

ELBERT COUNTY, GEORGIA

**ELBERT COUNTY
CITY OF BOWMAN
CITY OF ELBERTON**

DRAFT Pre-Disaster Mitigation (PDM) Plan Amended: December, 2011

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1.0 Introduction

The Elbert County Pre-Disaster Mitigation (PDM) Plan was originally approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) and adopted in 2006. The Disaster Mitigation Act of 2000 (DMA2K) established mitigation planning requirements under 44 CFR Part 201. Included in the DMA2K is a requirement that each jurisdiction review, update, and resubmit its PDM plan for approval every five years in order to maintain eligibility for mitigation grant funding [44 CFR §201.6(d)(3)]. Federal hazard mitigation funding assistance programs include the following:

- Hazard Mitigation Grant Program
- Pre-Disaster Mitigation
- Flood Mitigation Assistance
- Severe Repetitive Loss

The 2011 update to the Elbert County Pre-Disaster Mitigation Plan is a cooperative effort between the county and the municipalities of Elberton and Bowman, and is funded through a grant from the FEMA Hazard Mitigation Grant Program. In late March 2011, the Elbert County Board of Commissioners requested assistance from the Northeast Georgia Regional Commission (NEGRC) to facilitate the planning process and prepare the plan update for submission to GEMA.

A summary table of updates is included at the beginning of each chapter of this document to highlight changes that have been made to the original 2006 plan.

Table 1.1: Summary of Updates to Chapter 1: Introduction

Section	Update Summary
1.1 Purpose and Need	Text revisions
1.2 Methodology	Changes to committee structure and participants; addition of public questionnaire to planning process; text revisions
1.3 Review/Analysis/Revision Process	New to 2011 update
1.4 Organization of the Plan	Identification of contents of specific chapters; addition of Mitigation Actions Guides for natural and technological hazards; text revisions
1.5 HRV Summary, Goals & Objectives	Text revisions
1.6 Multi-Jurisdictional Considerations	Text revisions
1.7 Adoption, Implementation, Monitoring, & Evaluation Process	Text revisions
1.8 Community Data	2010 Census and 2009 American Community Survey data additions

1.1 Purpose and Need

Natural and technological (manmade) disasters can occur without warning and may result in damages that extend beyond the initial costs of recovery. Disasters can devastate neighborhoods, the local economy, and infrastructure, posing significant risks to the health and welfare of area residents. The intent of the plan is to provide a set of guidelines for the implementation of hazard mitigation projects reducing the losses associated with natural and technological hazards.

1.2 Methodology

All information contained within this document has been obtained through personal knowledge of the committee members as well as research conducted by committee members and the Northeast Georgia Regional Commission (NEGRC), who facilitated the planning process and compiled all of the data into a single planning document.

The Elbert County Emergency Management Agency (EMA) invited a diverse group of community leaders, local and regional experts, and emergency management staff to participate in the development of the plan. A full planning committee was assembled for the plan update kick-off meeting in April 2011; a smaller steering committee was then established to directly guide the process and provide regular input.

The plan update deadline established by the original 2006 plan was May 2011. Due to local constraints, Elbert County was unable to meet this deadline; as a result, NEGRC staff recommended an accelerated plan update process to ensure eligibility for mitigation grant funding as soon as possible. This accelerated schedule required the steering committee to meet twice monthly for the duration of the process, with two full planning committee meetings scheduled prior to 1) the second public hearing, and 2) plan update adoption prior to submission to FEMA.

Steering committee members were responsible for working with NEGRC to review and update the list of critical facilities and potential hazards, assess risk and determine potential losses as a result of hazard events, and develop mitigation goals and strategies. The following table lists planning committee participants and their affiliated agencies.

Table 1.2: Planning Committee Membership

Committee Member	Affiliated Agency
Norma Alcalde	Elbert County Department of Family & Child Services
Charles Almond, Jr.	Elbert County Emergency Services & EMA
Kenneth Ashworth	Elbert County Board of Commissioners
Lynn Biovin	City of Bowman
Jack Bell	Elbert County Emergency Services & EMA
Shayne Bennett	Elbert County Sheriff's Office
Tom Brown	Elbert Memorial Hospital
Kevin Cameron	Elbert County Tax Assessor's Office
Ed Cole	Elbert County Solid Waste
Mark Gaffney	WSGC Radio
Tiffany Gibbons	City of Bowman

Committee Member	Affiliated Agency
Patrick Hopp	Elbert County Code Enforcement
Kevin Jordan	Elberton Fire Department
Allen Lee	Elberton Police Department
Tommy Lyon	Elbert County Board of Commissioners
Henry McCalla	Elberton Fire Department
Rick Mewborn	Elbert County Fire Department
Wesley Moss	Georgia Forestry Commission
Jonathan Poon	Elbert County Emergency Services
Jeffrey Simpson	Elbert County Animal Control & Code Enforcement
Douglas Slay	Georgia Forestry Commission
Clay Talton	UGA Cooperative Extension, Elbert County
Bob Thomas	Elbert County Administrator's Office
Mark Welsh	Elberton Police Department
Julie Williams	Elbert County Emergency Services
Steven Wooten	Elbert County Environmental Health

Two public meetings were held for the purposes of soliciting public input on the plan update, one during the drafting stage and the second during the final stage of the planning process prior to submittal of the plan to GEMA. The meetings were intended to inform the public of the process and its implications for disaster mitigation countywide as well as to engage the public in identifying their priorities for disaster mitigation. NEGRC staff and the steering committee also developed a brief questionnaire that was distributed in print and online following the first public hearing in June 2011. The purpose of this questionnaire was to gather information from Elbert County residents on their expectations and concerns during and after hazard events, and a total of 133 responses were received. Refer to Appendix E for further details on the public involvement process.

1.3 Review, Analysis, and Revision Process

Chapter One (Introduction to the Planning Process) was revised and updated to reflect new participation on the Steering Committee, reorganization of the committee structure, and new public participation techniques.

With input from the Steering Committee, NEGRC staff reviewed the text and data included in Chapters Two and Three (Local Hazard, Risk and Vulnerability) and made updates and revisions where necessary. Utilizing recently obtained information and upon agreement at the Steering Committee level, earthquakes were added to the list of natural hazards (Chapter Two) that could potentially affect Elbert County. The methodology for completing an assets inventory (see GEMA Worksheet #3 in Appendix A) was developed based on the availability of data for Elbert County. The Tax Assessor provided the numbers and values of structures by type for the entire county. Those land parcels containing a portion of the flood hazard area, or floodplain, were counted to determine the number of structures in the flood area; it was assumed that each land parcel contained one structure. Values for these affected structures were determined by multiplying the total value in the community by the percentage of structures in the hazard area.

The Steering Committee reviewed and revised the mitigation goals, objectives, and action items from the 2006 plan for each hazard (Chapters Four and Five). While most of the goals and objectives were left unchanged, action items carried over from the 2006 plan were revised, and several new items were added. The Steering Committee then utilized the Social, Technical, Administrative, Political, Legal, Economic, Environmental (STAPLEE) method to prioritize the action items by hazard. Additional detail on this process is included in section 6.1 of this document.

Chapter Six was updated in cooperation with members of the Steering Committee that will be directly involved in implementing, evaluating, and monitoring the Elbert County Pre-Disaster Mitigation Plan, including representatives from Elbert County Emergency Services and Elbert County Code Enforcement.

1.4 Organization of the Plan

Chapter Two of the Elbert County Pre-Disaster Mitigation Plan contains a Hazard, Risk and Vulnerability (HRV) assessment identifying the most prevalent natural hazards that have occurred, and are most likely to occur throughout the community. Chapter Three identifies and evaluates potential technological hazards. Each of the hazards is defined and profiled based on historic occurrences in the county. The vulnerability of critical facilities is examined for each of the hazards to determine an estimate of potential loss and total impact resulting from a hazard event.

Chapters Four and Five present Mitigation Goals, Objectives and Strategies for natural and technological hazards, respectively. Following these sections are Mitigation Actions Guides for natural and technological hazards (Chapters Six and Seven, respectively). These guides have been designed as stand-alone resources to be used for project development and grant-seeking efforts in support of mitigation goals implementation during the next five years.

Chapter Eight outlines roles, responsibilities and a schedule for implementing, evaluating, monitoring, and updating this plan. Upon formal approval by GEMA and prior to submission to FEMA, Elbert County and the cities of Elberton and Bowman will each officially adopt the new plan and begin collaborating on implementation efforts. Chapter Nine summarizes the plan, providing a list of relevant references and additional sources of information.

1.5 Hazard, Risk, and Vulnerability (HRV) Summary, Goals and Objectives

In order to determine appropriate mitigation actions, a risk assessment was performed identifying the probability of various natural and technical disasters affecting Elbert County. This assessment analyzed historical data relating to disaster occurrences within Elbert County and estimated the probability of future occurrences.

The hazard identification process produced six natural hazards and one type of technological hazard that may affect Elbert County and its municipalities in the future.

Appendix A provides a profile of each of the hazards and the supportive historical data illustrating the probability of future hazard occurrences.

The vulnerability of Elbert County and its municipalities was determined by first updating the list of critical facilities identified in the 2006 plan. These critical facilities and existing land use were then mapped along with the most current floodplain data. This exercise allowed NEGRC staff and the steering committee to identify structures and neighborhoods potentially exposed to these “mappable” hazards. Additionally, potential financial losses were determined based on an examination of values of critical facilities as provided by the Elbert County Tax Assessor. This information is discussed in greater detail in Chapter Two and the data is provided in Worksheet #5 in Appendix D.

The HRV assessment informed the development of mitigation goals and objectives for each hazard in Elbert County. Under these goals and objectives, NEGRC and the Steering Committee identified implementation actions, including responsible agencies, approximate costs, potential financial resources, and an estimated timeline for completion in the Mitigation Actions Guides that comprise Chapters Six and Seven.

1.6 Multi-Jurisdictional Considerations

The cities of Elberton and Bowman have participated in the 2011 planning process. None of the hazards identified and profiled are limited to specific jurisdictional boundaries (with the exception of flood, which are more likely to occur within the identified floodplain associated with streams and rivers). Therefore, each of the hazards applies equally to Elbert County and both municipalities. Where appropriate, goals, objectives and mitigation actions are tailored specifically to a jurisdiction’s need, otherwise the application is considered to be countywide.

1.7 Adoption, Implementation, Monitoring, and Evaluation Process

Upon final approval from GEMA, Elbert County, Elberton, and Bowman will formally adopt the plan and will be responsible for coordinating the implementation of the identified mitigation actions.

In accordance with DMA2K, Elbert County and its municipalities will review and update its pre-disaster mitigation plan on a five-year interval and address the implementation schedule of the identified mitigation actions annually.

In order to ensure that multiple jurisdictions, as well as multiple agencies, are implementing common goals related to disaster mitigation it is important that the recommendations originating from this planning document are incorporated into the county’s Comprehensive Plan and Short-Term Work Program as well as the Emergency Management Agencies Local Emergency Operations Plan.

Resolutions formally adopting the 2011 Elbert County Pre-Disaster Mitigation Plan are included in Appendix E from the Elbert County Board of Commissioners, the City of Elberton, and the City of Bowman.

1.8 Community Data

Elbert County's total population during the 2010 Census was 20,166, which represented a 1.68% decrease from 2000 Census figures. Most of this population decrease (63.48%) has occurred in the unincorporated areas of the county.

The 2010 Census showed a change in the racial and ethnic composition of Elbert County. Sixty-five percent of the population identified themselves as white, down slightly from 67% in 2000. While 31% of the population identified themselves as black in 2000, only 29.5% did so in 2010. While both the white and black population decreased over the ten-year period, the percent of persons of Hispanic or Latino origin increased from 2% to 4.8%. The population of Elbert County aged between 2000 and 2010, as the number of persons 65 years old and over increased from 15% to 16.4%, while persons 18 years old and younger decreased from 26% to 23.7%. These changes may result in the need for additional outreach services to ensure the safety of all residents in the event of a natural or technological hazard occurrence.

According to 2009 American Community Survey estimates, the median household income in Elbert County was \$32,865, well below the state (\$47,469). In 2009, approximately 20.8% of Elbert County residents were living below the poverty level.

More detailed information on the demographics of Elbert County as well as the municipalities of Elberton and Bowman can be found in Appendix B.

2.0 Local Natural Hazard, Risk, and Vulnerability

The steering committee was responsible for reviewing and updating the list of hazards likely to affect Elbert County. The goal was to utilize local knowledge, experience, and expertise to determine whether the hazards identified and profiled in the 2006 plan were still relevant to Elbert County. As a result of this process, the steering committee retained all hazards from the previous plan. In addition, the committee decided collectively to include Earthquakes as a sixth natural hazard with the potential to impact Elbert County.

