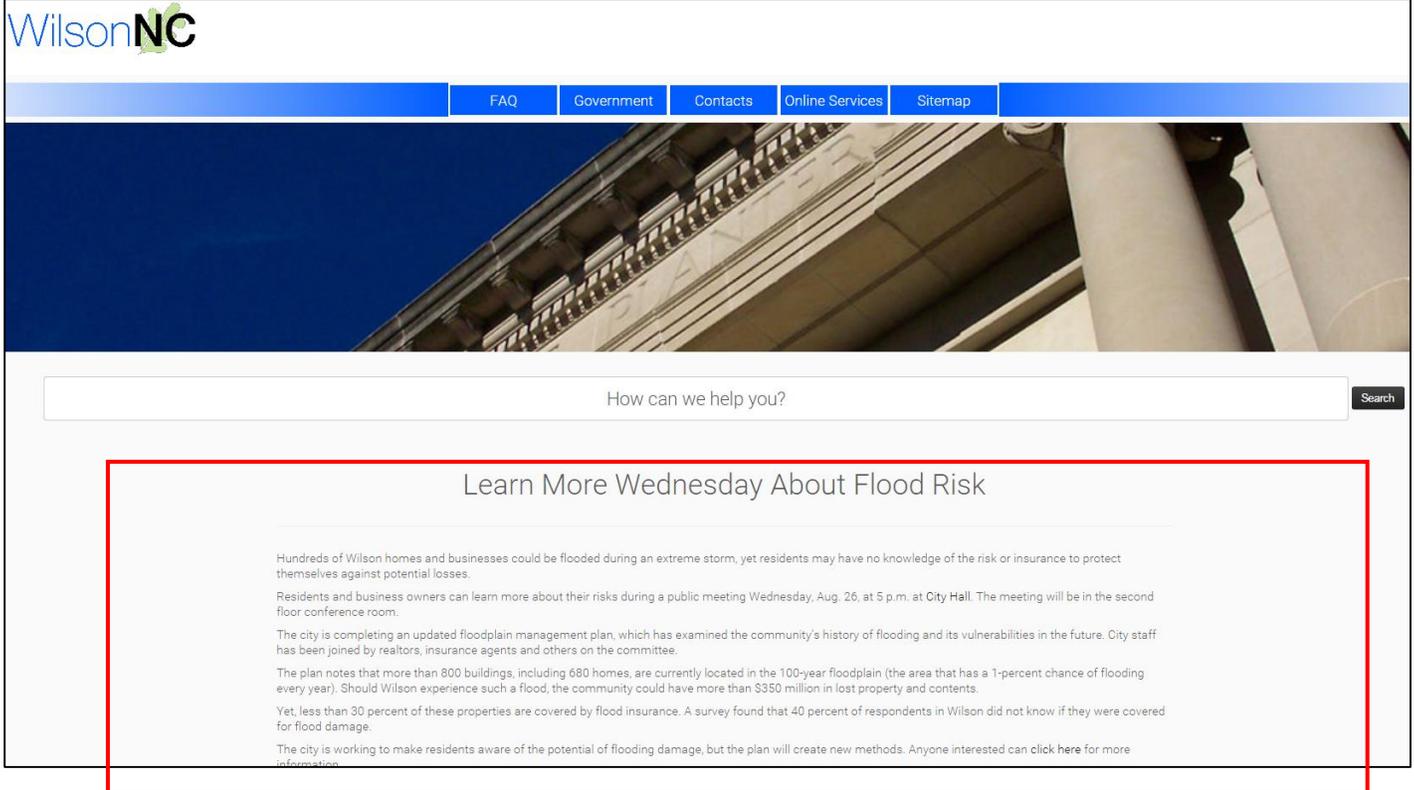
August 20, 2015

Planning Step 2: Involve the Public

Table A-3: Public Meeting Dates

Meeting Type	Meeting Topic	Meeting Date	Meeting Locations
Public Meeting #1	1) Introduction to DMA, CRS and the planning process	February 19, 2015	City of Wilson City Hall Second Floor Conference Rm
	2) Introduction to hazard identification		
Public Meeting #2	1) Review "Draft" Floodplain Management Plan	August 26, 2015	City of Wilson City Hall Second Floor Conference Rm
	2) Solicit comments and feedback from the FMPC		

Public Meeting Advertisement on City Website



The screenshot shows the top portion of the City of Wilson website. At the top left is the Wilson NC logo. A blue navigation bar contains links for FAQ, Government, Contacts, Online Services, and Sitemap. Below the navigation bar is a large image of a classical building facade with columns. A search bar with the placeholder text "How can we help you?" and a "Search" button is positioned below the image. The main content area features a red-bordered box containing the following text:

Learn More Wednesday About Flood Risk

Hundreds of Wilson homes and businesses could be flooded during an extreme storm, yet residents may have no knowledge of the risk or insurance to protect themselves against potential losses.

Residents and business owners can learn more about their risks during a public meeting Wednesday, Aug. 26, at 5 p.m. at City Hall. The meeting will be in the second floor conference room.

The city is completing an updated floodplain management plan, which has examined the community's history of flooding and its vulnerabilities in the future. City staff has been joined by realtors, insurance agents and others on the committee.

The plan notes that more than 800 buildings, including 680 homes, are currently located in the 100-year floodplain (the area that has a 1-percent chance of flooding every year). Should Wilson experience such a flood, the community could have more than \$350 million in lost property and contents.

Yet, less than 30 percent of these properties are covered by flood insurance. A survey found that 40 percent of respondents in Wilson did not know if they were covered for flood damage.

The city is working to make residents aware of the potential of flooding damage, but the plan will create new methods. Anyone interested can [click here](#) for more information.

Public Service Announcement on Channel 8



Is your home at risk?

Attend a free public meeting to learn more about flood risk to Wilson properties and ways to avoid losses

Wednesday, Aug. 26, 5 p.m.
Wilson City Hall, 112 Goldsboro St. E



WilsonNC on    www.WilsonNC.org 

Local Newspaper Articles

2/18/2015

WilsonTimes.com - City holding flood hazard meetings

The Wilson Times

Monday, February 16, 2015 3:25 PM

City holding flood hazard meetings

From staff reports

City residents can attend a meeting Thursday to learn more about the risks of their property flooding and what can be done to limit potential damage.

The city is now working through a planning process to reduce the adverse impacts of flood hazards. This effort is implemented through the Community Rating System and will result in an adopted, approved Comprehensive Floodplain Management Plan, Repetitive Loss Areas Analysis, and Program for Public Information.

As part of the process, the city will be hosting a series of public meetings, the first of which will be Thursday, from 5 to 6 p.m., at City Hall, 112 Goldsboro St. E., in the second floor conference room.

The meeting will begin with an overview of the CRS process, followed by a question and answer session. Attendees will have a chance to meet one-on-one with city staff and learn if their properties are in the floodplain and what the potential damages could be under a variety of flood scenarios.

The CRS is a voluntary program within the National Flood Insurance Program that encourages floodplain management activities that exceed the minimum NFIP requirements. Flood insurance premiums for property owners are discounted to reflect the reduced flood risk resulting from community actions, which meet the following three goals of the CRS: reduce flood losses, facilitate accurate insurance rating, and promote awareness of flood insurance.

The city of Wilson currently has a class rating of 6 within the CRS, which translates into a 20 percent reduction in premium costs for structures located in special flood hazard areas. This planning process is being led by the Wilson Planning and Engineering Departments with support from a technical expert.

The public is encouraged to provide input on all phases of the plan's development. Information will be available as the planning process progresses at the city's website: www.wilsonnc.org.

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[Terms and Conditions](#)

<http://www.wilsontimes.com/Print/35725531---City-holding-flood-hazard-meetings>

1/1

Friday, August 21, 2015 10:53 PM

Learn more about flood insurance at meeting

The city of Wilson is hosting a meeting to better inform residents about flood insurance for homes and businesses.

The meeting will be held Wednesday at 5 p.m. at City Hall, located downtown at 112 Goldsboro St. The meeting will be held in the second floor conference room.

City staff are completing an updated floodplain management plan, which has examined the community's history of flooding and its vulnerabilities in the future. The process has involved collaboration with real estate and insurance agents.

According to plan findings, more than 800 buildings, including 680 homes, are currently located in the 100-year floodplain, an area that has a 1 percent chance of flooding every year. It is estimated that widespread flooding could lead to more than \$350 million in lost property and contents in the floodplain area.

Close to 30 percent of properties in the floodplain are covered by flood insurance. A survey also found that 40 percent of respondents in Wilson weren't sure if they had flood insurance that would cover the damages.

City staff are working to inform residents of the potential of flood damage. Anyone interested in more information can go to the city's website, at www.wilsonnc.org, and search for flood information.

From staff reports

Public Meeting Agendas, Minutes and Sign-in Sheets



Agenda

City of Wilson Floodplain Management Planning Public Meeting

February 19, 2015 at 5:00 PM
City of Wilson City Hall 2nd Floor Conference Room
(112 Goldsboro Street, E)

1. Welcome
2. Background on the CRS Program
3. CRS Activity 510 – Floodplain Management Planning
4. CRS Activity 510 – Repetitive Loss Area Analysis
5. CRS Activity 330 – Program for Public Information
6. Questions and answers

CITY OF WILSON
INCORPORATED 1849

PLANNING & DEVELOPMENT SERVICES | PO BOX 10 | WILSON, NORTH CAROLINA 27894-0010 | TELEPHONE (252) 399-2220 | FACSIMILE (252) 399-2233
EQUAL OPPORTUNITY EMPLOYER

Meeting Minutes February 19, 2015

City of Wilson Public Meeting Planning & Development Services Department

A public meeting of the City of Wilson's Floodplain Management Planning Committee (FMPC) was held on February 19, 2015 at 5:00 PM in the 2nd floor conference room of the City's Planning & Development Services Department. Mr. Stroud opened the meeting by providing an overview of the products currently under development: Floodplain Management Plan (FMP), Repetitive Loss Area Analysis (RLAA) and Program for Public Information (PPI).

Mr. Stroud provided a Power Point presentation of the three Community Rating System (CRS) projects that Amec Foster Wheeler is preparing for the City of Wilson. The presentation covered the 10-step CRS planning process under Activity 510 which included a discussion of preparing a resolution for adoption by the City Council recognizing this planning process and members of the FMPC. The presentation gave a timeline and framework for completion of the project.

