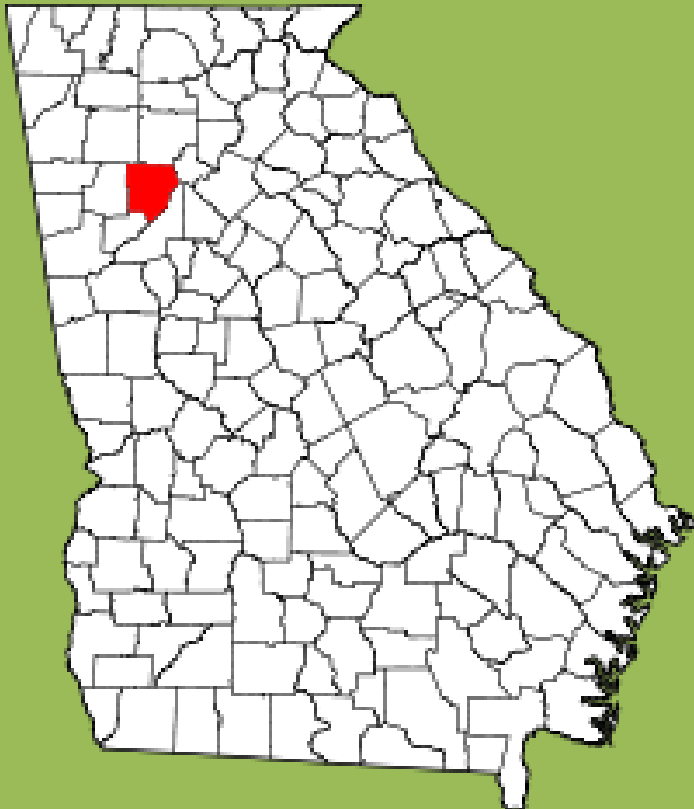




Cobb County, Georgia Hazard Mitigation Plan 2016



***A MULTI-JURISDICTIONAL PLAN
PREPARED BY THE COBB
COUNTY EMERGENCY
MANAGEMENT AGENCY IN
PARTNERSHIP WITH THE CITIES
OF: ACWORTH, AUSTELL,
KENNESAW, MARIETTA,
POWDER SPRINGS AND SMYRNA***

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ACKNOWLEDGEMENTS

The Cobb County Emergency Management Agency would like to thank the members of the Hazard Mitigation Executive Planning Committee (listed within the report) and the many individuals from county and city departments who assisted in providing information needed for this plan update. Without the collaborative effort, this update would not have been possible. Many thanks go out to the Hazard Mitigation Team at the Georgia Emergency Management Agency for providing support.

Also, thank you to the citizens of our community who took the time to review the plan and provide input.

Stay safe!

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CHAPTER 1 – INTRODUCTION

The Disaster Mitigation Act of 2000 has provided the force for states and local governments to undertake natural hazard mitigation planning since October 30, 2000 when the President signed this Act into law. This law encourages and rewards local and state pre-disaster planning. The intent is to integrate state and local planning to strengthen statewide mitigation efforts.

Historically, it has been proven that the impact of natural and technological hazards can be reduced if appropriate mitigation steps are taken before such hazards occur. Through the identification of potential hazards and the areas vulnerable to these threats, mitigation measures may be implemented to reduce the impact to people and property.

This plan is a revision of the Cobb County Pre-Disaster Mitigation plan (PDMP) which was last approved by FEMA in 2011. The revised plan was developed with a goal of updating the mitigation plans to address natural and manmade threats not included in the previous PDMP, updating the status of mitigation goals and objectives, as well as providing the user with a clearer plan which is easier to use and is organized in a manner which allows information to be located quickly.

For the 2016 Plan Update, the plan name has changed from “Cobb County Pre-Disaster Mitigation Plan (PDMP)” to “Cobb County Hazard Mitigation Plan”. The plan is intended to be used all of the time, pre and post disaster. Therefore, the name has been changed.

Multi-Jurisdictional Profile

Cobb County

Cobb County was founded December 3, 1832. It includes six incorporated cities: Acworth, Austell, Kennesaw, Marietta, Powder Springs and Smyrna. Marietta is the county seat and the largest city in the county. Cobb County was named in honor of Thomas Willis Cobb, a Georgia Senator and U.S. Representative credited with helping to write the Confederate Constitution.

Cobb County is located in what is considered the Atlanta metropolitan area in the northwest portion of the state of Georgia. The county is approximately 340 square miles in size and is bordered by Cherokee, Fulton, Douglas, Paulding and Bartow counties. According to the 2014 Census estimates, there are 730,981 people living in Cobb County. As of the 2010 Census, the population density was approximately 2,023 people per square mile.

The following table highlights the population and land area data for Cobb County and municipalities.

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Table 1 - Population Estimates & Land Area of Cobb County and Municipal Jurisdictions

	Census 2000	Census 2010	Census 2014 Estimate	Land Area ¹ (sq.mi)
Cobb County Unincorporated	455,067	508,876	540,167	275.1
Acworth	13,422	20,439	21,867	8.80
Austell	5,359	6,658	6,985	5.80
Kennesaw	21,675	30,294	32,400	9.50
Marietta	58,748	56,605	60,014	23.3
Powder Springs	12,481	13,939	14,590	7.10
Smyrna	40,999	51,265	54,958	15.20
Total	607,751	688,076	730,981	344 sq. mi

Cobb County possesses a strong economy. There are more than 30,000 businesses licensed in Cobb County including over 300 international firms and four Fortune 500 companies. Cobb is home to several corporate headquarters including The Home Depot, The Weather Channel, Lockheed Martin and Georgia Northeastern Railroad. As of 2013 the medium household income was \$63,920. Cobb has maintained a Triple-AAA credit rating since 1997.

Cobb County operates under the commission-county manager form of government. Policy leadership of elected officials combined with the administrative abilities of a county manager is the strength in this particular system. The County Manager directs the daily operations of the County and is appointed by the Board of Commissioners. The five-member Board of Commissioners is comprised of the Chairman, and four commissioners, each elected from single-member districts for staggered four-year terms.

There are six (6) municipalities within Cobb County: the Cities of Acworth, Austell, Kennesaw, Marietta, Powder Springs and Smyrna. Each has their own local governing bodies in place, consisting of an elected mayor and city council and an appointed city manager that oversees the day-to-day operations of the respective city's functions, such as zoning, code enforcement, building permits, site inspections, business licenses, public safety, and others. These all mirror the functions overseen by the County Manager in terms of unincorporated areas in Cobb County.

Cobb County has a humid subtropical climate which is characterized by hot, humid, summers and mild winters. The county is particularly prone to tornadoes, severe thunderstorms, and flooding. Blizzards are rare in this area, with the last one hitting in

¹ Land Area Source: Georgia DNR, *Cobb County, GA: Flood Risk Report* (2013). Population Data from U.S. Census Bureau.

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March 1993. Ice storms are more common and can cause more problems than snow. Downed trees, power outages, and dangerous road conditions are examples of some of the possible consequences of ice storms. Severe weather conditions such as these pose a major threat to the county.

PURPOSE

The purpose of the Cobb County Hazard Mitigation Plan revision is to update the previous plan to include current, applicable information that will aid the process of reducing or eliminating the loss of life and property damage resulting from local threats. These threats can include natural hazards such as floods, earthquakes, and tornadoes as well as technological hazards such as terrorism, dam failures and hazardous material spills.

The Cobb County Hazard Mitigation Plan represents the combined efforts of Cobb County, and the cities of Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna. Each city has collaborated to update this plan and will continue efforts to develop mitigation strategies to reduce the collective risks from both natural and technological hazards.

Since approval of the previous plan, departments within Cobb County Government and local jurisdictions have continued many proactive efforts regarding hazard mitigation. For example, the Cobb County Water System continues to prioritize the protection of life and property through land acquisitions. From 2004 to the present, more than \$15 million (funded by FEMA grants and Cobb County general funds) has been spent on land acquisitions within the area of flood basins countywide to reduce the threat from flooding. Evidence of this initiative can be demonstrated in the *Cobb County Code's* legal framework which supports flood mitigation.² By codifying its intent and purpose into law, Cobb County has demonstrated its commitment to mitigate the threat of flooding and the associated risks to life safety and property. This initiative has led to collaborated efforts between the Cobb County Water System (CCWS) and the Permits Department. If a building permit is requested for land located in one of the county's floodplains, it is first referred to Storm Water Management Division for review and recommendations. In addition, federal grants are received county-wide, such as funding property buyouts that are complementary to the goals of the Hazard Mitigation Plan (HMP).

Adoption of this plan is the initial step towards reducing or minimizing the effects of disasters and continuing to meet eligibility requirements for FEMA Hazard Mitigation grant assistance. The Hazard Mitigation Plan will continue to serve as a compilation of information that can be referenced by current and future decision makers as they strive to minimize the impact of potential hazards in Cobb County. The HMP is intended to

² Applicable flood ordinances can be found in Appendix A-3

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promote stronger and more effective coordination between Cobb County and its six cities regarding hazard mitigation.

PLANNING METHODOLOGY

The information included in the HMP was gathered from county and city data, and online research. The plan development process included four phases compatible with the GEMA/FEMA planning guidelines:

- **Organizing resources**
- **Assessing risks**
- **Developing a mitigation plan**
- **Implementing and monitoring progress**

Historically, the process has included a diverse range of participation from various individuals, organizations and departments within the county. During the updating process the Executive Planning Committee played an integral role in reviewing the existing the goals and objectives based upon jurisdictional risks. The participants also acted as a liaison between the county and their jurisdictions, which was particularly helpful to gather additional information needed for the plan update. Public participation and input was solicited to include Cobb County residents in the planning process as well.

Executive Planning Committee

Multi-Jurisdictional Planning Participation <i>Requirement §201.6(a)(3)</i>
--

As with the 2011 plan update, the Executive Planning Committee was made up of representatives from each city (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna), as well as Cobb County. Members were personnel from their respective fire, police, or other governmental agencies. The Executive Planning Committee provided jurisdictional input during the revision process. CEMA and the Executive Planning Committee members are responsible for submission of the plan to the appointed and elected officials of each jurisdiction for approval and adoption.

The initial kick-off meeting attended by Executive Planning Committee members was held on July 29, 2015. With the list consisting of largely the same individuals as the 2011 plan update, an e-mail was sent to them asking for their participation, as well as all bordering counties. A Project Subcommittee meeting was held September 17, 2015. A final Executive Planning Committee meeting was held January 12, 2016. The following is a chart of the participating agencies/departments/organizations which provided specific information and support as members of the Executive Planning Committee.

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Table 2- Hazard Mitigation Executive Planning Committee Members

Jurisdiction or Organization	Department	Participant	Contribution
Cobb County	Community Development	Phillip Westbrook, Planner	Attended meetings, provided input
Cobb County	Emergency Management Agency	Sean Loughlin, Planner & Cassie Mazloom, Deputy Director	Facilitated meetings and revised plan
Cobb County	Fire Department	Spencer Miller, Division Chief	Attended meetings, provided input
Cobb County	Stormwater Management	Bill Higgins, Division Manager	Attended meetings, provided input
City of Austell	Fire Department	Patrick Maxwell, Chief & Brandon Merritt, Assistant Chief	Attended meetings
City of Austell	Stormwater Management	Duane Demeritt, Floodplain Administrator	Attended meetings, provided input
City of Austell	Public Works	Randy Bowens, Director	Attended meeting
City of Acworth	Police	Mark Cheatham, Captain	Attended meetings, provided input
City of Acworth	Public Works	Richard Beard, Water Quality Enforcement	Provided input
City of Kennesaw	Police	John Grubbs, Captain & Kevin Mitchell, Lieutenant	Attended meetings, provided input
City of Marietta	Fire Department	Keith Person, Lieutenant	Attended meeting, provided input
City of Powder Springs	City Manager	Pam Conner, City Manager	Attended meetings, provided input
City of Smyrna	EMA / Fire Department	Roy Acree, Fire Chief / EMA Director	Attended meetings
Cobb County School District	Police	Philip Bradford, Officer	Attended meeting
Chattahoochee Technical College	Police	Charles Spann, Police Chief	Provided input
Cobb County – Marietta Water Authority	Water Treatment	Stan Brinkley, Division Manager	Attended meetings

Cobb County Hazard Mitigation Plan – 2016

Data Collection

As part of the 2016 plan update process, Executive Planning Committee members assisted the Emergency Management Agency collect data for the plan update by completing a series of questionnaires/worksheets on several topics. Information collected from those questionnaires was incorporated into the plan, as appropriate. Those worksheets³ consisted of the following:

- Capabilities Assessment Worksheet (looks at planning / regulatory; administrative/technical; fiscal; education/outreach and community classification capabilities for each jurisdiction)
- Events & Losses Worksheet (captures information related to significant events & losses that have occurred in each jurisdiction the past 5 years)
- Floodplain Administrator Questionnaire (for each jurisdiction's Floodplain Administrator to complete to identify any issues)
- Mitigation Project Worksheet (to identify any new projects or actions to incorporate into 2016 Plan update)
- New Development Questionnaire to identify development in the past 5 years in known hazard areas, such as Special Flood Hazard Areas (SFHAs)

Committee members from municipal jurisdictions were also provided printouts of the critical facilities within their jurisdictions from the 2011 plan and given the opportunity to revise, add or delete facility information to keep the plan as up to date as possible.

With the 2011 plan having already been overhauled substantially, a great deal of the information gathering for the 2016 plan update was completed via the worksheets identified above. Throughout the process e-mail communication, telephone communication and face-to-face meetings were used to answer questions and assist in the information gathering. Informal, face-to-face meetings beyond the three core meetings held in July & September, 2015 and January, 2016 were also held with Planning Committee members from the City of Acworth, City of Kennesaw and the City of Marietta. Having participated in the development of the previous plan, the Executive Planning Committee members were largely familiar with the planning and information gathering process. For Cobb County, this proved to be the most efficient and effective approach for preparing the document for this plan update cycle.

The following steps were used as a general reference by EMA staff to update the plan:

- Review the status of all hazard mitigation planning work to date
- Receive any additional completed work products for inclusion in the Hazard Mitigation Plan (HMP)

³ Templates of each worksheet are provided in the Appendix A-7. Relevant data was extracted and placed within the plan.

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- Review remaining plan work tasks needing to be completed and make updates as necessary
- Review and update the completion dates for remaining work
- Set date(s) for the Executive Planning Committee to meet
- Solicit any additional meeting agenda items for Executive Planning Committee meetings
- Review options for public input
- Distribute draft versions of the Hazard Mitigation Plan for review
- Solicit additional information from cities regarding flood mitigation issues

The Cobb County HMP revision is based upon research from a variety of sources, including FEMA hazard information reports, National Oceanographic and Atmospheric Administration (NOAA), various Cobb County government agencies' data (Community Development, Finance, Tax Assessor, Fire, Geographic Information System (GIS), Planning, Police, Cobb School District, and Water), as well as data from the county's municipalities.

Planning Process: Public Participation Requirement §201.6(b)(1)

The Executive Planning Committee determined that an online survey would again be the best method of soliciting public input, maximizing feedback and offering a wider demographic of participation. The public survey and draft plan was posted on the Cobb County website from December 14, 2015 through January 12, 2016. Links to the online survey and draft plan were disseminated via e-mail to the cities. The Cities of Austell, Marietta and Powder Springs posted on their web sites a link to the draft plan and survey. The survey resulted in 7 responses, plus comments were e-mailed by a local university and a Cobb EMA volunteer.⁴ Suggestions were reviewed and included in the plan update prior to final submission, as appropriate.

Input was also solicited from area businesses through the Cobb Chamber of Commerce, which posted on its Facebook page a link to the draft document and survey. The Cobb Library System did the same and hard copies were distributed to the five busiest libraries throughout all geographic areas of Cobb County.

A public meeting was also held on January 12, 2016 to solicit feedback, which was publicly advertised one month prior in a high visible section of the *Marietta Daily Journal* and also on the Cobb County Emergency Management Agency web site along with the draft plan and survey.

⁴ Survey questions and results can be found in Appendix E.

Cobb County Hazard Mitigation Plan – 2016

CEMA will continue to approach the plan as a living document and welcome input and suggestions from the public to incorporate into future plan updates, including during municipal adoptions of the plan.

PLAN ORGANIZATION AND TABLE OF CHANGES

The Cobb County Hazard Mitigation Plan revision is organized as follows:

- Chapter 1 – Introduction, Purpose and Planning Process
- Chapter 2 – Hazard, Risk, Vulnerability Assessment for Natural Hazards
- Chapter 3 – Hazard, Risk, Vulnerability Assessment for Technological Hazards
- Chapter 4 – Community Capabilities and Growth Trends
- Chapter 5 – Overview of Mitigation Grants Implemented
- Chapter 6 – Mitigation Goals and Objectives
- Chapter 7 – Plan Execution
- Chapter 8 – Conclusion

The appendix information contains reference materials, data sets, maps, worksheet information, and other materials that support the Hazard Mitigation Plan. The contents of the Appendices are listed in the Table of Contents of this document.

Table 3 is a Summary of Changes which have been made during the revision process.

Cobb County Hazard Mitigation Plan – 2016

Table 3 – Summary of Changes

Section	Change and Justification
Changed Name of Plan from Pre-Disaster Mitigation Plan (PDMP) to Hazard Mitigation Plan	The document is intended to be used pre and post disaster. It is a hazard mitigation plan and the new name reflects this.
Format	Plan format stayed the same. Added two new chapters: Chapter 4- Community Capabilities and Growth Trends and Chapter 5- Overview of Hazard Mitigation Projects Implemented to better address these topics.
All Sections	Standard updates to verbiage were made to the document throughout to make the plan current. Additional maps were integrated throughout the document to provide the user with a visual depiction of information provided within the plan.
All Sections	Data collection surveys/questionnaires used in gathering information for the plan update were incorporated into the plan, as appropriate, and templates provided in the Appendix. Additional plans were also incorporated into the document and are listed in the Table of Contents.
Chapter 2	Flood hazard now includes Hazus data from a recent flood study for Cobb County, as well as information on the Community Rating System, National Flood Insurance Program and existing flood codes in effect for all jurisdictions within Cobb County.
Chapter 3	Dam hazard narrative now includes dam break scenarios for three dams provided by the Georgia Safe Dams Program.
Chapter 5	Provides new information on hazard mitigation grants implemented the past five years and new projects added to the Actions & Project Matrix.
Chapter 6	The Goals & Objectives for Natural & Technological Hazards were reviewed and status updates provided as needed.

Cobb County Hazard Mitigation Plan – 2016

PLANNING PROCESSES

The process of revising the Hazard Mitigation Plan included reviewing and updating the following:

- **Hazard Identification**
- **Hazard Profiles**
- **Vulnerability Assessment**
- **Estimating Loss**
- **Critical Facilities**
- **Mitigation Goals and Objectives**

The updating of these specific areas makes up the Hazard, Risk and Vulnerability assessment. This assessment included a review of historical data on hazards occurring in Cobb County during the five years since the previous plan update and before. The assessment also involved looking at each hazard profile and then conducting an analysis of the potential risk to life, property and the environment and looking at the costs associate with that loss. Special attention was given to critical facilities within the county due to the importance of these structures and the services they provide.

Additionally, requests were made to each jurisdiction to respond with updates on current mitigation projects. All jurisdictions participated in the review of past projects as well as analyzing the need for future projects which would benefit all jurisdictions throughout the county. Each jurisdiction took into consideration hazard events which had occurred since the 2011 Hazard Mitigation Plan Update.

Hazard Identification

The plan revision continues to include profiles of the types of natural and technological hazards that affect Cobb County. During the update process, maps and historical data sources were studied and reviewed in order to identify the geographic extent, intensity, and probability of occurrence for various hazard events. Since historical hazard data is often a good indication of what may happen, a comprehensive hazard history for Cobb County is provided in Appendix A. This natural hazard listing is comprised mostly of NOAA's National Climatic Data Center (NCDC) data. In the digital version of this plan, each listed hazard includes the appropriate web link for that specific event in the NCDC on-line database.

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Hazard Profiles

As in the previous plan, the causes and characteristics of each hazard were analyzed to determine how it has affected Cobb County in the past. This includes assessing what part of Cobb County's population and infrastructure has historically been vulnerable to each specific hazard. Reviews of each hazard addressed in this plan are located in Chapters 2 (Natural) and 3 (Technological and Terroristic). The following characteristics were used to examine each hazard before selecting them for inclusion in the plan:

- **The probability that the hazard will impact an area**
- **The potential severity of the hazard**
- **Where the hazard might affect a given area**
- **Local conditions that might increase or decrease the effect of the hazard**

Vulnerability Assessment

This step was accomplished by comparing each previously identified hazard with the inventory of affected critical facilities and population exposed to each hazard. With the exception of the flood hazard, planners could not find any substantial data to support differences in vulnerability between the county and the six Cobb cities. Worksheets provided by GEMA, located in Appendix B, were used to present the comprehensive information for each hazard. The data for this form included the numbers of the various types or structures, the dollar value of the structures, and a breakdown of the various population numbers. The information was supplied by the Cobb County Tax Assessor's Office.

Estimating Loss

Using the best available data, this step involved estimating damage and financial losses likely to be sustained in a geographic area. However, there is no substantial data to support differentiating the unincorporated county from the six Cobb cities. Describing vulnerability in terms of dollar losses provides the Hazard Mitigation Plan with a common framework to measure the effects of hazards on critical facilities. As noted above, the information was supplied by the Cobb County Tax Assessor's Office and Appendix B includes a spreadsheet to show how the numbers were calculated for loss estimations and population impacts.