Table 2.1: Summary of Updates to Chapter 2: Local Natural Hazard, Risk, and Vulnerability

Hazard Type	Section	Update Summary
Severe Thunderstorms	2.1.1 Hazard Identification	Text revisions
	2.1.2 Hazard Profile	Text revisions; updated relevant data for hazard frequency
	2.1.3 Assets Exposed to Hazard	Text revisions
	2.1.4 Estimate of Potential Losses	Updated relevant data for mobile/manufactured homes; added text to address Fujita scale for tornados
	2.1.5 Land Use & Development Trends	Added information on relevant zoning regulations for mobile/manufactured homes
	2.1.6 Multi-Jurisdictional Concerns	No changes
	2.1.7 Hazard Effects Summary	Text revisions
Flooding	2.2.1 Hazard Identification	Text revisions; added description for flash flooding
	2.2.2 Hazard Profile	Text revisions; updated relevant data for hazard frequency
	2.2.3 Assets Exposed to Hazard	Updated section to account for recently created FIRM and floodplain delineation
	2.2.4 Estimate of Potential Losses	Updated relevant data for historical losses; added text to address repetitive loss properties
	2.2.5 Land Use & Development Trends	Added text to address impacts of development on flooding hazard
	2.2.6 Multi-Jurisdictional Concerns	No changes
	2.2.7 Hazard Effects Summary	Text revisions
Winter Storms	2.3.1 Hazard Identification	Text revisions
	2.3.2 Hazard Profile	Text revisions; updated relevant data for hazard frequency
	2.3.3 Assets Exposed to Hazard	Text revisions
	2.3.4 Estimate of Potential Losses	Text revisions; updated relevant data for historic damages
	2.3.5 Land Use & Development Trends	Text revisions
	2.3.6 Multi-Jurisdictional Concerns	No changes
	2.3.7 Hazard Summary	Text revisions

Hazard Type	Section	Update Summary
Drought	2.4.1 Hazard Identification	Text revisions
	2.4.2 Hazard Profile	Text revisions; updated relevant data for hazard occurrences and frequency
	2.4.3 Assets Exposed to Hazard	Text revisions
	2.4.4 Estimate of Potential Losses	Text revisions; updated relevant data
	2.4.5 Land Use & Development Trends	Text revisions; updated population data
	2.4.6 Multi-Jurisdictional Concerns	No changes
	2.4.7 Hazard Summary	Text revisions
Wildfires	2.5.1 Hazard Identification	Text revisions
	2.5.2 Hazard Profile	Updated section to account for recently created Elbert County Community Wildfire Protection Plan
	2.5.3 Assets Exposed to Hazard	Updated section to account for recently created Elbert County Community Wildfire Protection Plan
	2.5.4 Estimate of Potential Losses	Updated section to account for recently created Elbert County Community Wildfire Protection Plan
	2.5.5 Land Use & Development Trends	Updated section to account for recently created Elbert County Community Wildfire Protection Plan
	2.5.6 Multi-Jurisdictional Concerns	Updated section to account for recently created Elbert County Community Wildfire Protection Plan
	2.5.7 Hazard Summary	Updated section to account for recently created Elbert County Community Wildfire Protection Plan
Earthquakes	All	New section

2.1 Severe Thunderstorms (includes Thunderstorms, Lightning, Hail, Tornado)

2.1.1 Hazard Identification

Thunderstorms can bring heavy rains, strong winds, hail, lightning and tornados depending on the weather conditions. All of these events have been classified together as a Severe Thunderstorms, which pose the greatest threat to the population, properties, and agricultural resources of Elbert County. These events are described briefly below, and additional information on thunderstorms and tornados is accessible via the FEMA website at the “Disasters & Maps” tab.¹

Additional hazards associated with Severe Thunderstorms include Flooding and Wildfires; these hazard types will be described in subsequent sections of this Chapter.

Thunderstorm

A thunderstorm is formed from a combination of moisture, rapidly rising warm air and a force capable of lifting air such as a warm and cold front, a sea breeze or a mountain. All thunderstorms contain lightning. Thunderstorms may occur singly, in clusters or in

¹ Retrieved on July 25, 2011, from the FEMA website at <http://www.fema.gov/hazard/index.shtm>.

lines. Thus it is possible for several thunderstorms to affect one location in the course of a few hours. Some of the most severe weather occurs when a single thunderstorm affects one location for an extended time.²

Hail

Hail is produced by many strong thunderstorms. Hail can be smaller than a pea or as large as a softball and can be very destructive to plants and crops.

Lightning

Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a “bolt”. This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning reaches a temperature approaching 50,000 degrees Fahrenheit in a split second. Rapid heating and cooling of air near the lightning causes thunder.³

Tornado

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm (or sometimes as a result of a hurricane) and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tornado is a result of the high wind velocity and wind-blown debris.⁴

2.1.2 Hazard Profile

Thunderstorms can essentially occur at any time of the year and can be found throughout the country. However, they are more common in the central and southern states and severe thunderstorms (with the potential for hail and tornados) are more prevalent between the months of March and August.

The National Climatic Data Center (NCDC) organizes climate data related to thunderstorms into several possible categories: gusty winds, hail, heavy rain, high winds, lightning, thunderstorm winds, and tornado. Of these, the most frequently recorded events since 1950 are thunderstorm winds (87 occurrences), followed by hail (53 occurrences). Since the 2006 plan, there have been 17 occurrences of hail, 22 occurrences of thunderstorm winds, and one tornado event.

The National Weather Service issues a severe thunderstorm watch when conditions are likely to generate damaging winds in excess of 58 mph, or hail in excess of three-fourths of an inch. Straight-line winds in excess of 100 mph are responsible for the majority of thunderstorm damage. According to the United States Wind Zone map, Elbert County is located in Zone III, indicating the possibility of 200 mph design wind speeds.⁵ This designation places Elbert County at risk for category F3 (158-206 mph)

² Additional information about thunderstorms is accessible from the FEMA website at <http://www.fema.gov/hazard/thunderstorm/index.shtm>.

³ Additional information about lightning is accessible from the FEMA website at <http://www.fema.gov/hazard/thunderstorm/index.shtm>.

⁴ Additional information about tornadoes is accessible from the FEMA website at <http://www.fema.gov/hazard/tornado/index.shtm>.

⁵ Retrieved on July 25, 2011, from the FEMA website at <http://www.fema.gov/graphics/library/wmap.gif>.

tornados as measured by the Fujita Tornado Measurement Scale, which may result in severe damage to buildings, property, and trees.

Since 1950, severe thunderstorm events have resulted in a total of approximately \$76.7 million in property damages, greater than \$50 million in crop damages, 44 personal injuries, and 9 deaths in Elbert County. Based on historic frequency, Elbert County might expect a hail event every 1.15 years, thunderstorm winds every 0.70 years, and a tornado event every 5.08 years. These recurrence intervals have decreased since the 2006 plan. For additional information on severe thunderstorm events, see GEMA Worksheet #1 and the Worksheet #1 addenda in Appendix D.

2.1.3 Assets Exposed to Hazard

There is no methodology to predict where a thunderstorm event is going to occur, and therefore the entire county is vulnerable. Additionally, all identified critical facilities are susceptible to damages.

2.1.4 Estimate of Potential Losses

Historically, Elbert County has not experienced a tornado above an F2 on the Fujita scale. Tornados ranging from F0 to F2 have resulted in up to \$250,000 in property damage per occurrence. Since Elbert County lies in a wind zone associated with F3 tornados, it is possible that future events could result in more serious and widespread damages.

Mobile and manufactured homes are especially vulnerable to loss as a result of high winds and tornados. According to the most recent Tax Assessor's data, there are a total of 2,993 mobile/manufactured homes in Elbert County, accounting for approximately 8.8% of the total number of structures (34,075).

2.1.5 Land Use and Development Trends

Most land use and development trends will not inform the strategies identified to mitigate the possible effects of severe thunderstorms, as the entire county is at equal risk for these types of hazard events. However, the significant number of mobile and manufactured homes throughout the county raises concern for the safety of residents in these areas. These structures, especially when not anchored to the ground, are susceptible to severe damage and possible destruction from strong thunderstorm winds and tornados. Elbert County manufactured and mobile home regulations do not outline requirements for anchoring. The City of Elberton Zoning Ordinance requires that all manufactured homes be anchored with tie-down bands to withstand winds of up to 100 miles per hour. Elbert County does not require a foundation for manufactured homes; Elberton requires a brick or masonry foundation only for certain types.

2.1.6 Multi-Jurisdictional Concerns

All of Elbert County is vulnerable to the effects of severe thunderstorms. All mitigation goals, objectives and strategies are applicable to each of the three jurisdictions.

2.1.7 Hazard Effects Summary

Based on the quantifiable data, thunderstorms present the most prevalent disaster in Elbert County and have generated the largest financial losses in property and crop damages, exceeding \$126 million. As the risk for thunderstorms is equal throughout the county, most mitigation strategies will need to address the community as a whole. An exception to this might be the areas with concentrations of mobile homes.

2.2 Flooding

2.2.1 Hazard Identification

A flood is a partial or complete inundation of water on normally dry areas. The causes of flooding include severe thunderstorms, tropical cyclones, seasonal rains, run-off from snow or ice, and other weather-related conditions.⁶ The severity of flooding is also a function of environmental variables such as topography, previous ground saturation, soil types, native vegetative cover, urbanization, and drainage patterns.

Flash flooding is characterized by rapid accumulation or runoff of surface waters. Flash flooding impacts smaller rivers, creeks, and streams and can occur when the soil becomes oversaturated or when excess volumes of water collect on impervious surfaces.

2.2.2 Hazard Profile

Flooding in Elbert County is most commonly associated with severe thunderstorms that typically generate during the Atlantic hurricane season, which runs from June to November. However, due to the southeastern climate, flooding may occur year-round because of the potential for prolonged periods of precipitation during any month.

During the past 61 years, there have been 15 flood events in Elbert County recorded by the NCDC, detailed in Hazard Frequency Table located in Appendix A. Nine of these events were reported as flash floods.

Based on the historic frequency recorded by the NCDC, the county can expect a flood event every 4.07 years. However, as illustrated by the level of activity during particular years, the number of occurrences is directly related to the severity of the storm season.

2.2.3 Assets Exposed to Hazard

In July 2010, FEMA completed a Flood Insurance Study (FIS) for Elbert County which included creation of the first Digital Flood Insurance Rate Maps (FIRM) for Elbert County and the City of Bowman. The City of Elberton's most recent FIRM update occurred in 1986, and the 2010 FIS recommended no revisions to the city's FIRM. The FIS identified principal flood problems in Elbert County as low-lying areas adjacent to major streams that are subject to periodic flooding which accompanies major storm events.⁷ The Elbert County FIRM delineates specific flood insurance risk zones that

⁶ Additional information about thunderstorms is accessible from the FEMA website at: <http://www.fema.gov/hazard/flood/index.shtm>

⁷ Retrieved on July 29, 2011, from the Georgia Floodplain Mapping Program website at <http://www.georgiadfirm.com/status/elbert/13105CV000A.pdf>

correspond with 1-percent-annual-chance floodplains (also known as the 100-year floodplain) and 0.2-percent-annual-chance floodplains (also known as the 500-year floodplain) as well as areas outside of these floodplain zones.

Approximately 5.37% percent of Elbert County is covered by either 100-year or 500-year floodplains. Based on an evaluation of the location of critical facilities, there are five critical facilities located within flood hazard areas. These critical facilities are identified in Appendix A. Additionally, the county has a number of roadways that traverse streams within flood prone areas, which are repeatedly damaged during prolonged rainstorms. These include Double Bridges Road, Horse Farm Road, Hunter Road, John Rucker Road, and Moore Road.

2.2.4 Estimate of Potential Losses

The potential losses from flooding are difficult to determine due to the variable intensity of rainfall associated with each storm event. The largest direct potential loss in the county is related to the repeated damage of the local road network. Additionally, because of the large amount of agriculturally productive land, there is a possibility that extreme flood damage could have a major adverse impact on agricultural production. The result of the 15 flood events recorded by the NCDC is a reported loss of \$5,485,000 in property damage as well as an additional \$20,000 in crop damages.