The presentation went on to discuss those 10 CRS planning steps including how the local City of Wilson departments would be involved, how the FMPC would function throughout the planning committee, what the responsibilities of the FMPC would, the various flood hazards that would be profiled in the floodplain management plan and how goals and projects would be developed for the plan.

The second part of the presentation covered the development of the Repetitive Loss Area Analysis (RLAA). This planning process was also included within CRS Activity 510. Mr. Stroud explained that the RLAA would require the examination of all FEMA identified repetitive loss properties (those properties in the City of Wilson which have had 2 paid claims against the NFIP of \$1,000 or more in any given 10-year period). Additionally, those properties with only one loss would also be identified so that repetitive loss areas could be developed. Repetitive loss areas are required to meet the requirements of the RLAA. Mr. Stroud went on to indicate that all property owners in these identified areas would need to receive a letter indicating the specifics of the project and that field survey crews would be collecting data on their buildings.

The third part of the presentation covered the Program for Public Information (PPI). This CRS activity is a part of Activity 330 Outreach Projects and replaces the former credit for CRS Outreach Project Strategy. Mr. Stroud explained that the objective of this project is to develop an overall outreach program in the City of Wilson that best meets the needs and objectives of the community by leveraging both public and private resources where messages can be relayed to the public in the most effective manner. Mr. Stroud went on to describe the process for developing this PPI.

There were specific questions from members of the public. After a questions and answer period the meeting ended at 7:35 PM

City of Wilson, NC

Floodplain Management Plan Workshop

Public Meeting February 19th, 2015

Name	Address	Phone	E-mail
DAVID STROUD	AmeC Foster Wheeler	919-325-6497	david.stroud@amecfc.com
Charles Stainback	3618 Eagle Point Ln A ^{Unit}	309-361-3464	crstainback@gmail.com
Polly Stainback	" " " "	309-210-9328	pas1247@gmail.com
DONALD EVANS	930 Brookside Dr.	252-237-6417	
Bruce Rose	419 Monticello Dr.	252-837-6750	bruce@colsona.org
Tom Fyle	503E County Club Dr	252-236-1357	Tom_Fyle_C_Fisher.Com
JAMES JOHNSON	PO Box 7117	252-291-0404	jamesjohnsoniii@colsona.org
Susan Kellum	2224 Nash Place N	858-390-0923	skellum@wilsonnc.org
Llewellyn Jones	403 Brentwood Dr.	252-291-5951	llewellynjones@earthlink.net



Agenda

Public Meeting of the Floodplain Management Planning Committee (FMPC)
2nd Floor Conference Room – Planning and Development Services Department
August 26th, 2015
5:00 PM

1. Call meeting to order
2. Objectives for meeting
3. Review the “draft” Floodplain Management Plan (FMP), Repetitive Loss Area Analysis (RLAA), and Program for Public Information (PPI)
4. Questions
5. Adjourn

Meeting Minutes

August 26th, 2015

City of Wilson Public Meeting

Planning & Development Services Department

A public meeting of the City of Wilson's Floodplain Management Planning Committee (FMPC) was held on August 26th, 2015 at 5:00 PM on the second floor Conference Room of the City's Planning & Development Services Department. Mr. Stroud opened the meeting by indicating the three products which have been created by the City (Floodplain Management Plan, Repetitive Loss Area Analysis, and Program for Public Information). Mr. Stroud provided a Power Point Presentation and gave an overview of the development of each of the 3 documents including specific detail unique to each.

Mr. Stroud discussed the Floodplain Management Plan and first presented the goals and objectives where were developed to guide the plan. Next, Mr. Stroud discussed the various flood hazards which were profiled and the vulnerability results of each of those hazards. Then the mitigation projects were explained and described.

The second part of the presentation focused on the City's Repetitive Loss Area Analysis (RLAA). Mr. Stroud explained that all property owners in the Repetitive Loss Areas were first notified before any field survey work was completed. A building by building detailed analysis was completed where specific data was collected on each building. Various flood protection and mitigation techniques were evaluated for each building and potential mitigation measures were proposed.

Finally, Mr. Stroud described the process to create the Program for Public Information (PPI). The makeup of the committee was critical for development of this plan. Mr. Stroud described that an assessment of the insurance and flood conditions of the City began this process. Next the committee evaluated all of the existing outreach projects the City had completed and evaluated what outreach projects could be completed in the future. A final list of outreach projects was developed based on this review.

Mr. Stroud indicated that all three planning documents would need to be approved by the City Council. There were several questions from the 9 citizens who attended this public meeting. The meeting adjourned at 6:45 PM.

Floodplain Management Plan
Repetitive Loss Area Analysis
Program for Public Information

Public Meeting

Wednesday, August 26, 2015
5:00 PM

City Hall - 2nd Floor Conference Room

Name	Contact Information
1 <i>Walter Shepard</i>	<i>1908 Canal Dr. A.P.</i>
2 <i>Andrew Bodwin</i>	<i>1904 Canal Dr. Wilson NC</i>
3 <i>Denise Allan</i>	<i>D2Allan@yahoo.com</i>
4 <i>Mary Ojawa</i>	<i>1103 Cardinal Dr. NW. Wilson</i>
5 <i>Richard Dew</i>	<i>5113 Brewster Rd. Wickliffe, NC</i>
6 <i>Gaye Maas</i>	<i>4302 FAWCO I maas@my.rrdc.com</i>
7 <i>Hewellyn Jones</i>	<i>403 Brentwood Dr. Wilson (Hewellyn Jones @ Facebook)</i>
8 <i>DAVID SELVO - AMEC</i>	<i>RALEIGH, NC</i>
9 <i>Janet Holland</i>	<i>City of Wilson</i>
10 <i>Laura Mercer</i>	<i>3207 Granite Ct. Wilson</i>
11 <i>bsil-juris</i>	<i>City of Wilson</i>
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Public Survey

The City of Wilson distributed a public survey that requested public input into the Floodplain Management Plan planning process and the identification of mitigation activities that could lessen the risk and impact of future flood hazard events. The survey was provided on the City’s website.



WILSON
NORTH CAROLINA

The City of Wilson needs your help!

The City of Wilson is working to become less vulnerable to flooding and your participation is important to us!

The City is preparing a *Floodplain Management Plan*. This Plan will identify and assess our community’s flood hazard risks and determine how to best minimize or manage those risks and what outreach materials may be necessary to better communicate those risks.

This survey is an opportunity for you to share your opinions and participate in the mitigation planning process. The information you provide will help us better understand your hazard concerns and can lead to mitigation activities that should help lessen the impacts of future hazard events.

Please help us by completing this survey by April 30, 2015 and returning it to:

Daryl Norris, P.E., CFM
City of Wilson – Stormwater Division
112 Goldsboro St E
Wilson, NC 27893

Surveys can also be emailed to dnorris@wilsonnc.org

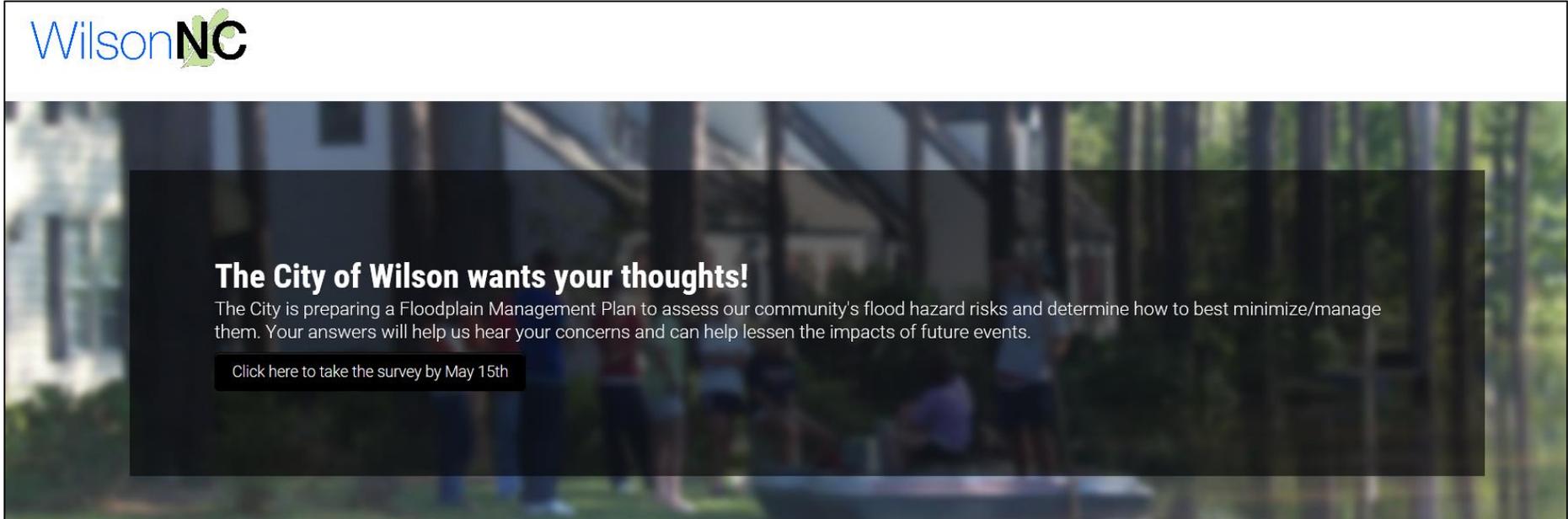
1. **Where do you live?**
 City of Wilson Other: _____

2. **Have you ever experienced or been impacted by high water or flooding in Wilson?**
 Yes
 No

a. **If “Yes,” please explain:**

Page 1 of 3

Public Survey posted on City's website



Wilson NC

The City of Wilson wants your thoughts!

The City is preparing a Floodplain Management Plan to assess our community's flood hazard risks and determine how to best minimize/manage them. Your answers will help us hear your concerns and can help lessen the impacts of future events.

[Click here to take the survey by May 15th](#)

The City received 55 survey responses. The following is a summary of the responses received.

Q1: Where do you live?

Answer Choices	Percentage	Number Responding
Wilson	85	47
Other	15	8
Total	100	55

Q2: Have you ever experienced or been impacted by high water or flooding in Wilson?

Answer Choices	Percentage	Number Responding
Yes	67	37
No	33	18
Total	100	55

Q3: How concerned are you about the possibility of your community being impacted by flooding?