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Critical Facilities

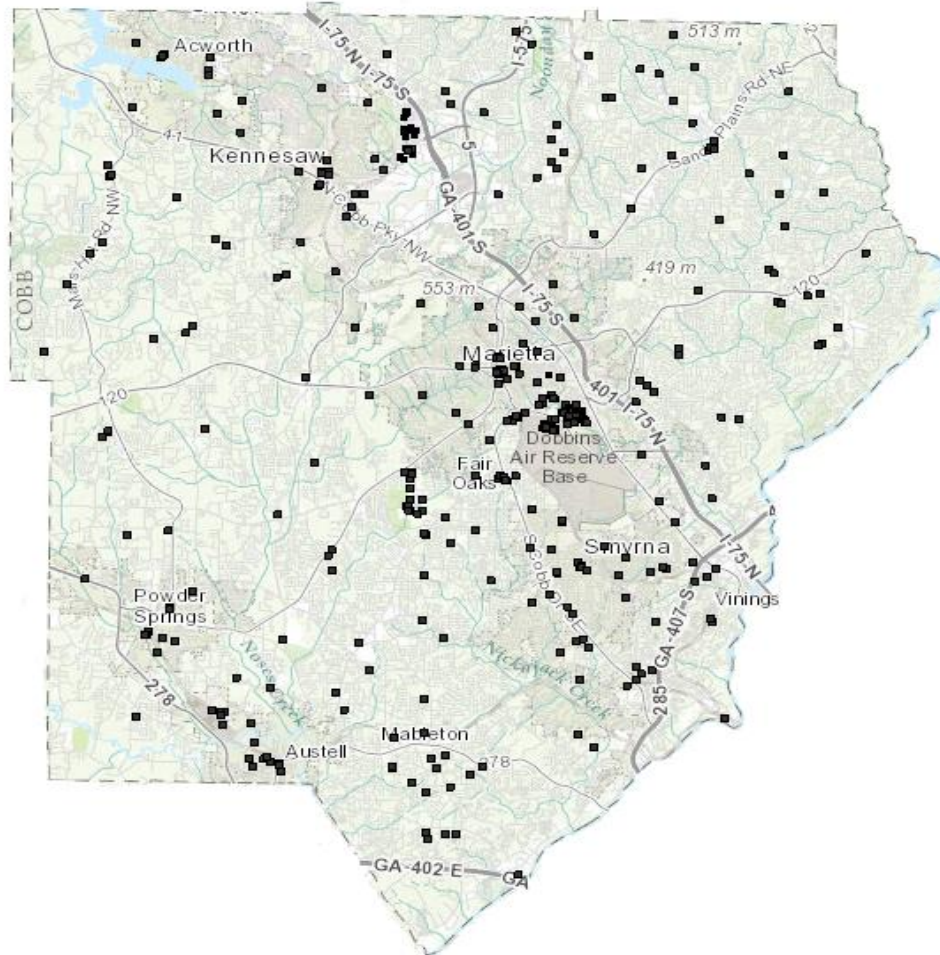
Critical facilities are important because they provide essential products and services to the public that are necessary to preserve the welfare and quality of life in the county. In addition, these facilities support important public safety, emergency response, and/or disaster recovery functions. It is of great importance that the county prioritizes mitigation actions which reduce the risk of damage to these facilities which are so essential to the county's wellbeing. Under Executive Order 11988, Floodplain Management, Federal agencies funding and/or permitting critical facilities are required to avoid the 0.2% (500-year) floodplain or protect the facilities to the 0.2% chance flood level. During the revision process, each jurisdiction reviewed critical facilities which were already identified and mapped on GEMA's Georgia Mitigation Information System (GMIS) program. A benefit of using this system is the overlay between the floodplain and critical facilities layers within the mapping system. CEMA utilizes the following criteria when logging critical facilities:

- Facility Type
- Facility Name
- Owner/Operator (public or private)
- Location
- Contact Information
- Address
- Township
- Capacity
- Seasonal Capacity
- Building Value
- Content Value
- Replacement Value
- Function
- Value

At the time of the 2016 plan update, staff was updating critical facility information within the Georgia Mitigation Information System site. The continual updating of critical facility information is identified as a task for CEMA staff in coordination with hazard mitigation counterparts. Map 1 provides a graphical view of critical facilities located throughout Cobb County.

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Map 1 - Critical Facilities, Cobb County, GA



Source: Georgia Mitigation Information System, GEMA

MITIGATION GOALS AND OBJECTIVES

Chapter 6 presents the mitigation goals, objectives, and actions for natural and technological hazards. The Executive Planning Committee discussed the results of the hazard, risk and vulnerability assessment during the initial meeting. During the subsequent meetings, the committee re-assessed the existing mitigation goals, objectives and related action items identified within the plan. The following describe these key terms and how they were used in the planning process:

- **Goals** were written as general guidelines to explain in a broad sense what needs to be mitigated.

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- **Objectives** were written to define specific strategies or implementation steps needed to attain the identified goals.
- **Action Steps** and mitigation actions were used to describe the specific actions needed to achieve the goals and objectives. Each mitigation goal identifies an organization or agency responsible for initiating the required action steps. A timeline for completion is also included in the action steps.
- **Coordinating Organizations** are public agencies with regulatory responsibility to address hazards, or organizations that are willing and able to organize resources, locate and secure appropriate funding, or oversee activity, implementation, monitoring, and evaluation.

A compilation of mitigation actions and projects can be found in Table 27 of this plan organized by individual objective and goal, along with the prioritization of all of the mitigation actions. The criteria used by the Executive Planning Committee to prioritize mitigation actions were:

- **The probability that the hazard will impact an area**
- **The potential severity of the hazard**
- **Cost benefit**

MULTI-JURISDICTIONAL CONSIDERATIONS

Multi-Jurisdictional Risk Assessment

<i>Requirement §201.6(c)(2)(iii)</i>

The Cities of Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna were participants in the updating process. Each city was responsible for identifying the critical infrastructure inside their respective cities (*excluding Cobb County Government assets such as schools and other county structures*) and identifying mitigation goals, objectives, and specific action items relevant to their individual municipalities. Each Cobb city invested a great deal of time focusing on the potential flooding hazard for their jurisdiction. Chapter 6, *Flood* section, includes all flood mitigation recommendations for both unincorporated Cobb County and the six cities.

Cobb County Hazard Mitigation Plan – 2016

AUTHORITY

Multi-Jurisdictional Plan Adoption Requirement §201.6(c)(5)
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The Hazard Mitigation Plan was developed in adherence to state and federal laws governing local hazard mitigation plans. The document is supported by the following statutory and regulatory authorities:

- **Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000 (P.L. 106-390)**
- **44 CFR Part 201.6**

The Cobb County Board of Commissioners will be responsible for formally adopting the Cobb County Hazard Mitigation Plan and its revisions. Each of the county's six cities has committed to follow suit through the formal processes of their city councils. The authorities for the jurisdictions participating in the revision of this plan have adopted the current plan version effective as of the dates shown below.

Table 4 – Cobb County Hazard Mitigation Plan Adoption Schedule

Jurisdiction	Adopting Authority	Plan Adoption Date
Cobb County	Board of Commissioners	11/30/2016
City of Acworth	City Council	11/17/2016
City of Austell	City Council	12/5/2016
City of Kennesaw	City Council	12/5/2016
City of Marietta	City Council	1/11/2017
City of Powder Springs	City Council	11/7/2016
City of Smyrna	City Council	TBD

Cobb County Hazard Mitigation Plan – 2016

PLAN MAINTENANCE AND IMPLEMENTATION

Monitoring, Evaluating, and Updating the Plan <i>Requirement §201.6(c)(4)(i)</i>

The Plan Maintenance process (more detail provided on p. 154) will ensure that the Cobb County Hazard Mitigation Plan remains an active and relevant document. The plan maintenance process includes monitoring and evaluating the plan. Additionally, Cobb County will develop steps to ensure public participation throughout the plan maintenance period. Since the previous plan's development, Cobb County and its six cities have utilized the plan to complete a number of hazard mitigation actions and projects, as identified within Chapter 5. The 2016 plan update and maintenance process continues in the same manner as the previous plan update.

All jurisdictions will continue to incorporate the mitigation strategies identified in this plan into other relevant planning documents such as the Cobb County Comprehensive Plan, Local Emergency Operations Plan (LEOP), Cobb County Water System Flood Mitigation Plan and other county and municipal documents. CEMA staff will review the HMP annually and coordinate with the Executive Planning Committee and local jurisdictions, as necessary. Revisions will be submitted to GEMA on an as-needed basis as well.

Cobb County Hazard Mitigation Plan – 2016

CHAPTER 2 - NATURAL HAZARD, RISK AND VULNERABILITY (HRV) SUMMARY

Risk Assessment Requirement §201.6(c)(2)

The following tables provide a summary of the hazards which have been identified and assessed throughout the county and its six jurisdictions. In conducting the risk and vulnerability assessment, comparisons were made to the hazards identified within the State of Georgia Hazard Mitigation Plan, as well as the differences in risks within jurisdictions throughout the county. Some factors which were considered in assessing the county's HRV include:

- **Frequency of Occurrence**
- **Probability of Occurrence**
- **Extent of Severity**
- **Potential Impact to Measured Area of County (percentage affected)**

The hazards identified in the 2011 plan have not changed and remain in effect for the 2016 Plan Update.

Table 5 - Cobb County & Municipalities Hazards

Hazards	Jurisdictions Affected
Dam Failure	All six
Drought	All six
Earthquake	All six
Flood	All six– but not same risk
Hazardous Materials Spills	All six
Terrorism	All six
Tornado	All six
Severe Weather (Lightning, Thunderstorm (hail, wind), and Winter Storms)	All six

Cobb County Hazard Mitigation Plan – 2016

Table 6 - Comparison of Cobb County, GA Hazards to State Hazard Mitigation Plan

Hazards identified in 2014 State of Georgia Hazard Mitigation Plan	Equivalent 2016 Cobb County Identified Hazards	Differences
Coastal Hazards (Storm Surge, Coastal, Flooding)	Not in county	Not a threat to county
Dam Failure	Dam Failure	None
Drought	Drought	None
Earthquake	Earthquake	None
Geologic Hazards (Sinkholes, Landslides, Debris Flows)	Not in county	Not a threat to county
Hurricane Wind	Flood (cause inland flooding)	Included in county Flood hazard
Inland Flooding	Flood	None
N/A	Hazardous Materials Spills	Not in State Plan
Severe Weather	Lightning, Thunderstorm (hail, wind), Winter Storms	Includes multiple hazards associated with Severe Weather threats to the County per National Climactic Data Center (NCDC) data
Severe Winter Weather	Winter Storms	Included in county Severe Weather hazard
N/A	Terrorism	Not in State Plan
Tornado	Tornado	None
Wildfire	Not in county	Not a threat to county
Wind	Severe Weather	Included in Severe Weather Thunderstorm analysis

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Table 7 - Frequency, Probability & Severity Matrix for Natural Hazards, Cobb County, GA

HAZARD	Cobb	Acworth	Austell	Kennesaw	Marietta	Powder Springs	Smyrna
Tropical Cyclonic Events (Hurricanes & Tropical Storms)							
<i>See Wind & Flooding</i>							
Coastal Flooding							
N/A							
Wind							
<i>See Severe Weather</i>							
Severe Weather (Includes Thunderstorms (Hail, Wind), Lightning and Winter Storms)							
Frequency	High	High	High	High	High	High	High
Severity	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.
Probability	High	High	High	High	High	High	High
Tornadoes							
Frequency	High	High	High	High	High	High	High
Severity	High	High	High	High	High	High	High
Probability	High	High	High	High	High	High	High
Flooding							
Frequency	Ext.	Ext.	Ext	Ext	Ext	Ext	Ext
Severity	High	Mod.	High	Mod.	Mod.	High	Mod.
Probability	Low+	Low+	Low+	Low+	Low+	Low+	Low+
Severe Winter Storms							
<i>See Severe Weather</i>							
Drought							
Frequency	High	High	High	High	High	High	High
Severity	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.
Probability	High	High	High	High	High	High	High
Wildfire							
N/A							
Earthquake							
Frequency	V. Low	V. Low	V. Low	V. Low	V. Low	V. Low	V. Low
Severity	Mod	Mod	Mod	Mod	Mod	Mod	Mod
Probability	Low	Low	Low	Low	Low	Low	Low
Landslide							
N/A							
Sinkhole							
N/A							

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Key for Frequency and Probability

N/A = Not applicable; not a hazard to the jurisdiction
 V. Low = Very low risk/occurrence
 Low = Low risk; little damage potential (example, minor damage to less than 5% of the jurisdiction)
 Mod. = Medium risk; moderate damage potential (example, causing partial damage to 5-15% of the jurisdiction, infrequent occurrence)
 High = High risk; significant risk/major damage potential (for example, destructive damage to more than 15% of the jurisdiction, regular occurrence)
 Ext.= Extensive risk/probability/impact

Key for Severity

<u>Event - Extent</u>	<u>Low</u>	<u>Mod</u>	<u>High</u>	<u>Ext.</u>
Tropical Cyclonic Events	<i>(See Wind & Inland Flooding)</i>			
Coastal Flooding	NA	NA	NA	NA
Wind – Wind Speed	38 MPH	39–50 MPH	50-73 MPH	73–91 MPH
Severe Weather	<i>(See Wind & Inland Flooding)</i>			
Tornado - Magnitude	< F3	F3	F4	F5
Inland Flooding - Water depth	3" or less	3 – 8"	8-12"	12"+
Severe Winter Storms – Ice / Sleet	¼ " or less	¼ – 4"	4-7"	7"+
Severe Winter Storms - Snow	1" or less	1-6"	6-12"	12"+
Drought – Duration	1 year	1 – 2 years	2-5 years	5+ years
Wildfire - # of Fires	NA	NA	NA	NA
Earthquake - Magnitude	1-2	3	4	5+
Landslide	NA	NA	NA	NA
Sinkhole	NA	NA	NA	NA

Impacts on structures / infrastructure from the hazards that impact Cobb County are wide ranging and Table 8 provides a snapshot of potential impacts. It is important to note that while any given hazard may occur less frequently or be less probable than other hazards, all it takes is one incident from a hazard to cause significant impacts to people and infrastructure within Cobb County. Planners should think of worst case scenarios. The intent of the hazard mitigation plan is to be aware of our hazards and lessen or eliminate potential impacts to the extent possible.

Cobb County Hazard Mitigation Plan – 2016

Table 8 - Potential Impacts from Hazards, Cobb County, GA

Impacts on Structures and Infrastructure from Identified Hazards	All Structures	Mobile Homes	Poorly Constructed Homes	Non Elevated Homes	Telecommunications	Electrical utilities	Sewage Systems	Potable Water	Roadways	Waterways	Airports	Agriculture	Livestock	Fisheries	Economic Disruptions	Environmental Damage
Dam Failure	X							X	X							X
Drought							X	X		X	X	X	X			
Earthquake	X			X	X	X	X	X		X				X	X	
Flood	X			X	X	X	X	X	X		X	X	X	X	X	
Hazardous Materials Spills	X						X	X	X		X	X	X	X	X	
Tornado	X			X	X			X		X				X	X	
Severe Weather:																
Lightning	X			X	X											
Thunderstorm Hail	X			X	X				X	X						
Thunderstorm Wind	X			X	X			X		X						
Winter Storms				X	X			X		X	X			X		
Terrorism	X			X	X		X			X				X		

SECTION I – FLOODS

Hazard Description

A flood, as defined by the National Flood Insurance Program, is a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is your property) from:

- Overflow of inland or tidal waters
- Unusual and rapid accumulation or runoff of surface waters from any source or
- A mudflow

Floods are the most common and widespread of all natural disasters--except fire. Most communities in the United States can experience some kind of flooding after spring rains, heavy thunderstorms, or winter snow thaws. The Hazard Frequency Table in Appendix A-2 indicates that 1.7 floods will occur each year in Cobb County. This is based on a historical review of NCDC weather data for the past 10 years.

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Floods can develop slowly or rapidly rising but generally develop over a period of days. Mitigation includes any activities that prevent an emergency, reduce the chance of an emergency happening, or lessen the damaging effects of an unavoidable emergency. Investing in mitigation steps such as floodplain management activities, constructing barriers such as levees, and purchasing flood insurance may help mitigate structural damage to homes and help reduce financial loss from building and crop damage should a flash flood occur.

Hazard Identification

The Cobb County Water System (CCWS), Storm Water Management Division (SWMD), has developed a comprehensive Flood Mitigation Plan (FMP). Their FMP has been submitted to GEMA in conjunction with the Hazard Mitigation Plan (HMP). A primary objective of the HMP is to coordinate with the SWMD in developing flood mitigation strategies submitted by the six Cobb cities and the unincorporated county as part of the hazard mitigation planning process. The FMP contains hazard mitigation information useful to the local jurisdictions in Cobb. The SWMD has collaborated with the Public Works departments of each of the county's jurisdictions in the past to address mitigating flood related risks. The Stormwater Management Division, along with each city, participated in the revision process of the previous HMP by assisting with the identification of flood related hazard areas inside their respective jurisdictions in developing their respective goals, objectives, and action items for the plan. Those actions remain in effect for this plan update and have been updated accordingly.

Through studies of previous flooding losses and Cobb County basin-wide studies, Cobb has compiled a database of known flood hazard areas. Various flood related maps are also included in Appendix A-9, which include include:

- Cobb floodplain map
- Cobb stream buffer maps broken down into 25 separate tiles which include buffers, flood zones and dam locations
- Flood maps produced by municipalities from local planning documents

Approximately 20% of Cobb County is floodplain. Floodplains in their natural, undisturbed and undeveloped state provide storage of floodwaters, silt retention, and allow groundwater sources to be replenished. Intense rainfall events in excess of four inches, occurring in less than two hours, and even moderate rainfalls exceeding one inch per hour over extended periods of time, may result in flooding roadways, low-lying commercial properties, and certain low lying private residences.

Cold frontal boundaries moving down from Canada into the Midwest and into Cobb County during the early spring frequently collide with warm fronts moving north into Cobb County from the Gulf of Mexico. These collisions can spawn intense thunderstorms as well as tornadoes. These storms commonly occur in late February or

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early March and can produce severe flooding. Thunderstorms can also occur in late June, July or August when orthographic lifting of water vapor during the summer heat transforms into powerful thunderstorms locally referred to as “*thunderboomers*.” Thunderboomers can be particularly hazardous because they are often stationary versus the rapidly moving frontal storms. When these powerful thunderstorm cells “stall,” they can dump massive amounts of rainfall to specific areas in a short period.

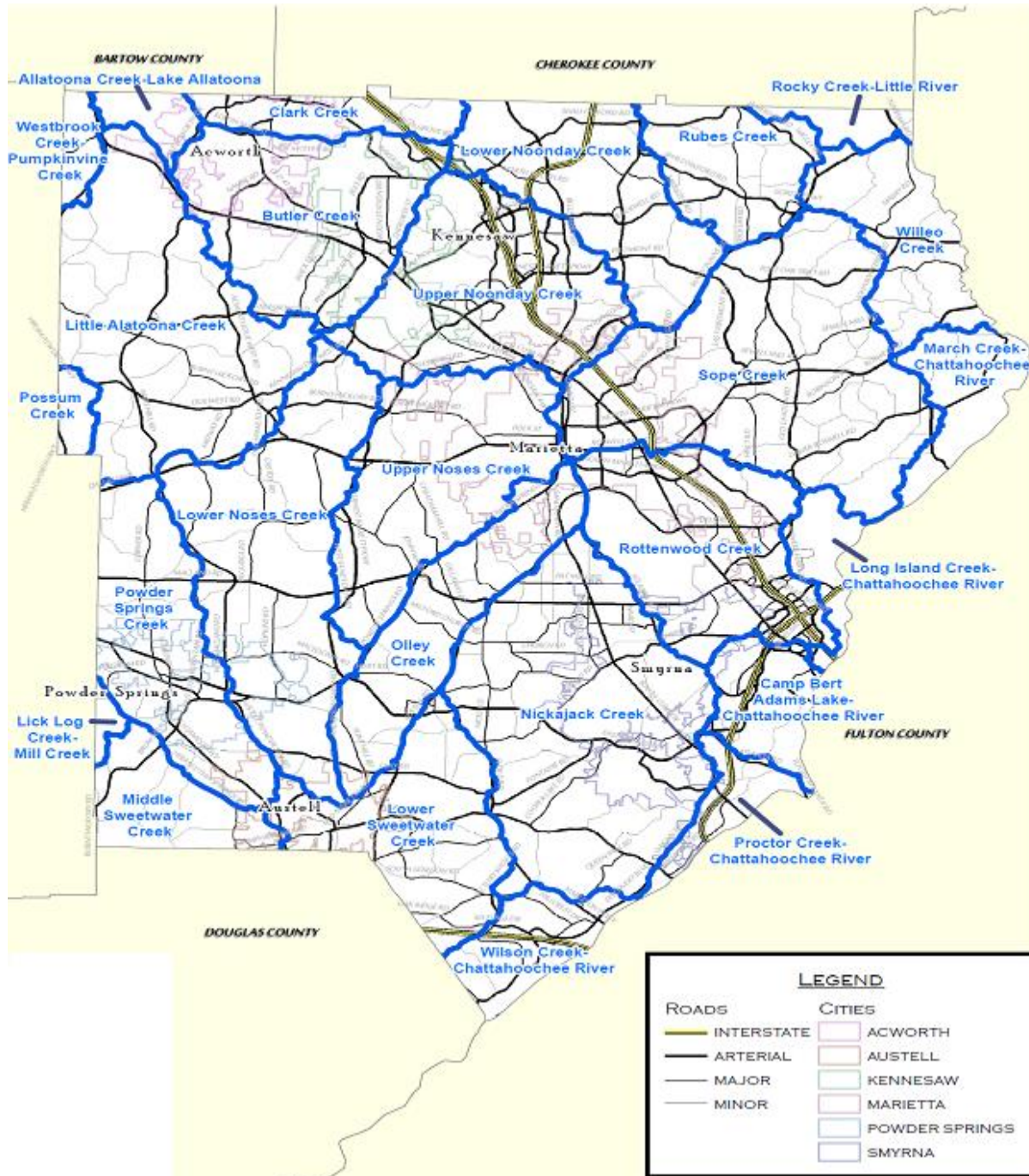
According to the FMP, the majority of the Cobb flood hazards occur in association with the following water basins:

- Sweetwater Creek Basin in southwest Cobb
- Areas along the Chattahoochee River – Cobb’s eastern boundary
- Sope Creek flowing from the northwest to the Chattahoochee River
- Noonday Creek flowing through northwest Cobb to Cherokee County before entering Lake Allatoona
- Noses and Wildhorse with specific concerns near Clay Road and Hopkins Road

Map 2 depicts these general areas, which was provided by Cobb County Community Development, Planning Division.

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Map 2 - Cobb County Watersheds



Source: Cobb County Community Development, Planning Division; Cobb County GIS

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Hazard Profile

According to the Cobb Stormwater Management Division's Flood Mitigation Plan, flooding may occur slowly, but most often occurs quickly in Cobb County. During a flash flood, there is usually little time to warn affected residents. Summer thunderstorms can cause serious flooding. For example, on June 28, 1999, a thunderstorm dumped five inches of rainfall over a two-hour period in southern Cobb County. This storm occurred near Hurt Road, Powder Springs Road, Tramore Park, and the East-West Connector. Within only a 1½-mile radius, the storm caused flooding to 154 homes in Cobb County.

A large storm of this kind also occurred on July 7, 1989. It affected northern Cobb County near Kennesaw College, Wooten Lake Road, Bells Ferry and Chastain Road, Chestnut Hills Subdivision off Bells Ferry Road, and Tate Creek. This storm dumped nine inches of rainfall over a 13-hour period. Appendix A provides a historical listing of weather events in Cobb County. In the digital version of the plan, each record includes a web link to the specific event recorded in the NCDC database.