One (1) repetitive loss property has been identified in Elbert County. Repetitive loss properties are defined as a National Flood Insurance Program (NFIP) insured property or structure that has had at least two paid flood losses of more than \$1,000 each in any 10-year period since 1978.⁸

2.2.5 Land Use and Development Trends

Elbert County is a largely rural county that does not have large concentrations of development outside the cities of Elberton and Bowman. Increased development throughout Elbert County may cause an increased risk of flooding. Not only can new development in areas already prone to flooding result in potential losses, but development of impervious surfaces and urban infrastructure elsewhere in the County may result in increased risk of flooding. The construction of new roads, parking lots, roof-tops, and other impervious surfaces typically increases surface runoff volumes beyond pre-development levels, thereby creating a greater risk of flooding downstream in the watershed and potentially enlarging floodplains.

Elbert County and the municipalities of Elberton and Bowman currently participate in the National Flood Insurance Program and all currently have FEMA approved flood hazard identification maps.

2.2.6 Multi-Jurisdictional Concerns

Each of the jurisdictions is subject to the potential damages caused by floods, although those areas lying within the defined flood hazard boundary, as illustrated in Appendix A, are subject to increased vulnerability to flood hazards.

⁸ Retrieved on July 29, 2011, from the FEMA website at <http://www.fema.gov/business/nfip/19def2.shtml>

2.2.7 Hazard Summary

The occurrences of flood events in Elbert County are typically correlated with the occurrences of severe thunderstorms that carry excessive amounts of rainfall. The hurricane season of 2004 produced three consecutive major storms in Elbert County during the month of September that led to the flooding of local roadways. Although flood events are relatively rare in the county, September 2004 illustrated the potential for damage based on the repeated occurrence of storm events. As indicated in the flood hazard boundary map in Appendix A, each of the jurisdictions has varying levels of vulnerability to flooding.

2.3 Winter Storms

2.3.1 Hazard Identification

Winter storms include snow, freezing rain, sleet, freezing temperatures, or a combination thereof⁹. The most prevalent occurrences of winter storms in Elbert County are accumulations of ice as the result of freezing rain and temperatures dropping below the freezing point. Ice storms, in particular, can generate extensive damage to trees and power lines as well as create unsafe driving conditions.

2.3.2 Hazard Profile

The severity and characteristics of winter storms vary greatly, but all winter storms are capable of causing extensive damages. Temperatures in Elbert County rarely reach the extreme cold experienced in northern climates, but freezing temperatures accompanied by high winds can produce a wind chill factor that may be dangerous if overexposed.

Winter storms in Elbert County are most prevalent during the months of December through February. Southern winter storms are usually the result of northern cold fronts moving southward which typically affords the local EMA and general population ample time to prepare for adverse conditions.

Over the past 61 years there have been 31 occurrences of winter storms in Elbert County recorded by the NCDC, detailed in Hazard Frequency Table located in Appendix A. The worst recorded event was an ice storm that occurred in December of 2002 and caused approximately \$3.0 million in damages. Based on the historic frequency recorded by the NCDC, the county can expect a winter storm event every 1.97 years.

2.3.3 Assets Exposed to Hazard

There is no methodology to predict where a winter storm event is going to occur, and therefore the entire county is vulnerable. Additionally, winter storms generally affect very large areas. All identified critical facilities are susceptible to damages caused by winter storms.

⁹ Additional information about winter storms is accessible from the FEMA website at <http://www.fema.gov/hazard/winter/index.shtm>.

2.3.4 Estimate of Potential Losses

Damages from winter storms are typically caused by an accumulation of ice on trees, limbs, or power lines that can result in loss of power and property damage. Winter weather also creates adverse road conditions that pose an increased risk to motorists. The accident rate can be much higher during winter storm events, particularly to a resident population that is not accustomed to driving under these conditions. The accumulation of snow or ice beyond the typical winter weather months can result in crop losses and have a devastating impact on the agricultural industry.

The 31 winter storms recorded by the NCDC resulted in a reported loss of \$3,025,000 in property damage.

2.3.5 Land Use and Development Trends

Most land use and development trends will not inform the strategies identified to mitigate the possible effects of winter storms, as the entire county is at equal risk for these types of hazard events.

2.3.6 Multi-Jurisdictional Concerns

All of Elbert County is vulnerable to the effects of winter storms. All mitigation goals, objectives and strategies are applicable to each of the three jurisdictions.

2.3.7 Hazard Summary

Based on frequency and reported damage, winter Storms pose a significant threat to Elbert County. Winter storms have the potential to immobilize the entire county. Extended periods of power outages due to down power lines pose a risk to residents who primarily heat their homes with electricity. Roads that are blocked or covered in ice may delay any needed assistance as well as put motorist at risk. As the risk for winter storms is equal throughout the county, most mitigation strategies will need to address the community as a whole.

2.4 Drought

2.4.1 Hazard Identification

Drought cannot be characterized as a single event, but rather a prolonged period without precipitation. The Georgia Automated Environmental Monitoring Network website defines drought more specifically as “a period of insufficient rainfall for normal plant growth, which begins when soil moisture is so diminished that vegetation roots cannot absorb enough water to replace that lost by transpiration.”¹⁰

¹⁰ Retrieved on August 3, 2011 from the Georgia Automated Environmental Monitoring Network website at <http://www.georgiaweather.net/>.

According to the 2003 Georgia Drought Management Plan, Elbert County is located in Climate Division 3 (Northeast). For this Climate Division, the State Climatologist office and the Georgia Environmental Protection Division (EPD) monitor the following indicators for drought triggers, or specific values. If any one of the indicators reaches or passes a trigger value for two consecutive months, a preliminary evaluation is conducted to determine the appropriate response.

1. Standard Precipitation Index: This figure compares precipitation levels during the last three, six, and twelve months with historical figures to determine net loss or increase.
2. Reservoir Levels: Water level is measured in the Lake Hartwell and Clark Hill reservoirs.
3. Streamflow: Annual and monthly discharge levels are monitored and compared with historical figures along the Broad River near Bell and along the Chattahoochee River near Cornelia.

A drought event is not considered to be over until all of the indicators for the Climate Division are at an acceptable stress level for at least four consecutive months.¹¹

Another hazard often associated with Drought is Wildfires, which will be described in subsequent sections of this Chapter.

2.4.2 Hazard Profile

Due to the lengthy nature of a drought event, the adverse impacts can affect a community for extended periods of time. The severity of impacts increases as the drought event is prolonged, and many may still be felt long after the drought is declared over.

Drought conditions are typically associated with the dry summer months, but they may persist throughout the winter months as well. Over the past 61 years there have been 17 occurrences of drought conditions in Elbert County recorded by the NCDC, as illustrated in the Worksheet #1 Addendum in Appendix D. All of the recorded events occurred between 1999 and 2004, reflecting a period of statewide drought-like conditions.

Based on the historic frequency recorded by the NCDC, Elbert County can expect a drought event approximately every three years. However, the multiple variables involved in declaring a drought event challenge the accuracy of this estimation. As of July 26, 2011, most of Elbert County was identified in the Moderate Drought (D1)

¹¹ Retrieved on August 3, 2011 from the Department of Community Affairs Planning & Quality Growth website at <http://www.georgiaplanning.com/watertoolkit/Documents/WaterConservationDroughtManagement/DroughtMgtPlanFinal03.pdf>.

category by the National Drought Mitigation Center's U.S. Drought Monitor; a portion of the southern third of the county was identified in the Severe Drought (D2) category.¹²

2.4.3 Assets Exposed to Hazard

There are no critical facilities directly exposed to the effects of drought. Drought has the most significant impact on the agricultural community in Elbert County. Drought also has an effect on the residential population, particularly those that utilize groundwater wells.

2.4.4 Estimate of Potential Losses

Drought events are going to generate the largest impact on crop and livestock farmers countywide. Yields of crops have been documented at a total loss during the worst drought seasons. Hay, soybeans, cotton and corn are the most prevalent crops grown in Elbert County with an annual farm-gate value of approximately \$2.6 million. From 2007 to 2011, a period of prolonged mild to extreme drought, these four crops were impacted with decreased yields when compared to annual averages. In 2010 alone, cotton yielded over 10% less and soybeans yielded over 37% less than previous years, as reported by the Elbert County Extension Services Office. The most directly identified loss is illustrated in the reduced yields of row crops, but these impacts generate spin-off effects in the livestock industry.

Decreased yields of hay reduce the amount of feed available for the livestock population, which has a number of ramifications that are often prolonged beyond the drought event. Cattle may have difficulty maintaining their weight during a drought event due to unproductive pastureland and they may also have difficulty breeding. In addition to creating an obvious burden on the animal population, drought events may result in reduced economic viability of cattle farming.

2.4.5 Land Use and Development Trends

Elbert County lost population between the 2000 and 2010 U.S. Censuses. Therefore, the county is unlikely to experience a major increase in demand for residential or commercial water supplies in the coming years that would be seriously affected by drought conditions. With low demand for development, the agricultural industry is expected to remain prominent. Therefore, prolonged drought conditions would continue to present a risk to the local economy.

2.4.6 Multi-Jurisdictional Concerns

The effects of prolonged drought conditions are felt countywide. Although agricultural production occurs outside municipal boundaries, a decrease in the sector's economic productivity will have an effect on the entire county. Therefore, it is important that all three jurisdictions cooperate on the implementation of drought mitigation strategies to assist the agricultural community withstand drought conditions.

¹² Retrieved on August 3, 2011 from the National Drought Mitigation Center's U.S. Drought Monitor website at <http://droughtmonitor.unl.edu>.

2.4.7 Hazard Summary

It is often difficult to assess the impacts of drought because the negative effects are distributed over a prolonged period of time. Drought may have effects on residential and commercial water supplies, but the largest impacts are felt in the agricultural industry and the increased risk of wildfires.

2.5 Wildfires

2.5.1 Hazard Identification

Wildfires (or wildland fires) present threats to people and property living or recreating near undeveloped wilderness areas. Drought and dry weather conditions contribute to an increased potential for wildfires.

Wildfires are classified under three different types:

- Surface Fire: Burns rapidly at a low intensity
- Ground Fire: Most infrequent, characterized by intense blazes destroying all vegetation and organic matter
- Crown Fire: Generally resulting from ground fires, occurs in upper sections of trees¹³

The most dangerous conditions are extended periods of drought (typically during the summer months) and high winds (typically during late winter and early spring). Drought conditions create an adverse environment for containing fires because of the dry condition of the forest on a regional scale. Additionally, high gusting winds facilitate the spread of wildfires throughout a much larger region.

2.5.2 Hazard Profile

There are no recorded wildfire events in the NCDC database, but the Georgia Forestry Commission has recorded the number and location of wildfires in Elbert County between 2000 and 2010. During that time period there were 483 reported wildfires countywide, resulting in an average of 48.3 wildfires per year. According to the 2010 Elbert County Community Wildfire Protection Plan (CWPP), developed by the Georgia Forestry Commission, the leading cause (46%) of wildfires over the past 20 years is debris burning.¹⁴