Answer Choices	Percentage	Number Responding
Extremely concerned	57	30
Somewhat concerned	28	15
Not concerned	15	8
Total	100	53

Q4: Is your home located in a Federal Emergency Management Agency (FEMA) floodplain?

Answer Choices	Percentage	Number Responding
Yes	4	2
No	56	31
I don't know	40	22
Total	100	55

Q5: Do you have flood insurance for your home/personal property?

Answer Choices	Percentage	Number Responding
Yes	11	6
No	80	44
I don't know	9	5
Total	100	55

Q6: If "no" to previous question, why not?

Answer Choices	Percentage	Number Responding
My home is not located in a floodplain	35	16
I rent	20	9
It's too expensive	18	8
I don't need it because it never floods	0	0
I don't need it because my home is elevated or otherwise protected	2	1
I never really considered it	9	4
Other	16	7
Total	100	45

Q7: Have you taken any actions to protect your home from flood damage?

Answer Choices	Percentage	Number Responding
Yes	33	18
No	67	36
Total	100	54

Q8: Do you know what government agency/office to contact regarding the risks associated with flooding?

Answer Choices	Percentage	Number Responding
Yes	41	22
No	59	32
Total	100	54

Q9: What is the most effective way for you to receive information about how to make your home or neighborhood more resistant to flood damage?*

Answer Choices	Percentage	Number of Responses Received
Newspaper	12	7
Television advertising or programs	0	0
Radio advertising or programs	2	1
Internet	11	6
Email	22	12
Mail	36	20
Public workshops/meetings	2	1
School meetings	2	1
Other	13	7
Total		55

*Note: Respondents were able to choose more than one answer choice

Q10: In your opinion, what are some steps your local government could take to reduce the risk of flooding in your neighborhood?

A sample of the responses received to Question 10 are shown below:

- Ensure drains and channels are clear of debris.
- Replace outdated drainage systems or add additional drainage.
- Create signs that say 'flood zone', 'drainage' and 'creek'.
- Restrict development in flood-prone areas and regulate/maintain storm water system to mitigate nuisance flooding.
- Develop a plan of action for property owners. They don't know what they can and cannot do, and what potential remedies need a permit. The recent article in the Wilson Times was a good start.
- Be as proactive as possible by determining the reason for flooding and attempting to put policies in place to reduce and lessen the chance for flooding.

The **Draft Risk and Vulnerability Assessment** was posted for public review and comment on the City website.

Wilson NC

Flood Information

Flood hazard areas have been mapped in the City of Wilson and Wilson County. Most of these areas are located along the various creeks and streams throughout the City and County. Maps showing the location of these flood hazard areas are available for viewing at the Wilson County Public Library and the City of Wilson Planning Department. Elevation certificates are also available at the City of Wilson Planning Department.

While hurricanes are generally considered a coastal problem, Hurricane Hugo illustrated that piedmont counties are not safe from the crushing winds and inland flooding caused by hurricanes. You should be concerned about them.

Inland flooding due to smaller storms is more frequent than hurricanes and can cause dams to overflow and streams and rivers to swell. These floods can cause great damage and loss of life. Flash floods move very fast. They can roll boulders, uproot trees, and destroy buildings and bridges.

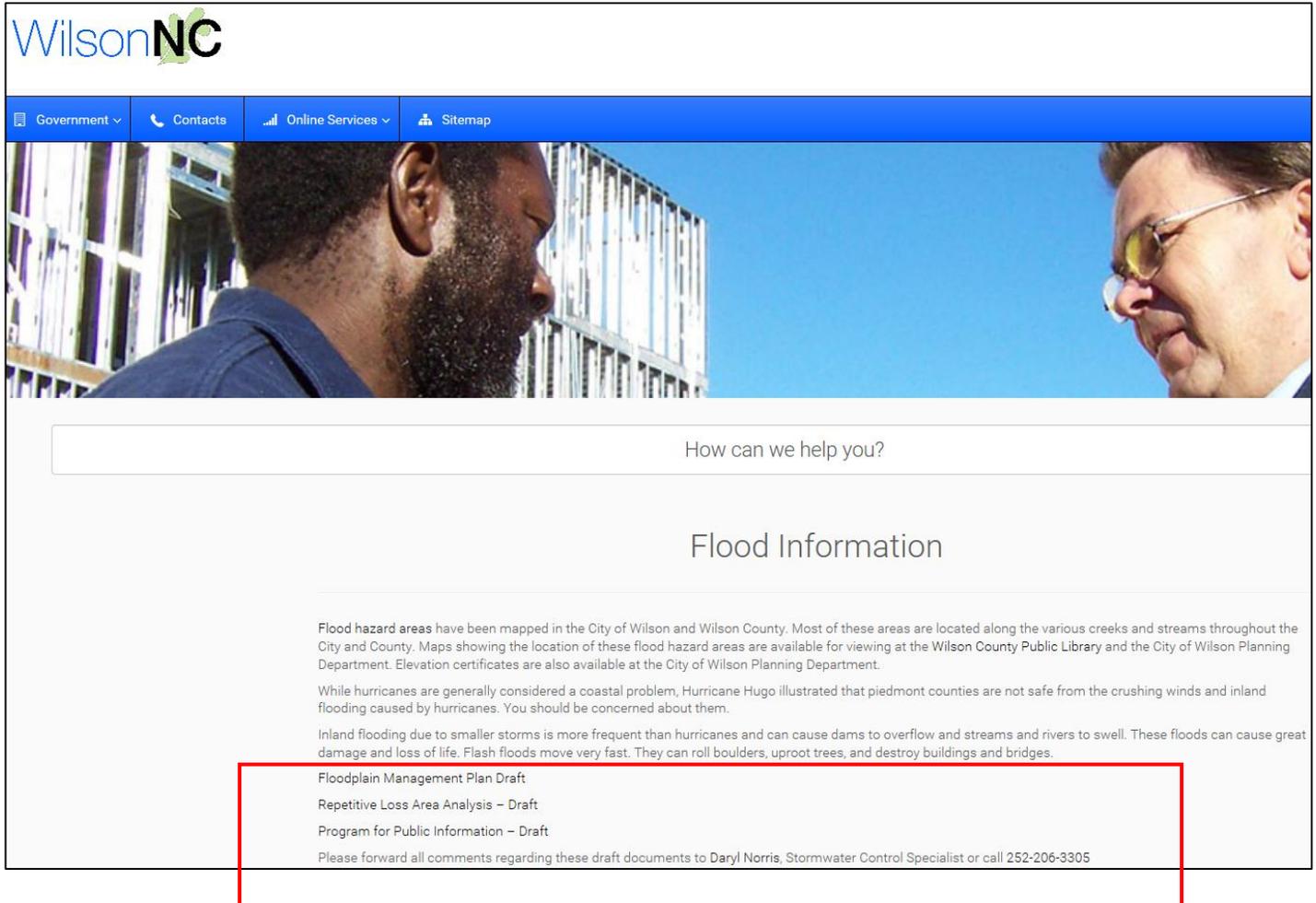
Click or tap any section title to collapse or expand it.

Expand all sections | Collapse all sections

- The Natural and Beneficial Functions of the Local Flood Plain
- Flood Warning
- Be Prepared
- Flood Insurance
- Property Protection Measures
- Floodplain Development Permits
- The Substantial Improvement/Substantial Damage Requirements
- Drainage System Maintenance
- Floodplain Management Plan Survey
- Hazard Identification and Risk Assessment**

Click on the following link to download the Hazard Identification and Risk Assessment document:
[DRAFT Hazard Identification and Risk Assessment \(PDF\)](#)

The City of Wilson posted the entire **Draft Floodplain Management Plan** on its website for public review and comment.



Wilson NC

Government ▾ | Contacts | Online Services ▾ | Sitemap

How can we help you?

Flood Information

Flood hazard areas have been mapped in the City of Wilson and Wilson County. Most of these areas are located along the various creeks and streams throughout the City and County. Maps showing the location of these flood hazard areas are available for viewing at the Wilson County Public Library and the City of Wilson Planning Department. Elevation certificates are also available at the City of Wilson Planning Department.

While hurricanes are generally considered a coastal problem, Hurricane Hugo illustrated that piedmont counties are not safe from the crushing winds and inland flooding caused by hurricanes. You should be concerned about them.

Inland flooding due to smaller storms is more frequent than hurricanes and can cause dams to overflow and streams and rivers to swell. These floods can cause great damage and loss of life. Flash floods move very fast. They can roll boulders, uproot trees, and destroy buildings and bridges.

- Floodplain Management Plan Draft
- Repetitive Loss Area Analysis – Draft
- Program for Public Information – Draft

Please forward all comments regarding these draft documents to Daryl Norris, Stormwater Control Specialist or call 252-206-3305

Planning Step 3: Coordinate

This planning step credits the incorporation of other plans and other agencies' efforts into the development of the Floodplain Management Plan. Other agencies and organizations must be contacted to determine if they have studies, plans and information pertinent to the Floodplain Management Plan, to determine if their programs or initiatives may affect the community's program, and to see if they could support the community's efforts. A sample coordination letter is provided below. A copy of all coordination letters can be provided by the City of Wilson Planning & Development Services Department upon request.



April 10, 2015

Wilson County Emergency Mgmt Agency
Gordon Deno
1817 Glendale Drive
Wilson, NC 27893

RE: City of Wilson Floodplain Management Plan

Dear Gordon Deno:

The City of Wilson is developing a floodplain management plan to address the flood hazards and associated stormwater and local drainage issues that impact the community. This planning process incorporates the 10-steps of Activity 510-Floodplain Management Planning in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) Program.



Our objective in reaching out to other agencies and stakeholders is to coordinate with those who may bring additional information to the planning process and associated flooding issues within Wilson. Any information, studies, etc. which may supplement the work of the established Floodplain Management Planning Committee (FMPC) would be welcomed. Additionally, I invite your participation at our committee and public meetings throughout the planning process. As future meeting dates are determined, they will be posted on the City's website: www.WilsonNC.org and emailed.

The City has teamed with Mr. David Stroud of Amec Foster Wheeler to help complete the floodplain management plan. He may be reached at (919) 765-9986 or david.stroud@amecfw.com. Serving as coordinators for the City are Daryl Norris, Stormwater Environmental Specialist, and may be reached at (252) 296-3305 or dnorris@wilsonnc.org, and Josh Jurius, Planner, and may be reached at (252) 399-2387 or jjurius@wilsonnc.org.

