

# SECTION 8

## MITIGATION STRATEGY

This section of the Plan provides the blueprint for the participating jurisdictions in Wake County to follow in order to become less vulnerable to its identified hazards. It is based on general consensus of the Wake County Regional Work Groups and the Coordinating Committee and the findings and conclusions of the *Capability Assessment* and *Risk Assessment*. It consists of the following five subsections:

- ◆ 8.1 Introduction
- ◆ 8.2 Mitigation Goals
- ◆ 8.3 Identification and Analysis of Mitigation Techniques
- ◆ 8.4 Selection of Mitigation Techniques for Wake County
- ◆ 8.5 Plan Update Requirement

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### 8.1 INTRODUCTION

The intent of the Mitigation Strategy is to provide the Wake County communities with the goals that will serve as guiding principles for future mitigation policy and project administration, along with an analysis of mitigation techniques available to meet those goals and reduce the impact of identified hazards. It is designed to be comprehensive, strategic, and functional in nature:

- ◆ In being *comprehensive*, the development of the strategy includes a thorough review of all hazards and identifies extensive mitigation measures intended to not only reduce the future impacts of high risk hazards, but also to help the region achieve compatible economic, environmental, and social goals.
- ◆ In being *strategic*, the development of the strategy ensures that all policies and projects proposed for implementation are consistent with pre-identified, long-term planning goals.
- ◆ In being *functional*, each proposed mitigation action is linked to established priorities and assigned to specific departments or individuals responsible for their implementation with target completion deadlines. When necessary, funding sources are identified that can be used to assist in project implementation.

The first step in designing the Mitigation Strategy includes the identification of mitigation goals. Mitigation goals represent broad statements that are achieved through the implementation of more specific mitigation actions. These actions include both hazard mitigation policies (such as the regulation of land in known hazard areas through a local ordinance) and hazard mitigation projects that seek to address specifically targeted hazard risks (such as the acquisition and relocation of a repetitive loss structure).

The second step involves the identification, consideration, and analysis of available mitigation measures to help achieve the identified mitigation goals. This is a long-term, continuous process sustained through the development and maintenance of this Plan. Alternative mitigation measures will continue

to be considered as future mitigation opportunities are identified, as data and technology improve, as mitigation funding becomes available, and as this Plan is maintained over time.

The third and last step in designing the Mitigation Strategy is the selection and prioritization of specific mitigation actions for Wake County and its municipalities (provided separately in Section 9: *Mitigation Action Plan*). The county and each participating jurisdiction has its own Mitigation Action Plan (MAP) that reflects the needs and concerns of that jurisdiction. The MAP represents an unambiguous and functional plan for action and is considered to be the most essential outcome of the mitigation planning process.

The MAP includes a prioritized listing of proposed hazard mitigation actions (policies and projects) for Wake County and its municipalities to complete. Each action has accompanying information, such as those departments or individuals assigned responsibility for implementation, potential funding sources, and an estimated target date for completion. The MAP provides those departments or individuals responsible for implementing mitigation actions with a clear roadmap that also serves as an important tool for monitoring success or progress over time. The cohesive collection of actions listed in the MAP can also serve as an easily understood menu of mitigation policies and projects for those local decision makers who want to quickly review the recommendations and proposed actions of the Hazard Mitigation Plan.

In preparing each Mitigation Action Plan for Wake County, officials considered the overall hazard risk and capability to mitigate the effects of hazards as recorded through the risk and capability assessment process, in addition to meeting the adopted mitigation goals and unique needs of the community.

### **8.1.1 Mitigation Action Prioritization**

Prioritization of the proposed mitigation actions was based on the following six factors:

- ◆ Effect on overall risk to life and property
- ◆ Ease of implementation
- ◆ Political and community support
- ◆ A general economic cost/benefit review<sup>1</sup>
- ◆ Funding availability
- ◆ Continued compliance with the NFIP

The work group point(s) of contact for each jurisdiction helped coordinate the prioritization process by reviewing each action and working with the lead agency/department responsible to determine a priority for each action using the six factors listed above.

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<sup>1</sup> Only a general economic cost/benefit review was considered by the Regional Work Groups through the process of selecting and prioritizing mitigation actions. Mitigation actions with “high” priority were determined to be the most cost effective and most compatible with the participating jurisdictions’ unique needs. Actions with a “moderate” priority were determined to be cost-effective and compatible with jurisdictional needs, but may be more challenging to complete administratively or fiscally than “high” priority actions. Actions with a “low” priority were determined to be important community needs, but the community likely identified several potential challenges in terms of implementation (e.g. lack of funding, technical obstacles). A more detailed cost/benefit analysis will be applied to particular projects prior to the application for or obligation of funding, as appropriate.