2.5.3 Assets Exposed to Hazard

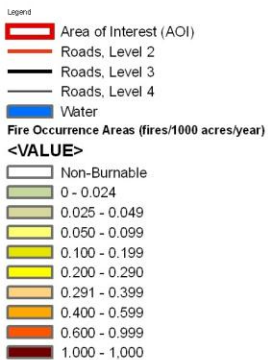
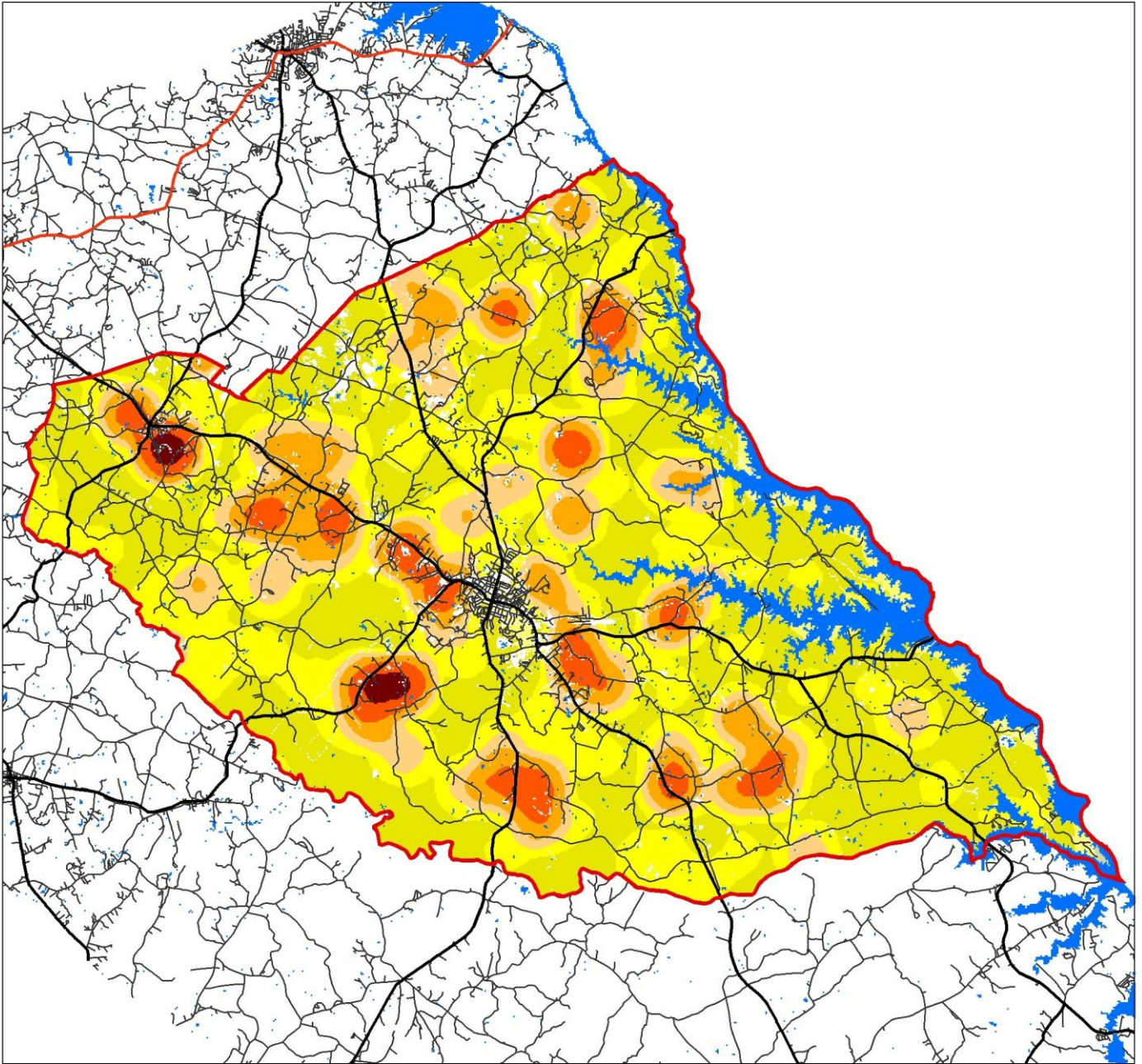
All of Elbert County is potentially vulnerable to wildfires, either large blazes affecting expansive tracts of forestland or multiple small fires damaging individual lots. Both are potentially extremely dangerous and may escalate quickly depending on the prevailing weather conditions. During the development of the 2010 Elbert County CWPP, the Georgia Forestry Commission mapped wildfire occurrences as shown on the following page.

¹³ Retrieved on August 16, 2011, from a report on the U.S. Fire Administration website, entitled, "Wildland Fires: A Historical Perspective" at <http://www.usfa.dhs.gov/downloads/pdf/statistics/v1i3-508.pdf>.

¹⁴ Georgia Forestry Commission (2010). "Community Wildfire Protection Plan: An Action Plan for Wildfire Mitigation and Conservation of Natural Resources, Elbert County, Georgia," p. 7.

Elbert Co Fire Occurrence Areas

AOI: Elbert Co Description: Published Results Dataset for the AOI



00.45.9 1.8 2.7 3.6
Miles

11/16/2010

Disclaimer: The user assumes the entire risk related to their use of the SFRAS application and either the published or derived maps from the application. The Southern Group of State Foresters is providing these data "as is" and disclaims any and all warranties, whether expressed or implied, including (without limitation) any implied warranties of merchantability or fitness for a particular purpose. In no event will the Southern Group of State Foresters be liable to you or to any third party for any direct, indirect, incidental, consequential, special or exemplary damages or lost profit resulting from any use or misuse of these data.



2.5.4 Estimate of Potential Losses

Elberton and Bowman are equipped with pressurized water systems and fire hydrants throughout each jurisdiction. Fire departments are active in both cities, and eight stations are located in unincorporated areas; in addition, the Georgia Forestry Commission county protection unit is located west of Elberton and responds to wildfires throughout the county.¹⁵

Even with these protections, wildfires resulted in approximately \$99,000 in damages to property, including four homes and two non-residential buildings, between 2004 and 2010. On average, 81 acres of land burns each year as a result of wildfires.¹⁶

2.5.5 Land Use and Development Trends

Elbert County is still nearly 51% forested, and remains largely rural.¹⁷ Development has traditionally been scattered in unincorporated areas and what is referred to as the wildland urban interface (WUI). WUIs are defined as areas “where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.”¹⁸ Elbert County is predominantly comprised of two of the three main categories of WUI, as follows:

- Boundary: Classic type of WUI, with a clearly-defined boundary between suburban and rural areas
- Intermix: Structures, such as rural homes, are scattered in wildland (undeveloped) areas.¹⁹

The Elbert County CWPP includes maps depicting WUI areas. Development in these areas presents challenges to fire safety personnel as a result of inadequate water supply, longer response times for emergency services, inadequate access, and distance between structures simultaneously impacted by wildfire occurrences.²⁰

Wildfire risk assessments were conducted in 2009 utilizing the Woodland Community Wildfire Hazard Assessment tool, which considers accessibility, vegetation, building materials and assembly, and other factors. The assessment resulted in the placement of Elbert County in the “moderate” hazard range. Identified land use and development factors contributing to this designation include:

- Dead end roads with inadequate turnarounds
- Narrow roads without drivable shoulders
- Narrow driveways with overhanging trees

¹⁵ Ibid., p. 7.

¹⁶ Ibid., p. 7.

¹⁷ Ibid., p. 7.

¹⁸ Retrieved on August 16, 2011, from a report on the U.S. Fire Administration website, entitled, “Fires in the Wildland/Urban Interface” at <http://www.usfa.dhs.gov/downloads/pdf/statistics/v2i16-508.pdf>.

¹⁹ Georgia Forestry Commission (2010). “Community Wildfire Protection Plan: An Action Plan for Wildfire Mitigation and Conservation of Natural Resources, Elbert County, Georgia,” p. 9.

²⁰ Ibid., p. 15.

- Minimal defensible space around structures
- Undeveloped lots comprising half the total lots in many rural communities

The National Fire Protection Association (NFPA) is responsible for developing and updating standards for fire protection. Relevant land use and development issues are addressed in *NFPA 1141: Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas*.²¹ Three general approaches should be taken for development in the WUI: 1) design developments to be defensible against wildfires, 2) design fire-resistant landscapes and structures, and 3) incorporate fuel reduction treatments to reduce vegetative hazards.²²

2.5.6 Multi-Jurisdictional Concerns

Though the majority of heavily wooded areas are located outside of the municipal jurisdictions, a small fire burning uncontained within either of the cities may create more damage because of the increased density of development. It is imperative that all three jurisdictions work closely with the Georgia Forestry Commission to continue their joint efforts in combating wildfires countywide.

2.5.7 Hazard Summary

It is difficult to estimate the losses as a result of wildfires because the extent of damages depends solely on the severity of the fire and the types of structures and/or property that are impacted. To guide wildfire mitigation efforts, the 2010 Elbert County CWPP identified several priorities in the following categories: Community Hazard and Structural Ignitability, Community Wildland Fuel Reduction, Community Wildland Fire Response, and Education and Outreach. Mitigation actions will vary, as wildfires may be classified as both a natural and a technological, or manmade, hazard.

2.6 Earthquakes

2.6.1 Hazard Identification

An earthquake is a sudden shaking of the earth caused by a fault slip which results in a release of energy that travels away from the fault surface as seismic waves. Seismic waves are elastic shocks that travel through the earth. Faults slip to release stress that is created as tectonic plates move around the surface of the earth. Earthquakes can cause buildings and bridges to collapse, telephone and power lines to fall, and cause fires, explosions, and landslides.²³

²¹ This document is available for purchase through the NFPA website at

http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1141&cookie_test=1.

²² Department of Landscape Architecture, Mississippi State University. *Wildfire Planning Strategies for Community Design: A Guide for Southeastern Developers and Planners*, p. 31. Retrieved on August 17, 2011 from http://www.lalc.msstate.edu/research/wildfire/Wildfire_Planning_Strategies.pdf.

²³ Georgia Emergency Management Agency, Georgia Earthquake Awareness Guide, April 2011, pg 3

There are currently three scales that measure earthquakes: the Richter Magnitude Scale, the Moment Magnitude Scale, and the Modified-Mercalli Intensity Scale.

- The Richter Magnitude Scale is logarithmic and expresses earthquake size as a magnitude using whole numbers and decimal fractions. The Richter Magnitude Scale measures the energy released by an earthquake, not the damage caused by an earthquake²⁴. The Richter Magnitude Scale has no theoretical upper limit, however the practical upper limit lies just below 9.0 and 10.0 for local or surface-wave magnitudes and moment magnitudes respectively²⁵
- The Moment Magnitude Scale provides the most reliable estimate of the size of an earthquake when the earthquake exceeds 6.0 on the Richter Magnitude Scale²⁴. The Moment Magnitude scale is the preferred magnitude scale.
- The Modified-Mercalli Intensity Scale is a measure of the strength of shaking of an earthquake at a specific location and is normally represented in roman numerals²⁶. The Modified-Mercalli Intensity Scale ranges from one (I) to twelve (XII) with one (I) meaning that shaking could not be felt and twelve (XII) is total damage²⁷

2.6.2 Hazard Profile

Elbert County is listed as one of several counties in the state that is at most risk for an earthquake event. The risk is due to several factors including Elbert County's proximity to areas that have experienced significant earthquake events in the past.

The earthquake event that struck Charleston, SC in 1886 registered at a level VII on the Modified-Mercalli Intensity Scale, and was felt in Elbert County. Regional earthquakes in areas surrounding Elbert County could also result in damage within the county, much like the 1974 earthquake registering at a magnitude of 4.9 on the Richter scale near the J. Strom Thurmond reservoir, also known as Clarks Hill Lake, to the south of Richard B. Russell Lake along the Savannah River. There is a scattered linear feature of seismic activity to the south of Elbert County that continues beyond Macon, Georgia. Elbert County is also vulnerable to any significant seismic activity that takes place along the Appalachian Mountains to the northwest (see Georgia Earthquake Activity map below).²⁸

2.6.3 Assets Exposed to Hazard

All facilities that have been identified as critical are susceptible to damages.

²⁴ Georgia Emergency Management Agency, Georgia Earthquake Awareness Guide, April 2011, pg 6

²⁵ Retrieved on August 22, 2011, from the United States Geological Survey (USGS) website at <http://earthquake.usgs.gov/hazards/qfaults/glossary.php>

²⁶ Georgia Emergency Management Agency, Georgia Earthquake Awareness Guide, April 2011, pg 7

²⁷ Retrieved on August 22, 2011, from the United States Geological Survey (USGS) website at <http://earthquake.usgs.gov/learn/topics/mercalli.php>

²⁸ Email correspondence from Dr. Andrew Newman, Associate Professor-Georgia Institute of Technology School of Earth and Atmospheric Sciences on June 5, 2011.

2.6.4 Estimate of Potential Losses

The potential losses from an earthquake event are difficult to determine due to the variable intensity and magnitude associated with each earthquake event. The most readily identifiable damages from a significant earthquake event would be fallen trees, downed power lines, and ruptured gas lines. Structural damage can also occur during an earthquake event depending upon the intensity and magnitude of the earthquake. At a level IV on the Modified Mercalli Intensity scale, windows and doors are disturbed, and walls make cracking sound. Within a structure, a sensation like a heavy truck striking the building can be felt. Standing motor cars are rocked noticeably. In a significant earthquake event, cracks in structural foundations can occur as well as the cracking and/or buckling of sidewalks, driveways, and roads.

The fatality and injury rate may increase during and following an earthquake event, particularly for a resident population that is not accustomed to these conditions.

2.6.5 Land Use and Development Trends

When evaluating the resilience of existing structures or the construction of new structures, it is important to consider that the following land and building characteristics are particularly susceptible to damage during an earthquake event: soft ground, weak slopes, and structures of poor quality that contain un-reinforced masonry or are built with earth, rubble, and/or stone. Structures with heavy roofs and above-ground infrastructure are also vulnerable to damage from an earthquake event.²⁹

2.6.6 Multi-Jurisdictional Concerns

Because there are no clearly defined faults in Georgia²³, it is difficult to predict where an earthquake event is going to occur, and therefore the entire county is equally vulnerable.