We look forward to hearing from you and/or participation at future committee and public meetings.

Sincerely,

Janet Holland, AICP
Land Development Manager

DEVELOPMENT SERVICES
Geographic Information Systems ■ Neighborhood Improvement ■ Construction Standards ■ Land Development
112 Goldsboro Street E ■ PO Box 10 ■ Wilson, NC 27894-0010 ■ 252.399.2219 or 252.399.2220 ■ FAX 252.399.2233

Appendix B: Mitigation Strategy

Hazard Identification & Profiles

Table B.1 Hazard Summary for City of Wilson

Hazard	Frequency of Occurrence	Spatial Extent	Potential Magnitude	Significance
Flood: 100-/500-year	Occasional	Significant	Limited	Medium
Flood: Stormwater/Localized Flooding	Highly Likely	Limited	Limited	Medium
Major Stream Bank Erosion	Unlikely	Limited	Negligible	Low
Dam/Levee Failure	Unlikely	Limited	Negligible	Low
<p>Guidelines:</p> <p>Frequency of Occurrence: Highly Likely: Nearly 100% probability within the next year. Likely: Between 10 and 100% probability within the next year. Occasional: Between 1 and 10% probability within the next year. Unlikely: Less than 1% probability within the next year.</p> <p>Potential Magnitude: Catastrophic: More than 50% of the area affected. Critical: 25 to 50% of the area affected. Limited: 10 to 25% of the area affected. Negligible: Less than 10% of the area affected.</p> <p>Spatial Extent: Limited: Less than 10% of planning area. Significant: 10-50% of planning area. Extensive: 50-100% of planning area.</p> <p>Significance: Low Medium High</p>				

B.1 Risk Assessment Methodology

B.1.1 Calculating Likelihood of Future Occurrence

The frequency of past events is used in this section to gauge the likelihood of future occurrences. Based on historical data, the likelihood of future occurrence is categorized into one of the following classifications:

Highly Likely: Near 100% chance of occurrence in next year, or happens every year.

Likely: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less.

Occasional: Between 1 and 9% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years.

Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.

B.1.2 Calculating Vulnerability

Vulnerability is measured in general, qualitative terms, and is a summary of the potential impact based on past occurrences, spatial extent, and damage and casualty potential:

Extremely Low: The occurrence and potential cost of damage to life and property is very minimal to non-existent.

Low: Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.

Medium: Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.

High: Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have already occurred in the past.

Extremely High: Very widespread and catastrophic impact.

B.1.3 Defining Significance (Priority) of a Hazard

Defining the significance or priority of a hazard to a community is based on a subjective analysis of several factors. This analysis is used to focus and prioritize hazards and associated mitigation measures for the plan. These factors include the following:

Past Occurrences: Frequency, extent, and magnitude of historic hazard events.

Likelihood of Future Occurrences: Based on past hazard events.

Ability to Reduce Losses through Implementation of Mitigation Measures: This looks at both the ability to mitigate the risk of future occurrences as well as the ability to mitigate the vulnerability of a community to a given hazard event. It also considers the extent to which existing mitigation measures are in place to adequately address the hazard.

B.1.4 City of Wilson Hazard ID/Vulnerability/Priority Summary

Flood: 100-/500-year

- 100-yr and 500-yr floodplain coverage within the City.
- LOFO: 100-Occasional; 500-Unlikely (By Definition)
- Vulnerability: Medium
- Priority Hazard

Flood: Stormwater/Localized Flooding

- Localized flooding occurs at various times throughout the year with several areas of primary concern to the City. Localized flooding and ponding affect streets and property.
- LOFO: Highly Likely
- Vulnerability: Medium
- Priority Hazard

Stream Bank Erosion (Major)

- The annual probability level assigned for major erosion events is less than 1% probability within the next year. Minor stream bank erosion is a priority for the City, and City staff will continue to work with homeowners to monitor and address this issue in the future.
- LOFO: Unlikely
- Vulnerability: Low
- Non-Priority Hazard

Dam/Levee Failure

- Four dams are located within the City of Wilson (one high hazard, three intermediate hazard).
- There are no levees located within the City of Wilson.
- There are no recorded dam breaches or levee failures within the City of Wilson.
- LOFO: Unlikely
- Vulnerability: Low
- Priority Hazard

B.1.5 Summary of Priority Hazards

Priority Hazards

- Flood: 100-/500-year
- Flood: Stormwater/ Localized Flooding
- Dam/Levee Failure

Non-Priority Hazards

- Stream Bank Erosion (Major)

B. 2 Mitigation Goals Development

B.2.1 Formulating Mitigation Goals

The FMPC collected and provided data for the City of Wilson Floodplain Management Plan. From this information, a Risk Assessment was developed that describes the risk and vulnerability of the City to identified hazards and includes an assessment of the area's current capabilities for countering these threats through existing policies, regulations, programs, and projects.

This analysis identifies areas where improvements could or should be made. Formulating Goals leads to incorporating these improvements into the Mitigation Strategy portion of the plan. The planning goals should provide direction for what should be done to make the planning area more disaster resistant.

GOALS: Goals are stated without regard for implementation; that is, implementation cost, schedule, and means are not considered. Goals are defined before considering how to accomplish them so that the goals are not dependent on the means of achievement. Goals are public policy statements that:

- Represent basic desires of the jurisdiction;
- Encompass all aspects of planning area, public and private;
- Are nonspecific, in that they refer to the quality (not the quantity) of the outcome;
- Are future-oriented, in that they are achievable in the future; and
- Are time-independent, in that they are not scheduled events.

B.2.2 Goal Development

The Wilson FMPC conducted an exercise to outline its goals for this Floodplain Management Plan. The FMPC agreed upon four general goals for this planning effort:

Goal 1: Protect health and safety.

Goal 2: Reduce flood damage through flood resilient strategies and measures.

Goal 3: Reduce damage to insurable buildings in repetitively flooded areas.

Goal 4: Protect critical and essential facilities from flood damage.

The FMPC also developed 14 objectives in support of the goals. The objective numbers relate to the goal numbers above:

Objective 1.1: Advise the community of the safety and health precautions to implement before, during, and after a flood.

Objective 1.2: Publish the names of roads and intersections which often flood after heavy rain events or major storms.

Objective 1.3: Educate everyone on the benefits of improved water quality and associated habitat.

Objective 1.4: Identify the location of vulnerable populations to aid in emergency evacuations.

Objective 2.1: Prioritize capital improvement projects to address areas where poor drainage causes substantial flooding.

Objective 2.2: Encourage development outside of the special flood hazard area (1% annual chance flood).

Objective 2.3: Use the most effective approaches to protect buildings from flood damage, including elevation, acquisition, and other retrofitting techniques where appropriate.

Objective 2.4: Encourage property owners to assume an appropriate level of responsibilities for their own protection, including the purchase of flood insurance.

Objective 3.1: Prioritize stormwater management projects that target repetitive loss areas.

Objective 3.2: Develop a property buyout master plan to identify and purchase repetitive loss properties.

Objective 3.3: Recommend purchasing renter's insurance and use of the Increased Cost of Compliance (ICC) provision to mitigate flood damage.

Objective 4.1: Prioritize critical and essential facilities in need of protection from flood damage.

Objective 4.2: Provide 100- and 500-year flood protection for dry land access, where appropriate.

Objective 4.3: Leverage public funding to protect critical and essential facilities.

B.3 Categories of Mitigation Measures Considered

The following categories are based on the Community Rating System.

- Prevention
- Property Protection
- Natural Resource Protection
- Emergency Services
- Structural Projects
- Public Information and Outreach

B.4 Alternative Mitigation Measures per Category

Note: the CRS Credit Sections are based on the 2013 CRS Coordinator's Manual.

B.4.1 Preventative and Regulatory Measures

Preventative measures are designed to keep a problem - such as flooding - from occurring or from getting worse. The objective of preventative measures is to ensure that future development is not exposed to damage and does not cause an increase in damages to other properties. Building, zoning, planning and code enforcement offices usually administer preventative measures. Some examples of types of preventative measures include:

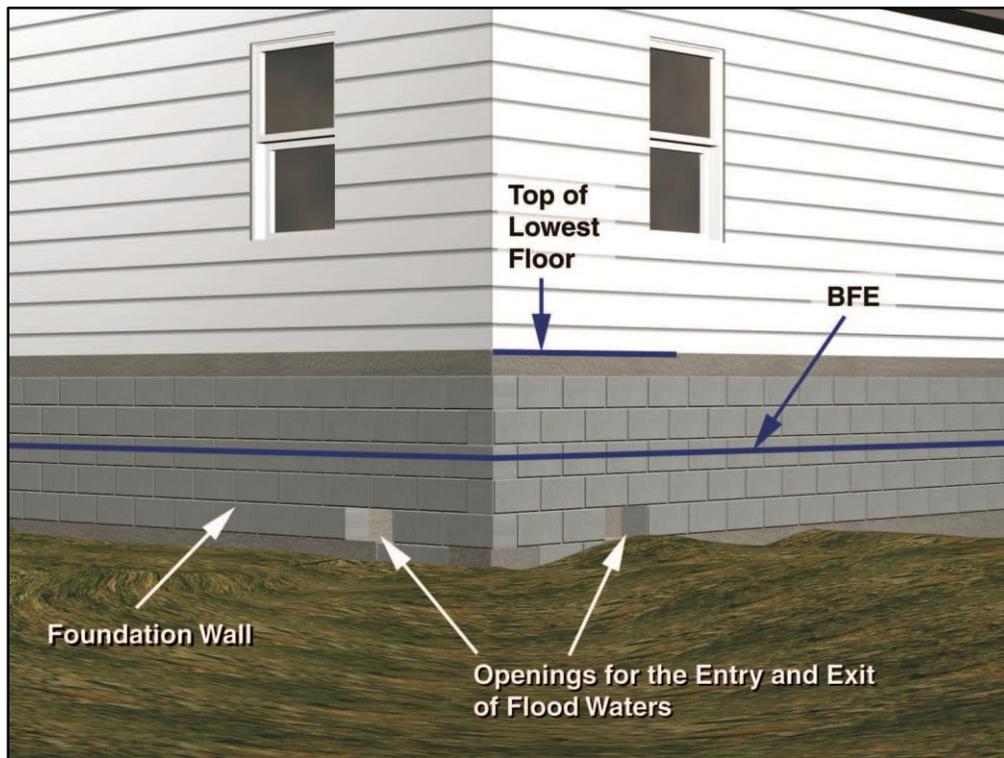
- Building codes
- Zoning ordinance
- Comprehensive or land use plan
- Open space preservation

- Floodplain regulations
- Subdivision regulations
- Stormwater management regulations

Building Codes

Building codes provide one of the best methods for addressing natural hazards. When properly designed and constructed according to code, the average building can withstand many of the impacts of natural hazards. Hazard protection standards for all new and improved or repaired buildings can be incorporated into the local building code. Building codes can ensure that the first floors of new buildings are constructed to be higher than the elevation of the 100-year flood (the flood that is expected to have a one percent chance of occurring in any given year). This is shown in Figure B.1.