Using these criteria, actions were classified as high, moderate, or low priority by the participating jurisdiction officials.

## 8.2 MITIGATION GOALS

### 44 CFR Requirement

**44 CFR Part 201.6(c)(3)(i):** The mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

The primary goal of all local governments is to promote the public health, safety, and welfare of its citizens. In keeping with this standard, Wake County and the participating municipalities have developed seven goal statements for local hazard mitigation planning in the county. In developing these goals, the previous thirteen hazard mitigation plans were reviewed to determine areas of consistency. The project consultant reviewed the goals from each of the existing plans that were combined to form this multi-jurisdictional plan. Many of the goals were similar and county-wide goals were formulated based on commonalities found between the goals in each plan. These proposed county-wide goals and their corresponding goals or objectives from the previous plans are presented in **Table 8.1**.

The proposed regional goals were presented, reviewed, voted on, and accepted by the Regional Work Groups and presented to the Coordinating Committee for their final review. This process of combining goals from the previous plans served to highlight the planning process that had occurred in each jurisdiction prior to joining this multi-jurisdictional planning effort. Each goal, purposefully broad in nature, serves to establish parameters that were used in developing more mitigation actions. The Wake County Mitigation Goals are presented in **Table 8.2**. Consistent implementation of actions over time will ensure that community goals are achieved.

**TABLE 8.1: PROPOSED MITIGATION GOALS**

	Goal	Wake County	Apex	Cary	Fuquay-Varina	Garner	Holly Springs	Knightdale	Morrisville	Raleigh	Rolesville	Wake Forest	Wendell	Zebulon
#1	Protect public health, life, safety, and welfare by increasing public awareness and education of hazards and by encouraging collective and individual responsibility for mitigating hazard risks.	Goal 1	Goal 1	Goal 1	Goal 1	Goal 1	Goal 1		Goals 1, 3, 5	Goal 1	Goal 1		Goal 2	Goal 1
#2	Improve technical capability to respond to hazards and to improve the effectiveness of hazard mitigation actions	Goal 2	Goal 2	Goal 2	Goal 2	Goal 2	Goal 2	Goal 7		Goal 2	Goal 2		Goal 8	Goal 2
#3	Enhance existing or create new policies and ordinances that will help reduce the damaging effects of natural hazards.	Goal 3	Goal 3	Goal 3	Goal 3	Goal 3	Goal 3		Goal 6	Goal 3	Goal 3			Goal 3
#4	Minimize threats to life and property by protecting the most vulnerable populations, buildings, and critical facilities through the implementation of cost-effective and technically feasible mitigation actions.	Goal 4	Goal 4	Goal 4	Goal 4	Goal 4	Goal 4		Goal 2, 6	Goal 4	Goal 4			Goal 4
#5	Generally reduce the impact of all natural hazards	Goal 4	Goal 4	Goal 4	Goal 4	Goal 4	Goal 4	Goals 1,3, 4, 5, 6, 8		Goal 4	Goal 4	Goals 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	Goals 1, 3, 4, 5, 6, 7	Goal 4
#6	Ensure that hazard mitigation is considered when redevelopment occurs after a natural disaster.	Goal 4	Goal 4	Goal 4	Goal 4	Goal 4	Goal 4		Goal 4	Goal 4	Goal 4			Goal 4
#7	Ensure that disaster response and recovery personnel have the necessary equipment and supplies available in order to serve the public in the event of a disaster	Goal 1	Goal 1	Goal 1	Goal 1	Goal 1	Goal 1		Goals 1, 3, 5	Goal 1	Goal 1	Goals 11, 12, 13, 14, 15, 16		Goal 1

**TABLE 8.2: WAKE COUNTY MITIGATION GOALS**

	Goal
Goal #1	Protect public health, life, safety, and welfare by increasing public awareness and education of hazards and by encouraging collective and individual responsibility for mitigating hazard risks.
Goal #2	Improve technical capability to respond to hazards and to improve the effectiveness of hazard mitigation actions
Goal #3	Enhance existing or create new policies and ordinances that will help reduce the damaging effects of natural hazards.
Goal #4	Minimize threats to life and property by protecting the most vulnerable populations, buildings, and critical facilities through the implementation of cost-effective and technically feasible mitigation actions.
Goal #5	Generally reduce the impact of all natural hazards
Goal #6	Ensure that hazard mitigation is considered when redevelopment occurs after a natural disaster.
Goal #7	Ensure that disaster response and recovery personnel have the necessary equipment and supplies available in order to serve the public in the event of a disaster

### 8.3 IDENTIFICATION AND ANALYSIS OF MITIGATION TECHNIQUES

#### 44 CFR Requirement

**44 CFR Part 201.6(c)(3)(ii):** The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effect of each hazard, with particular emphasis on new and existing buildings and infrastructure.