A 100-year flood associated with the remnants of Hurricane Dennis (moving north-northwest through western Alabama and eastern Mississippi), affected nearly all of north and central Georgia from the afternoon of Sunday July 10, 2005 through the morning hours of Monday July 11, 2005.

Repeated showers with torrential rainfall tracked over Austell, Powder Springs and unincorporated Cobb County for hours from July 10, 2005 at 8:00 p.m. until July 11, 2005 at 10:00 a.m. Areas under the feeder band experienced incredible rainfall amounts. Average rainfall amounts within the feeder band were six to eight inches for the 14-hour period, but some 10-12 inch rainfall amounts were observed across much of southern Cobb County.

Some parts of the county were under as much as six feet of water. CEMA estimated 450 damaged homes in Cobb County. At least 100 of these were outside the effective floodplain according to the FEMA flood insurance rate maps (FIRMs) of 2005. Several businesses also sustained major flooding, with damage to government property alone estimated at \$2.3 million dollars.

Four years later on September 21, 2009, a slow moving weather system stalled over the Atlanta metro area affecting the surrounding counties, including Cobb. Some areas were inundated with as much as 20 inches of rain from the period of September 20th to September 21st. Unlike the 2005 flood event, Cobb County received a federal disaster declaration for the 2009 flooding.

It is estimated that over 1500 homes throughout the county were damaged. Public damage was estimated at \$10 million. Due to the disaster declaration, the county was able to receive federal public assistance grants to assist with damaged infrastructures

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as well as individual assistance for county citizens. As with the 2005 flood event, several businesses also incurred major flooding and related damage. The Small Business Association (SBA) provided financial assistance to eligible business owners affected by the flood in the form of low interest loans.

Map 3 depicts the radar imagery from the historic 500-year interval flood event that occurred in 2009.

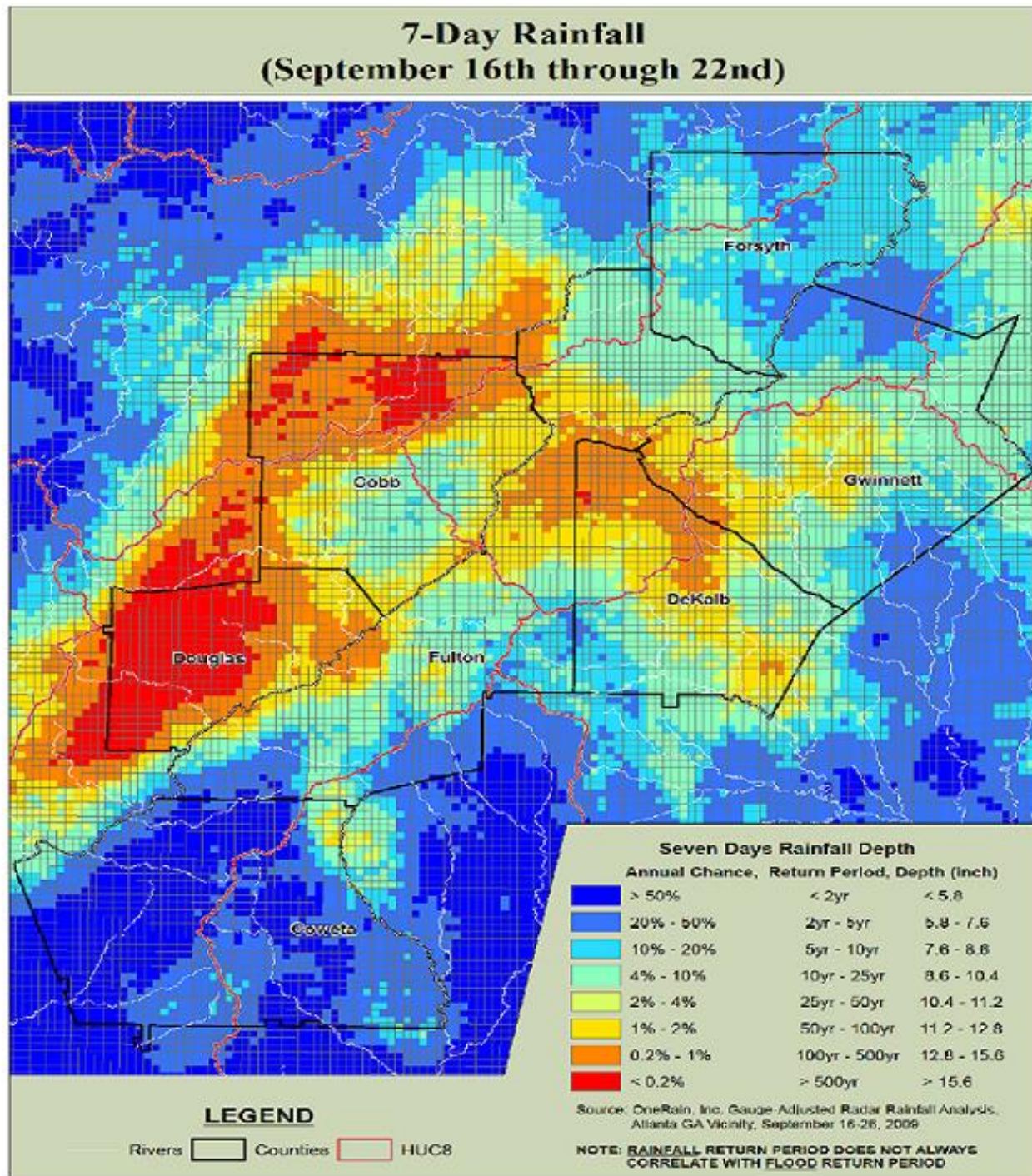
The most notable flood event in recent years occurred on July 11, 2012, when the Unincorporated area of Marietta in East Cobb County received approximately six inches of rainfall in just a few hours from a slow moving thunderstorm, resulting in sudden flood conditions that impacted south of Roswell Road through the Indian Hills area. Yards were flooded and residents were on guard due to the rapidly deteriorating flood conditions. Widespread minor flooding occurred in East Cobb Park and covered the intersection of Robinson Road and Robinson Farms Drive up to two feet deep.

Events like this can be sudden and unpredictable and all citizens who work, live and recreate in Cobb County should be prepared for flooding events like these.

Significant Event	Date	Jurisdictions Affected
Flood	July 10, 2005	Unincorporated Cobb County, Austell, Powder Springs
Flood	September 21, 2009	Unincorporated Cobb County, Austell, Marietta, Powder Springs
Flood	July 11-12, 2012	Unincorporated Cobb County - Marietta

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Map 3 - Radar Analysis of September, 2009 Historic Rainfall Event



Source: Cobb County Stormwater Management; One Rain, Inc.

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The following map depicts the FEMA 100 Year Flood Plain, Zones AE, A and X for each of the six Cobb cities of: Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna. They were extracted from the countywide floodplain layer provided by Cobb County GIS and overlaid with the municipal boundary layer. The map is intended to provide a general idea of the location of floodplain areas within Cobb County and municipal jurisdictions. Floodplain information for neighborhoods and particular streets and parcels can be referenced at <http://map.georgiadfirm.com/>, which provides the most up-to-date map information.

Cobb County and the six cities will continue to identify potential flood mitigation actions for inclusion in the Hazard Mitigation Plan. Maps of specific flood mitigation projects that have been implemented in recent years is included in Chapter 5.

Map 4 - Floodplains, Cobb County, GA



Source: City Boundaries and Floodplain Layers Provided by Cobb County GIS.
Map Generated by CEMA.

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Assets Exposed to Hazard

Virtually all of Cobb County is potentially subject to flooding. However, approximately 20% of Cobb County's 340 square mile area is floodplain (approximately 70 square miles or 44,800 acres). Using information from the 2015 Cobb County Tax Digest, the number of structures per type is provided in Table 9 below, in addition to the estimated values of properties within Cobb County.

**Table 9 - Estimated Number Structures and People Impacted
Flood Hazard**

Type of Structure (Occupancy Class)	Estimated Number of Structures			Estimated Value			Estimated Number of People****		
	# in * Community	# in Hazard Area	% in Hazard Area	\$ in Community**	\$ in Hazard Area***	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	291,457	58,291	20%	54,134,968,108	10,826,993,622	20%	757,788	151,558	20%
Commercial	64,099	12,820	20%	34,811,378,690	6,962,275,738	20%	320,495	64,099	20%
Industrial	853	171	20%	1,031,834,630	206,366,926	20%	42,650	8,530	20%
Agricultural	356	71	20%	68,102,480	13,620,496	20%	712	142	20%
Religious/Non-profit	1289	258	20%	402,621,843	80,524,369	20%	12,890	2,578	20%
Government	3698	740	20%	1,151,648,860	230,329,772	20%	14,025	2,805	20%
Education	192	38	20%	386,551,953	77,310,391	20%	144,000	28,800	20%
Utilities	395	79	20%	2,591,101,838	518,220,368	20%	2,765	553	20%
Total	362,339	72,468	20%	\$94,578,208,402	\$18,915,641,680	20%	1,295,325	259,065	20%

* Data in the "# in Community" column provided by the 2015 Cobb County Tax Digest, Cobb County Tax Assessor's Office.

** Estimated value in community column was calculated by Cobb Tax Digest 2015 information (40% taxable value) and adjusting it to 100%. Does not include value of contents

*** Estimated value in hazard area column was calculated by taking the \$ in Community Value and multiplying it by the "% in Hazard Area" for each hazard analyzed

**** Methodology on population figures and entire breakdown of this table is provided in Appendix B-3

While the values above do not include structure contents and are intended to be a very general estimate of damage with 20% of the structures being impacted, it is worth comparing the numbers with a 2013 report published by the Georgia Dept. of Natural Resources, Environmental Protection Division, Georgia Flood Mapping and Assessment and Planning, entitled: *Cobb County, GA: Flood Risk Report*⁵. This report incorporates Hazus data, a well regarded hazard loss program that is endorsed by the Federal Emergency Management Agency (FEMA). This report indicates that property values including the value of contents to be valued at approximately \$89 billion in Cobb County. This number does not differ greatly from the estimated "quick swag" value of \$94 billion using the adjusted 2015 Cobb County Tax Digest information. The report also projects that a 100-year storm event could result in approximately \$1.7 billion dollars in damage in a worst case scenario flood event for Cobb County, including municipal jurisdictions, as shown in Table 10.

⁵ The full report can be seen in Appendix A-4 and includes damage estimates from a 100-year storm event broken down by individual jurisdiction

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**Table 10 - Estimated Losses for 100-Year Flood Event
Cobb County, GA⁶**

	Total Inventory Estimated Value	Dollar Losses 1% (100-Year Storm)
Residential Building / Contents	\$62,187,400,000	\$1,126,900,000
Commercial Building / Contents	\$18,976,100,000	\$392,400,000
Other Buildings / Contents	\$8,196,200,000	\$145,200,000
Total Building / Contents	\$89,359,700,000	\$1,664,500,000
Business Disruption	N/A	\$39,400,000
Total	\$89,359,700,000	\$1,703,900,000

Source: Georgia DNR, *Cobb County, GA: Flood Risk Report* (2013)

Plan Incorporates National Flood Insurance Program Participation Requirement §201.6(c)(3)(ii)

National Flood Insurance Program Participation and Repetitive Flood Losses

The National Flood Insurance Program is aimed at reducing the impact of flooding on private and public structures. This is achieved by providing affordable insurance for property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. Overall, the program reduces the socio-economic impact of disasters by promoting the purchase and retention of Risk Insurance in general, and National Flood Insurance in particular. As of the 2016 plan update, there were approximately 3,700 active NFIP policies (see Table 11) within Cobb County, including municipal jurisdictions. **All jurisdictions in Cobb County participate in the NFIP.**

As of November, 2015, there were 10 Severe Repetitive Flood Loss properties identified within Cobb County Unincorporated on the National Flood Insurance Program target list which includes residential properties – a reduction from the 42 residential repetitive loss properties identified within the 2011 Hazard Mitigation Plan Update. There were no properties identified on the target list within each of the municipal jurisdictions within Cobb County.⁷ Appendix A-9 presents a FEMA 100-Year Flood Map of the entire county, as well as flood maps provided by local plans. It also includes the entire map broken down into 25 different tiles. These maps show the county's stream buffers, Flood Zones AE & A, and the locations of dams.

⁶ Includes Cobb County Unincorporated and its six municipalities

⁷ Community Repetitive Loss data sheets are located in Appendix A-5

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Table 11 - National Flood Insurance Program (NFIP) Information, Cobb County, GA

Jurisdiction	Number of Policies	Insurance In-force Whole \$	Written Premium In-Force	NFIP Join Date
Acworth	33	\$7,590,700	\$11,472	02/15/1978
Austell	160	\$42,157,800	\$73,915	12/01/1977
Cobb County	2,899	\$731,345,500	\$1,850,578	01/03/1979
Kennesaw	131	\$32,804,400	\$81,790	08/01/1980
Marietta	206	\$62,831,000	\$182,122	02/15/1978
Powder Springs	67	\$15,179,200	\$30,094	08/01/1980
Smyrna	226	\$52,405,600	\$149,155	12/15/1977
Totals	3,722	\$994,314,200	\$2,379,126	

Source: FEMA, National Flood Insurance Program

According to Cobb County Stormwater Management during the 2016 plan update, once properties have been mitigated or removed from the floodplain, there can be a lag time for the NFIP to take them out of the repetitive loss database. Another reality is that property owners may opt to stay in their homes, thus keeping the number of repetitive loss properties higher than desired.

Community Rating System (CRS) Participation

The Cities of Austell, Marietta and Powder Springs have joined Cobb County as participants of the Community Rating System (CRS)

City of Austell: CRS rating of 8
City of Marietta: CRS rating of 8
City of Powder Springs: CRS rating of 6
Cobb County: CRS rating of 8

The Community Rating System (CRS) recognizes and encourages community floodplain management activities that exceed the minimum NFIP standards. Cobb County as well as the City of Austell, City of Marietta, and the City of Powder Springs are participants of the CRS. Depending upon the level of participation, flood insurance premium rates for policyholders can be reduced up to 45%. Besides the benefit of reduced insurance rates, CRS floodplain management activities enhance public safety, reduce damages to property and public infrastructure, avoid economic disruption and

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losses, reduce human suffering, and protect the environment. Participating in the CRS provides an incentive to maintaining and improving a community's floodplain management program over the years. Implementing some CRS activities can help projects qualify for certain other Federal assistance programs. Table 12 summarizes the CRS ratings and respective discounts for National Flood Insurance Program Policy holders.

Table 12 - CRS Class Premium Reduction Chart⁸

CRS Class	Premium Reduction Inside SFHA ⁹	Premium Reduction Outside SFHA ¹⁰
1	45%	10%
2	40%	10%
3	35%	10%
4	30%	10%
5	25%	10%
6	20%	10%
7	15%	5%
8	10%	5%
9	5%	5%
10	0	0

Source: FEMA, National Flood Insurance Program, <https://www.floodsmart.gov/>

Flood Codes

With the flood hazard being a priority for hazard mitigation projects and actions within Cobb County in recent years, it is worth noting that all jurisdictions in Cobb County, including Cobb County Government, have flood codes in place to ensure that new development within known floodplain areas is handled in accordance with local regulations. These codes are referenced within Table 13, where it is also possible to click some of the links to access the content of these codes directly.

With all the jurisdictions in Cobb County addressing the flood hazard, this enhances the community's ability, as a whole, to promote the safety of citizens. This is extremely important as the population continues to grow and people continue to move to Cobb County Unincorporated and its municipalities.

⁸ Disclaimer: This is *only* intended to provide a general idea of rate reductions. There are exceptions and program rules. Specifics should be clarified through the National Flood Insurance Program or local floodplain administrators.

⁹ Inside SFHA: Zones A, AE, A1-A30, V, V1-V30, AO, and AH

¹⁰ Outside the SFHA: Zones X, B, C, A99, AR, and D

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Table 13 - Flood Codes, Cobb County, GA

Jurisdiction	Code Reference
City of Acworth	Chapter 50, Flood Prevention and Drainage
City of Austell	Section 5, Article 2, Floodplain Management and Prevention Ordinance
City of Kennesaw	Unified Development Code Chapter 3
Cobb County	Chapter 58, Floods
City of Marietta	Chapter 7-8 Comprehensive Development Code, Article 7-8-10: Floodplain Management/Flood Damage Prevention
City of Powder Springs	Unified Development Code Article 9, Land Development Activities, Section 9-10: Floodplain Management & Floodplain Damage Prevention
City of Smyrna	Chapter 54, Floods

Source: Municode; City of Austell Stormwater Management; City of Powder Springs

Floodplain Administrators

As part of the 2016 Hazard Mitigation Plan Update, there were a series of worksheets that were completed by the jurisdictions to gather as much information as possible, as noted within Chapter 1. One of the worksheets was a Floodplain Administrator questionnaire. With all jurisdictions in Cobb County being participants of the National Flood Insurance Program, each has a person designated as “Floodplain Administrator”. Cobb EMA wanted to know what the needs of the floodplain administrators were and activities that have taken place.

Some of the general findings of the surveys completed are as follows:

- Cities of Austell, Marietta and City of Powder Springs are now participants of the Community Rating System along with Cobb County.
- Jurisdictions are open to additional educational opportunities for floodplain administrators to enhance their education in floodplain management. One jurisdiction noted that training on the Metropolitan North Georgia Water Planning District’s Model Floodplain Ordinance would be beneficial.
- Funding sources to implement mitigation projects and staffing are general issues of importance to local governments in maintaining local floodplain management programs.

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Estimate of Potential Losses

The potential losses due to floods cannot be exactly predicted. The loss analysis within the flood section of this plan looks at existing inventory of structures, their current value and potential losses from a 100-year flood event to provide a general dollar loss figure across all jurisdictions within Cobb County, as shown within Table 10. All of Unincorporated Cobb County and the six cities are susceptible to flooding, even areas outside of known floodplain areas.

Land Use & Development Trends

According to the 2014 Census, Cobb County is the fourth most populous county in Georgia with a population of 730,981. The estimated population of 730,981 is an approximate 6% increase from the 2010 census population count. Although Cobb County's regulations pertaining to development within floodplain areas have been made more restrictive, the effect of development on property within the county, including floodplain land, remains a concern.

Urbanization in Cobb County continues to increase, which has been directly related to increasing flows, increasing flood levels, and increased flood frequencies in the county. Detailed maps depicting future land use in Cobb County and all jurisdictions are located in Appendix C.

Chapter 4, Community Capabilities and Growth Trends, discusses in brief which areas of the county are showing the greatest increase of development and population.

Multi-Jurisdictional Concerns

The most recent flood events occurred in 2005 and 2009 within Cobb County. The resulting damage to various areas of the county has prompted the continued use of the Hazard Mitigation Matrix tool (Table 27) which takes a multi-jurisdictional approach to identifying actions and projects.

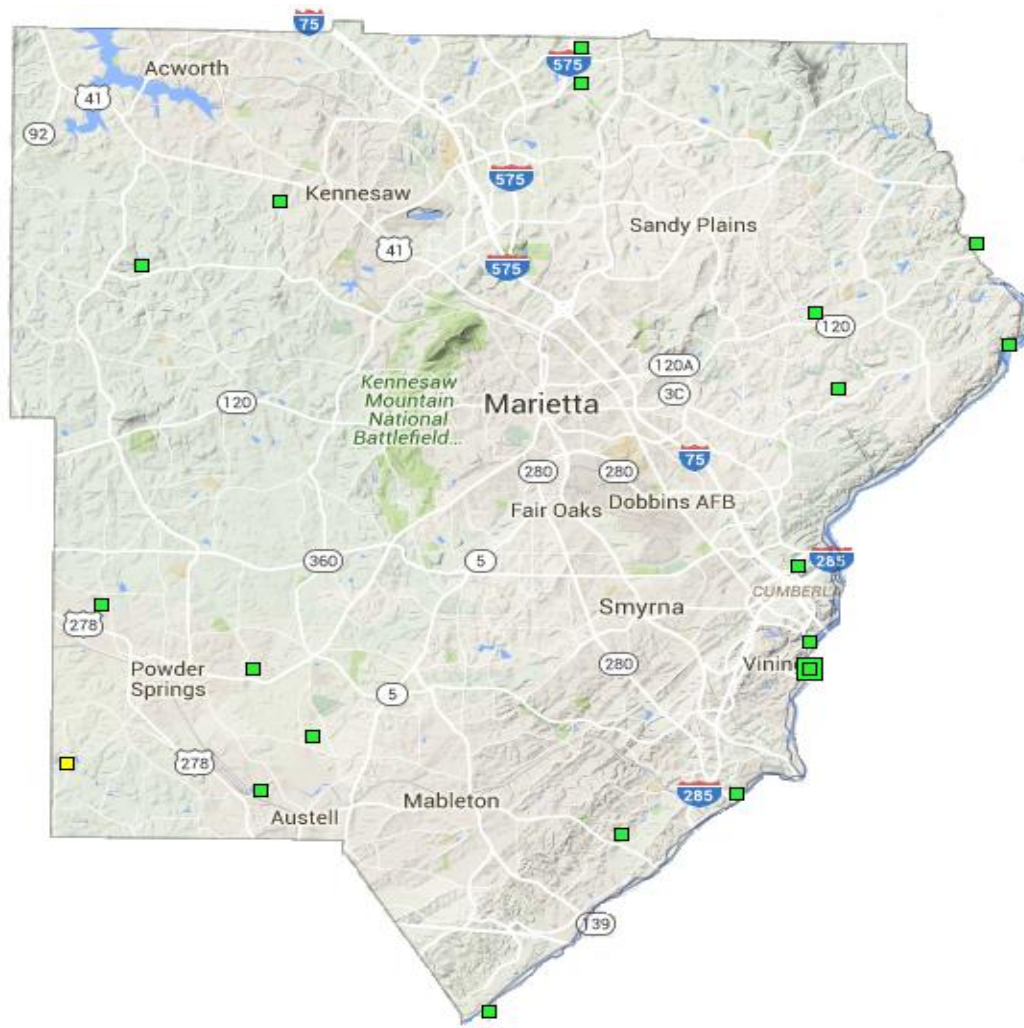
All six cities, Acworth, Austell, Kennesaw; Marietta, Powder Springs, and Smyrna were provided with the tool to help identify flood mitigation strategies. Each city also joined with the county in adopting, implementing, and maintaining both the Flood Mitigation Plan and Hazard Mitigation Plan. The Hazard Mitigation Plan provides for the use of future grant funds received by Cobb County and the cities to support the flood mitigation goals identified in this plan.