Just as important as having code standards is the enforcement of the code. Adequate inspections are needed during the course of construction to ensure that the builder understands the requirements and is following them. Making sure a structure is properly elevated and anchored requires site inspections at each step.



Source: FEMA Publication: *Above the Flood: Elevating Your Floodprone House, 2000*

Figure B.1 – Building Codes and Flood Elevations

The City of Wilson has adopted the 2012 North Carolina Building Codes. In accordance with the 2012 North Carolina Building Code (Section 1804), the ground immediately adjacent to the foundation shall be sloped away from the building at a slope of not less than 5-percent for a minimum distance of 10 feet. For buildings and structures in flood hazard areas, the finished ground level of an under-floor space such as a crawl space shall be equal to or higher than the outside finished ground level on at least one side (Section 1805).

In accordance with the 2012 North Carolina Residential Code (Section R401), lots shall be graded to drain surface water away from foundation walls. The grade shall fall a minimum of 6 inches within the first 10 feet.

In accordance with the City's Flood Damage Prevention Ordinance (adopted 2013), in all special flood hazard areas where BFE data has been provided, the elevation to which all structures and other development located within the special flood hazard areas must be elevated, or floodproofed if non-residential, shall be the BFE plus 2.5 feet of freeboard.

Comprehensive or Land Use Plan

Building codes provide guidance on how to build in hazardous areas. Planning and zoning activities direct development away from these areas, particularly floodplains and wetlands. They do this by designating land uses that are compatible with the natural conditions of land that is prone to flooding, such as open space or recreation. Planning and zoning activities can also provide benefits by simply allowing developers more flexibility in arranging improvements on a parcel of land through the planned development approach.

The Wilson 20/20 Community Vision Report, adopted in August 2007, was prepared for Wilson County and the City of Wilson by the University of North Carolina at Chapel Hill's School of Government. The report established a vision statement for the community and specific goals for future improvements. The planning process used to establish the vision and goals was dynamic and widespread, involving many facets of the greater Wilson community. This 2030 Comprehensive Plan incorporates the vision and goals of the Wilson 20/20 Community Vision and sets out an approach for implementing the vision through strategic actions. The Wilson 2030 Comprehensive Plan is intended to ensure that the City grows in ways that enhances the community's vitality and overall quality of life. The plan addresses neighborhood preservation, economic opportunities, a transportation system, development of parks and recreation facilities, and the protection of natural resources and environmental quality.

Open Space Preservation

Keeping the floodplain and other hazardous areas open and free from development is the best approach to preventing damage to new developments. Open space can be maintained in agricultural use or can serve as parks, greenway corridors and golf courses.

Comprehensive and capital improvement plans should identify areas to be preserved by acquisition and other means, such as purchasing an easement. With an easement, the owner is free to develop and use private property, but property taxes are reduced or a payment is made to the owner if the owner agrees to not build on the part set aside in the easement.

Although there are some federal programs that can help acquire or reserve open lands, open space lands and easements do not always have to be purchased. Developers can be encouraged to dedicate park land and required to dedicate easements for drainage and maintenance purposes.

The City of Wilson has several parks and other public lands designated as open space. Along some water features, certain portions of lots have restrictive regulations which prohibit any development including placement of fill.

Zoning Ordinance

City and County zoning consists of both a zoning map and a written ordinance that divides the jurisdictions into zoning districts, including various residential, commercial, mixed-use and industrial districts. The zoning regulations describe what type of land use and specific activities are permitted in each district, and also regulate how buildings, signs, parking, and other construction may be placed on a lot. The zoning regulations also provide procedures for rezoning and other planning applications. The

zoning map and zoning regulations provide properties in Wilson’s planning and zoning jurisdiction with certain rights to development. The City’s planning area also includes an extraterritorial jurisdiction (ETJ) which encompasses an extra 5,600 acres surrounding the City. The ETJ provides for a control on development adjacent to the City.

Floodplain Regulations

The City of Wilson UDO also contains flood damage prevention standards which apply to all special flood hazard areas within the City of Wilson and its extraterritorial jurisdiction. In all special flood hazard areas where Base Flood Elevation (BFE) data has been provided, the elevation to which all structures and other development located within the special flood hazard areas must be elevated, or floodproofed if non-residential, shall be the BFE plus 2.5 feet of freeboard. The ordinance also contains provisions for Special Flood Hazard Conservation Areas (SFHCAs) in addition to the requirements for the SFHAs.

Stormwater Management Regulations

Stormwater runoff is increased when natural ground cover is replaced by urban development. Development in the watershed that drains to a river can aggravate downstream flooding, overload the community's drainage system, cause erosion, and impair water quality. There are three ways to prevent flooding problems caused by stormwater runoff:

- 1) Regulating development in the floodplain to ensure that it will be protected from flooding and that it won't divert floodwaters onto other properties;
- 2) Regulating all development to ensure that the post-development peak runoff will not be greater than it was under pre-development conditions; and
- 3) Set construction standards so buildings are protected from shallow water. z

As required by state regulations, the City monitors its drainage outfall into the Neuse River drainage basin, and manages development in water supply watersheds within its jurisdiction. Regulations pertaining to the two water supply watersheds within Wilson (WS III and WS IV) limit development density and impervious surface area, and also define critical and protected areas within each watershed. The City’s Watershed Protection Overlay District corresponds with the critical and protected areas for each defined watershed. The City’s UDO requires that there shall be no net increase in peak stormwater runoff flow leaving a development from predevelopment conditions for the 1-year, 24-hour storm. The UDO also enforces requirements of the state designated Watershed Protection District and required vegetative buffers ranging from 50ft – 100ft.

Reducing Future Flood Losses

Future flood losses in the City of Wilson will be reduced through the implementation of the 2012 North Carolina Building Code and the City’s 2013 Flood Damage Prevention Ordinance. Enforcement of the first floor elevation requirement will provide an extra level of protection for buildings constructed in the City.

Zoning and comprehensive planning can work together to reduce future flood losses by directing development away from hazard prone areas. Creating or maintaining open space is the primary way to reduce future flood losses. The City of Wilson has many open space and natural parcels which serve to reduce future flood losses by remaining open. These parks and natural preserved areas create opportunities for the public to benefit from education and recreation while eliminating potential for future flooding.

Stormwater management and the requirement that post development runoff cannot exceed pre-development conditions is one way to prevent future flood losses. Retention and detention requirements also help to reduce future flood losses.

CRS Credit

The CRS encourages strong building codes. It provides credit in two ways: points are awarded based on the community's Building Code Effectiveness Grading Schedule (BCEGS) classification and points are awarded for adopting the International Code series. Wilson's BCEGS rating is a Class 4 for both residential and commercial. The FMPC did not recommend any projects related to the building code since the City is implementing the State of North Carolina Building Code.

CRS credits are available for regulations that encourage developers to preserve floodplains or other hazardous areas away from development. There is no credit for a plan, only for the enforceable regulations that are adopted pursuant to a plan. Wilson currently receives credit for Activity 430 – Higher Regulatory Standards. Additionally, Wilson currently receives credit for Activity 420 – Open Space Preservation. Preserving flood prone areas as open space is one of the highest priorities of the Community Rating System. The credits in the 2013 manual have doubled for OSP (Open Space Preservation). The City also currently receives credit for Activity 450 – Stormwater Management. The community enforces regulations for stormwater management, soil and erosion control and water quality. The FMPC did not recommend any changes to the city's Comprehensive Plan, Zoning Ordinance, Subdivision Ordinance or Flood Damage Prevention Ordinance.

Conclusions

- The zoning ordinance does not designate floodplain as a special type of district.
- Open space is designated as a special type of district.

Recommendations

- The City should continue to implement activities in the CRS Program under the guidance of the 2013 CRS Coordinator's Manual
- The City should consider creating an Open Space Plan.
- The FMPC recommended that the city continue to create open space through a variety of measures including buying out properties.

B.4.2 Property Protection Measures

Property protection measures are used to modify buildings or property subject to damage. Property protection measures fall under three approaches:

- Modify the site to keep the hazard from reaching the building;
- Modify the building (retrofit) so it can withstand the impacts of the hazard; and
- Insure the property to provide financial relief after the damage occurs.

Property protection measures are normally implemented by the property owner, although in many cases technical and financial assistance can be provided by a government agency.

Keeping the Hazard Away

Generally, natural hazards do not damage vacant areas. As noted earlier, the major impact of hazards is to people and improved property. In some cases, properties can be modified so the hazard does not reach the

damage-prone improvements. For example, a berm can be built to prevent floodwaters from reaching a house.

Flooding

There are five common methods to keep a flood from reaching and damaging a building:

- Erect a barrier between the building and the source of the flooding.
- Move the building out of the flood-prone area.
- Elevate the building above the flood level.
- Demolish the building.
- Replace the building with a new one that is elevated above the flood level.

Barriers

A flood protection barrier can be built of dirt or soil (a "berm") or concrete or steel (a "floodwall"). Careful design is needed so as not to create flooding or drainage problems on neighboring properties. Depending on how porous the ground is, if floodwaters will stay up for more than an hour or two, the design needs to account for leaks, seepage of water underneath, and rainwater that will fall inside the perimeter. This is usually done with a sump or drain to collect the internal groundwater and surface water and a pump and pipe to pump the internal drainage over the barrier.

Barriers can only be built so high. They can be overtopped by a flood higher than expected. Barriers made of earth are susceptible to erosion from rain and floodwaters if not properly sloped, covered with grass, and properly maintained.

Relocation

Moving a building to higher ground is the surest and safest way to protect it from flooding. While almost any building can be moved, the cost increases for heavier structures, such as those with exterior brick and stone walls, and for large or irregularly shaped buildings. Relocation is also preferred for large lots that include buildable areas outside the floodplain or where the owner has a new flood-free lot (or portion of the existing lot) available.