2.6.7 Hazard Summary

Earthquakes can pose numerous risks to a community, including loss of life, injury, as well as significant economic loss. Depending on the location, magnitude, and intensity of an earthquake event, road conditions could be unsafe, resulting in a disruption to food supply and overall continuity of business.

Structural damage to critical facilities can result in the delay of deployment and receipt of lifeline services, including hospitals, nursing homes, and schools.

²⁹ Retrieved on August 17, 2011, from the United Nations International Strategy for Disaster Reduction (UNISDR) website at http://www.stopdisastersgame.org/en/pdf/Earthquake_fact-sheet.pdf

3.0 Local Technological Hazard, Risk, and Vulnerability

Table 3.1: Summary of Updates to Chapter 3: Local Technological Hazard, Risk, and Vulnerability

Hazard Type	Section	Update Summary
Hazardous Material Releases	2.1.1 Hazard Identification	Text revisions
	2.1.2 Hazard Profile	Text revisions; updated information
	2.1.3 Assets Exposed to Hazard	Text revisions, updated information
	2.1.4 Estimate of Potential Losses	Text revisions
	2.1.5 Land Use & Development Trends	Text revisions, updated information
	2.1.6 Multi-Jurisdictional Concerns	No changes
	2.1.7 Hazard Effects Summary	Text revisions

3.1 Hazardous Material Releases

3.1.1 Hazard Identification

Hazardous materials are chemical substances, which if released or misused can pose a threat to the environment and the health and welfare of the population. These products are used in industry, agriculture, medicine, research, and consumer goods. They can take the form of explosives, flammable and combustible substances, poisons, and radioactive materials. The release of these substances into the environment is most often a result of transportation accidents or because of chemical spills in industrial areas.

3.1.2 Hazard Profile

Transportation-related hazardous material releases carry the potential for the greatest exposure to risk and also are impossible to predict because they typically involve an accident of some kind. There have been 60 reported hazardous material releases in Elbert County between 1990 and 2011, as recorded by the Georgia Department of Natural Resources (DNR) Emergency Response Team (see GEMA Worksheet #1 Addendum in Appendix D). The majority of these incidents are the result of individuals, businesses, or utility departments (knowingly or unknowingly) releasing hazardous materials in waterways. Between 1990 and 2005, there were two reported cases of transportation-related spills involving tractor-trailers and the release of petroleum products.

Based on the historic frequency recorded by the DNR the county can expect a hazardous material release event every 0.35 years. As the DNR only records reported events through its complaint tracking system, this figure may misrepresent the actual number of individual releases.

3.1.3 Assets Exposed to Hazard

There are currently three sites in Elbert County listed on the DNR Hazardous Site Inventory, last updated in July 2011. This listing provides an inventory of sites where there has been a known or suspected release of a regulated substance above a reportable quantity and which have yet to show they meet state clean-up standards. The three sites in Elbert County are the Elbert County Landfill, Martin Fireproofing

Company, and a 5.2 acre parcel owned by CSX Transportation, Inc. adjacent to the rail corridor. Martin Fireproofing (headquartered in New York) still owns the listed parcel; while the plant is not in operation, the site is still contaminated. Adjacent to this site is a residential subdivision (Robinwood) of substantial size. According to the DNR Drinking Water program's "New Well/Spring Application," proposals for new public wells within one mile of hazardous waste disposal sites will be subject to further investigation to ensure safe drinking water. Martin Fireproofing has been designated as a Class I cleanup priority. According to the DNR Hazardous Site Inventory, sites designated as Class I "have resulted in known human exposure to regulated substances, that have sources of continuing releases, or that are causing serious environmental problems." These are identified as the highest priority by DNR. The other two sites have been designated as Class IV by the DNR. Class IV sites are presumed to be in compliance with clean-up standards; corrective action may have already been conducted or is underway, but remain on the Hazardous Site Inventory and the property owner is required to file deed notices. These sites may be redesignated should it be found that they do not protect human health or the environment. There are a number of critical facilities that are exposed to potential hazardous materials located along the rail corridor in the City of Elberton, including the Fire and Police Departments as well as the city's municipal building.

3.1.4 Estimate of Potential Losses

The biggest threat to Elbert County is the potential for a hazardous material release resulting from a train derailment, or other transportation-related accident. The most vulnerable area to transportation-related hazardous materials releases is the City of Elberton because of the intersections of the state highway network and the CSX rail corridor. Additionally, Elberton contains the highest population densities in the county and presents the greatest potential for human exposure to harmful agents.

The rail corridor intersects the county and crosses the Broad River entering Elbert from Madison County. The railroad extends east from Elberton towards South Carolina and traverses a significant groundwater recharge area and the water supply watershed associated with the drinking water intake point on the Lake Russell Reservoir. The rail crosses the lake again at the South Carolina border.

The largest potential impact is the contamination of the county's drinking water source as a result of a release within the watershed. This does not have to occur within direct proximity to the water intake point as the watershed extends northwest along GA Highway 17, beyond Bowman and into Hart County.

3.1.5 Land Use and Development Trends

Existing land use patterns along the rail corridor through the City of Elberton have been deemed vulnerable to hazardous material spills not only because of the frequency of trains traversing the city, but also because of the concentration of commercial and residential properties in the area. There is a large amount of employment activity directly adjacent to the rail corridor and residential developments within close proximity on either side. Elbert County is currently developing its first zoning ordinance; careful

attention should be given to the vulnerability of certain land uses adjacent to the rail corridor.

3.1.6 Multi-Jurisdictional Concerns

Major hazardous material releases would obviously have an effect on the entire county. Major rail and transportation corridors traverse both Elberton and Bowman, increasing the probability of occurrences within either of the municipalities. The largest concern is for the contamination of the City of Elberton's drinking water source in the Lake Russell Reservoir.

3.1.7 Hazard Summary

Although the possibility for a major release seems remote, the potential for devastating effects must be considered. The City of Elberton currently has a permitted withdrawal capacity of 7.5 million gallons per day from the Lake Russell Reservoir and has identified the opportunity to expand its water service area further into the unincorporated areas of Elbert County and potentially into other municipalities and counties. This increases the importance of protecting the water quality from harmful pollutants through the adoption of the mitigation measures identified in Chapter 5.

4.0 Local Natural Hazard Mitigation Goals and Objectives

Table 4.1: Summary of Updates to Chapter 4: Local Natural Hazard Mitigation Goals and Objectives

Hazard Type	Section	Update Summary
Severe Thunderstorms	4.1.1 Community Mitigation Goals	Text changes
	4.1.2 Identification & Analysis of Range of Mitigation Options	Text changes
	4.1.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
Flooding	4.2.1 Community Mitigation Goals	Text changes
	4.2.2 Identification & Analysis of Range of Mitigation Options	Text changes; update with 2010 NFIP participation
	4.2.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
Winter Storms	4.3.1 Community Mitigation Goals	Text changes
	4.3.2 Identification & Analysis of Range of Mitigation Options	Text changes
	4.3.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
Drought	4.4.1 Community Mitigation Goals	Text changes
	4.4.2 Identification & Analysis of Range of Mitigation Options	Text changes
	4.4.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
Wildfires	4.5.1 Community Mitigation Goals	Text changes
	4.5.2 Identification & Analysis of Range of Mitigation Options	Text changes
	4.5.3 Mitigation Strategy and Recommendations	Multiple changes/revisions with 2010 Elbert County CWPP
Earthquakes	All	New section

4.1 Severe Thunderstorms

4.1.1 Community Mitigation Goals

Severe Thunderstorms, which include hail, lightning and tornados, pose the most serious threat to Elbert County and its residents based on the historic frequency of events discussed in Chapter 2. Thunderstorms are also the most difficult hazard to predict, making the identification of appropriate and effective mitigation strategies difficult. The highest priority for the county is increasing public awareness prior to the development of a severe thunderstorm event.

4.1.2 Identification and Analysis of Range of Mitigation Options

Thunderstorms require both structural and non-structural mitigation strategies due to the widespread impacts these events may have. The most important mitigation strategy relates to public awareness, particularly for vulnerable populations. To this end, several mitigation actions relating to public education, engagement, and notification relating to all potential hazards in Elbert County have been identified. However, there are also mitigation opportunities to increase structural resistance to severe thunderstorms.

Both municipalities utilize zoning and subdivision ordinances to regulate the construction of new buildings. Elbert County is currently in the process of developing its first zoning ordinance. Land use trends illustrate concentrations of manufactured and mobile homes, which are typically more vulnerable to the effect of severe thunderstorms.

Elbert County and both municipalities are rich in historic structures, particularly within the downtown districts of Bowman and Elberton. In order to retain the historic character of these communities, the structural integrity of the historic buildings must be monitored and enhanced as needed to mitigate the potentially adverse impacts of severe thunderstorms on historic buildings.

Mitigation options relating to new buildings and infrastructure have been targeted toward ensuring that new manufactured and mobile homes are reinforced to maintain their structural resistance to the effects of severe thunderstorms. In addition, an assessment should be performed to determine the need for public and community safe rooms in the event of a severe hazard event, such as a tornado. To best plan for new infrastructure supporting the mitigation of all potential hazards, Elbert County should develop a Capital Improvement Element (CIE) that includes relevant mitigation projects.

Mitigation options relating to existing buildings and infrastructure address the vulnerability of critical facilities to lightning strikes and the reinforcements required for existing manufactured and mobile homes to reduce their vulnerability to severe thunderstorms.

4.1.3 Mitigation Strategy and Recommendations

The goal, objectives, and action steps for severe thunderstorms from the 2006 plan were re-evaluated by Steering Committee members. It was determined that the goal and objectives remain valid, and were therefore left unchanged. “Tasks” identified in the 2006 plan were eliminated due to perceived redundancy with mitigation actions. The Steering Committee completed a report on mitigation actions identified in the previous plan (see Appendix D for this document), and revised these as necessary. Updated mitigation action steps for severe thunderstorms are coded with “ST.”

Severe Thunderstorms Goal:

Minimize the adverse impacts associated with severe thunderstorm events, including damage resulting from hail, lightning, and tornados, on the general population, public and personal property, and on critical facilities supporting the county and each of the municipalities.

Severe Thunderstorms Objective 1:

Educate the public on the potential adverse impacts of severe thunderstorm events and increase the public awareness of emergency preparations and procedures during hazard events.

ST1: Acquire and install additional tornado warning sirens to provide countywide coverage.

Severe Thunderstorms Objective 2:

Initiate mitigation measures to minimize structural damage resulting from the effects of severe thunderstorm events.

ST2: Maintain emergency shelters' abilities to meet the needs of Elbert County residents following a hazard event with regard to locations and amenities

ST3: Develop priority list for lightning protection (e.g. lightning rods and surge protectors) installation and/or replacement on critical facilities and electronic equipment

ST4: Develop draft ordinance for consideration by the Board of Commissioners (BOC) and the city councils to improve the safety of manufactured and mobile home parks

ST5: Assess the need to design and construct public and community safe rooms

Table 4.2: 2012 Severe Thunderstorm Action Items

Project No.	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source(s)	Responsible Party
Severe Thunderstorms						
ST1	Acquire and install additional tornado warning sirens to provide countywide coverage (at minimum, one at each fire station)	1	2012-2016	\$14,000 per siren	Grants, SPLOST	EMA
ST2	Maintain emergency shelters' abilities to meet the needs of Elbert County residents following a hazard event with regard to locations and amenities	1	2014	Staff time	N/A	EMA, American Red Cross, DFCS, Health Department
ST3	Develop priority list for lightning protection (e.g. lightning rods and surge protectors) installation and/or replacement on critical facilities and electronic equipment	2	2014	Staff time	N/A	EMA, Elbert County, Cities

Project No.	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source(s)	Responsible Party
ST4	Develop draft ordinance for consideration by the BOC and City Councils to improve the safety of manufactured and mobile home residents with specific focus on rental properties and mobile home parks	3	2013	Staff time	N/A	Elbert County & City Code Enforcement officers
ST5	Assess need to design and construct public and community safe rooms	3	2012-2016	\$60,000 per safe room	Grants	EMA

4.1.4 Special Multi-Jurisdictional Strategy and Considerations

Severe thunderstorm events can occur throughout the county and all areas are equally vulnerable.

4.1.5 Local Public Information and Awareness Strategy

A primary mitigation strategy involves the county's ability to notify its residents of severe thunderstorm occurrences because of the rapid development of storm events. It is also imperative that part of the mitigation strategy involves educating the public on household preparedness to increase the safety of the population.