At the time of the 2016 plan update, the U.S. Geological Survey had 19 gauges located strategically in Cobb County and bordering areas to monitor water levels, as shown on Map 5. These locations include target areas of the Chattahoochee River, Nickajack

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Creek, Noonday Creek, Noses Creek, Sewell Mill Creek, Sope Creek, and Sweetwater Creek.

Map 5 – Stream Gauge Locations, Cobb County, GA



Source: National Oceanic and Atmospheric Administration (NOAA) and United States Geological Survey (USGS)

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SECTION II – TORNADOES

Hazard Description

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm (or sometimes because 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. Tornado season is generally March through August, although tornadoes can occur at any time of year. They tend to occur in the afternoons and evenings: over 80 percent of all tornadoes strike between noon and midnight.

Hazard Identification

Tornadoes are measured on the F Scale (see Table 14) that was implemented in the U.S. on February 1, 2007 and created by a team of meteorologists and wind engineers. *The Enhanced F-scale still is a set of wind estimates (not measurements) based on damage.* It uses three-second gusts estimated at the point of damage based on a judgment of eight levels of damage to the 28 indicators listed below. These estimates vary with height and exposure. **Important note:** The three second gust is not the same wind as in standard surface observations. Standard measurements are taken by weather stations in open exposures, using a directly measured "one minute mile" speed.

Damage paths can be in excess of one mile wide and 50 miles long. Tornadoes are among the most unpredictable and destructive of weather phenomena. Tornado season in Georgia runs ordinarily from March through August; however, tornadoes can strike at any time of the year if the essential conditions are present. With a statewide average of 24 tornadoes per year, with the annual average of two deaths and 49 injuries¹¹, the Cobb County Emergency Management Agency takes the threat of tornadoes very seriously.

¹¹ 2014 State of Georgia Hazard Mitigation Strategy

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Table 14 - Enhanced Fujita Scale for Tornado Intensity

FUJITA SCALE			DERIVED EF SCALE		OPERATIONAL EF SCALE	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

Source: National Oceanic and Atmospheric Administration, Storm Prediction Center

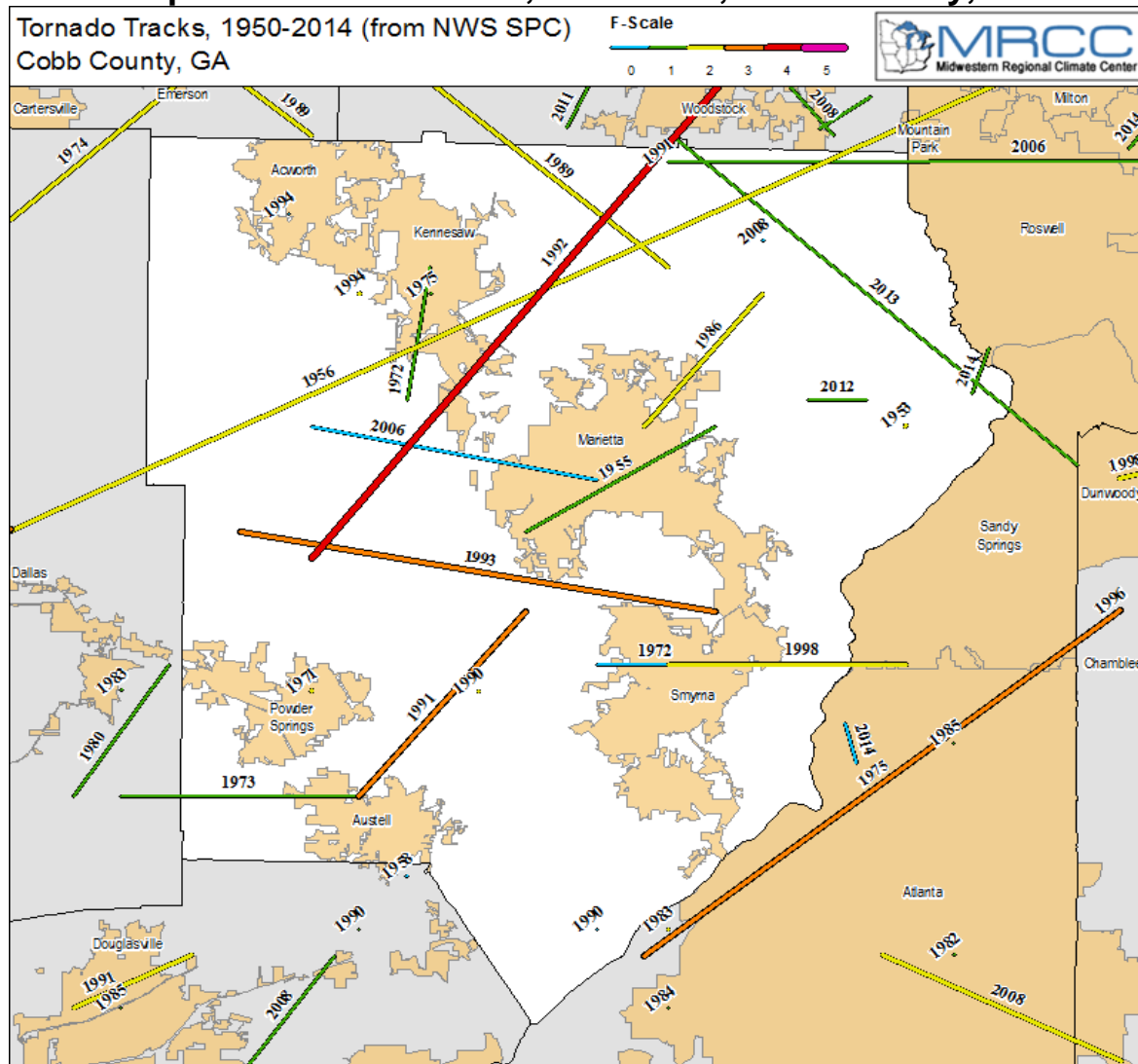
Hazard Profile

Because no one can predict exactly when or where a tornado might touch down, all of Cobb County is vulnerable to the threat of a tornado. There are no significant differences between the county and its six municipalities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna) in terms of the risks and vulnerabilities associated with tornadoes. With 27 hits from tornadoes to Cobb County since 1955 through 2014, trend analysis indicates approximately a tornado will touch down in Cobb County approximately every two years.¹² Map 6 shows historical tornado tracks within Cobb County. Tornadoes tend to strike in somewhat random fashion, making the task of reliably calculating a recurrence interval extremely difficult. The damage potential associated with a tornado is extremely high. Cobb County has the second highest occurrence rate in the state.

¹² A historical listing using National Climatic Data Center (NCDC) data of natural hazards that includes tornadoes is located in Appendix A-1.

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Map 6 - Tornado Tracks, 1950-2014, Cobb County, GA



Source: Midwestern Regional Climate Center

The most significant event in this regard was on the evening of April 8, 1998. On this date, an upper level low-pressure system formed, moving through the Ohio and Tennessee Valleys. During its path of travel, it picked up intensity, developing super cell thunderstorms, and spawning six tornadoes in northern Mississippi, Alabama, and Georgia. Some of these tornadoes were classified as F5 on the Fujita Scale. In the six hours this system was in existence, there were 36 fatalities, 273 injuries and over \$300 million in damages (NOAA Service Assessment, Southeastern US). At 12:20 a.m. on the morning of April 9, the second of three tornadoes touched down in Cobb County. This tornado was an F2, with winds of just under 150 mph. This tornado cut a path 600 feet wide and three miles long. Ground zero for the Cobb tornado was at the intersection of Windy Hill Road and Highway 41/Cobb Parkway. This location was less

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than ½ mile from the boundary of Dobbins Air Force Base, where numerous military planes were parked. Fifty-five structures in Cobb County reported significant damage, 16 of those being commercial establishments. The remaining 39 losses were to residential structures; the estimated loss provided to Cobb Fire on April 9 was \$2.6 million for structures in Cobb alone, excluding contents.

On April 8, 2006 at approximately 3:45 a.m., the National Weather Service issued a Severe Thunderstorm Warning with a Tornado Watch, and Cobb County sounded the outdoor warning sirens. About 10 minutes later, the sirens sounded again as the National Weather Service issued a Tornado Warning. Severe weather conditions continued for approximately 45 minutes covering two separate areas—a path along extreme north Cobb County and a path extending west to east in the central portion of the county. A survey conducted by the National Weather Service in Peachtree City, GA concluded that two tornadoes touched down in Cobb County. The stronger F1 tornado affected far northern Cobb County and continued eastward into North Fulton County. The tornado touched down in the Noonday community or about seven miles north of Marietta just south of the intersection of Canton Road/Georgia Highway 5 and Jamerson Road and traveled east a more or less continuous 18-mile long path into North Fulton County.

Substantial damage was reported to homes and trees at the tornado's initial touchdown point in the Jamerson subdivision. At least sixty homes in the Jamerson subdivision sustained damage, 10 with major damage and fifty with minor damage. In addition, at least 200 trees were down in this area. Intermittent damage continued eastward from this point toward North Fulton County.

Minor damage was also reported to several homes in the Sweat Mountain area just before the tornado crossed into North Fulton County. Within Cobb county, this tornado traveled a 7-mile long path with a path width of anywhere from 10 to 200 yards. The overall path length of this tornado, including both Cobb and Fulton counties, was 18-miles long. Cobb county officials reported that tornado damage in the county consisted of: thirteen residences destroyed 75 residences with major damage 57 residences with minor damage 38 residences affected one commercial property destroyed 10 commercial property with major damage sixteen commercial property with minor damage one commercial property affected 825 trees down thirty roads impacted because of downed trees and power lines. Approximately 16,500 residences lost power throughout the City of Marietta and Cobb County. The total cost to Cobb County Government was \$122,000.

There has been tornado activity in the years 2012, 2013 and 2014 within Cobb County.

On March 2, 2012, an EF-1 tornado with a maximum wind speed of 100 MPH touched down around 9:14 PM near East Cobb Park along Roswell Road. It continued to track along Roswell Road where it caused roof damage to a daycare and a house near

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Providence Road. Minor tree and roof damage continued just north of Roswell Road and ended near the Indian Ridge Subdivision around 9:15 PM. The path length was just over a mile with a maximum width of 150 yards. Estimated property damage was around \$75,000.

On June 13, 2013, a tornado that touched down just inside the Cherokee County line moved into Cobb County and strengthened to an EF-1. The tornado tracked southeast through Cobb County with the most significant damage occurring near Wendwood Drive Northeast and near Bishop Lake where dozens of trees were snapped and uprooted, many causing damage to homes. The tornado continued to track southeast, and crossed the Chattahoochee River at the Cobb-Fulton County line near the Morgan Falls Dam. Estimated property damage was around \$300,000.

On October 14, 2014 a National Weather Service Storm Survey team found a tornado touched down near Willow Point Parkway in east Cobb County and traveled north northeast into Fulton County north of Timber Ridge Road before lifting along Willeo Road near the Chattahoochee River. EF1 damage was indicated in Cobb County with maximum wind speeds around 95 MPH and a path width of 100 yards. Damage was confined mainly to trees snapped or uprooted with some damage to homes from falling trees. Estimated property damage was around \$60,000.

Significant Event	Date	Jurisdictions Affected
Tornado	April 8, 2006	Unincorporated Cobb County, Marietta
Tornado	March 2, 2012	Unincorporated Cobb County, Marietta
Tornado	June 13, 2013	Unincorporated Cobb County, Marietta
Tornado	October 14, 2014	Unincorporated Cobb County, Marietta

Assets Exposed to Hazard

As demonstrated in Table 15, it can be assumed that all structures and facilities within Cobb County could be damaged by a tornado as tornadoes are among the most unpredictable of weather phenomena and are indiscriminate as to when or where they strike. Additional data about all tornadoes that have impacted Cobb County can be found in Appendix A-1.

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**Table 15 – Estimated Number Structures and People Impacted
Tornado Hazard**

Type of Structure (Occupancy Class)	Estimated Number of Structures			Estimated Value			Estimated Number of People ****		
	# in * Community	# in Hazard Area	% in Hazard Area	\$ in Community**	\$ in Hazard Area***	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	291,457	291,457	100%	54,134,968,108	54,134,968,108	100%	757,788	757,788	100%
Commercial	64,099	64,099	100%	34,811,378,690	34,811,378,690	100%	320,495	320,495	100%
Industrial	853	853	100%	1,031,834,630	1,031,834,630	100%	42,650	42,650	100%
Agricultural	356	356	100%	68,102,480	68,102,480	100%	712	712	100%
Religious/Non-profit	1289	1289	100%	402,621,843	402,621,843	100%	12,890	12,890	100%
Government	3698	3698	100%	1,151,648,860	1,151,648,860	100%	14,025	14,025	100%
Education	192	192	100%	386,551,953	386,551,953	100%	144,000	144,000	100%
Utilities	395	395	100%	2,591,101,838	2,591,101,838	100%	2,765	2,765	100%
Total	362,339	362,339	100%	\$94,578,208,402	\$94,578,208,402	100%	1,295,325	1,295,325	100%
* Data in the "# in Community" column provided by the 2015 Cobb County Tax Digest, Cobb County Tax Assessor's Office.									
** Estimated value in community column was calculated by Cobb Tax Digest 2015 information (40% taxable value) and adjusting it to 100%. Does not include value of contents									
*** Estimated value in hazard area column was calculated by taking the \$ in Community Value and multiplying it by the "% in Hazard Area" for each hazard analyzed									
**** Methodology on population figures and entire breakdown of this table is provided in Appendix B-3									

Estimate of Potential Losses

A loss estimation reality is that losses may vary widely even within one category of natural hazard, depending on place and location. For instance, a tornado may hop from one location to another in a primarily rural area of the county, creating virtually no economic damage, whereas a similar hazard event in an urban area might create millions of dollars in damages. Compounding this obstacle to accurate loss estimation is the fact that tornadoes range considerably in their intensity and duration (see F Scale). With tornadoes potentially impacting all areas of the county, the loss estimations are based on 100% of the county, as shown within Table 15, being impacted and factoring in the known value of structures across all occupancy types.

Land Use & Development Trends

The county currently has no land use or development trends related specifically to tornadoes. Existing building codes do not require structures to exceed design wind speeds of 90 mph; however, construction must adhere to the Georgia State Minimum Standard Codes *Uniform Codes Act* and the *International Building Code* (2009 edition). The minimum standards established by these codes provide reasonable protection to persons and property within structures that comply with the regulations for most natural hazards. However, it should be noted that these requirements are applicable to new structures or additions to existing structures. Therefore, pre-existing structures could potentially be more susceptible if constructed under a less stringent code.

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Multi-Jurisdictional Concerns

Currently new Cobb County structures are required to meet regulations to sustain the wind speed of 90 mph as determined by the American Society of Civil Engineers (ASCE). There are no significant differences between the county and the six municipalities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna) in terms of risks and vulnerabilities associated with tornadoes. As stated previously, the entire county potentially can be affected by a tornado. As a result, any mitigation steps taken related to tornadoes should be undertaken on a countywide basis and include the six municipalities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna). When future maps and data become available, and are determined relevant to the tornado hazard, they will be incorporated as applicable, into plan updates.

Hazard Summary

Overall, Cobb County has high exposure to potential damage from tornadoes. Should a tornado hit certain portions of the county that are highly concentrated with homes, or any of the critical facilities identified, depending upon the strength and duration of the event, significant damage could occur. Due to the destructive nature of tornadoes, it is important that the HMP measures identified in this plan receive full consideration. Specific mitigation actions related to tornadoes are identified in Chapter 6.

One reality of most weather events, including tornadoes, is that they are predominantly handled at the local level and receive no Federal disaster declaration. Recent tornado events have demonstrated the ability of communities helping each other cleanup after storms in coordination with local government. Cobb County has assisted homeowners with debris removal after wind events by allowing homeowners to leave their debris on the right of way for county personnel to pick up. This type of community collaboration is extremely important and will allow the Cobb County community to be resilient in the future as well.

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SECTION III- SEVERE WEATHER

For the purpose of this plan's analysis, severe weather encompasses thunderstorms (including hail), lightning, and winter storms.

THUNDERSTORMS

Hazard Description

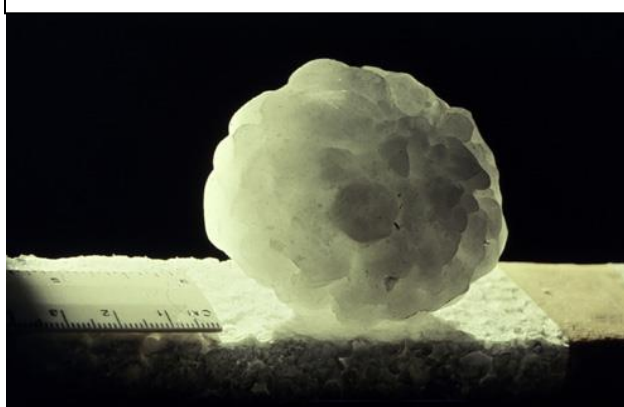
For the purpose of analysis, the hazards of thunderstorms and hail have been consolidated. A thunderstorm is formed from a combination of moisture, rapidly rising warm air, and a force capable of lifting air such as a warm and cold front, a sea breeze or a mountain. All thunderstorms contain lightning. Thunderstorms may occur alone, in clusters or in 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.

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. Individuals exposed to the elements during a hailstorm should take cover immediately. Pets and livestock are particularly vulnerable. Outdoor animals should be sheltered when conditions are ripe for the threat of hail.

Hail Size Chart

Pea	0.25"
Penny/Dime	0.75"
Quarter	1.00"
Half Dollar	1.25"
Golfball	1.75"
Tennis Ball	2.50"
Baseball	2.75"
Grapefruit	4.00"

Large Sized Hail



Hazard Identification

According to the CCWS, Flood Mitigation Plan (FMP), cold frontal boundaries moving from Canada into the Midwest, and into Cobb County during the early spring, frequently collide with warm fronts moving north into Cobb County from the Gulf of Mexico. These collisions can spawn intense thunderstorms as well as tornadoes. These storms commonly occur in late February or early March and can produce severe flooding. Thunderstorms can also occur in late June, July or August when orthographic lifting of

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water vapor during the summer heat transforms into powerful thunderstorms locally referred to as thunderboomers. Thunderboomers can be particularly hazardous because they are often stationary versus the rapidly moving frontal storms. When these powerful thunderstorm cells stall, they can dump massive amounts of rainfall to specific areas in a short period. In addition to flooding, thunderstorms can cause power outages, transportation and economic disruptions, significant property damage, and pose a high risk for injuries and loss of life.

A *severe thunderstorm watch* is issued by the National Weather Service when the weather conditions are such that a severe thunderstorm (damaging winds 58 miles per hour or more, or hail one (1) inch in diameter or greater) is likely to occur. Recently, state guidelines have been changed to reflect a change in the warning standard for severe thunderstorms.

Hazard Profile

The most prevalent natural hazard event occurring in Cobb County is thunderstorms. There are no significant differences between the county and its six municipalities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna) when it comes to areas of the county being affected. Cobb will experience 6.5 thunderstorms that cause damage each year according to a review of the past 10 years of NCDC-based historical data.

Cobb will experience approximately 4 instances of hail each year according to a review of the past 10 years of NCDC-based historical data. The largest hail recorded within Cobb County according to the NCDC database was 4.0 inches in diameter, occurring on April 22, 1997 and May 7, 1998 in Acworth. There are no significant differences between the county and its six municipalities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna) when it comes to areas of the county being affected.

One recent event was early Tuesday morning about 6:00 a.m., on February 26, 2008 when Cobb County residents experienced a weather system which resulted in a severe thunderstorm weather accompanied by a microburst (straight-lined winds on a very small scale). There were numerous power and traffic signal outages, road closures, and reports of tree and wind damage to homes. According to the National Weather Service, "The damage was confined to a three or four block width; the tree-fall pattern was diffluent (fanning out) across that area which is consistent with microburst winds. There was no evidence of reverse rotation or confluent tree-fall pattern indicative of tornado flow. The National Weather Service concluded that the damage that occurred in the Shallowford Road area was clearly caused by a microburst event with wind speeds up to 90 mph."

Cobb County and Marietta's Fire, Police, and Department of Transportation personnel responded after being dispatched by 911 to provide safety to and open roadways for

Cobb County Hazard Mitigation Plan – 2016

Cobb residents. Cobb's Emergency Management Agency conducted initial damage assessment of approximately 100 homes, with 87 damaged. Many agencies provided ongoing support to the response efforts of the storm, and the support continued during the recovery efforts. The Cobb County Board of Commissioners voted to provide debris removal for affected residences.

Assets Exposed to Hazard

In evaluating assets that are susceptible to thunderstorms and hail, the committee determined that all critical facilities, as well as all public, private, and commercial property, are susceptible to thunderstorms and hail. *Please note that Table 16 is inclusive of all severe weather hazards including thunderstorms, lightning and winter storms.*

**Table 16 – Estimated Number Structures and People Impacted
Severe Weather Hazard**

Type of Structure (Occupancy Class)	Estimated Number of Structures			Estimated Value			Estimated Number of People****		
	# in * Community	# in Hazard Area	% in Hazard Area	\$ in Community**	\$ in Hazard Area***	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	291,457	291,457	100%	54,134,968,108	54,134,968,108	100%	757,788	757,788	100%
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Agricultural	356	356	100%	68,102,480	68,102,480	100%	712	712	100%
Religious/Non-profit	1289	1289	100%	402,621,843	402,621,843	100%	12,890	12,890	100%
Government	3698	3698	100%	1,151,648,860	1,151,648,860	100%	14,025	14,025	100%
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Total	362,339	362,339	100%	\$94,578,208,402	\$94,578,208,402	100%	1,295,325	1,295,325	100%
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** Estimated value in community column was calculated by Cobb Tax Digest 2015 information (40% taxable value) and adjusting it to 100%. Does not include value of contents									
*** Estimated value in hazard area column was calculated by taking the \$ in Community Value and multiplying it by the "% in Hazard Area" for each hazard analyzed									
**** Methodology on population figures and entire breakdown of this table is provided in Appendix B-3									

Estimate of Potential Losses

According to the Cobb County Water System, Flood Mitigation Plan, it is hard to predict potential losses resulting from thunderstorms since they occur throughout the county. This is also true for hail. Therefore, there were no maps found that track hail. However, according to FEMA, the United States suffers approximately \$1 billion in damage to property and crops annually.

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Land Use & Development Trends

Cobb County continues to develop and grow based on Census data. Although Cobb County's regulations pertaining to development within floodplain areas has been made more restrictive to prevent development in high flood risk areas, development pressure on all land in the county, including floodplain land, is growing. Currently, there are no regulations pertaining to development and hail.

Multi-Jurisdictional Concerns

All of Cobb County potentially can be affected by thunderstorms and hail. As a result, any mitigation steps taken related to thunderstorms and hail should be undertaken on a countywide basis and include the six cities of Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna. There are no definable or significant differences between the county and municipalities in terms of risks and vulnerabilities associated with thunderstorms and hail.