Building Elevation

Raising a building above the flood level can be almost as effective as moving it out of the floodplain. Water flows under the building, causing little or no damage to the structure or its contents. Raising a building above the flood level is cheaper than moving it and can be less disruptive to a neighborhood. Elevation has proven to be an acceptable and reasonable means of complying with floodplain regulations that require new, substantially improved, and substantially damaged buildings to be elevated above the base flood elevation.

Demolition

Some buildings, especially heavily damaged or repetitively flooded ones, are not worth the expense to protect them from future damages. It is cheaper to demolish them and either replace them with new, flood protected structures, or relocate the occupants to a safer site. Demolition is also appropriate for buildings that are difficult to move - such as larger, slab foundation or masonry structures - and for dilapidated structures that are not worth protecting.

Pilot Reconstruction

If a building is not in good shape, elevating it may not be worthwhile or it may even be dangerous. An alternative is to demolish the structure and build a new one on the site that meets or exceeds all flood protection codes. FEMA funding programs refer to this approach as "pilot reconstruction." It is still a pilot program, and not a regularly funded option. Certain rules must be followed to qualify for federal funds for pilot reconstruction.

Retrofitting

An alternative to keeping the hazard away from a building is to modify or retrofit the site or building to minimize or prevent damage. There are a variety of techniques to do this, as described below.

Dry Floodproofing

Dry floodproofing means making all areas below the flood protection level watertight. Walls are coated with waterproofing compounds or plastic sheeting. Openings, such as doors, windows and vents, are closed, either permanently, with removable shields, or with sandbags. Dry floodproofing of new and existing nonresidential buildings in the regulatory floodplain is permitted under state, FEMA and local regulations. Dry floodproofing of existing residential buildings in the floodplain is also permitted as long as the building is not substantially damaged or being substantially improved. Owners of buildings located outside the regulatory floodplain can always use dry floodproofing techniques.

Dry floodproofing is only effective for shallow flooding, such as repetitive drainage problems. It does not protect from the deep flooding along lakes and larger rivers caused by hurricanes or other storms.

Wet Floodproofing

The alternative to dry floodproofing is wet floodproofing: water is let in and everything that could be damaged by a flood is removed or elevated above the flood level. Structural components below the flood level are replaced with materials that are not subject to water damage. For example, concrete block walls are used instead of wooden studs and gypsum wallboard. The furnace, water heater and laundry facilities are permanently relocated to a higher floor. Where the flooding is not deep, these appliances can be raised on blocks or platforms.

Insurance

Technically, insurance does not mitigate damage caused by a natural hazard. However, it does help the owner repair, rebuild, and hopefully afford to incorporate some of the other property protection measures in the process. Insurance offers the advantage of protecting the property, as long as the policy is in force, without requiring human intervention for the measure to work.

Private Property

Although most homeowner's insurance policies do not cover a property for flood damage, an owner can insure a building for damage by surface flooding through the NFIP. Flood insurance coverage is provided for buildings and their contents damaged by a "general condition of surface flooding" in the area. Most people purchase flood insurance because it is required by the bank when they get a mortgage or home improvement loan. Usually these policies just cover the building's structure and not the contents. Contents coverage can be purchased separately. Renters can buy contents coverage, even if the owner does not buy structural coverage on the building. Most people don't realize that there is a 30-day waiting period to purchase a flood insurance policy and there are limits on coverage.

Public Property

Governments can purchase commercial insurance policies. Larger local governments often self-insure and absorb the cost of damage to one facility, but if many properties are exposed to damage, self-insurance can drain the government's budget. Communities cannot expect federal disaster assistance to make up the difference after a flood.

Local Implementation/CRS Credit

The CRS provides the most credit points for acquisition and relocation under Activity 520, because this measure permanently removes insurable buildings from the floodplain. The City of Wilson does currently receive credit for Activity 520 – Acquisition and Relocation. The City of Wilson purchased 10 buildings after Hurricane Floyd in 1999. The FMPC recommended that the City continue to prepare a plan for the purchase of repetitive loss buildings and other buildings which are subject to flood damage.

The CRS credits barriers and elevating existing buildings under Activity 530. The credit for Activity 530 is based on the combination of flood protection techniques used and the level of flood protection provided. Points are calculated for each protected building. Bonus points are provided for the protection of repetitive loss buildings and critical facilities. The City does not currently receive credit for Activity 530 – Flood Protection. The Wilson City Engineer has the technical expertise to provide advice and assistance to homeowners who may want to flood proof their home or business. The FMPC recommends that the City continue to publicize technical assistance for retrofitting.

Flood insurance information for the City is provided in Section 3.3.2. The City of Wilson publicizes the requirement for flood insurance to those requesting FIRM information through the Mandatory Purchase Requirement and outreach brochures to floodplain residents and repetitive loss areas also promote the purchase of flood insurance. Since a large number of the buildings in the repetitive loss areas are rented and not owned by the occupant, new outreach will focus on renters.

There is no credit for purchasing flood insurance, but the CRS does provide credit for local public information programs that explain flood insurance to property owners and preparing plans to increase coverage. The CRS also reduces the premiums for those people who do buy NFIP coverage. The City of Wilson currently receives credit for Activity 330 – Outreach Projects. The FMPC would like to focus outreach to renters to explain that NFIP renters insurance is available to protect valuables inside the home.

Conclusions

- There are several ways to protect properties from flood damage. The advantages and disadvantages of each should be carefully examined for that particular situation.
- Property owners can implement some property protection measures at little cost, especially for sites in areas of low level flooding.
- Approximately 30% of properties located in the Zone AE flood zone have a flood insurance policy; approximately 60% of properties located in the Zone X 500-yr and Zone X Unshaded flood zones have flood insurance.
- The local government can promote and support property protection through outreach and financial incentives.
- Property protection measures can protect the most flood-prone buildings in the City such as those which are repetitively flooded.

Recommendations

- Encourage homeowners to take responsibility for protecting their own properties by providing retrofitting advice and assistance.
- Encourage the promotion of flood insurance to renters to cover their personal belongings.
- Target Repetitive loss properties by leveraging, local, state, and federal funding opportunities.
- Continue to provide retrofitting advice to residents in the City.

B.4.3 Natural Resource Protection

Resource protection activities are generally aimed at preserving (or in some cases restoring) natural areas. These activities enable the naturally beneficial functions of fields, floodplains, wetlands, and other natural lands to operate more effectively. Natural and beneficial functions of watersheds, floodplains and wetlands include:

- Reduction in runoff from rainwater and snow melt in pervious areas
- Infiltration that absorbs overland flood flow

- Removal and filtering of excess nutrients, pollutants and sediments
- Storage of floodwaters
- Absorption of flood energy and reduction in flood scour
- Water quality improvement
- Groundwater recharge
- Habitat for flora and fauna
- Recreational and aesthetic opportunities

As development occurs, many of the above benefits can be achieved through regulatory steps for protecting natural areas or natural functions. This section covers the resource protection programs and standards that can help mitigate the impact of natural hazards, while they improve the overall environment. Six areas were reviewed:

- Wetland protection
- Erosion and sedimentation control
- Stream/River restoration
- Best management practices
- Dumping regulations
- Farmland protection

Wetland Protection

Wetlands are often found in floodplains and topographically depressed areas of a watershed. Many wetlands receive and store floodwaters, thus slowing and reducing downstream flows. They also serve as a natural filter, which helps to improve water quality, and they provide habitat for many species of fish, wildlife and plants. The City of Wilson's corporate limits contain approximately 1,440 acres of wetlands, floodplains and land in the Neuse River buffer.

Erosion and Sedimentation Control

Farmlands and construction sites typically contain large areas of bare exposed soil. Surface water runoff can erode soil from these sites, sending sediment into downstream waterways. Erosion also occurs along stream banks and shorelines as the volume and velocity of flow or wave action destabilize and wash away the soil. Sediment suspended in the water tends to settle out where flowing water slows down. This can clog storm drains, drain tiles, culverts and ditches and reduce the water transport and storage capacity of river and stream channels, lakes and wetlands.

There are two principal strategies to address these problems: minimize erosion and control sedimentation. Techniques to minimize erosion include phased construction, minimal land clearing, and stabilizing bare ground as soon as possible with vegetation and other soil stabilizing practices.

Stream/River Restoration

There is a growing movement that has several names, such as "stream conservation," "bioengineering," or "riparian corridor restoration." The objective of these approaches is to return streams, stream banks and adjacent land to a more natural condition, including the natural meanders. Another term is "ecological restoration," which restores native indigenous plants and animals to an area.

A key component of these efforts is to use appropriate native plantings along the banks that resist erosion. This may involve retrofitting the shoreline with willow cuttings, wetland plants, or rolls of landscape material covered with a natural fabric that decomposes after the banks are stabilized with plant roots.

In all, restoring the right vegetation to a stream has the following advantages:

- Reduces the amount of sediment and pollutants entering the water
- Enhances aquatic habitat by cooling water temperature
- Provides food and shelter for both aquatic and terrestrial wildlife
- Can reduce flood damage by slowing the velocity of water
- Increases the beauty of the land and its property value
- Prevents property loss due to erosion
- Provides recreational opportunities, such as hunting, fishing and bird watching
- Reduces long-term maintenance costs

As required by state regulations, the City monitors its drainage outfall into the Neuse River drainage basin, and manages development in water supply watersheds within its jurisdiction. In accordance with the City's UDO, buffers shall be maintained along all perennial and intermittent streams according to the requirements for Neuse River Basin Buffers.

Best Management Practices

Point source pollutants come from pipes such as the outfall of a municipal wastewater treatment plant. They are regulated by the US EPA. Nonpoint source pollutants come from non-specific locations and harder to regulate. Examples of nonpoint source pollutants are lawn fertilizers, pesticides, other chemicals, animal wastes, oils from street surfaces and industrial areas, and sediment from agriculture, construction, mining and forestry. These pollutants are washed off the ground's surface by stormwater and flushed into receiving storm sewers, ditches and streams.

The term "best management practices" (BMPs) refers to design, construction and maintenance practices and criteria that minimize the impact of stormwater runoff rates and volumes, prevent erosion, protect natural resources and capture nonpoint source pollutants (including sediment). They can prevent increases in downstream flooding by attenuating runoff and enhancing infiltration of stormwater. They also minimize water quality degradation, preserve beneficial natural features onsite, maintain natural base flows, minimize habitat loss, and provide multiple usages of drainage and storage facilities.