4.1.6 Action Steps Revisions

Completed Action Steps

None of the action items identified in the 2006 plan were fully completed.

Unchanged Action Steps

ST1: Acquire and install additional tornado warning sirens to provide countywide coverage (at minimum, one at each fire station)

New Action Steps

ST5: Assess need to design and construct public and community safe rooms

Deleted and/or Revised Action Steps

None of the previously identified action steps were deleted completely, but most were revised to enable Elbert County officials to measure progress (see the following comparison table). In addition, most public education-, engagement-, and notification-related action steps were moved to a newly-formed "All Hazards" category (see section 4.7 of this document).

Table 4.3: 2006 Severe Thunderstorm Action Items

2006 Action Item	2012 Action Item
Acquire and install additional tornado warning sirens to provide countywide coverage	ST1
Develop a cooperative relationship with local media outlets to generate public information on pre-disaster mitigation strategies for households.	AH2, AH3
Assess the vulnerability of the population and utilize local information and census data to identify vulnerable populations.	AH1, AH2
Assess emergency shelter's ability to meet the demands of the population and the shelter's locations in relation to vulnerable populations.	ST2,
Assess the vulnerability of key critical facilities to lightning strikes and develop a lightning rod replacement/installation priority program.	ST3
Assess the vulnerability of manufactured homes countywide addressing the number of homes placed on permanent foundations.	ST4

4.2 Flooding

4.2.1 Community Mitigation Goals

Flooding has occurred in Elbert County and is typically associated with severe thunderstorms during the Atlantic hurricane season (June –November). The majority of flood damage is limited to facilities within the floodplains of streams and rivers. Elbert County remains largely rural, and does not have many concentrations of urbanized areas containing high percentages of impervious surfaces.. The highest priority in the county is mitigating flood damage to roadways lying within the flood hazard boundary.

4.2.2 Identification and Analysis of Range of Mitigation Options

The major implications resulting from flood events relates to structural damages. It is important that the county and each of the cities continue to monitor development adjacent to flood-prone areas (as indicated on floodplain maps) to minimize the impacts of flooding.

Elbert County, Elberton, and Bowman all currently participate in the National Flood Insurance Program (NFIP). In addition, both the county and the city of Elberton have current floodplain management/flood damage prevention ordinances that were updated with the new Areas of Special Flood Hazard as identified in 2010 by FEMA. Provisions for mitigating potential damages from flooding apply within these Areas of Special Flood Hazard.

There are no immediate threats to any community character area as a result of flooding.

Mitigation options relating to new buildings and infrastructure are targeted toward the enforcement of ordinances directing all new construction and development away from identified flood hazard areas.

Mitigation options relating to existing buildings and infrastructure are targeted towards monitoring and recording flood conditions and taking actions to reduce recurring flood damage to facilities (specifically roadways) located within identified hazard areas.

4.2.3 Mitigation Strategy and Recommendations

The goal, objectives, and action steps for flooding from the 2006 plan were re-evaluated by Steering Committee members. It was determined that the goal and objectives remain valid, and were therefore left unchanged. “Tasks” identified in the 2006 plan were eliminated due to perceived redundancy with mitigation actions. The Steering Committee completed a report on mitigation actions identified in the previous plan (see Appendix D for this document), and revised these as necessary. Updated mitigation action steps for flooding are coded with “FL.” Because of the spatial differences between jurisdictions relating to flooding vulnerability, the action steps may be unique to the county, or either the city of Bowman or Elberton.

Flooding Goal:

Reduce the risk of flood damage throughout the county through sensible floodplain management and mitigation strategies reducing the risk of flood-prone facilities.

Flooding Objective 1:

Initiate mitigation measures to minimize structural damage resulting from the effects of flood events.

FL1: Construct stormwater improvements at particular roadways that are prone to flooding, and monitor all roadway conditions within the flood hazard boundary

FL2: Monitor flood control conditions and investigate funding sources to buy-out, move, or raise structures located in areas prone to flooding at:

1. Teasley Mill Road at Herndon Circle and Broad Street
2. Pine Knoll Drive
3. Old Golf Course Road
4. Oglesby Boulevard and Porter Drive

Flooding Objective 2:

Coordinate all new development with flood hazard boundary maps to minimize the adverse impacts of flooding on personal and public property and structures.

FL3: Maintain and enforce flood prevention ordinances and any relevant setback ordinances

FL4: Continue compliance with National Flood Insurance Program criteria

Table 4.4: 2012 Flooding Action Items

Project No.	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source(s)	Responsible Party
Flooding						
FL1	Construct stormwater improvements at particular roadways that are prone to flooding to reduce the damages resulting from flooding. Monitor all roadway conditions within the flood hazard boundary	2	2012-2016	\$50,000 per location	Grants, SPLOST	EMA, Elbert County, Cities
FL2	Monitor flood control conditions and investigate funding sources to buy-out, move, or raise structures located in areas prone to flooding at: 1. Teasley Mill Road at Herndon Circle and Broad Street 2. Pine Knoll Drive 3. Old Golf Course Road 4. Oglesby Blvd and Porter Drive	1	Ongoing	Unknown, dependent on needs	Grants	EMA, Elbert County, Cities
FL3	Maintain and enforce flood prevention ordinance and any relevant set-back ordinance	1	Ongoing	Staff time	N/A	Elbert County & City Code Enforcement officers
FL4	Continue compliance with criteria of the National Flood Insurance Program	1	Ongoing	Staff time	N/A	EMA, Elbert County, Cities

4.2.4 Special Multi-Jurisdictional Strategy and Considerations

Flood events are typically constrained by the delineation of flood hazard boundaries; however those boundaries can expand based on the intensity of the flood event. Each of the three jurisdictions contains flood-prone areas, though the majority is located in the unincorporated county.

4.2.5 Local Public Information and Awareness Strategy

In order to increase public awareness of the risks associated with flood events it is important that the jurisdictional maps illustrating the flood hazard boundaries be publicized and on display in public areas to allow the population to develop a better understanding of the risks associated with construction in flood-prone areas. The nature of floods (typically slow-building events) allows a greater timeframe to generate

public warnings, and notification is not as critical as during rapidly occurring events, such as tornados.

4.2.6 Action Steps Revisions

Completed Action Steps

Construct culverts under the identified roadways in Chapter 2 to reduce the damages resulting from flooding, and monitor all roadway conditions within the flood hazard boundary.

Unchanged Action Steps

There were no unchanged action steps from the 2006 plan.

Deleted and/or Revised Action Steps

The only deletion from the 2006 plan was the action step that read, “Adopt the flood hazard boundary map as part of the county Future Land Use map illustrating areas unsuitable for development.” Flood hazard areas will be included in the Future Development Map (FDM) within the Elbert County Comprehensive Plan update, scheduled for 2012. (An action step relating to the comprehensive plan is located in an “All Hazards,” or “AH” category, which can be found in section 4.7 of this document.) While there were two completely new action steps identified by the Steering Committee (FL4, FL5), most of the 2006 action steps were revised to enable Elbert County officials to better measure progress (see the following comparison table).

Table 4.5: 2006 Flooding Action Items

2006 Action Step	2012 Action Step
Construct culverts under the identified roadways in Chapter 2 to reduce the damages resulting from flooding, and monitor all roadway conditions within the flood hazard boundary. (COMPLETED)	FL1
Monitor flood control conditions in area within the flood hazard boundary, specifically along Teasley Mill Road near its intersections with both Herndon Circle and Broad Street near the Bowman city limits	FL2
Monitor flood control conditions in areas within the flood hazard boundary, specifically along Heard Drive and Sherwood Drive (which have recently been upgraded) and near the southeastern Elberton city limit line between Old Golf Course Road and Pine Knoll Drive.	FL2
Maintain and enforce flood prevention ordinance.	FL3

4.3 Winter Storms

4.3.1 Community Mitigation Goals

Although winter storms do not occur with the same frequency as in northern climates, they can still have an adverse impact on Elbert County. As discussed in Chapter 2, winter storms typically take the form of accumulated ice on roads, trees, and power lines that create dangerous conditions and cause structural damages. While there is little that can be done to mitigate the accumulation of ice, increasing public education

and awareness regarding safety procedures during winter storm events is the highest priority in reducing the population's vulnerability.

4.3.2 Identification and Analysis of Range of Mitigation Options

The majority of damage related to winter storm events is structural in nature, resulting from fallen tree limbs. Though structural damage is the most prevalent form, it is the most difficult to mitigate. Elberton does have a power line right-of-way (ROW) cutting strategy in place, resulting in the clearing of approximately 35 line miles per year; a mitigation action step relating to this strategy is included in the "All Hazards" or "AH" category, due to its relevance for other hazard types. The primary focus for reducing the county's vulnerability is to increase public awareness, particularly related to the dangers associated with driving during winter storm conditions. Several mitigation actions relating to public education, engagement, and notification pertaining to all potential hazards in Elbert County have been identified, and are located in section 4.7 of this document.

Outside of the Elberton ROW strategy identified above, there are no policies, regulations, ordinances or land use trends that relate directly to the mitigation of winter storm events.

There are no immediate threats to any community character area as a result of winter storms.

There are no specific mitigation strategies for new buildings or infrastructure.

Mitigation options relating to existing buildings and infrastructure are targeted towards ensuring that emergency power sources are adequate, operational, and efficient at all critical facilities.

4.3.3 Mitigation Strategy and Recommendations

The goal, objectives, and action steps for winter storms from the 2006 plan were re-evaluated by Steering Committee members. It was determined that the goal and objectives remain valid, and were therefore left unchanged. "Tasks" identified in the 2006 plan were eliminated due to perceived redundancy with mitigation actions. The Steering Committee completed a report on mitigation actions identified in the previous plan (see Appendix D for this document), and revised these as necessary. Updated mitigation action steps for winter storms are coded with "WS."

Winter Storms Goal:

Minimize the threat posed to the general public from the potential adverse impacts of winter storms.

Winter Storms Objective 1:

Educate the public on the adverse conditions that result from winter storm events.

See "All Hazards" in section 4.7 for detail on education-related action steps.

Winter Storms Objective 2:

Mitigate the loss of functional use of key critical facilities resulting from winter storm events.

WS1: Inventory power generators for critical facilities and assess their adequacy to perform during hazard events and develop a replacement priority plan for installation and/or replacement

WS2: Identify funding sources for solar or other alternative energy sources for critical facilities.

Table 4.6: 2012 Winter Storm Action Items

Project No.	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source(s)	Responsible Party
Winter Storms						
WS1	Inventory power generators for critical facilities and assess their adequacy to perform during hazard events and develop a priority plan for installation and/or replacement.	1	2014	Staff time	N/A	EMA, Elbert County, Cities
WS2	Identify funding sources for solar or other alternative-energy sources for critical facilities	2	2012-2013	Staff time	N/A	EMA

4.3.4 Special Multi-Jurisdictional Strategy and Considerations

Winter storms affect all of Elbert County and mitigation strategies are applicable to the unincorporated county as well as the municipalities of Bowman and Elberton.

4.3.5 Local Public Information and Awareness Strategy

The primary mitigation strategy involves increased public education and awareness to reduce the potential for personal injury resulting from vehicular crashes. The nature of winter storms (typically predictable events with weather conditions building throughout the day) allows a greater timeframe to generate public warnings, and notification is not as critical as during rapidly occurring events, such as tornados.

Key action steps relating to public information and awareness that apply to all hazards (“AH”) are described in detail in section 4.7.

4.3.6 Action Steps Revisions

Completed Action Steps

None of the action steps identified in the 2006 plan were completed, though some power generators have been replaced, as needed, in the absence of a prioritized replacement plan.

Unchanged Action Steps

There were no unchanged action steps from the 2006 plan.

Deleted and/or Revised Action Steps

While there was one completely new action step identified by the Steering Committee (WS2), both of the 2006 action steps were revised to enable Elbert County officials to better measure progress (see the following comparison table).

Table 4.7: 2006 Winter Storm Action Items

2006 Action Step	2012 Action Step
Develop a cooperative relationship with local media outlets to generate public information on pre-disaster mitigation strategies for households.	AH2, AH3
Inventory power generators for critical facilities and assess their adequacy to perform during hazard events and develop a replacement priority plan.	WS1

4.4 Drought

4.4.1 Community Mitigation Goals

As discussed in Chapter 2, drought is a prolonged event that primarily affects the county's agricultural community but may also negatively impact public and private water supplies. In addition to actions supporting livestock production during drought occurrences, the Steering Committee identified regulatory and resource-sharing action steps. Actions relating to public education, engagement, and notification pertaining to all potential hazards, including drought, are included in section 4.7.