Hazard Summary

Overall, thunderstorms pose one of the greatest threats to Cobb County in terms of property damage, injuries, and loss of life, according to the CCWS Flood Mitigation Plan. Hail remains mostly a threat to property but the data did not provide any county/city estimates of damage costs. All infrastructure within Cobb County is susceptible to thunderstorms and hail and is reflected as such in the previous table. Thunderstorms are a serious natural hazard for Cobb County because they can spawn tornadoes and cause extensive flooding. Based on the frequency of this hazard, as well as its ability to negatively impact anywhere in the county, the HMP includes measures to mitigate this hazard. Specific mitigation actions related to thunderstorms and hail are located in Chapter 6.

LIGHTNING

Hazard Description

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. The rapid heating and cooling of air near the lightning causes thunder. Some thunderstorms can be seen approaching, while others hit without warning. It is important to learn and recognize the danger signs and to plan ahead.

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Hazard Identification

The Hazard Mitigation Executive Planning Committee has identified lightning as a frequent natural occurrence to Cobb County and the six cities of Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna. By definition, all thunderstorms are accompanied by lightning. The electrical charge from lightning can potentially be as much as 100 million volts. Lightning strikes move from cloud to cloud, cloud to ground, where high structures are involved, and from ground to cloud. Lightning strikes in Cobb County are most prevalent in the summer months.

Hazard Profile

Lightning, as with many natural hazards, can strike anywhere and at any time. There are no significant differences between the county and its six municipalities of Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna in terms of the risks and vulnerabilities associated with lightning. The State of Georgia as a whole, ranks 5th in the nation for states with the most fatalities due to lightning strikes from the 2002-2011 time period¹³. According to the U.S. National Lightning Detection Network® (NLDN), Cobb County typically experiences six (6) to 20 lightning flashes per square mile in a given year.¹⁴

Significant Event	Date of Strike	Victim	Jurisdiction Affected
Lightning Fatality	July 30, 2002	49 year old female	City of Marietta, Kennesaw Mountain National Park
Lightning Fatality	July 13, 2010	16 year old female	Unincorporated Cobb County South of Mableton
Lightning Fatality	July 13, 2010	14 year old female	Unincorporated Cobb County South of Mableton

Assets Exposed to Hazard

In evaluating assets that are susceptible to lightning strikes, the committee determined that all critical facilities, as well as all public, private, and commercial property, are susceptible to lightning.

¹³ 2014 State of Georgia Hazard Mitigation Strategy

¹⁴ Planners also looked at NCDC entries labeled as “Lightning” and “Thunderstorm Wind” to analyze lightning activity. There were 48 lightning events and 181 Thunderstorm Wind records recorded in the NCDC database from 1950 to 2016, which collectively average approximately four (4) lightning events per year. For planning purposes, the statistic of 6 to 20 lightning flashes annually per sq. mile is being used as a point of reference within Cobb County.

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Estimate of Potential Losses

Lightning can cause varying degrees of damage should it strike a facility. The most common is destroying the electrical components of a facility, or fire damage related to a lightning strike. Unlike most other natural hazards, lightning could potentially damage or destroy the contents of a structure (computers, televisions, phones, etc.) without any effect on the structure itself. In this regard, content and structure loss have been evaluated when considering potential losses for critical facilities.

Land Use & Development Trends

Cobb County currently has no major land use or development trends related to lightning with the exception of minimum building code requirements relating to the risk of fire (lightning strikes to building can increase the risk of structural fires). Cobb exceeds state and national building standards by requiring sprinkler systems in any new building erected within the county to prevent the threat of structural fires.

Multi-Jurisdictional Concerns

All of Cobb County potentially can be affected by lightning. As a result, any mitigation steps taken related to lightning should be undertaken on a countywide basis and include the cities of Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna. There are no significant differences between the county and the municipalities in terms of risks and vulnerabilities associated with lightning. When future maps and data become available, and are determined relevant to the lightning hazard, they will be incorporated into plan updates.

Hazard Summary

Lightning strikes have a high danger potential associated with them. Lightning, as with some of the other natural hazards typical to Cobb County, can strike anywhere and at any time. Its unpredictability, along with its deadly and destructive potential, is all the more reason to explore mitigation actions. The HMP Executive Planning Committee identified specific mitigation goals, objectives, and action items related to lightning strikes. These mitigation actions are identified in Chapter 6.

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WINTER STORMS

Hazard Description

Preparing for cold weather conditions and responding to them effectively can reduce the dangers caused by winter storms. Winter storms can include blizzards with large amounts of falling or blowing snow and sustained winds of at least 35 miles per hour. Cobb County is most susceptible to the risk associated with ice resulting from winter precipitation and freezing temperatures. Winter storms may also cause damage to homes by causing water pipes to freeze if the pipes are not properly insulated.

A major winter storm can also be lethal. Winter storms may cause frostbite and hypothermia for people not properly dressed for severe cold weather and precipitation. Special populations such as the elderly, disabled and individuals and families with no/intermittent electricity are especially vulnerable to winter weather conditions. According to FEMA, preparation is the best mitigation strategy for ensuring peoples' safety and reducing the risk of winter storm damage to property.

Hazard Identification

Historical data from the National Climatic Data Center and the National Weather Service relating to winter storms in Cobb County was researched. The National Weather Service, Peachtree City Office will issue a winter storm warning when a significant combination of hazardous winter weather is occurring or imminent. Significant and hazardous winter weather is defined as a combination of the following:

- Over 2 inches of snow; and/or
- Accumulation of sleet 1/2 inch or greater
- Accumulation of freezing rain of 1/4 inch or more.
- A winter storm watch/warning can also be issued at forecaster and emergency management discretion when significant impacts are expected but the snow, sleet or freezing rain criteria are not necessarily met.
- A Winter Weather Advisory is issued for an 80 percent or greater chance of a winter precipitation event which causes an inconvenience but does not meet warning criteria.

Hazard Profile

There are no significant differences between the county and its six cities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna) in terms of the risks and vulnerabilities associated with winter storms. There may be 1.5 winter weather events a year in Cobb County according to a review of the past 10 years of NCDC data. Although winter storms occur infrequently, they have the potential to wreak havoc on the community when they do strike. A good example is the blizzard that struck Georgia in

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March of 1993, and was particularly devastating to Cobb County and its six cities. Numerous power lines were downed; several roads, bridges, and buildings were damaged because of the heavy snow and ice accumulation.¹⁵

The two most recent winter weather events in Metro Atlanta that made national headlines were in 2014. The first storm event which put Cobb County in gridlock was due to a very quick icing of the roads as schools and businesses were dismissing early on the afternoon of January 28, 2014. This resulted in widespread abandonment of vehicles throughout the Atlanta area after dusk. People sought shelter at various locations by foot - at businesses, malls, private homes, fire stations and many other venues. School buses and schools themselves were stranded with students. This was an event of regional significance where every county in the Metro Atlanta area was severely impacted with a widespread amount of one (1) to three (3) inches of snow.

On February 11, 2014, nearly two weeks after the previous storm, the area prepared for another winter storm event. Unlike the first event, this storm prompted the closing of schools and many businesses. People stayed home, having learned from the January storm.

The Cobb County Department of Transportation's *Inclement Weather Procedures*, which includes plans for the treatment of roads under its responsibility during winter weather events, is now included as an annex to the Cobb County Hazard Mitigation Plan and is located in Appendix C.

Significant Event	Date	Jurisdictions Affected
Winter Storm	January 28, 2014	All Jurisdictions Within Cobb County
Winter Storm	February 11, 2014	All Jurisdictions Within Cobb County

Assets Exposed to Hazard

In evaluating assets potentially impacted by the affects of winter storms, the Executive Planning Committee determined that all critical facilities, as well as all public, private, and commercial property are susceptible.

Estimate of Potential Losses

The entire county is susceptible to winter storms. Therefore, it is difficult to predict potential losses. Cobb County did not receive a Federal disaster declaration for the January and February, 2014 winter storms. Costs were incurred by local governments for overtime hours, snow and ice removal and other related costs.

¹⁵ For additional information, a historical listing of natural hazards in Cobb County, including winter storm data, is located in Appendix A-1.

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Land Use & Development Trends

Cobb County currently has no land use or development trends related to winter storms.

Multi-Jurisdictional Concerns

All of Cobb County can be affected by winter storms. As a result, any mitigation steps taken related to winter storms should be undertaken on a countywide basis and include the cities of Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna. There are no significant differences between the county and the six cities in terms of risks and vulnerabilities associated with winter storms. When future maps and data become available, and are determined relevant to the winter storm hazard, they will be incorporated into plan updates.

Hazard Summary

Winter storms, unlike other natural hazards, typically afford communities some advance warning. The National Weather Service issues winter storm warnings and advisories as these storms approach. Unfortunately, even with advance warning, some of the most destructive winter storms have occurred in the southern United States, where buildings and infrastructure are not typically designed to sustain severe winter conditions. Also, motorists not accustomed to driving in snow and icy conditions pose an additional danger on roads and highways. Specific mitigation actions are identified in Chapter 6.

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SECTION IV - EARTHQUAKES

Hazard Description

Earthquake is a term used to describe the sudden slip on a fault, the resulting ground shaking and radiated seismic energy caused by the slip, or by volcanic or magmatic activity, or other sudden stress changes in the earth.

According to the now generally accepted theory of plate tectonics, the earth's crust is divided into several major plates, some 50 miles thick, which move slowly and continuously over the interior of the earth. Earthquakes are initiated when, due to slowly accumulating pressure, the ground slips abruptly along a geological fault plane on or near a plate boundary. The resulting waves of vibration within the earth create ground motion at the surface that vibrates in a very complex manner.

Once the sudden rupture occurs, the earth begins to shake. This shaking is caused by a series of waves known as seismic waves moving from the center of the earthquake out to other parts of the earth. The type of waves involved in an earthquake is a key characteristic of the phenomenon. The four types of seismic waves are grouped into two main categories according to the way they travel from the source, or focus, of an earthquake. P waves and S waves are "body" waves. Love waves and Raleigh waves are "surface" waves.

Once an earthquake occurs, it is important to know where the seismic event took place, how intense it was, and its impact on the built and natural environment. The more we know about earthquakes and about how and when they occur, the more we can do to lessen their effects on our communities. Two scales are frequently used to measure earthquakes: the Modified Mercalli Intensity Scale, which measures the intensity or impact of an earthquake on people and the built environment, and the Richter scale, which measures the amount of energy released by an earthquake, or its magnitude.

Hazard Identification

According to the *Emergency Manager's Guide to Earthquakes in Georgia*, 1999, while Georgia and the Southeastern United States are not typically known for seismic activity, documented incidents in the state of Georgia have shown minor to moderate earthquakes. Earthquakes in northwestern Georgia are clustered along a northeast trending line that represents the southwest extension of the Southeastern Tennessee Seismic Zone. Based on seismicity, the Southeastern Tennessee Seismic Zone is second only to the New Madrid Seismic Zone in the Eastern United States for its size and rate of earthquake production. In both seismic zones, the earthquake hypocenters are at mid-crustal depths (14 ± 10 km) and outline a 150-mile long narrow active zone. These similarities and the existence of the great 1811-12 New Madrid earthquakes suggest that southeastern Tennessee or Northwest Georgia could also be the site of a

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similar great earthquake. This area currently experiences one magnitude 4.0 earthquake about every 10 years. A magnitude 4.0 earthquake is generally perceived as a startling vibration that may rock objects off shelves and may cause some cracking of plaster.

The Southeastern Tennessee Seismic Zone (STSZ) runs along the northwest portion of Georgia. When looking at seismic activity, the STSZ is ranked second behind the New Madrid Seismic Zone for intensity and rate of earthquakes. The Brevard fault line runs through the mountains of northwest Georgia and through Cobb County to the Georgia-Alabama line. The northwest portion of the state where Cobb is located is also part of a region called the *Piedmont Province*, where mild to moderate earthquakes occur every two to four years. Dr. Tim Long of the Georgia Tech School of Earth & Atmospheric Sciences states that, “these are often related to reservoirs and water seepage” (GEMA Press Release, March 18, 2003, #03-1082).

Hazard Profile

According to the *Emergency Manager’s Guide to Earthquakes in Georgia*, “three levels of seismic activity are apparent in Georgia. The least active area is the Coastal Plane of South Georgia, where one significant earthquake has been experienced in the last 30 years, the 1976 Reidsville earthquake. The northern half of Georgia has experienced moderate seismicity, with a magnitude four earthquakes about every 10 years. When the details of the seismicity contained in the more frequent smaller earthquakes are included in a hazard assessment, two areas of northern Georgia stand out as being unusually active.

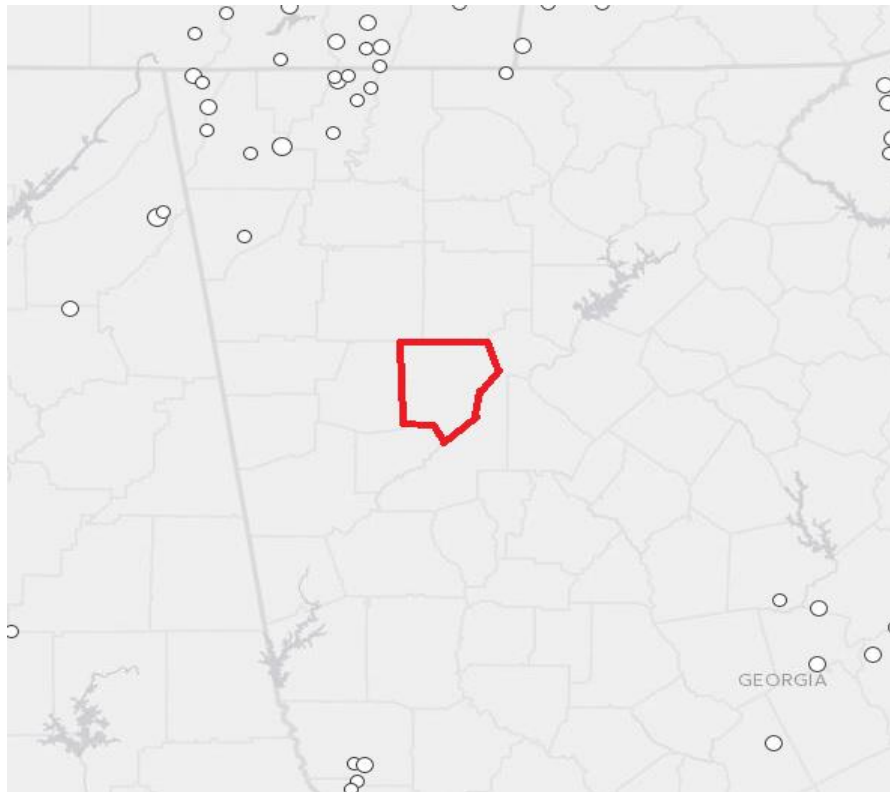
These are the central Georgia seismic zone and the extension of the Southeastern Tennessee Seismic Zone across northwest Georgia. The maximum damage from an earthquake will occur in the epicenter area and thus the counties located in these two zones have the greatest earthquake hazard in Georgia.”

An online query of the USGS database for earthquakes greater than 2.5 in intensity since 1956, within approximately 250 miles of Cobb County, revealed the greatest activity in northwest Georgia into Alabama, Tennessee and North Carolina, as well as clusters on the South Carolina Border to the east, southeast in Central Georgia and southwest in the area of Columbus, Georgia (see Map 7).

Based on historical records, Cobb County has only had one earthquake occur within its boundaries. Therefore, the probability of any magnitude of earthquake occurring within Cobb County is extremely low (approximately a 1 in 100 year event, or a .01% chance of occurring in a given year). However, earthquakes occurring in surrounding areas and being felt within Cobb County is statistically the more probable scenario.

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**Map 7 – Georgia Area Earthquakes > 2.5 Intensity
1956 - 2016¹⁶**



Source: United States Geological Survey (USGS) at <http://earthquake.usgs.gov>

On March 18, 2003, an earthquake struck in Wilkes County, east of Atlanta, and measured 3.5 on the Richter Scale. Noticeable aftershocks and tremors were felt in Cobb County, waking many people out of their beds. Media reporters interviewing residents repeatedly heard that citizens thought what woke them up was a sonic boom from a jet at Dobbins AFB.

An earthquake that measured 4.9 on the Richter scale struck in the Northeast Alabama area on April 29, 2003, waking people around 5:00 a.m. from Mississippi to North Carolina, but the tremor failed to inflict significant damage. The epicenter of the tremor was near Fort Payne, Alabama, about 37 miles southwest of Chattanooga, Tennessee, along the border of Georgia and Alabama, according to the U.S. Geological Survey web site (CNN.com, 29 April 2003). CEMA provided information to Cobb employees and residents regarding this incident, relaying information from GEMA and the seismology experts at Georgia Tech in Atlanta.

¹⁶ Greater than 2.5 in intensity on the Richter Scale

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On December 27, 2007 at 8:04 p.m., a small earthquake (2.4 in intensity) occurred in Cobb County with a depth of 3.14 miles below the surface and was not felt by the people living around the epicenter which was near the Macland Road and Luther Ward Road area. No significant damage was documented for this tremor.

Event	Date	Jurisdiction Affected
Small Earthquake (not significant)	December 27, 2007	Unincorporated Cobb County

Assets Exposed to Hazard

Since earthquakes cannot be predicted, any area of Cobb County is potentially at risk. Therefore, 100% of the assets of Cobb County are susceptible to the hazard as demonstrated in Table 17 below.

Table 17 – Estimated Number Structures and People Impacted Earthquake Hazard

Type of Structure (Occupancy Class)	Estimated Number of Structures			Estimated Value			Estimated Number of People ****		
	# in * Community	# in Hazard Area	% in Hazard Area	\$ in Community**	\$ in Hazard Area***	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	291,457	291,457	100%	54,134,968,108	54,134,968,108	100%	757,788	757,788	100%
Commercial	64,099	64,099	100%	34,811,378,690	34,811,378,690	100%	320,495	320,495	100%
Industrial	853	853	100%	1,031,834,630	1,031,834,630	100%	42,650	42,650	100%
Agricultural	356	356	100%	68,102,480	68,102,480	100%	712	712	100%
Religious/Non-profit	1289	1289	100%	402,621,843	402,621,843	100%	12,890	12,890	100%
Government	3698	3698	100%	1,151,648,860	1,151,648,860	100%	14,025	14,025	100%
Education	192	192	100%	386,551,953	386,551,953	100%	144,000	144,000	100%
Utilities	395	395	100%	2,591,101,838	2,591,101,838	100%	2,765	2,765	100%
Total	362,339	362,339	100%	\$94,578,208,402	\$94,578,208,402	100%	1,295,325	1,295,325	100%
* Data in the "# in Community" column provided by the 2015 Cobb County Tax Digest, Cobb County Tax Assessor's Office.									
** Estimated value in community column was calculated by Cobb Tax Digest 2015 information (40% taxable value) and adjusting it to 100%. Does not include value of contents									
*** Estimated value in hazard area column was calculated by taking the \$ in Community Value and multiplying it by the "% in Hazard Area" for each hazard analyzed									
**** Methodology on population figures and entire breakdown of this table is provided in Appendix B-3									

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Estimate of Potential Losses

There is no data from previous earthquakes to estimate possible losses in Cobb County. With earthquakes potentially impacting all areas of the county, the loss estimations are based on 100% of the county being impacted and factoring in the known value of structures across all occupancy types.

Land Use & Development Trends

Cobb County currently has no land use or development trends related to earthquakes.

Multi-Jurisdictional Concerns

There are no significant differences between the county and the six cities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna) in terms of risks and vulnerabilities associated with earthquakes. Earthquakes potentially can negatively affect all of Cobb County. As a result, any future mitigation steps taken related to earthquakes should be initiated on a countywide basis and include the six cities.

Hazard Summary

When earthquakes are discussed, Georgia is not the first state to be mentioned. Earthquakes in Georgia are rare, particularly when they are compared to the long history of damaging earthquakes, which are associated with California's active San Andreas Fault zone and other fault zones bounding the tectonic plates of the Earth's crust. Movement of the Earth's crust along these plate boundaries explains most earthquakes. Georgia, like all the other states east of the Rocky Mountains, does not have active faults, and is not on a tectonic plate boundary. However, damaging earthquakes do occur in the interior of tectonic plates and these intra-plate earthquakes can be an important consideration for emergency managers.

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SECTION V - DROUGHT

Hazard Description

A drought is a period of abnormally dry weather that persists long enough to produce a serious hydrologic imbalance (crop damage, water supply shortage, etc.).

Hazard Identification

The only sizable stream that flows through the metropolitan area is the Chattahoochee River, the headwaters of which are in the mountains of north Georgia. The Chattahoochee River is of marginal size to supply water to Cobb County and the cities of Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna. Groundwater resources in the area are comparatively limited.

Hazard Profile

Cobb County recovered from one of the longest droughts in its history after the end of a four-year drought in January 2003. Although there is no cost data specifically for Cobb County during that drought period, the State of Georgia incurred crop damages estimated at \$327 million. Then from September 20, 2007, until June 10, 2009, Cobb County was designated to be in a declared Drought Level 4 and the area had a rainfall deficit of approximately 10 inches. All jurisdictions throughout the county were susceptible to the effects of the drought which included limited water usage and damage to crops/vegetation.

The National Drought Policy Commission recommended several programs to help mitigate the effects of drought, all of which are administered by the State of Georgia. According to the historical data on drought for Cobb County, there is the possibility that a drought will occur again. Consider the following:

Georgia Department of Natural Resources CITING HISTORIC DROUGHT, GEORGIA EPD BANS MOST OUTDOOR WATER USE IN NORTH GEORGIA

The director of the Georgia Environmental Protection Division (EPD) has declared a level-four drought response across the northern third of Georgia, which prohibits most types of outdoor residential water use effective immediately. “The drought of 2007 has reached historic proportions, so it’s critical that we take immediate action to ensure that Georgians have a sufficient supply of safe drinking water,” said EPD Director Carol A. Couch. “All of the counties included in the level-four declaration are located in areas of either exceptional or extreme drought.”

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The drought declaration was made following a meeting today of the State Drought Response Committee. The Committee includes representatives from several state, federal and local agencies, as well as universities and non-government organizations. The EPD Director, working with State Climatologist David Stooksbury, consults with the Committee members and then determines the appropriate drought response. “During a year of average rainfall, water levels in Georgia’s large reservoirs such as Lanier and Allatoona tend to drop in late summer and then recover as the winter rains arrive,” said State Climatologist Stooksbury. “But the forecast calls for a dry, mild winter and that could result in serious water supply problems by next spring.”