The City's UDO contains regulations for stormwater BMPs. Because of Wilson's unique geologic and hydrologic conditions (i.e., poorly drained soils and a shallow water table), the types of appropriate BMPs that can be effectively utilized in Wilson are limited.

Dumping Regulations

BMPs usually address pollutants that are liquids or are suspended in water that are washed into a lake or stream. Dumping regulations address solid matter, such as shopping carts, appliances and landscape waste that can be accidentally or intentionally thrown into channels or wetlands. Such materials may not pollute the water, but they can obstruct even low flows and reduce the channels' and wetlands' abilities to convey or clean stormwater.

Many cities have nuisance ordinances that prohibit dumping garbage or other "objectionable waste" on public or private property. Waterway dumping regulations need to also apply to "non-objectionable" materials, such as grass clippings or tree branches, which can kill ground cover or cause obstructions in channels. Regular inspections to catch violations should be scheduled.

Many people do not realize the consequences of their actions. They may, for example, fill in the ditch in their front yard without realizing that is needed to drain street runoff. They may not understand how regarding their yard, filling a wetland, or discarding leaves or branches in a watercourse can cause a problem to themselves and others. Therefore, a dumping enforcement program should include public information materials that explain the reasons for the rules as well as the penalties.

Farmland Protection

Farmland protection is an important piece of comprehensive planning and zoning throughout the United States. The purpose of farmland protection is to provide mechanisms for prime, unique, or important agricultural land to remain as such, and to be protected from conversion to nonagricultural uses.

Frequently, farm owners sell their land to residential or commercial developers and the property is converted to non-agricultural land uses. With development comes more buildings, roads and other infrastructure. Urban sprawl occurs, which can lead to additional stormwater runoff and emergency management difficulties.

Farms on the edge of cities are often appraised based on the price they could be sold for to urban developers. This may drive farmers to sell to developers because their marginal farm operations cannot afford to be taxed as urban land. The Farmland Protection Program in the United States Department of Agriculture's 2002 Farm Bill (Part 519) allows for funds to go to state, tribal, and local governments as well as nonprofit organizations to help purchase easements on agricultural land to protect against the development of the land.

The FMPC did not recommend any projects related to farmland protection.

Local Implementation/CRS Credit

There is credit for preserving open space in its natural condition or restored to a state approximating its natural condition. The credit is based on the percentage of the floodplain that can be documented as wetlands protected from development by ownership or local regulations. The City of Wilson currently receives credit for Activity 420 – Open Space Preservation for preserving approximately 240 acres in the SFHA as open space. The FMPC did not recommend any projects related to the protection of wetlands.

The City of Wilson currently receives credit for Activity 540 – Drainage System Maintenance. A portion of the City's drainage system is inspected regularly throughout the year and maintenance is performed as needed by the City of Wilson Stormwater Division. The city also enforces a regulation prohibiting dumping in the drainage system.

Credit is available for the Erosion and Sediment Control (ESC) element under Activity 450 for regulating activities throughout the watershed to minimize erosion on construction sites that result could in sedimentation and water pollution. Wilson does currently receive credit for soil and erosion control regulations under Activity 450 – Stormwater Management. The City of Wilson's UDO contains erosion and sedimentation control regulations for land disturbing activities of 1 acre or greater in surface area. The regulations address identification of critical areas, limiting amount and time of exposure, and control of surface water runoff. The FMPC would like to develop an aggressive program to identify and correct any naturally occurring erosion areas along open channels, creeks, and streams within the city.

Conclusions

- A hazard mitigation program can use resource protection programs to support protecting natural features that can mitigate the impacts of flooding.
- Wilson ordinances prohibit illicit discharges into public drainage areas or onto public or private property.
- Preserving open space and natural areas will serve to benefit the natural resource areas and protect natural occurring processes and help to protect certain species of plants and animals.

Recommendations

- Wilson should identify additional parcels that will not be well suited for development and encourage a public/private partnership to maintain them as open space.

- The City should target outreach to its residents on the benefits of natural resource protection.
 - The City should target outreach to its residents regarding illicit discharges into public drainage areas or onto public or private property.
-

B.4.4 Emergency Services Measures

Emergency services measures protect people during and after a disaster. A good emergency management program addresses all hazards, and it involves all local government departments. This section reviews emergency services measures following a chronological order of responding to an emergency. It starts with identifying an impending problem (threat recognition) and continues through post-disaster activities.

Threat Recognition

The first step in responding to a flood is to know when weather conditions are such that an event could occur. With a proper and timely threat recognition system, adequate warnings can be disseminated.

The National Weather Service (NWS) is the prime agency for detecting meteorological threats. Severe weather warnings are transmitted through NOAA's Weather Radio System. Local emergency managers can then provide more site-specific and timely recognition after the Weather Service issues a watch or a warning. A flood threat recognition system predicts the time and height of a flood crest. This can be done by measuring rainfall, soil moisture, and stream flows upstream of the community and calculating the subsequent flood levels.

On smaller rivers and streams, locally established rainfall and river gauges are needed to establish a flood threat recognition system. The NWS may issue a "flash flood watch." This is issued to indicate current or developing hydrologic conditions that are favorable for flash flooding in and close to the watch area, but the occurrence is neither certain nor imminent. These events are so localized and so rapid that a "flash flood warning" may not be issued, especially if no remote threat recognition equipment is available. In the absence of a gauging system on small streams, the best threat recognition system is to have local personnel monitor rainfall and stream conditions. While specific flood crests and times will not be predicted, this approach will provide advance notice of potential local or flash flooding.

Warning

The next step in emergency response following threat recognition is to notify the public and staff of other agencies and critical facilities. More people can implement protection measures if warnings are early and include specific detail.

The NWS issues notices to the public using two levels of notification:

- Watch: conditions are right for flooding, thunderstorms, tornadoes or winter storms.
- Warning: a flood, tornado, etc., has started or been observed.

A more specific warning may be disseminated by the community in a variety of ways. The following are the more common methods:

- Commercial or public radio or TV stations
- The Weather Channel
- Cable TV emergency news inserts
- Telephone trees/mass telephone notification
- NOAA Weather Radio
- Tone activated receivers in key facilities
- Outdoor warning sirens

- Sirens on public safety vehicles
- Door-to-door contact
- Mobile public address systems
- Email notifications

Just as important as issuing a warning is telling people what to do in case of an emergency. A warning program should include a public information component.

StormReady

The National Weather Service established the StormReady program to help local governments improve the timeliness and effectiveness of hazardous weather related warnings for the public. To be officially StormReady, a community must:

- Establish a 24-hour warning point and emergency operations center
- Have more than one way to receive severe weather warnings and forecasts and to alert the public
- Create a system that monitors weather conditions locally
- Promote the importance of public readiness through community seminars
- Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises

Being designated a StormReady community by the National Weather Service is a good measure of a community's emergency warning program for weather hazards. It is also credited by the CRS.

Response

The protection of life and property is the most important task of emergency responders. Concurrent with threat recognition and issuing warnings, a community should respond with actions that can prevent or reduce damage and injuries. Typical actions and responding parties include the following:

- Activating the emergency operations center (emergency preparedness)
- Closing streets or bridges (police or public works)
- Shutting off power to threatened areas (utility company)
- Passing out sand and sandbags (public works)
- Holding children at school or releasing children from school (school superintendent)
- Opening evacuation shelters (the American Red Cross)
- Monitoring water levels (public works)
- Establishing security and other protection measures (police)

An emergency action plan ensures that all bases are covered and that the response activities are appropriate for the expected threat. These plans are developed in coordination with the agencies or offices that are given various responsibilities.

Emergency response plans should be updated annually to keep contact names and telephone numbers current and to ensure that supplies and equipment that will be needed are still available. They should be critiqued and revised after disasters and exercises to take advantage of the lessons learned and of changing conditions. The end result is a coordinated effort implemented by people who have experience working together so that available resources will be used in the most efficient manner possible.

Evacuation and Shelter

There are six key components to a successful evacuation:

- Adequate warning
- Adequate routes
- Proper timing to ensure the routes are clear
- Traffic control

- Knowledgeable travelers
- Care for special populations (e.g., the handicapped, prisoners, hospital patients, and schoolchildren)

Those who cannot get out of harm's way need shelter. Typically, the American Red Cross will staff a shelter and ensure that there is adequate food, bedding, and wash facilities. Shelter management is a specialized skill. Managers must deal with problems like scared children, families that want to bring in their pets, and the potential for an overcrowded facility.

Post-Disaster Recovery and Mitigation

After a disaster, communities should undertake activities to protect public health and safety and facilitate recovery. Appropriate measures include:

- Patrolling evacuated areas to prevent looting
- Providing safe drinking water
- Monitoring for diseases
- Vaccinating residents for tetanus and other diseases
- Clearing streets
- Cleaning up debris and garbage

Following a disaster, there should be an effort to help prepare people and property for the next disaster. Such an effort would include:

- Public information activities to advise residents about mitigation measures they can incorporate into their reconstruction work.
- Evaluating damaged public facilities to identify mitigation measures that can be included during repairs.
- Identifying other mitigation measures that can lessen the impact of the next disaster.
- Acquiring substantially or repeatedly damaged properties from willing sellers.
- Planning for long-term mitigation activities.
- Applying for post-disaster mitigation funds.

Regulating Reconstruction

Requiring permits for building repairs and conducting inspections are vital activities to ensure that damaged structures are safe for people to reenter and repair. There is a special requirement to do this in floodplains, regardless of the type of disaster or the cause of damage. The NFIP requires that local officials enforce the substantial damage regulations. These rules require that if the cost to repair a building in the mapped floodplain equals or exceeds 50% of the building's market value, the building must be retrofitted to meet the standards of a new building in the floodplain. In most cases, this means that a substantially damaged building must be elevated above the base flood elevation.

Local Implementation /CRS Credit

Flash flood warnings are issued by National Weather Service Offices, which have the local and county warning responsibility. Flood warnings are forecasts of coming floods, and are distributed to the public by the NOAA Weather Radio (Raleigh/Durham broadcasts at 162.550 MHz; Rocky Mount at 162.465 MHz), commercial radio and television, and through local emergency agencies. The warning message tells the expected degree of flooding, the affected river, when and where flooding will begin, and the expected maximum river level at specific forecast points during flood crest. The FMPC did not recommend any projects related to threat recognition.