4.4.2 Identification and Analysis of Range of Mitigation Options

The impacts of drought are non-structural in nature and may greatly affect crop production and livestock. Prolonged drought events may also have an effect on individual households using private water systems with wells as its source.

Both Elberton and Bowman operate individual public water systems. There is currently no public water provided by Elbert County, and current city policies are to extend the water service area to provide a more stable source to a larger percentage of county residents and businesses. The county land use trends illustrate a desire to promote new development within close proximity to Elberton to take advantage of the availability of water.

Elbert County depends on agricultural production for a large percentage of its economy. Drought can have a major impact on agriculture and thus, on the local economy.

There are no specific mitigation strategies for new buildings or infrastructure.

Mitigation options relating to existing buildings and infrastructure are targeted towards water preservation during prolonged periods of drought, reducing demand on existing sources of water.

4.4.3 Mitigation Strategy and Recommendations

The goal, objectives, and action steps for drought from the 2006 plan were re-evaluated by Steering Committee members. It was determined that the goal and objectives

remain valid, and were therefore left unchanged (with the exception of a word change from “effects” to “impacts” in the Goal and the addition of “crops” to Objective 2). “Tasks” identified in the 2006 plan were eliminated due to perceived redundancy with mitigation actions. The Steering Committee completed a report on mitigation actions identified in the previous plan (see Appendix D for this document), and revised these as necessary. Updated mitigation action steps for drought are coded with “DR.”

Drought Goal:

Minimize the negative impacts on the local population and economy resulting from prolonged drought conditions.

Drought Objective 1:

Educate the public on the adverse conditions that result from prolonged drought events and on household mitigation strategies.

DR1: Develop draft water use conservation ordinance for consideration by the City of Bowman

DR2: Seek funding to connect City of Bowman and City of Elberton water systems to enable water sharing during prolonged drought events

Drought Objective 2:

Assist the agricultural community in developing drought mitigation strategies minimizing the adverse impacts on crops and livestock populations.

DR3: Develop and share sources for out-of-county feed surplus during prolonged drought events

DR4: Promote federal, state, and local incentive and grant programs, such as the Environmental Quality Incentive Program (EQIP), to offset the effects of drought on the agricultural community and economy.

Table 4.8: 2012 Drought Action Items

Project No.	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source(s)	Responsible Party
Drought						
DR1	Develop draft water use conservation ordinance for consideration by the City of Bowman and Elbert County	2	2013	Staff time	N/A	Elbert County & City Code Enforcement officers
DR2	Seek funding to connect City of Bowman and City of Elberton water systems to enable water sharing during prolonged drought events	1	Ongoing	Staff time	N/A	Cities
DR3	Develop and share sources for out-of-county feed surplus during prolonged drought events.	2	Ongoing	Staff time	N/A	Elbert County Extension Services

Project No.	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source(s)	Responsible Party
DR4	Promote federal, state, and local incentive and grant programs, such as the Environmental Quality Incentive Program (EQIP), to offset the effects of drought on the agricultural community and economy.	1	Ongoing	Staff time	N/A	Elbert County Extension Services

4.4.4 Special Multi-Jurisdictional Strategy and Considerations

Though prolonged drought affects the entire county, the majority of the impacts are felt within the agricultural community.

4.4.5 Local Public Information and Awareness Strategy

The primary mitigation strategy involves increased public education and awareness to reduce the inefficient use of water by individual households. Key action steps relating to public information and awareness that apply to all hazards (“AH”) are described in detail in section 4.7.

4.4.6 Action Steps Revisions

Completed Action Steps

None of the action steps identified in the 2006 plan were completed.

Unchanged Action Steps

There were no unchanged action steps from the 2006 plan.

Deleted and/or Revised Action Steps

While there were two completely new action steps identified by the Steering Committee (WS2), both of the 2006 action steps were revised to enable Elbert County officials to better measure progress (see the following comparison table).

Table 4.9: 2006 Drought Action Items

2006 Action Step	2012 Action Step
Develop a cooperative relationship with local media outlets to generate public information on water conservation strategies for households.	AH2, AH3
Explore the possibility of creating agreements with contiguous counties to develop a cooperative relationship for sharing feed surplus during prolonged drought events	DR3

4.5 Wildfires

4.5.1 Community Mitigation Goals

Wildfires are typically a random occurrence and may result from lightning strikes or, as is most often the case, human carelessness. Although wildfires are categorized as randomly occurring events, they are most often associated with prolonged drought conditions. The highest priority is to maintain a cooperative relationship among the county and municipal fire department's and the Georgia Forestry Commission to address wildfire mitigation.

4.5.2 Identification and Analysis of Range of Mitigation Options

The impacts of wildfire can have devastating impacts on structures if left uncontrolled. Mitigation measures relating to structural impacts are largely related to fire protection services and increased training for local firefighters. Non-structural strategies are related to public education and awareness to increase fire prevention.

Water plays a major role in the county's ability to combat wildfires. Similarly to policies related to drought mitigation, the City of Elberton's water service district is designed to accommodate new growth in the county to ensure adequate access to water. This includes adequate fire protection service to new residential and commercial developments.

There are no immediate threats to any community character area as a result of wildfires.

There are no specific mitigation strategies for new buildings or infrastructure.

Mitigation options relating to existing buildings and infrastructure are targeted towards the increased training of all firefighters reducing the vulnerability of land, life, and property countywide.

4.5.3 Mitigation Strategy and Recommendations

The goal, objectives, and action steps for wildfires from the 2006 plan were re-evaluated by Steering Committee members. It was determined that the goal remains valid, and was therefore left unchanged. Steering Committee members elected to revise the objectives identified in 2006 to directly relate to the priorities and recommendations included in the 2010 Elbert County Community Wildfire Protection Plan (CWPP). "Tasks" identified in the 2006 plan were eliminated due to perceived redundancy with mitigation actions. The Steering Committee completed a report on mitigation actions identified in the previous plan (see Appendix D for this document), and revised these as necessary. Updated mitigation action steps for wildfires are coded with "WF." Although the responsible party may be different for each action step, they are all intended to reduce vulnerabilities countywide.

Wildfires Goal:

Reduce the potential for damage to the general population and personal and public property resulting from the impacts of wildfires.

Wildfire Objective:

Continue implementation of the prioritized mitigation actions identified in the 2010 Elbert County Community Wildfire Protection Plan to minimize the risk of wildfire damage throughout the community.

WF1: Coordinate a Community Clean-Up Day, encouraging individual land owners to create a firesafe environment through vegetation maintenance and removal

WF2: Continue enforcement of burn permit regulations

WF3: Promote prescribed burning, where applicable, to create at least 30 feet of “defensible space” surrounding structures and property

WF4: Provide wildland fire suppression training for new personnel

Table 4.10: 2012 Wildfire Action Items

Project No.	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source(s)	Responsible Party
Wildfires						
WF1	Coordinate a Community Clean-Up Day, encouraging individual land owners to create a firesafe environment through vegetation maintenance and removal	2	Every Fall	Staff time	N/A	Georgia Forestry Commission, Elbert County & City Code Enforcement officers, volunteers
WF2	Continue enforcement of burn permit regulations	1	Ongoing	Staff time	N/A	Georgia Forestry Commission
WF3	Promote prescribed burning, where applicable, to create at least 30 feet of "defensible space" surrounding structures and property	3	Ongoing	Staff time	N/A	Georgia Forestry Commission, local fire departments
WF4	Provide wildland fire suppression training for new fire personnel	1	Ongoing, as new personnel are hired	Staff time	N/A	Georgia Forestry Commission, local fire departments

4.5.4 Special Multi-Jurisdictional Strategy and Considerations

Based on the wildfire occurrence map in Chapter 2, it is apparent that there are no discernible patterns in the location of wildfires throughout the county, and therefore each jurisdiction is equally susceptible.

4.5.5 Local Public Information and Awareness Strategy

The primary mitigation strategy involves increased public education and awareness to increase individual responsibility in preventing unnecessary wildfires. Key action steps

relating to public information and awareness that apply to all hazards (“AH”) are described in detail in section 4.7.

4.5.6 Action Steps Revisions

Completed Action Steps

None of the action steps identified in the 2006 plan were completed, though the county continues to work with the Georgia Forestry Commission to facilitate an annual advertising campaign supporting wildfire prevention during fire prevention week.

Unchanged Action Steps

There were no unchanged action steps from the 2006 plan.

Deleted and/or Revised Action Steps

While there were 3 completely new action steps identified by the Steering Committee (WF1, WF2, and WF3), both of the 2006 action steps were revised to enable Elbert County officials to better measure progress (see the following comparison table).

Table 4.11: 2006 Wildfire Action Items

2006 Action Step	2012 Action Step
Develop a cooperative relationship with local media outlets to generate public information on water conservation strategies for households.	AH2, AH3
Continue to participate in cross-training exercises among fire departments.	WF4

4.6 Earthquake

4.6.1 Community Mitigation Goals

There is a low probability that an earthquake will occur within Elbert County. Earthquake risk is due primarily to proximity to seismic activity zones in the Appalachian Mountains and fault lines off the shore of South Carolina. Elbert County has experienced at least two major earthquakes, in 1886 and 1974. The recent earthquake in Mineral, Virginia on August 23, 2011 was felt by some in the Elbert County area, though no damage was reported. Due to a relatively low risk factor, the primary focus for earthquake mitigation in Elbert County is outreach and education. Actions relating to public education, engagement, and notification pertinent to all potential hazards, including earthquakes, are included in section 4.7.

4.6.2 Identification and Analysis of Range of Mitigation Options

Mitigation measures relating to structural impacts of earthquake events are related to identifying structures within the county that could sustain significant damage. Non-structural strategies are related to public education and awareness of the risk of earthquake within the county.

There are no existing policies, regulations, ordinances, and/or land use restrictions relating to earthquakes.

4.6.3 Mitigation Strategy and Recommendations

The goal, objectives, and action steps for earthquakes were developed by Steering Committee members. The mitigation action step for earthquakes is coded with “EQ,” and is applicable for all jurisdictions in Elbert County.

Earthquake Goal:

Reduce the potential for damage to the general population and personal and public property resulting from the impact of an earthquake.

Earthquake Objective:

Educate the public on the risk of earthquakes within the county, and minimize potential damage by protecting critical facilities and teaching household mitigation strategies

EQ1: Develop a survey procedure and guidance document to inventory structural and non-structural hazards in and near critical facilities.

EQ2: Enforce existing building codes for new and substantially improved buildings

Table 4.12: 2012 Earthquake Action Items

Project No.	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source(s)	Responsible Party
Earthquake						
EQ1	Develop a survey procedure and guidance document to inventory structural and non-structural hazards in and near critical facilities	1	2013	Staff time	N/A	EMA, Elbert County, and Cities
EQ2	Enforce existing building codes for new and substantially improved buildings	2	Ongoing	Staff time	N/A	Elbert County & City Code Enforcement officers

4.6.4 Special Multi-Jurisdictional Strategy and Considerations

Elbert County, Elberton, and Bowman are all equally at risk for earthquakes.

4.6.5 Local Public Information and Awareness Strategy

The primary mitigation strategy involves increased public education and awareness to increase individual responsibility in preventing unnecessary wildfires. Key action steps relating to public information and awareness that apply to all hazards (“AH”) are described in detail in section 4.7.

4.7 All Hazards

Table 4.13: 2012 All Hazard Action Items

Project No.	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source(s)	Responsible Party
All Hazards						
AH1	Coordinate with Elbert County and its municipalities to ensure that neighborhoods are identified and delineated during comprehensive plan update process	1	2012-2013	Staff time	Elbert County, Cities	Elbert County, Cities
AH2	Develop strategy for targeted outreach prior to or during a hazard occurrence to neighborhoods with high percentages of residents in need of additional assistance	3	2014	Staff time	N/A	EMA
AH3	Conduct regular outreach and education activities (in English and Spanish) on hazard mitigation strategies through PSAs, school and hospital newsletters, Facebook, local television channels, and utility companies	2	Ongoing	Staff time	N/A, grants if available	EMA, Elbert County, Cities
AH4	Identify strategy for instant notification to residents prior to and/or during a hazard occurrence (e.g. text messaging, email, etc.)	2	2013	Investigate cost	Grants	EMA
AH5	Develop Capital Improvements Element (CIE) to include hazard mitigation projects	2	2014-2015	Staff time or consultant fee	Elbert County, Cities	Elbert County, Cities
AH6	Continue implementing power line ROW cutting/clearing strategy for the City of Elberton at approximately 35 line miles per year	1	Ongoing	\$200,000 annually	Local	City of Elberton

5.0 Local Technological Hazard Mitigation Goals and Objectives

Table 5.1: Summary of Updates to Chapter 5: Local Technological Hazard Mitigation Goals & Objectives

Hazard Type	Section	Update Summary
Hazardous Material Releases	4.1.1 Community Mitigation Goals	No changes
	4.1.2 Identification & Analysis of Range of Mitigation Options	No changes
	4.1.3 Mitigation Strategy and Recommendations	Multiple changes/revisions

5.1 Hazardous Material Releases

5.1.1 Community Mitigation Goals

Hazardous material releases are impossible to predict because those producing the greatest damages are typically associated with transportation accidents (tractor trailers overturning or train derailment). Because of the location of major transportation corridors (both road and rail) intersecting the county and in proximity to key critical facilities, the highest priority is to develop an assessment of the county's vulnerability to hazardous material releases.