In formulating the Mitigation Strategy for Wake County, a wide range of activities were considered in order to help achieve the established mitigation goals, in addition to addressing any specific hazard concerns. These activities were discussed during the Wake County Regional Work Group meetings. In general, all activities considered by the Regional Work Groups can be classified under one of the following six broad categories of mitigation techniques: Prevention, Property Protection, Natural Resource Protection, Structural Projects, Emergency Services, and Public Awareness and Education. These are discussed in detail below.

#### 8.3.1 Prevention

Preventative activities are intended to keep hazard problems from getting worse, and are typically administered through government programs or regulatory actions that influence the way land is developed and buildings are built. They are particularly effective in reducing a community's future vulnerability, especially in areas where development has not occurred or capital improvements have not been substantial. Examples of preventative activities include:

- ◆ Planning and zoning
- ◆ Building codes
- ◆ Open space preservation
- ◆ Floodplain regulations

- ◆ Stormwater management regulations
- ◆ Drainage system maintenance
- ◆ Capital improvements programming
- ◆ Riverine / fault zone setbacks

**Appendix E** documents the full range of prevention activities that were considered by each jurisdiction for inclusion in the Mitigation Action Plan. Appendix E also lists the mitigation alternatives that were considered, but ultimately not selected for implementation. An explanation for why actions were not selected for implementation is provided.

### 8.3.2 Property Protection

Property protection measures involve the modification of existing buildings and structures to help them better withstand the forces of a hazard, or removal of the structures from hazardous locations. Examples include:

- ◆ Acquisition
- ◆ Relocation
- ◆ Building elevation
- ◆ Critical facilities protection
- ◆ Retrofitting (e.g., windproofing, floodproofing, seismic design techniques, etc.)
- ◆ Safe rooms, shutters, shatter-resistant glass
- ◆ Insurance

### 8.3.3 Natural Resource Protection

Natural resource protection activities reduce the impact of natural hazards by preserving or restoring natural areas and their protective functions. Such areas include floodplains, wetlands, steep slopes, and sand dunes. Parks, recreation, or conservation agencies and organizations often implement these protective measures. Examples include:

- ◆ Floodplain protection
- ◆ Watershed management
- ◆ Riparian buffers
- ◆ Forest and vegetation management (e.g., fire resistant landscaping, fuel breaks, etc.)
- ◆ Erosion and sediment control
- ◆ Wetland preservation and restoration
- ◆ Habitat preservation
- ◆ Slope stabilization

### 8.3.4 Structural Projects

Structural mitigation projects are intended to lessen the impact of a hazard by modifying the environmental natural progression of the hazard event through construction. They are usually designed by engineers and managed or maintained by public works staff. Examples include:

- ◆ Reservoirs
- ◆ Dams / levees / dikes / floodwalls
- ◆ Diversions / detention / retention
- ◆ Channel modification
- ◆ Storm sewers

### 8.3.5 Emergency Services

Although not typically considered a “mitigation” technique, emergency service measures do minimize the impact of a hazard event on people and property. These commonly are actions taken immediately prior to, during, or in response to a hazard event. Examples include:

- ◆ Warning systems
- ◆ Evacuation planning and management
- ◆ Emergency response training and exercises
- ◆ Sandbagging for flood protection
- ◆ Installing temporary shutters for wind protection

### 8.3.6 Public Education and Awareness

Public education and awareness activities are used to advise residents, elected officials, business owners, potential property buyers, and visitors about hazards, hazardous areas, and mitigation techniques they can use to protect themselves and their property. Examples of measures to educate and inform the public include:

- ◆ Outreach projects
- ◆ Speaker series / demonstration events
- ◆ Hazard map information
- ◆ Real estate disclosure
- ◆ Library materials
- ◆ School children educational programs
- ◆ Hazard expositions

## 8.4 SELECTION OF MITIGATION TECHNIQUES FOR WAKE COUNTY

In order to determine the most appropriate mitigation techniques for the communities in Wake County, the Regional Work Groups thoroughly reviewed and considered the findings of the *Capability*

*Assessment* and *Risk Assessment* to determine the best activities for their respective communities. Other considerations included the effect of each mitigation action on overall risk to life and property, its ease of implementation, its degree of political and community support, its general cost-effectiveness, and funding availability (if necessary).

## **8.5 PLAN UPDATE REQUIREMENT**

In keeping with FEMA requirements for plan updates, the Mitigation Actions identified in the previous plans were evaluated to determine their 2014 implementation status. Updates on the implementation status of each action are provided. The mitigation actions provided in Section 9: *Mitigation Action Plan* include the mitigation actions from the previous plans as well as any new mitigation actions proposed through the 2014 planning process.