The City of Wilson is not currently designated as a StormReady community; however, Wilson County is designated as StormReady. Should a storm threaten Wilson County, the Emergency Operations Center

will activate. During activation, the county will give regularly advisories to the media and to local municipalities.

The incident commander at the scene of an emergency in Wilson County has the authority to order an evacuation. If the City of Wilson alone is to be evacuated, the Mayor will issue the order. If the evacuation involved more than one jurisdiction, the order will be issued on the County level. There are several highway routes allowing evacuation from various parts of the County. These include I-95, U.S. 301, U.S. 264, U.S. 264 Alt, NC 91, NC 42, NC 58, US 117, NC 222, and NC 581.

The City of Wilson does not currently receive credit for Activity 610 – Flood Warning Program. Community Rating System credits are based on the number and types of warning media that can reach the community's flood prone population. Depending on the location, communities can receive credit for the telephone calling system and more credits if there are additional measures, like telephone trees. Being designated as a StormReady community can provide additional credits. The FMPC did not recommend any projects related to flood warning.

Conclusions

- Wilson County performs most emergency management functions for the City of Wilson.

Recommendations

- The FMPC recommended that a plan be developed to identify the location of all vulnerable populations so that an effective and efficient evacuation program can be implemented.
- Wilson should work with the County to protect critical facilities and infrastructure that are potentially exposed to flood damage.

B.4.5 Structural Projects

Four general types of flood control projects are reviewed here: levees, reservoirs, diversions, and dredging. These projects have three advantages not provided by other mitigation measures:

- They can stop most flooding, protecting streets and landscaping in addition to buildings.
- Many projects can be built without disrupting citizens' homes and businesses.
- They are constructed and maintained by a government agency, a more dependable long-term management arrangement than depending on many individual private property owners.

However, as shown below, structural measures also have shortcomings. The appropriateness of using flood control depends on individual project area circumstances.

- Advantages
 - They may provide the greatest amount of protection for land area used
 - Because of land limitations, they may be the only practical solution in some circumstances
 - They can incorporate other benefits into structural project design, such as water supply and recreational uses
 - Regional detention may be more cost-efficient and effective than requiring numerous small detention basins
- Disadvantages
 - They can disturb the land and disrupt the natural water flows, often destroying wildlife habitat
 - They require regular maintenance
 - They are built to a certain flood protection level that can be exceeded by larger floods

- They can create a false sense of security
- They promote more intensive land use and development in the floodplain

Levees and Floodwalls

Probably the best known flood control measure is a barrier of earth (levee) or concrete (floodwall) erected between the watercourse and the property to be protected. Levees and floodwalls confine water to the stream channel by raising its banks. They must be well designed to account for large floods, underground seepage, pumping of internal drainage, and erosion and scour.

Reservoirs and Detention

Reservoirs reduce flooding by temporarily storing flood waters behind dams or in storage or detention basins. Reservoirs lower flood heights by holding back, or detaining, runoff before it can flow downstream. Flood waters are detained until the flood has subsided, and then the water in the reservoir or detention basin is released or pumped out slowly at a rate that the river can accommodate downstream.

Reservoirs can be dry and remain idle until a large rain event occurs. Or they may be designed so that a lake or pond is created. The lake may provide recreational benefits or water supply (which could also help mitigate a drought).

Flood control reservoirs are most commonly built for one of two purposes. Large reservoirs are constructed to protect property from existing flood problems. Smaller reservoirs, or detention basins, are built to protect property from the stormwater runoff impacts of new development.

Diversions

A diversion is a new channel that sends floodwaters to a different location, thereby reducing flooding along an existing watercourse. Diversions can be surface channels, overflow weirs, or tunnels. During normal flows, the water stays in the old channel. During floods, the floodwaters spill over to the diversion channel or tunnel, which carries the excess water to a receiving lake or river.

Local Implementation /CRS Credit

The City of Wilson does not currently receive credit for Activity 530 - Flood Protection. Structural flood control projects that provide 100-year flood protection and that result in revisions to the Flood Insurance Rate Map are not credited by the CRS in order to avoid duplicating the larger premium reduction provided by removing properties from the mapped floodplain.

Conclusions

- There are many areas identified that experience flooding due to overburdened channels and/or inadequate drainage systems.

Recommendations

- The FMPC recommended prioritization of capital improvement projects to address drainage, especially in the identified repetitive loss areas.

B.4.6 Public Information

Outreach Projects

Outreach projects are the first step in the process of orienting property owners to the hazards they face and to the concept of property protection. They are designed to encourage people to seek out more information in order to take steps to protect themselves and their properties.

Awareness of the hazard is not enough; people need to be told what they can do about the hazard. Thus, projects should include information on safety, health and property protection measures. Research has

shown that a properly run local information program is more effective than national advertising or publicity campaigns. Therefore, outreach projects should be locally designed and tailored to meet local conditions.

Community newsletters/direct mailings: The most effective types of outreach projects are mailed or distributed to everyone in the community. In the case of floods, they can be sent only to floodplain property owners.

News media: Local newspapers can be strong allies in efforts to inform the public. Local radio stations and cable TV channels can also help. These media offer interview formats and cable TV may be willing to broadcast videos on the hazards.

Libraries and Websites

The two previous activities tell people that they are exposed to a hazard. The next step is to provide information to those who want to know more. The community library and local websites are obvious places for residents to seek information on hazards, hazard protection, and protecting natural resources.

Books and pamphlets on hazard mitigation can be given to libraries, and many of these can be obtained for free from state and federal agencies. Libraries also have their own public information campaigns with displays, lectures and other projects, which can augment the activities of the local government. Today, websites are commonly used as research tools. They provide fast access to a wealth of public and private sites for information. Through links to other websites, there is almost no limit to the amount of up to date information that can be accessed on the Internet.

In addition to online floodplain maps, websites can link to information for homeowners on how to retrofit for floods or a website about floods for children.

Technical Assistance

Hazard Information

Residents and business owners that are aware of the potential hazards can take steps to avoid problems or reduce their exposure to flooding. Communities can easily provide map information from FEMA's FIRMs and Flood Insurance Studies. They may also assist residents in submitting requests for map amendments and revisions when they are needed to show that a building is located outside the mapped floodplain.

Some communities supplement what is shown on the FIRM with information on additional hazards, flooding outside mapped areas and zoning. When the map information is provided, community staff can explain insurance, property protection measures and mitigation options that are available to property owners. They should also remind inquirers that being outside the mapped floodplain is no guarantee that a property will never flood.

Property Protection Assistance

While general information provided by outreach projects or the library is beneficial, most property owners do not feel ready to retrofit their buildings without more specific guidance. Local building department staffs are experts in construction. They can provide free advice, not necessarily to design a protection measure, but to steer the owner onto the right track. Building or public works department staffs can provide the following types of assistance:

- Visit properties and offer protection suggestions
- Recommend or identify qualified or licensed contractors
- Inspect homes for anchoring of roofing and the home to the foundation
- Explain when building permits are needed for home improvements.

Public Information Program

A Program for Public Information (PPI) is a document that receives CRS credit. It is a review of local conditions, local public information needs, and a recommended plan of activities. A PPI consists of the following parts, which are incorporated into this plan:

- The local flood hazard
- The property protection measures appropriate for the flood hazard
- Flood safety measures appropriate for the local situation
- The public information activities currently being implemented within the community, including those being carried out by non-government agencies
- Goals for the community's public information program
- The outreach projects that will be done each year to reach the goals
- The process that will be followed to monitor and evaluate the projects

Local Implementation /CRS Credit

The City of Wilson currently receives credit under Activity 330 – Outreach Projects as well as Activity 350 – Flood Protection Information. The FMPC recently participated in the development of a PPI to direct outreach within and outside the community. A community brochure is mailed to all properties in the community on an annual basis. Documents relating to floodplain management are available in the Wilson County Public Library. Credit is also provided for floodplain information displayed on the City's website. Wilson maintains a website that provides flood protection information including flood insurance, property protection, flood warning system, permit requirements, and drainage system maintenance.

Conclusions

- Wilson has a public awareness and outreach program.
- The City targets citizens through its website, news media, public meetings, neighborhood meetings, and special events.

Recommendations

- Work to improve flood insurance coverage in Wilson.
 - Work with Insurance and Real Estate Agents to educate citizens on the flood risk.
-

B.5 Mitigation Alternative Selection Criteria

The process for evaluating mitigation alternatives is located in section 4.3. The following criteria were used to select and prioritize proposed mitigation measures:

STPLE/E

- Social: Does the measure treat people fairly? (different groups, different generations)
- Technical: Will it work? (Does it solve the problem? Is it feasible?)
- Administrative: Do you have the capacity to implement and manage project?
- Political: Who are the stakeholders? Did they get to participate? Is there public support? Is political leadership willing to support?
- Legal: Does the organization have the authority to implement? Is it legal? Are there liability implications?
- Economic: Is it cost-beneficial? Is there funding? Does it contribute to the local economy or economic development?
- Environmental: Does it comply with environmental regulations?

Sustainable Disaster Recovery

- Quality of life
- Social equity
- Hazard mitigation
- Economic development
- Environmental protection/enhancement
- Community participation

Smart Growth Principles

- Infill versus sprawl
- Efficient use of land resources
- Full use of urban resources
- Mixed uses of land
- Transportation options
- Detailed, human-scale design

Other

- Does measure address area with highest risk?
- Does measure protect...
 - The largest # of people exposed to risk?
 - The largest # of buildings?
 - The largest # of jobs?
 - The largest tax income?
 - The largest average annual loss potential?
 - The area impacted most frequently?
 - Critical infrastructure
- What is timing of available funding?

- What is visibility of project?
- Community credibility

Prioritization Process

Since there was a FMPC that developed this Floodplain Management Plan, a thorough discussion of each mitigation category occurred. Then within each specific mitigation category, a variety of projects were discussed and debated.

Consensus was reached on the specific projects identified in the mitigation action plan. The prioritization of Short, Range, Medium Range and Long Range was reached based on the significance of the project and the overall impact to the goals and objectives of the plan. The FMPC was given this guidance for prioritization:

Priority Classification

- Short Range** = Project should be completed in less than one year
- Medium Range** = Project should be completed in two to three years
- Long Range** = Project should be completed in more than four years

If the FMPC felt the project warranted a certain classification, they may have extended the timeframe for completion beyond what is described above because they believed the project was significant and would have an impact on reducing flooding in Wilson.

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