5.1.2 Identification and Analysis of Range of Mitigation Options

Elbert County has identified non-structural mitigation strategies related to assessing the vulnerability of the City of Elberton's major water source, as there are transportation corridors carrying hazardous materials that traverse the Lake Russell reservoir adjacent to Elberton's water intake point.

There are no policies, regulations, ordinances or land use trends that relate to the mitigation of hazardous material releases.

There are no immediate threats to any community character area as a result of hazardous material releases.

There are no specific mitigation strategies for new buildings or infrastructure.

Mitigation options relating to existing buildings and infrastructure are targeted towards mitigating the potential adverse impacts of hazardous material releases on critical facilities located within proximity to the identified vulnerability areas and reducing the impacts on both public and private sources of water.

5.1.3 Mitigation Strategy and Recommendations

The goal, objectives, and action steps for hazardous material releases from the 2006 plan were re-evaluated by Steering Committee members. "Tasks" identified in 2006 were eliminated due to perceived redundancy with mitigation actions. It was determined that the goal remains valid, and was therefore left unchanged. The previous Objective 1 was deleted for two reasons: 1) According to Steering Committee members, the County has decided against utilizing tornado-warning sirens to inform the public of hazardous material releases, and 2) The public awareness action step will be covered in the "All

Hazards” category outlined in section 4.7 of the previous chapter. As a result, the updated Objective 1 was identified as Objective 2 in the 2006 plan. The Steering Committee revised the remaining mitigation actions identified in the previous plan as necessary. Updated mitigation action steps for hazardous material releases are coded with “HMR.”

Hazardous Material Releases Goal:

Reduce the county’s vulnerability to the negative impacts of hazardous material spills.

Hazardous Material Releases Objective 1:

Assess the vulnerability of key natural resources to hazardous material releases.

HMR1: Inventory key road and rail crossing points potentially impacting water resources and delineate areas of vulnerability adjacent to transportation corridors.

HMR2: Over time, inventory private wells within proximity to transportation corridors and seek funding for the purpose of connecting to the public water system.

Hazardous Material Releases Objective 2:

Increase the education and training levels of emergency response personnel related to hazardous material spills.

HMR3: Provide opportunities annually for co-operative inter-jurisdictional training exercises to increase education levels regarding hazardous material releases.

Table 5.2: 2012 Hazardous Material Releases Action Items

Project No.	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source(s)	Responsible Party
Hazardous Material Releases						
HMR1	Inventory key road and rail crossing points impacting water resources and delineate areas of vulnerability adjacent to transportation corridors	1	Ongoing	Staff and volunteer time	EMA; Elbert County, Cities; grants, if available	Elbert County, Cities; GEMA; GA EPD
HMR2	Over time, inventory private wells within proximity to transportation corridors and seek funding for the purpose of connecting to the public water system	2	Ongoing	Staff and volunteer time for inventory; unknown for infrastructure improvements	EMA; Elbert County, Cities; grants, if available	Elbert County, Cities; GA EPD

Project No.	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source(s)	Responsible Party
HMR3	Provide opportunities annually for cooperative, inter-jurisdictional training exercises to increase education levels regarding hazardous material releases	1	Ongoing	Staff and volunteer time	EMA	Elbert County, Cities; GEMA

5.1.4 Special Multi-Jurisdictional Strategy and Considerations

Major rail and road corridors intersect each of the jurisdictions in Elbert County though the City of Elberton appears to be the most vulnerable to adverse impacts resulting from a major spill because of the density of development adjacent to the transportation corridors intersecting the city and the proximity of its water intake point to the rail line. However, hazardous material spills have the potential to cause major environmental damages that could have a major impact on the entire county.

5.1.5 Local Public Information and Awareness Strategy

It is imperative that the county has the ability to notify the public of a major hazardous material release that could potentially harm the population. Similarly to severe thunderstorm events, hazardous material releases and their effects are often very immediate in nature. Delays in communicating the occurrence of these events increase the threat to the population.

5.1.6 Action Steps Revisions

Completed Action Steps

None of the action steps identified in the 2006 plan were completed.

Unchanged Action Steps

There were no unchanged action steps from the 2006 plan.

Deleted and/or Revised Action Steps

As noted previously, the 2006 hazardous material releases action step relating to public outreach was integrated under the "All Hazards" category described in section 4.7 of the previous chapter. The action step relating to the utilization of tornado sirens during hazardous material release events was deleted, per Steering Committee recommendations. The three remaining action steps under hazardous material releases from the 2006 plan were revised to enable Elbert County officials to better measure progress (see the following comparison table).

Table 5.3: 2006 Hazardous Material Release Action Items

2006 Action Step	2012 Action Step
Develop a cooperative relationship with local media outlets to generate public information on pre-disaster mitigation strategies for households.	AH2, AH3
Inventory key road and rail crossing points potentially impacting water resources and delineate areas of vulnerability adjacent to transportation corridors.	HMR1
Assess the vulnerabilities of private wells to hazardous material spills within proximity to transportation corridors.	HMR2
Explore opportunities for co-operative inter-jurisdictional training exercises to increase regional education levels regarding hazardous material spills.	HMR3

6.0 Executing the Plan

Table 6.1: Summary of Updates to Chapter 6: Executing the Plan

Section	Update Summary
6.1 Implementation Action Plan	Text revisions; new mitigation action prioritization process described
6.2 Evaluation, Monitoring, Updating	Revisions to process
6.3 Multi-Jurisdictional Strategy and Considerations	No changes
6.4 Plan Update and Maintenance	Revisions to public involvement process

6.1 Implementation Action Plan

The Elbert County Emergency Management Agency (EMA) served as the primary local contact during the development of the Elbert County Pre-Disaster Mitigation Plan Update. The Northeast Georgia Regional Commission (NEGRC) assisted the EMA by facilitating the planning process and assembling the relevant information into the planning document. Upon review and approval by the Georgia Emergency Management Agency (GEMA), the Elbert County Board of Commissioners will formally adopt the planning document by resolution.

The Elbert County EMA Director (currently Mr. Chuck Almond) assumes responsibility for the maintenance of the plan and for coordinating the pursuit of implementation strategies set forth within the document. Following a timeframe of no more than five years (2012-2016), the EMA Director will convene a planning committee to update and revise the planning document as well as the mitigation strategies per FEMA standards.

It is imperative that the EMA Director monitors the progress of the plan and the implementation of the identified strategies to ensure that pre-disaster mitigation efforts are maximized throughout the county.

Mitigation strategies within this document were revised, developed and prioritized by the steering committee. NEGRC facilitated a quantitative prioritization process using the STAPLEE (Social, Technical, Administrative, Political, Legal, Economic, Environmental) method. For every identified mitigation action, small workgroups within the steering committee were charged with assigning a rating under each STAPLEE component with a "+" for favorable, a "-" for less favorable, and "N/A" for not applicable. These symbols were then assigned numerical values as follows: "+" = 1, "-" = -1, and "N/A" = 0. NEGRC staff calculated the scores for each mitigation action and presented them to the steering committee. Input was obtained by steering committee member to then qualitatively review and revise the numerical prioritization, where necessary. There are three possible priority levels under each hazard type; the "All Hazards" mitigation actions category was also prioritized as such.

Elbert County revised its Short-Term Work Program (STWP) within its Comprehensive Plan in 2009. The 2006 Elbert County Pre-Disaster Mitigation Plan was not incorporated in the 2009 Comprehensive Plan Update. Elbert County should

incorporate its Pre-Disaster Mitigation Plan into its 2014 Comprehensive Plan and STWP update to create a more cohesive planning document.

Through the revision of the county Comprehensive Plan, the Pre-Disaster Mitigation (PDM) Plan should be distributed to county and municipal agencies as well as made available at the Comprehensive Plan public meetings to inform county residents and staff of the PDM plan's strategies. Additionally, the PDM planning committee should be consulted in the Comprehensive Plan participation process to ensure that the PDM plan is adequately incorporated into the 2014 Comprehensive Plan.

6.2 Evaluation, Monitoring, Updating

The evaluation, monitoring, and updating methods described in the 2006 plan were not effective, according to the Elbert County EMA Director. For this plan update, the EMA Director assumes responsibility for facilitating an annual review of the plan in cooperation with a committee of local government and agency representatives, to include an update to the database of countywide critical facilities. Additionally, the committee shall evaluate the implementation of any mitigation projects (action items) during that year, if any, or outline the procedures taken towards completing defined mitigation actions. This information will be documented in a project review checklist. This committee shall be assembled for the first time within one year from plan update adoption by the County and Cities, and will meet at least annually thereafter.

The EMA Director shall regularly include pre-disaster mitigation planning as part of the Emergency Operations committee's agenda to ensure that relevant discussion of disaster mitigation projects takes place among key emergency service personnel and departments.

6.3 Multi-Jurisdictional Strategy and Considerations

All goals, objectives and strategies set forth in this planning document are relevant to Elbert County as well as the cities of Bowman and Elberton, unless specifically stated otherwise. Each of the jurisdictions participated in the planning process and has authorized the Elbert County EMA to act on its behalf with regards to disaster mitigation as set forth in the Service Delivery Strategy.

6.4 Plan Update and Maintenance

According to the EMA Director, there was very little community involvement in the maintenance of the original plan between 2006 and 2011. Information was distributed, when applicable, to the comprehensive planning committee, during zoning hearings, and during election seasons. Elbert County commits to developing a closer relationship to the general public and continuing to disseminate information through public notices, county and other websites, and television, radio, and social media outlets.

Elbert County will conduct a formal update process for its PDM plan and submit the plan update for approval by GEMA and FEMA within five (5) years of the adoption of this plan. During the update process, the County and Cities will again engage the public in order to obtain feedback and input into the plan.

7.0 Conclusion

Table 7.1: Summary of Updates to Chapter 7: Conclusion

Section	Update Summary
7.1 Conclusion Summary	Text revisions
7.2 References	Revised to reflect updated references

7.1 Conclusion Summary

The planning process has provided Elbert County officials, emergency personnel, staff and the general public with a greater understanding of the county's vulnerability to natural and technological hazards. This process has allowed the county to develop mitigation measures to minimize the adverse impacts resulting from hazard events.

As the community moves forward in implementing the identified mitigation strategies, periodic reviews will be conducted to assess the continued relevance of the established goals and objectives and define new projects worthy of funding. Although the implementation of mitigation measures may require the expenditure of funds in some cases, it has been proven throughout the nation and the world that dollars spent on hazard mitigation can ultimately save the local government over the long-term by minimizing the community's vulnerability to negative impacts of natural and technological hazards by protecting people and property. Therefore, it is important that the pre-disaster mitigation planning process retain strong political and public support ensuring that the identified implementation strategies can be pursued.

7.2 References

Documents/Publications

- Federal Emergency Management Agency (FEMA) Local Multi-Hazard Mitigation Planning Guidance (2008)
- FEMA Multi-Jurisdictional Pre-Disaster Mitigation Plan Update Guidance Template (2009)
- FEMA State and Local Mitigation Planning How-To Guide (2007)
- 2011 State of Georgia Hazard Mitigation Strategy
- 2004 Elbert County Comprehensive Plan
- 2009 Elbert County Partial Plan Update
- 2010 Elbert County Community Wildfire Protection Plan

Websites

- Federal Emergency Management Agency: www.fema.gov/hazards
- Georgia Emergency Management Agency: www.gema.state.ga.us
- Georgia Department of Natural Resources: <http://www.dnr.state.ga.us/dnr/environ/>
- Office of Hazardous Materials Safety: <http://hazmat.dot.gov/index.html>
- National Climatic Data Center: <http://www.ncdc.noaa.gov/oa/ncdc.html>

Other Resources

- Elbert County Flood Hazard Boundary Maps