The level four drought response was declared for all counties in north Georgia from Muscogee County on the Alabama line northeastward to Spalding County, and eastward to Lincoln County on the South Carolina line. The level-four drought response included all of metropolitan Atlanta, Rome, Athens, and Columbus, but did not include the cities of Macon and Augusta.

Counties not on the list remained subject to the level-two drought response. A level-two drought response declaration limited outdoor watering to the following schedule:

- Odd-numbered addresses on Tuesdays, Thursdays and Sundays-12 midnight to 10 a.m.
- Even-numbered and unnumbered addresses on Mondays, Wednesdays and Saturdays-12 midnight to 10 a.m.

A level-four drought response prohibits most types of outdoor water use, although the state does offer some exemptions for commercial uses. However, local governments and water utilities may impose more stringent watering schedules so citizens should contact their local water providers for more specific guidance.

At the time of the 2016 Plan Update, water levels were at or above normal and drought conditions in the United States were predominantly located on the west coast. The southeastern United States including Georgia is forecast to receive above normal rainfall during an El Nino weather pattern. Table 18 identifies the ranges of precipitation in correlation to drought severity classifications.

Based on analysis of past occurrences, drought conditions will occur in the future across the State of Georgia and Cobb County. Changing weather patterns and the overall increase in development and water consumption will inevitably impact drought conditions. An analysis of NCDC data from 1950 to 2016 indicates that there have been 22 incidents of drought conditions recorded in Cobb County. This equates to a drought event approximately every three years.

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Table 18 - Drought Severity Classification

NDMC Category	Description	Possible Impacts	Ranges	
			Standardized Precipitation Index (SPI)	Palmer Drought Severity Index (PDSI)
D0	Abnormally Dry	Going into drought: <ul style="list-style-type: none"> Short-term dryness slowing planting, growth of crops or pastures Coming out of drought: <ul style="list-style-type: none"> Some lingering water deficits Pastures or crops not fully recovered 	-0.5 to -0.7	-1.0 to -1.9
D1	Moderate Drought	<ul style="list-style-type: none"> Some damage to crops, pastures Streams, reservoirs, or wells low, some water shortages developing or imminent Voluntary water-use restrictions requested 	-0.8 to -1.2	-2.0 to -2.9
D2	Severe Drought	<ul style="list-style-type: none"> Crop or pasture losses likely Water shortages common Water restrictions imposed 	-1.3 to -1.5	-3.0 to -3.9
D3	Extreme Drought	<ul style="list-style-type: none"> Major crop/pasture losses Widespread water shortages or restrictions 	-1.6 to -1.9	-4.0 to -4.9
D4	Exceptional Drought	<ul style="list-style-type: none"> Exceptional and widespread crop/pasture losses Shortages of water in reservoirs, streams, and wells creating water emergencies 	-2.0 or less	-5.0 or less

Source: National Drought Mitigation Center, Drought Monitor

Significant Event	Date	Jurisdiction Affected
Drought	September 20, 2007 until June 10, 2009	Entire State of Georgia including Cobb County

Assets Exposed To Hazard

With the exception of lakes and rivers, there is no area within Cobb County that is more vulnerable to drought than any other area. Therefore, all assets are considered to be exposed. However, it is not likely that any structure would be damaged in the event of a drought. Because of the low risks to county structures, drought has been excluded from the exposure analysis.

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Estimate of Potential Losses

A drought is not expected to affect any structures in unincorporated Cobb or its six cities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna). However, crop and livestock damage is a potential concern. According to the *2012 Census of Agriculture*, Cobb County contains 110 farms, covering 5,143 acres of land. Crop sales accounted for \$3,045,000 and livestock sales accounted for \$390,000 in 2012. If a severe drought affects Cobb County and its six cities in the future, the losses could be as much as \$3,435,000 (*2012 Census of Agriculture County Profile, Cobb, Georgia*).

Land Use and Development Trends

There are no land use or development trends related to the drought hazard. Cobb County has adopted in the past statewide restrictions on water use for the county and the six municipalities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna). During drought conditions, the Georgia Department of Natural Resources and local governments implement water restrictions, as necessary.

Multi-Jurisdictional Hazard Differences

There are no significant differences between the county and the Cobb cities of Acworth; Austell; Kennesaw, Marietta, Powder Springs, and Smyrna in terms of the risks and vulnerabilities associated with drought. The probability for drought is the same countywide.

Hazard Summary

A brief drought would not be expected to have much impact on Cobb County and its six cities. However, prolonged drought could affect water resources in the county as well as increase the chance of wildfire, crop, and livestock damage. Lake Allatoona and the rivers it feeds are good examples of this.

Representatives of Georgia, including Cobb County and its six municipalities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna), understand the need to prepare for drought conditions. Actions to avert drought impacts must be done in advance by water conservation and implementation of best practices. Water restrictions will continue to serve as a method of reducing the impact of drought to the county and its municipalities when necessary.

There are currently eight programs in place in Georgia to mitigate the effects of a drought. These programs are *Water Withdrawal Permitting Program*, *Drinking Water Permitting Program*, *Water Resources Management Program*, *Agricultural Disaster Declaration and Damage Assessment Report Program*, *Farmers and Consumer Market Bulletin*, *Georgia Department of Agriculture (GDA) Press Services*, *GDA Farmers*

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Hotline, and the Emergency Livestock Feeding Project, National Drought Policy Commission Report, Georgia.

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CHAPTER 3 - TECHNOLOGICAL HAZARDS RISK & VULNERABILITY SUMMARY

SECTION I – DAMS (Potential Failures)

Hazard Description

Dam failures can potentially be the most catastrophic flood events. A dam failure may be the result of neglect, poor design, or structural damage caused by a major geophysical event such as flood or an earthquake. When a dam fails, large volumes of water are suddenly released onto low-lying areas downstream, and these fast moving large volumes of water may destroy anything in its path and may pose a serious threat to life and property.

Hazard Identification

According to the Cobb County Water System, Stormwater Management Division (SWMD), since 1979 four dams have failed in Cobb County: Chastain Lakes Lower Dam (total breach in 1984; Wooten Lake Dam (partial breach in 1989); Patillo Dam at Valley Vista (total breach in 2004) and Laura Lake Dam in 2009. Dam failures in other parts of the state have resulted in the loss of human life and property.

Flooding resulting from dam failures is becoming an increasing concern in Cobb. In conjunction with CEMA, the Stormwater Management Division may seek grant funding from GEMA to study dams as opportunities arise. Presently, there are 159 dams in Cobb County according to the Georgia Environmental Protection Division. Of those, 31 are Category I (high hazard) dams regulated by the State of Georgia, 42 are categorized as Category II (low hazard) that are unregulated, along with 86 other unregulated dams in other categories such as Breached; Exempt; and Exempt High Hazard.¹⁷

Category I Dams are categorized as those that can potentially create a loss of life, which is why they are regulated by the State of Georgia. However, that does not minimize the impact that unregulated dams may have on the community, which is why it is important to educate dam owners and the community about the impacts that dam failures can have on lives and property.

Map 8 generally depicts the location of Category I and II dams within Cobb County.

¹⁷ The list of dams in Cobb County can be located in Appendix A-6

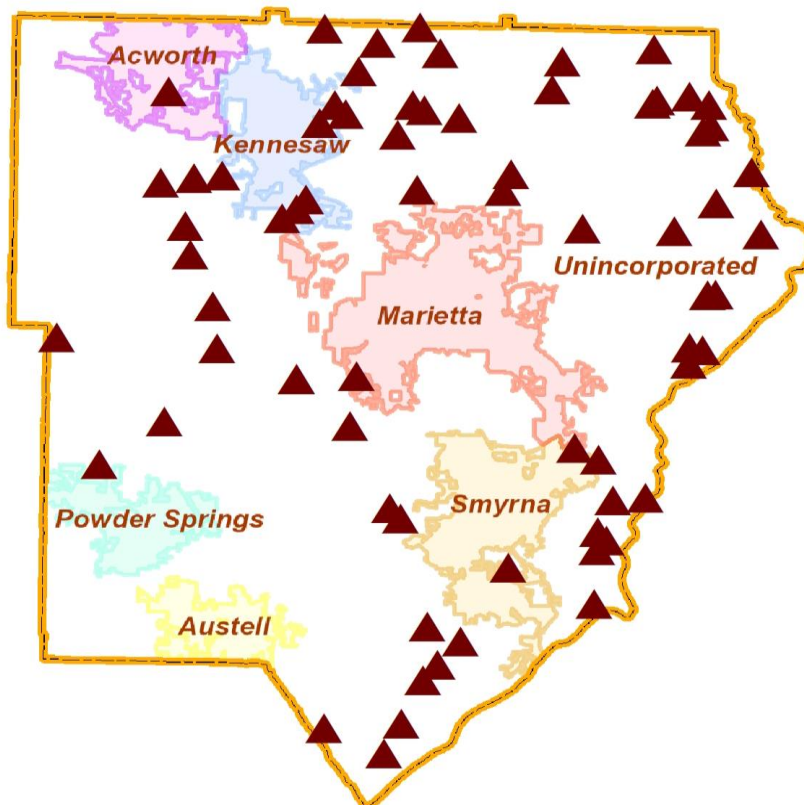
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Hazard Profile

It is generally believed that the majority of earth-fill dams in Cobb County were constructed in the 1940s and 1950s. Therefore, many of these existing dams are approaching service lives of 60-70 years. Many dams were constructed with corrugated metal standpipe and corrugated metal outlet conduits. Corrugated metal pipe typically has a service life of only 25 years. These dams are a serious potential hazard. Mitigation actions are proposed in Chapter 6.

Event	Date	Jurisdiction Affected
Dam Failure	September 21, 2009	Laura Lake Dam, Unincorporated Cobb County

Map 8 - Category I and II Dams, Cobb County, GA



Source: Cobb County Water System GIS Dam Layer. Map prepared by CEMA

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Assets Exposed to Hazard

While the number of regulated, Category I high risk dams posing potential loss of life to Cobb residents is at 31 – with an additional 128 unregulated dams that could impact residents and property within the county, it is important to note that there may be additional dams that are unknown. Also, even though Category II dams are not projected to cause a loss of life, because they are unregulated they warrant more attention. Assumptions made on potential exposure is to all county assets, as shown within Table 19.

Table 19 – Estimated Number Structures and People Impacted Dam Hazard

Type of Structure (Occupancy Class)	Estimated Number of Structures			Estimated Value			Estimated Number of People****		
	# in * Community	# in Hazard Area	% in Hazard Area	\$ in Community**	\$ in Hazard Area***	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	291,457	291,457	100%	54,134,968,108	54,134,968,108	100%	757,788	757,788	100%
Commercial	64,099	64,099	100%	34,811,378,690	34,811,378,690	100%	320,495	320,495	100%
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Agricultural	356	356	100%	68,102,480	68,102,480	100%	712	712	100%
Religious/Non-profit	1289	1289	100%	402,621,843	402,621,843	100%	12,890	12,890	100%
Government	3698	3698	100%	1,151,648,860	1,151,648,860	100%	14,025	14,025	100%
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Utilities	395	395	100%	2,591,101,838	2,591,101,838	100%	2,765	2,765	100%
Total	362,339	362,339	100%	\$94,578,208,402	\$94,578,208,402	100%	1,295,325	1,295,325	100%
* Data in the "# in Community" column provided by the 2015 Cobb County Tax Digest, Cobb County Tax Assessor's Office.									
** Estimated value in community column was calculated by Cobb Tax Digest 2015 information (40% taxable value) and adjusting it to 100%. Does not include value of contents									
*** Estimated value in hazard area column was calculated by taking the \$ in Community Value and multiplying it by the "% in Hazard Area" for each hazard analyzed									
**** Methodology on population figures and entire breakdown of this table is provided in Appendix B-3									

Estimate of Potential Losses

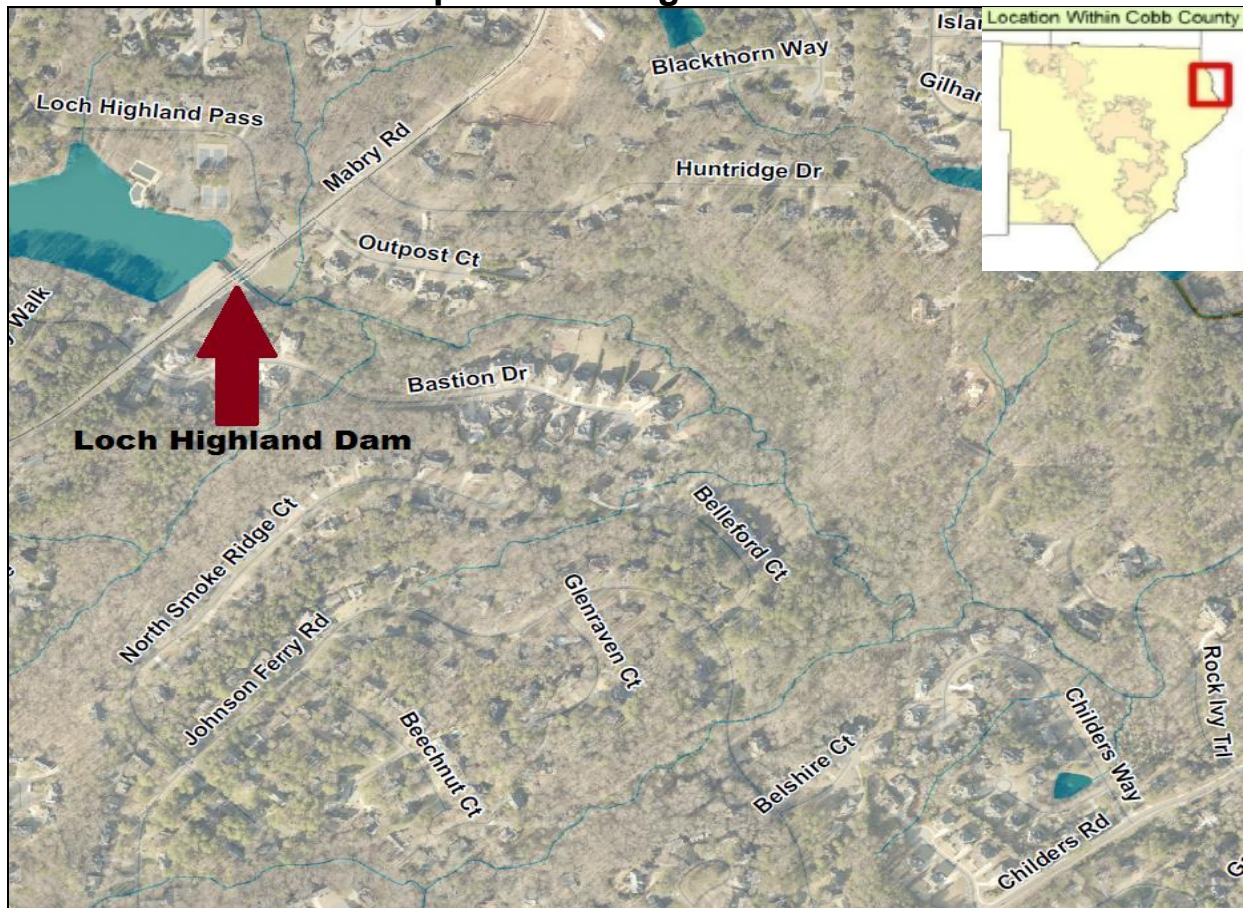
At the time of the 2016 plan update, dam breach information within draft Emergency Actions Plans provided by the Georgia Safe Dams Program were furnished to Cobb County EMA upon request¹⁸. This is extremely beneficial to the Hazard Mitigation Plan to begin documenting potential losses from failures within the county. Reports on Loch Highland Dam (Northeast Cobb County); Kellner Dam (Northwest Cobb County) and Laurel Lake Dam (Southeast Cobb County) provide useful information on the potential effects from a dam breach. While they do not provide dollar losses, they do provide the likely impact areas and number of roads and structures that would be impacted.

Repairs to roadways alone could cost hundreds of thousands of dollars or more to repair, in addition to the costs associated with damages to private properties.

¹⁸ See Appendix C-4 to view Dam Emergency Action Plans

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Map 9 - Loch Highland Dam

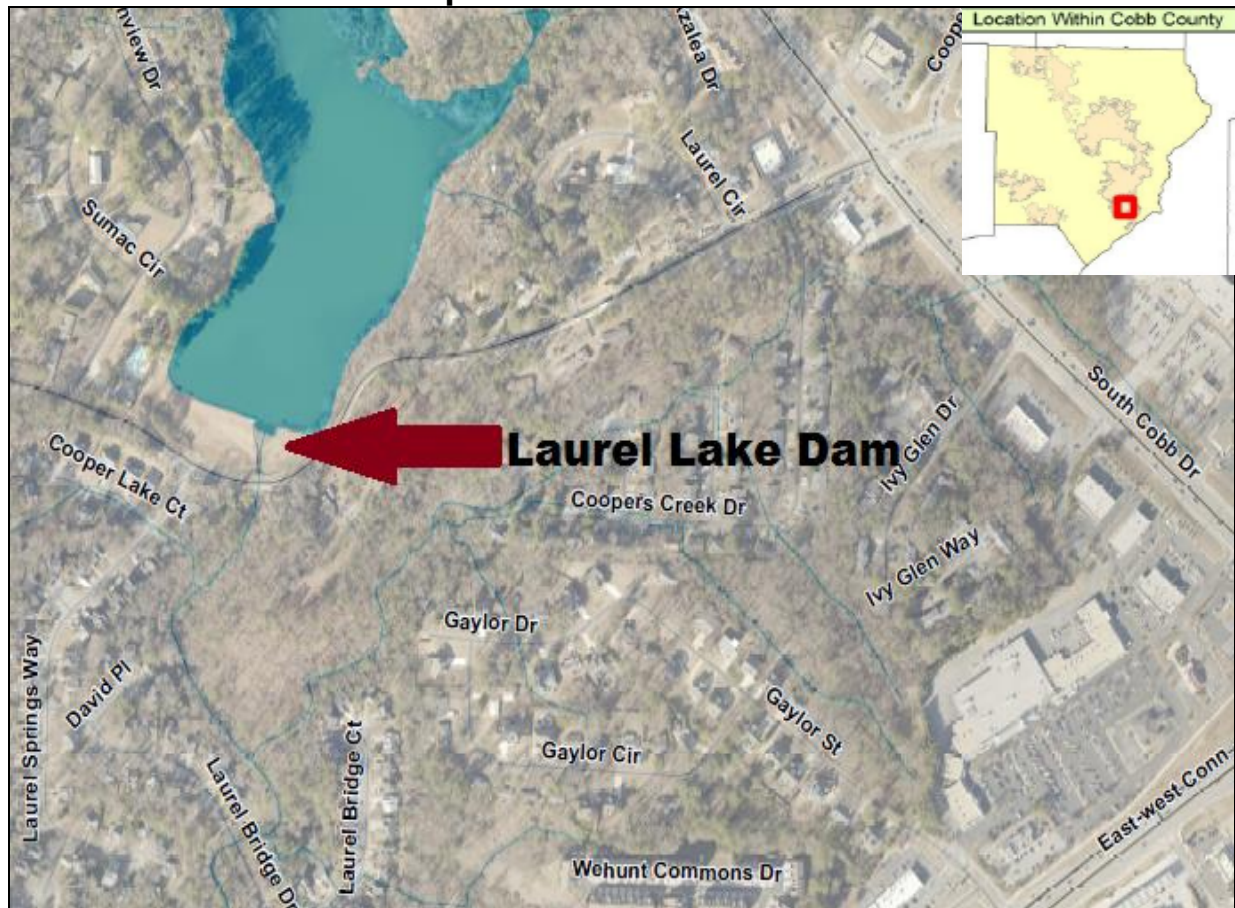


Source: Cobb County GIS Data Layers. Map prepared by CEMA.

Impact: According to the draft *EAP for Loch Highland Dam* (September, 2014) prepared for the Georgia Safe Dams Program by Golder Associates, a total of 45 single family houses lie in the inundation area resulting from dam failure at Loch Highland. These residences extend up to 3 miles downstream of the Loch Highland Dam. The following roadways would also be affected by a dam breach:

- Mabry Road (Any dam failure would likely destroy parts of the roadway)
- Rock Ivy Trail

Map 10 - Laurel Lake Dam



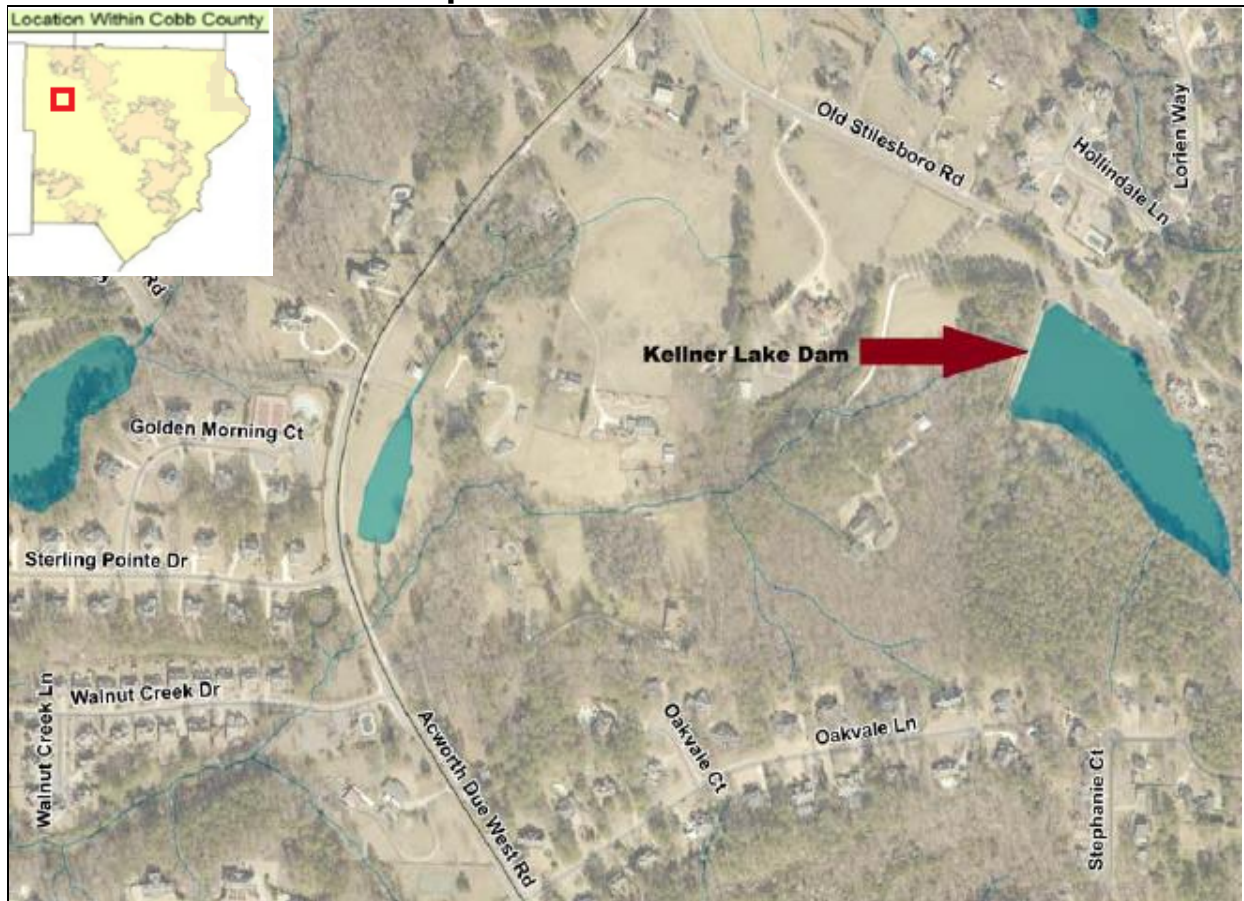
Source: Cobb County GIS Data Layers. Map prepared by CEMA.

Impact: According to a draft *EAP for Laurel Lake Dam* (September, 2014) prepared for the Georgia Safe Dams Program by Golder Associates, a total of 2 single family homes and 7 multi-family homes lie in the inundation area resulting from dam failure at Laurel Lake Dam. The following roadways would also be overtopped by a dam breach:

- Cooper Lake Road
- Laurel Bridge Drive

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Map 11 - Kellner Lake Dam



Source: Cobb County GIS Data Layers. Map prepared by CEMA.

Impact: According to a draft *EAP for Kellner Lake Dam* (September, 2014) prepared for the Georgia Safe Dams Program by Golder Associates, a total of 1 residence lies in the inundation area approximately .88 miles downstream resulting from dam failure at Kellner Lake Dam. The following roadways would also be overtopped by a dam breach:

- Private Drive
- Acworth Due West Road
- Walnut Creek Drive (overtopped at two different locations)
- Sterling Point Drive

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Land Use and Development Trends

According to the Cobb County Water System, Stormwater Management Division, the pressure increases to locate homes on previously undesirable land as land becomes more valuable in Cobb County. There is increasing pressure to build homes downstream of dams and even into the hypothetical dam breach zones.

Although, at this time there is no legally binding ordinance in Cobb County to regulate either existing, potentially hazardous dams, or the dam breach zones below them, the Cobb County Stormwater Management Division generally regulates new development outside of hypothetical dam breach zones during the Plan Review process. The regulation of private dams on private property is a different matter. Regulating the individual actions of private property owners on their own land is not an activity that has been undertaken by Cobb County to date. According to Georgia State Law, the property owner is solely responsible for operating and maintaining a safe structure on their property. This is an area of growing concern.

Multi-Jurisdictional Concerns

There are no significant differences between the effects of a dam breach between the county and the six cities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna) in terms of risks and vulnerabilities associated with dams. As a result, any future mitigation steps taken related to dams should be initiated on a countywide basis and include the six cities.

Hazard Summary

Category I, high hazard dams are those, which pose a potential risk to human life in the event of catastrophic failure. If such a *high hazard* dam is at least 25 feet high, or if it impounds at least 100 acre-feet of water, then it is regulated by the State of Georgia (Cobb County Water System, Flood Mitigation Plan). The State of Georgia design criteria is very conservative, and the review methodology is very meticulous and thorough. Therefore, high hazard dams do not pose the biggest concern for Cobb County.

All new dam construction is regulated by Cobb County and its development standards pertaining to dam design and construction are conservative. Therefore, new dams do not pose the biggest concern for Cobb County.

Of greatest concern to Cobb are the numerous privately owned older high-hazard dams located throughout the county, which are too small to be regulated by the State, and are not being monitored, regulated, or maintained. In some cases, they may not even be inventoried. It is unknown how many of these could cause loss of life and property damage in the event of a catastrophic failure.

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SECTION II - HAZARDOUS MATERIAL SPILLS

Hazard Description

Hazardous materials are chemical substances, which if released or misused can pose a threat to the environment or health. These chemicals are used in industry, agriculture, medicine, research, and consumer goods. Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. These substances are most often released because of transportation accidents or because of chemical accidents in plants.

Hazard Identification

The Hazard Mitigation Executive Planning Committee reviewed historical data from the Environmental Protection Division of the Georgia Department of Natural Resources (DNR), as well as from the Cobb Fire Department during its research involving hazardous material spills in Cobb County. A major source of hazardous spills is along roadways, highways, and railways. Hazardous materials are substances that are harmful to the health and safety of people and property. Facilities are at risk that produce, process, or store hazardous materials, as are facilities that treat or dispose of hazardous waste. The term, *technological hazard* in this instance refers to incidents resulting from human activities such as the manufacture, transportation, storage, and use of hazardous materials. This plan assumes that hazards resulting from technological sources are accidental, and that their consequences are unintended.

Hazard Profile

Hazardous material spills occur frequently within the county. This is directly attributable to the presence of three interstate highways (I-75, I-285, I-20) the major railroads (Norfolk Southern and CSX), and many multi-lane state highways that run through the county. Cobb Fire and Emergency Services Annual Report data indicates that 1,373 hazardous materials calls were handled in 2012; 1,675 in 2013 and 1,637 in 2014.

The following table lists notable hazardous material incidents occurring in recent years:

Significant Event	Date	Jurisdictions Affected
Chemical Plant Fire	May 23, 2014	City of Marietta & Cobb County
Chemical Release	Dec. 14, 2015	City of Marietta & Cobb County
Chemical Release	Aug. 13, 2016	Cobb County / Smyrna Area

A chemical plant fire at Amrep, Inc. in 2014 was an extremely intense fire within the City of Marietta, with damage estimated at around \$20 million. Black smoke could be seen from throughout metro Atlanta and fish kill was reported within a nearby creek. Events

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like these show the vulnerability of surrounding people and property, particularly in densely populated areas.

On December 14, 2015, firefighters worked nine hours containing an ammonia leak at Talenti Gelato within the City of Marietta. The company uses ammonia as a refrigerant to flash-freeze ice cream at a super low temperature. Two nearby buildings were evacuated as a precaution. One of them was the Amrep building, which burned in 2014.

On August 13, 2016, approximately 2,300 gallons of automotive cleaning solvent was accidentally released by a chemical packager into a creek in southeast Cobb County off of Cobb Industrial Blvd., resulting in fish kill and contamination. It was milky white in appearance and required cleanup of the chemical and contaminated soil. Hazardous materials teams were able to contain the spill at a distance of .75 miles.

Assets Exposed to Hazard

In 2014, there were 215 facilities in Cobb County that reported chemical inventories at fixed facilities pursuant to the Emergency Planning and Community Right-to-Know Act (University of Texas, Dallas E-Plan© Emergency Response Information System). These are facilities required by Federal law to list chemicals on site at certain quantities, including Extremely Hazardous Substances (EHSs). This is for fixed facilities only- not transport vehicles. Over time, the number of facilities reporting chemical inventories annually has gradually declined, largely due to facilities handling smaller quantities at a time that are under the reporting thresholds, or they have switched to using safer alternatives, such as from deadly gaseous Chlorine to Sodium Hypochlorite.

The most vulnerable asset exposed to hazardous material spills is often the environment, according to the EPA of the Georgia DNR, with waterways being the most impacted. Research indicates that the waterway most often impacted by hazardous material spills is the Chattahoochee River. Recorded data indicates that transportation related spills contribute to most of the waterway contaminations. Historical data indicates most fixed location spills have been minor and consist of diesel, mineral oil, or gasoline spills. The Cobb County Hazard Mitigation Executive Planning Committee determined that the danger to critical facilities, because of a hazardous material spill, is minimal.

Table 20 indicates exposure at approximately a third (1/3) of county assets. It should be noted however that shutdowns, lost time, and expended man-hours are all factors mitigation planners must take into account when spills do occur either inside or outside facilities, or along roadways.

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Table 20 – Estimated Number Structures and People Impacted Hazardous Materials Hazard

Type of Structure (Occupancy Class)	Estimated Number of Structures			Estimated Value			Estimated Number of People****		
	# in * Community	# in Hazard Area	% in Hazard Area	\$ in Community**	\$ in Hazard Area***	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	291,457	96,181	33%	54,134,968,108	17,864,539,476	33%	757,788	250,070	33%
Commercial	64,099	21,153	33%	34,811,378,690	11,487,754,968	33%	320,495	105,763	33%
Industrial	853	281	33%	1,031,834,630	340,505,428	33%	42,650	14,075	33%
Agricultural	356	117	33%	68,102,480	22,473,818	33%	712	235	33%
Religious/Non-profit	1289	425	33%	402,621,843	132,865,208	33%	12,890	4,254	33%
Government	3698	1,220	33%	1,151,648,860	380,044,124	33%	14,025	4,628	33%
Education	192	63	33%	386,551,953	127,562,144	33%	144,000	47,520	33%
Utilities	395	130	33%	2,591,101,838	855,063,607	33%	2,765	912	33%
Total	362,339	119,572	33%	\$94,578,208,402	\$31,210,808,773	33%	1,295,325	427,457	33%
* Data in the "# in Community" column provided by the 2015 Cobb County Tax Digest, Cobb County Tax Assessor's Office.									
** Estimated value in community column was calculated by Cobb Tax Digest 2015 information (40% taxable value) and adjusting it to 100%. Does not include value of contents									
*** Estimated value in hazard area column was calculated by taking the \$ in Community Value and multiplying it by the "% in Hazard Area" for each hazard analyzed									
**** Methodology on population figures and entire breakdown of this table is provided in Appendix B-3									

Estimate of Potential Losses

It is difficult to determine the damage to the environment associated with hazardous material spills. Cobb County has no recorded instances of critical facilities or other property being damaged because of hazardous material spills, however, multiple incidents have occurred in which no damage was sustained. For illustration purposes, the previous table calculates an aggregate damage at 33%.

Land Use and Development Trends

Cobb County currently has no land use or development trends related to hazardous material spills.

Multi-Jurisdictional Concerns

All of Cobb County, to include the six local municipalities, is vulnerable to both fixed location and transportation related hazardous material spills. I-75, I-285, and I-20 as well as the major rail routes are most vulnerable to transportation related spills. Fixed location spills are possible in all areas of the county.

Hazard Summary

Hazardous material spills are a relatively common occurrence in Cobb County. The volume of spills experienced in the past dictates that mitigation measures are presented in the HMP. Unknown types and quantities of hazardous materials travel through the county on a daily basis, posing a significant challenge in the development of adequate

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mitigation measures. Specific mitigation actions are identified in the Hazard Mitigation Matrix (Table 27).

SECTION III - TERRORISM

Hazard Description

According to the FEMA, terrorism is defined as the use of force or violence against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion, or ransom. **CBRNe** is the acronym used for:

- Chemical Threats
- Biological Threat
- Radiological Threats
- Nuclear Threats
- enhanced explosive threats

It is used to refer to incidents or weapons in which any of these hazards have presented themselves. The term *CBRNe* is also commonly used to refer to weapons of mass destruction.

Research conducted about terrorism has found that terrorist activities have different causes or motivations. Because of the high amount of publicity for these types of events, it is believed many terrorists seek to draw attention toward their cause. This places high profile areas within the county at particular risk, as well as any area/facility which may create controversy.

"If You See Something, Say Something™"

"If You See Something, Say Something™" is a national campaign that raises public awareness of the indicators of terrorism and terrorism-related crime, as well as the importance of reporting suspicious activity to state and local law enforcement. Cobb County participates in this campaign.

Informed, alert communities play a critical role in keeping the community safe. The motto is that it takes a community to protect a community. Everyone can help keep Cobb County safe by paying attention their surroundings and reporting suspicious activity to local law enforcement.

Suspicious Activity

"Suspicious activity is any observed behavior that could indicate terrorism or terrorism-related crime. This includes, but is not limited to:

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Unusual items or situations: A vehicle is parked in an odd location, a package/luggage is unattended, a window/door is open that is usually closed, or other out-of-the-ordinary situations occur.

Eliciting information: A person questions individuals at a level beyond curiosity about a building's purpose, operations, security procedures and/or personnel, shift changes, etc.

Observation/surveillance: Someone pays unusual attention to facilities or buildings beyond a casual or professional interest. This includes extended loitering without explanation (particularly in concealed locations); unusual, repeated, and/or prolonged observation of a building (e.g., with binoculars or video camera); taking notes or measurements; counting paces; sketching floor plans, etc.

Some of these activities could be innocent — it's up to law enforcement to determine whether the behavior warrants investigation. The activities above are not all-inclusive, but have been compiled based on studies of pre-operational aspects of both successful and thwarted terrorist events over several years.

The "If You See Something, Say Something™" campaign respects citizens' privacy, civil rights, and civil liberties by emphasizing behavior, rather than appearance, in identifying suspicious activity.

Factors such as race, ethnicity, and/or religious affiliation are not suspicious. The public should only report suspicious behavior and situations (e.g., an unattended backpack or package, or someone breaking into a restricted area)" (U.S. Dept. of Homeland Security).

According to the U.S. Dept. of Homeland Security, citizens should describe specifically what is observed, including:

- Who or what was seen;
- When it was seen;
- Where it occurred; and
- Why it's suspicious.

Hazard Identification

Terrorist incidents in this country prior to the September 11, 2001 attacks have included bombings of the World Trade Center (1993) in New York City, the United States Capitol Building in Washington, D.C., and Mobil Oil corporate headquarters in New York City. There was also the 1995 bombing of the Murrah Federal Building in Oklahoma City.

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The most frequently used terrorist methods in the U.S. Types of terrorist attacks include, but are not limited to:

Bombs, Guns, and Explosives – These are the “traditional” weapons used by terrorists worldwide. Typically, these weapons are less technically and resource demanding.

Biological Weapons – These weapons use infectious microbes or toxins to produce illness or death in people, animals, or plants. Potential biological weapons include: anthrax, botulism, smallpox, viral hemorrhagic fevers, water safety threats (e.g. cholera), and food safety threats (e.g. salmonella). Biological weapons are relatively difficult to cultivate and disseminate.

Chemical Weapons – Chemical weapons cause severe health reactions designed to incapacitate or cause death. There is a wide array of potential chemical agents that could be used as weapons. These agents vary in how their effects on the body, required dose, exposure mechanism, length of exposure, toxicity, origination, and form (e.g. liquid, gas). Examples of chemical agents include sarin, mustard agent, VX, and cyanide.

Radiological and Nuclear Weapons – Although there has been much speculation by media and various governmental agencies regarding the potential for a terrorist to obtain fissionable material or a nuclear bomb, there are no known unclassified cases of any such organization or group actually obtaining weapons grade material. Constructing a nuclear bomb would be relatively difficult and require special resources, training, and materials.

Cyberterrorism – Cyberterrorism attacks computers and networks, and the information contained within them. A cyber attack could potentially disrupt communications, banking systems, power systems, and emergency networks.

Hazard Profile

Because of the sensitive nature and vulnerability of this hazard, much of the data relating to terrorist activities is confidential.

Assets Exposed to Hazard

Since terrorist activities cannot be predicted, any area of Cobb County is potentially at risk. Therefore, 100% of the assets of Cobb County are susceptible to the hazard. High risk areas include main thoroughfares and interstates, railroads, airports and chemical companies throughout the county.

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Estimate of Potential Losses

There is no data from previous events to estimate possible losses in Cobb County.

Land Use & Development Trends

Cobb County currently has no land use or development trends related to antiterrorism.

Multi-Jurisdictional Concerns

There are no significant differences between the county and the six cities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna) in terms of risks and vulnerabilities associated with terrorism. Terrorism has the potential to negatively affect all of Cobb County. As a result, any future mitigation steps taken related to terrorist activities should be initiated on a countywide basis and include the six cities. Cobb County participates in the Metro Atlanta Urban Area Security Initiative (UASI), which is focused on terrorism preparedness and training for all counties that are part of the Metro Atlanta UASI.

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CHAPTER 4 – COMMUNITY CAPABILITIES AND GROWTH TRENDS

Jurisdictional Resources & Capabilities

Requirement §201.6(c)(3)

SECTION I – COMMUNITY CAPABILITIES

As part of the 2016 Hazard Mitigation Plan update, jurisdictions represented on the Hazard Mitigation Planning Committee were sent a Community Capability Assessment Survey for the 2016 plan update. The purpose of this survey was to capture information relating to existing plans and community capabilities to demonstrate the ability to mitigate natural hazards in the community. The survey instrument included various questions regarding Planning and Regulatory capabilities; Administrative and Technical; Fiscal; Education/Outreach and Community Classifications.

It should be noted that all jurisdictions have adequate fire and police services, in addition to private ambulance providers that serve Cobb such as MetroAtlanta Ambulance Service and Puckett EMS. Capturing other services provided by governments is also important in the analysis to demonstrate the many entities that contribute to mitigation, by either lessening or eliminating the impact of disasters *before* they actually occur. Table 21 provides a summary of key services provided by Cobb County and municipal jurisdictions.

The general conclusion that can be made is that all communities within Cobb County are implementing measures to handle growth through their local jurisdictional processes. As the Cobb County population continues to grow as shown within Chapter 1, it is going to be increasingly important that future growth does not cumulatively enhance the County's susceptibility to hazards. Stormwater runoff is particularly important to monitor due to the increased amount impervious surface area. Cobb County and all jurisdictions have allocated resources to implement stormwater management programs, flood codes and local development standards to ensure that development is occurring in a manner that keeps the community safe.

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Table 21 - Core Community Capabilities Matrix

	Acworth	Austell	Cobb County	Kennesaw	Marietta	Powder Springs	Smyrna
Building Department / Official	X	X	X	X	X	X	X
Code Enforcement	X	X	X	X	X	X	X
Comprehensive Plan or Equivalent	X	X	X	X	X	X	X
Emergency Management Agency ¹⁹			X				X
Fire Department		X	X ²⁰		X		X
Flood Codes	X	X	X	X	X	X	X
National Flood Insurance Program (NFIP) Participant	X	X	X	X	X	X	X
Planning and/or Zoning Board / Commission	X	X	X	X	X	X	X
Planning / Zoning Department	X	X	X	X	X	X	X
Police Department	X	X	X	X	X	X	X
Stormwater Program - Standalone or Within a Department	X	X	X	X	X	X	X

Source: Community Capability Assessment Surveys; County and Municipal Web Sites

¹⁹ As recognized by the State of Georgia

²⁰ Cobb County Fire and Emergency Services provides fire protection services for Cobb County Unincorporated and the City of Acworth, City of Kennesaw and City of Powder Springs.

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SECTION 2 – GROWTH TRENDS – POPULATION AND DEVELOPMENT

Plan Revised to Reflect Changes in Development

Requirement §201.6(d)(3)

Chapter 1 contains information from the U.S. Census Bureau showing that Cobb County's population continues to increase. This section briefly discusses the geographic areas people are actually moving to. This is important to understand from a hazard mitigation standpoint to see trends and incorporate them into mitigation planning.

According to the Cobb County Community Development Agency:

"Traditionally, East Cobb had been the experiencing residential growth rates that far exceed county averages. Casual observation of development activity seems to indicate that this trend is reversing. North and West Cobb are experiencing more development activity that is currently occurring in East Cobb. This is due to land constraints in East Cobb which will become the focus of smaller infill development projects in the coming decades. West and North Cobb are receiving mostly single-family detached residential units in traditional cul-de-sac subdivisions. The non-residential activities in these areas are constrained by well defined commercial "nodes" along the transecting arterial roadways²¹.

A brief analysis by CEMA of 2010 Census Tract data generally shows the trend of Northern and Western portions of Cobb County west of the Interstate 75 having the greatest number of housing units per census tract, as well as the greatest population densities (See Maps 12 and 13). While the census tracts in eastern portion of the county do visually appear smaller and might insinuate a fewer number of residents and housing units, overall the maps tell a story and coincide with the findings of county planners. Southwest Cobb, the Vinings area in South Cobb along the Chattahoochee River and areas to the north along the Cobb Parkway (US 41) corridor in Northwest Cobb are densely populated areas and warrant attention for future hazard mitigation plan updates.

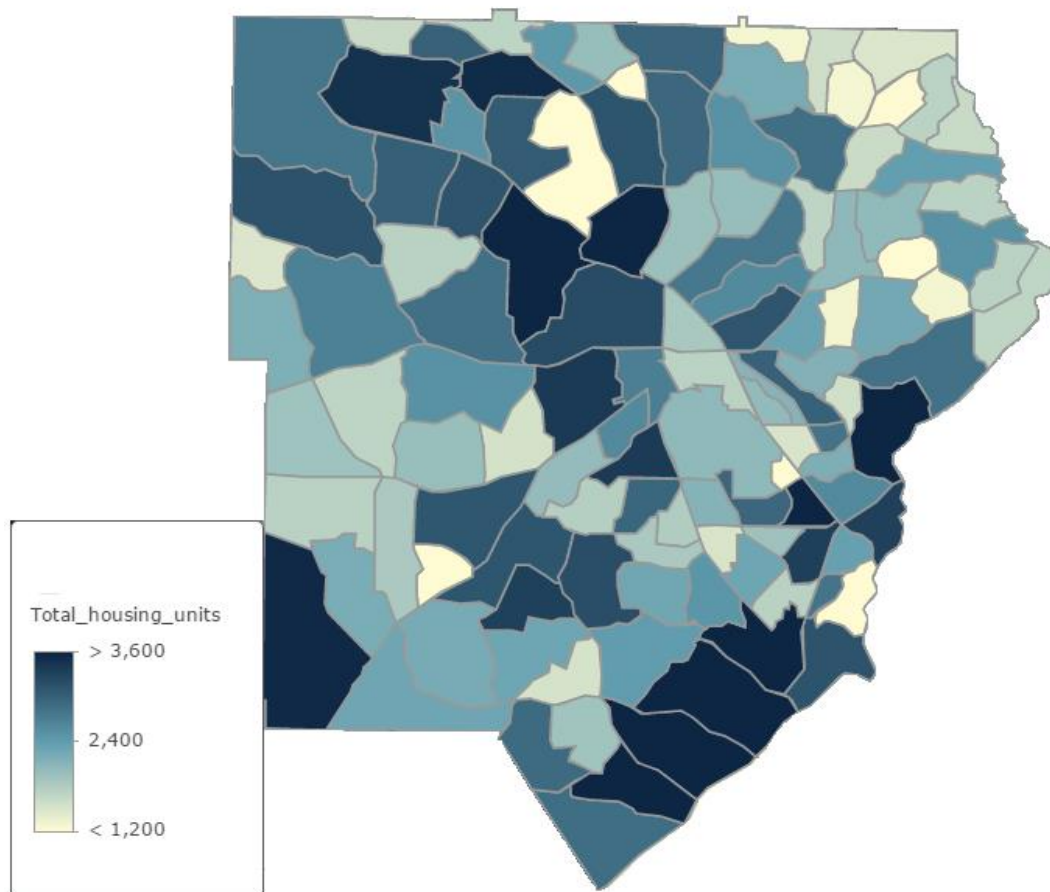
It is also noteworthy that the Cobb County Planning Division completed a *Northwest Land Vulnerability Analysis* in 2014. This goal of the analysis is to examine, identify and modify incompatible land uses, commuter traffic, new and improved transportation facilities, commercial and residential developments and environmental factors related to stormwater runoff and Lake Allatoona.²² The study area is in extreme Northwest Cobb, where it interfaces with growth in Paulding and Bartow Counties. Studies like this one contribute to hazard mitigation and will be incorporated into this document, as appropriate.

²¹ *Mapping Our Future 2030 Comprehensive Plan, Community Assessment and Public Participation Program*, p. 17

²² *Northwest Land Vulnerability Analysis*, Cobb County Planning Division, Summer, 2014.

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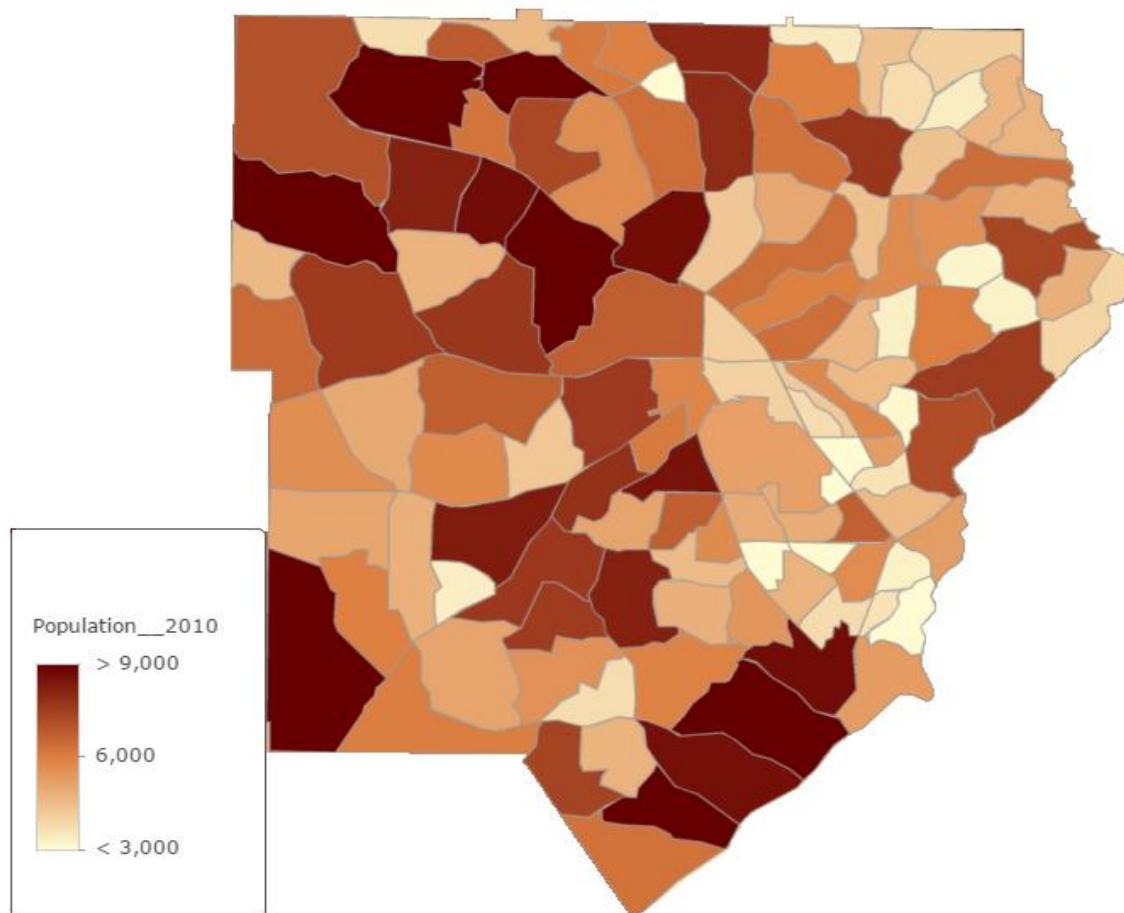
Map 12 - Number of Housing Units Per Census Tract – 2010 Census



Source: Atlanta Regional Commission, "Housing Characteristics" Open Data GIS Layer, Accessed Online 10/16/2015. Map generated by CEMA.

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Map 13 - Population Per Census Tract – 2010 Census



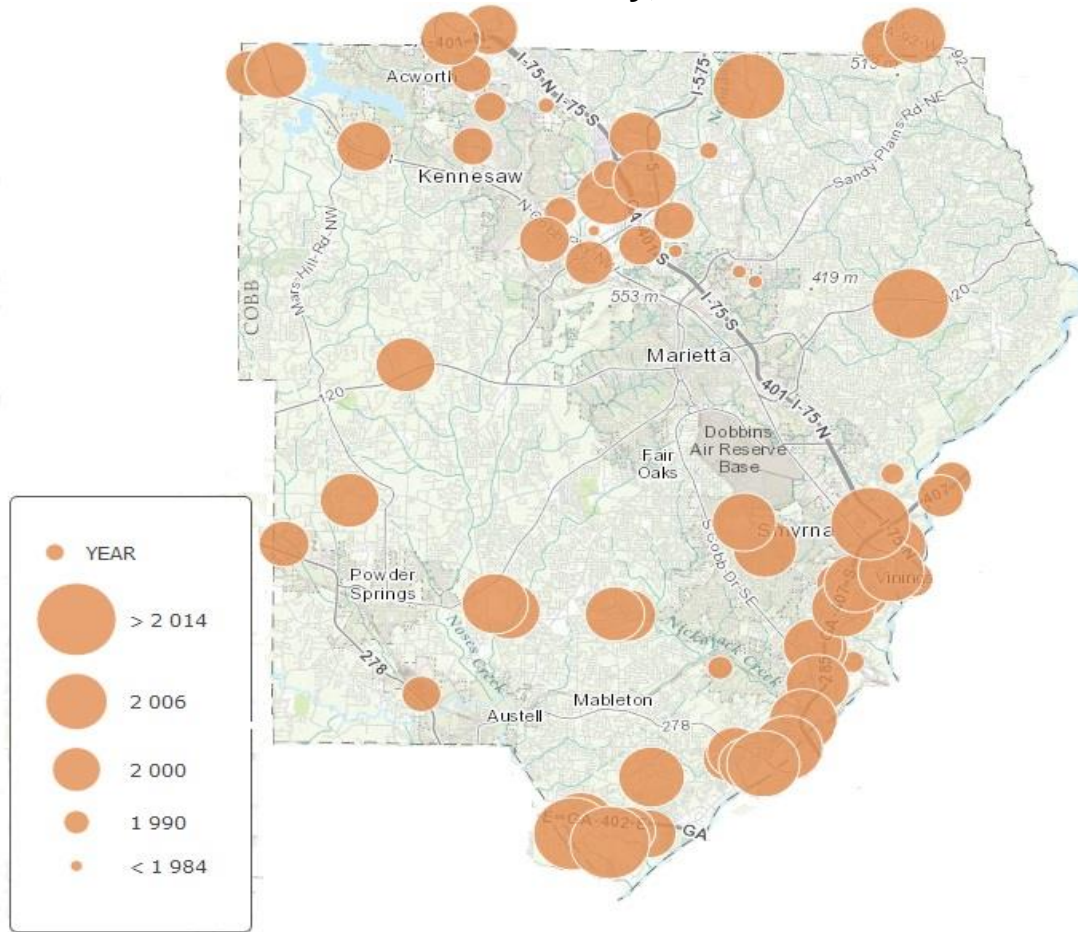
Source: Atlanta Regional Commission, “Population Change” Open Data GIS Layer, Accessed Online 11/06/2015. Map generated by CEMA.

Developments of Regional Impact

Another aspect of development worth incorporating into this plan are Developments of Regional Impact, or DRIs. DRIs are developments that are likely to have an impact outside of the host local government’s jurisdiction. According to the Atlanta Regional Commission, the Developments of Regional Impact (DRI) review process is intended to improve communication among governments on large scale and certain types of developments, and to provide a means of identifying and assessing potential impacts before conflicts relating to them arise. The DRI thresholds are established by the Georgia Dept. of Community Affairs- and the Atlanta Regional Commission has developed an alternative set of thresholds to guide DRI determination in the 10-county Atlanta region (See “Developments of Regional Impact: Alternative Requirements—Atlanta Regional Commission” on the ARC’s website for more information on the alternative procedures and thresholds).

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**Map 14 - Developments of Regional Impact By Years,
Cobb County, GA**



Source: Atlanta Regional Commission, "Developments of Regional Impact" Open Data GIS Layer, Accessed Online 10/16/2015. Map generated by CEMA.

The purpose of integrating the Development of Regional Impacts into the Hazard Mitigation Plan is to show that many of the DRI projects in Cobb County, according to data provided by the Atlanta Regional Commission, have occurred after the year 2000—largely west of the Interstate I-75 corridor as shown by Map 14. This generally correlates with the U.S. Census Bureau data indicating the greatest population growth in census tracts west of the I-75 corridor, as well as the greatest number of housing units. More people means greater potential impacts from hazards due to increased population density in general and increased water runoff. Wind events in densely populated areas could result in extensive property damage and harm to the population. This not only impacts government services, but the public also has a role to be educated about hazards to increase their level of personal preparedness.

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SECTION 3 – Development in Hazard Areas

Jurisdictions participating in the 2016 Hazard Mitigation Plan update were asked to complete a development questionnaire to list development activity the past five (5) years in known hazard areas within their boundaries. Analysis of flood codes and direct responses from jurisdictions revealed that local regulations generally prohibit development in flood zones without appropriate measures being implemented to minimize risk. For informational purposes, the City of Marietta and City of Powder Springs provided information on a few developments within their communities that are adjacent to, but not directly in, known flood zones. That information is documented in Appendix A-7 for reference along with the questionnaire template.

SECTION 4 – Incorporation into Existing Planning Mechanisms

Incorporation into Existing Planning Mechanisms

Requirement §201.6(c)(4)(ii)

The strategy for the HMP includes working with as many stakeholders, projects and programs as possible. Cobb County Police, Fire, Water System, Community Development, CEMA, Cobb and Douglas Public Health, municipal agencies and many others have programs, activities and plans that are complimentary to the goals of hazard mitigation. Some of these programs include safety education programs, Citizen Corps Council, the Medical Reserve Corps and Citizen Emergency Response Team (CERT). These programs provide vital training to improve personal preparedness and build life safety skills for citizens to put into action should a disaster or emergency event occur. The Cobb County Water System also conducts community programs that address flood related issues such as the Keep Cobb Beautiful program.

Key plans that are incorporated into this document and are included in Appendix C for reference include the following:

- Cobb County Dept. of Transportation Inclement Weather Manual
- Cobb County Emergency Management: Local Emergency Operations Plan
- Cobb County Emergency Management: Emergency Shelter Plan
- Cobb County Storm Water Management Division: Flood Hazards Plan
- County / City Comprehensive Plans
- County and Municipal Future Land Use Maps
- Emergency Action Plans - Dams
- Kennesaw State University Natural Hazard Mitigation Plan
- Northwest Cobb Land Vulnerability Study
- State of Georgia Hazard Mitigation Plan 2014

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The 2016 Hazard Mitigation Plan update includes a brief snapshot of comprehensive planning documents (city and county) and highlights elements of them relating to hazards- largely related to floodplain. Identifying existing planning mechanisms within the Cobb County is a first step in linking planning documents within the community. Jurisdictions are encouraged to reference this plan and integrate it into other planning mechanisms, as appropriate.

Cobb County²³:

“Although efforts are being made to control erosion and sedimentation, stormwater runoff continues to be a problem throughout the community (p. 7).

“Staff and elected officials have recently been effective in setting aside and permanently protecting environmentally sensitive areas such as stream banks, floodplains, steep slopes, and mature woodlands” (p. 7).

“Additional best management practices should be encouraged as part of the development process in Cobb County” (p. 7).

“Traditionally, East Cobb had been the experiencing residential growth rates that far exceed county averages. Casual observation of development activity seems to indicate that this trend is reversing. North and West Cobb are experiencing more development activity that is currently occurring in East Cobb. This is due to land constraints in East Cobb which will become the focus of smaller infill development projects in the coming decades. West and North Cobb are receiving mostly single-family detached residential units in traditional cul-de-sac subdivisions. The non-residential activities in these areas are constrained by well defined commercial “nodes” along the transecting arterial roadways” (p. 17).

“Floodplains and wetland are important resources because of the impact they can have on society at large. Floodplains are areas that can cause property damage and financial loss for individuals that own structures within their areas of influence. Floodplains, when left undisturbed, provide areas to accommodate the natural fluctuation of our hydrologic system while creating areas for plant and animal habitat. Wetlands are important because of their role in improving water quality. Wetlands are as effective and more efficient at taking silt and other pollutants from ground water when compared to the manmade structures currently being employed. Therefore, the protection of these resources will result in improved water quality in the watershed. These areas also provide plant and animal habitat for numerous species that have specific habitat requirements. Development that occurs in these areas has a negative impact on the manner in which the area functions as a natural habitat. Development in and around floodplains causes the alteration (usually in the form of expansion) of the floodplain areas, thus impacting a larger number of residents and homeowners. Wetlands, however, can be altered during the development process by altering water flow and adding fill. The alteration sometimes results in a loss of this resource resulting in mitigation measures as found appropriate by the United States Army Corp of Engineers” (pp. 23-24).

“In relation to hazardous materials, any new facilities that handle certain types and amounts of hazardous materials and are located within seven miles of a water supply intake must perform their operations on impermeable surfaces that have spill and leak collection systems. Water

²³ Mapping Our Future 2030 Comprehensive Plan- Community Assessment and Public Participation Program and Cobb County 2030 Comprehensive Plan, Implementation Program

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supply watersheds, public drinking water intakes, and seven miles radii of these intakes can be seen on Map 1. Other protective measures are mandated through the Metropolitan River Protection Act which establishes a 2,000 foot river protection corridor along the Chattahoochee River. This will be discussed further in this analysis” (p. 77).

“Floodplains

Flooding is the overflowing of water onto land that is normally dry. Water standing for short periods of time in areas of low elevation after a rainfall is not considered as flooding, nor is water that is part of a permanent or semi-permanent pool, such as a swamp or marsh. The severity of flooding is rated in terms of frequency, duration, and area of coverage.

Flood plains are the relatively flat areas of land adjacent to stream banks. Flood plains in their natural, undisturbed, and undeveloped state provide storage of flood waters, channelization, silt retention, and groundwater discharge. Map 5 shows the approximate locations of flood plain areas in the county. With its numerous streams, Cobb County has land in the 100-year flood plain throughout the county. The Sweetwater Creek basin in the Austell area and the land along the Chattahoochee River in South Cobb are particularly vulnerable.

Any fill material placed in a flood plain takes the place of the water that would be stored there in a flood. This causes the water level to rise and previously dry land is flooded. Cobb County participates in the National Flood Insurance Program, a federally-backed insurance program for the protection of property owners within flood hazard areas. The Federal Emergency Management Agency (FEMA) identifies and maps most areas in the county that are subject to flooding based upon the 100-year flood plain standard.

In order to prevent unnecessary flooding due to mismanagement of flood prone areas, residential developments located within the residential categories as recommended on the Future Land Use Map, shall exclude any acreage within flood plains and/or wetlands when calculating the overall density of the development. Development in the flood plain and in areas adjacent to flood plains is closely regulated by county ordinance.

Since the early 1970s, Cobb County has been actively involved in managing stormwater run-off from new developments. Cobb adopted its first Flood Protection Ordinance in 1973, setting an example for the six cities within the county, some of which followed by adopting similar ordinances.

The revised Cobb County Flood Damage Prevention Ordinance, adopted October 11, 1988, states that development may be permitted in the Flood Fringe Area, which is the area of the flood plain lying outside the floodway but still lying within the base flood plain, and which complies with the requirements of the Ordinance. Development is not permitted in the Floodway. The floodway is that area defining the channel of a river or other watercourse, and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot. Uses permitted in the floodway in compliance with the Ordinance include the following:

- *Agriculture, including forestry and livestock raising, requiring no shelter within the floodway except for temporary shelter, etc.;*
- *Dams, constructed to the specifications of the U.S.D.A. Soil Conservation Service, Army Corps of Engineers, State Safe Dam Act, and the Cobb County Community Development Department;*

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- *Public parks and recreation areas and facilities;*
- *Fences having sufficient open area to permit the free flow of water and debris;*
- *Roads and parking areas constructed so as to permit the free flow of flood waters; Utility poles, towers, pipelines, sewers, signs, etc. constructed so as to permit the free flow of flood waters; and*
- *Other uses which may be permitted by the Cobb County Community Development Department in accordance with the provisions of the ordinance.*

The ordinance, administered by the Department of Community Development requires a permit for any improvement or development, including grading and filling within an area of Special Flood Hazard. Also included are regulations that outline construction precautions for development in Flood Hazard Areas” (pp. 86-88).

The Implementation Program of the Cobb County 2030 Comprehensive Plan also identifies the refinement of 100-year floodplain locations throughout the county as an activity, as well as researching the need to further reduce impervious surface of new development in areas containing sensitive features such as streams, wetlands, etc. (p. 159).

City of Acworth:

The City of Acworth notes within its Comprehensive Plan²⁴ that is using stormwater best management practices for all new development. The plan also states that the city has land measures that protect natural resources within the community such as floodplains, etc. (p. 4-21).

“5.2.3 Flood Plains

Flooding is the temporary covering of soil with water from overflowing streams and by runoff from adjacent slopes. Water standing for short periods after rainfalls is not considered flooding, nor is water in swamps. Floodplains in their natural or relatively undisturbed state are important water resources areas. They serve three major purposes: 1) for natural water storage and conveyance, 2) for water quality maintenance, and 3) for groundwater recharge. Unsuitable development can destroy their value. For example, any fill material placed in the floodplain eliminates essential water storage capacity causing water elevation to rise and resulting in the flooding of previously dry land. The Federal Emergency Management Agency (FEMA) has identified and mapped the areas of Acworth prone to flooding in order to establish actuarial flood insurance rates and promote a sound flood plains management plan. A management plan has been established for areas having high development potential and/or prone to a one percent annual chance (100-year) flood, primarily the flooding caused by overflow of the following lakes, rivers and streams:

- *Lake Acworth*
- *Lake Allatoona*
- *Proctor Creek*
- *Butler Creek*
- *Tanyard Creek*

²⁴ City of Acworth Comprehensive Plan 2006-2026, August 2006.

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Approximate analysis has been used for areas having low development potential or minimal flood hazards. However, development in these areas should be carefully monitored to protect the functional integrity of floodplains as well as the health, safety, and property in the City” (pp. 36-37).

“6.1.1 Stormwater Management

Acworth is working with the ARC to help educate the public about stormwater management and the long-term effects of non-point source pollutants. The City has entered into an agreement with the ARC for a five-year regional education and information program. In addition, the Public Works Department currently screens ten sites throughout the City to measure the effects of stormwater runoff. In the short-term, Acworth intends to continue regularly screening runoff, inspecting storm drains, and working on the development of a GIS-based stormwater infrastructure management system” (p. 46).

All “Character Areas” identified within the City of Acworth, Community Agenda²⁵ 2012 include the following statement:

“Follow best management practices for stormwater management as defined in the Georgia Erosion and Sedimentation Act.”

“Section 4.1.4.3 Stormwater

Encourage innovative practices in storm water management and maintenance.

- *Continue watershed storm water management program to strengthen policies for stormwater, erosion, and sedimentation control with Acworth, Kennesaw, and Cobb County, ARC, LAPA, and other Regional Water Authorities.*
- *Encourage land owners and developers to use Low Impact Development (LID) tools for all new development in the City. These tools include, but are not limited to, open drainage swales, grass channels, pervious pavement surfaces, ground depressions, and rooftop retention areas.*
- *Plan for maintenance of future stormwater infrastructure.*
- *Increase funding for stormwater infrastructure” (p. 4-70)*

City of Austell:

The City of Austell, Community Assessment and Technical Addendum, July 2006²⁶, mentions the following as it relates to hazard mitigation:

“Character Area Descriptions Within the City of Austell and Recommended Development Strategies

Conservation Areas/Greenspace – Areas of protected open space including wetlands, floodplains, stream corridors, conservation areas, recreation/parks and other environmentally sensitive areas. Recommended Development Strategies – Limit any new development. Promote

²⁵ City of Acworth Community Agenda, July 24, 2012.

²⁶ City of Austell, Community Assessment and Technical Addendum. July 2006.

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these areas as passive-use tourist and recreation destinations. Conservation/greenspace areas should be connected as possible. Limit impervious surfaces” (Community Assessment, p. 10).

“Flood Plains

The City of Austell has designated flood plains along creek and stream beds as delineated in referenced mapping. Five specific creeks have been identified by Federal Emergency Management Agency (FEMA) as flooding periodically: Noses Creek, Sweetwater Creek, Olley Creek, Powder Creek and Buttermilk Creek. The City participates in FEMA’s National Flood Insurance Program for the protection of properties within flood hazard areas. In addition, the City and Cobb County closely regulate development in or near the flood plain with local ordinances, including a Flood Hazard Prevention Ordinance (Technical Addendum, p. 17).

“Stormwater Management

The City of Austell Public Works Department’s Stormwater Management Division operates the City’s Stormwater Management System including the following services: pre-construction meetings with new developers; maintain drainage infrastructure; installation of new drainage structures to alleviate draining and flooding problems; inspection of new stormwater facilities to ensure compliance with development standards, the City of Austell Stormwater Management Ordinance, and the Georgia Stormwater Management Manual; Adopt-A Stream program; develop, initiate, and oversee public education programs; establish corporate partnerships for Division programs; maintain databases of existing businesses that may have problems complying with the City of Austell Stormwater Management Ordinance; conduct stream reconnaissance evaluations to identify general areas of potential pollutant problems; conduct random evaluations of businesses with highly visible or potential pollutants and document findings for enforcement action, if required; documentation on illicit discharges observed flowing directly into state waters; and prepare annual stormwater report” (Technical Addendum, p. 22).

City of Kennesaw²⁷:

“5.2.3 Floodplains

Flooding is the temporary covering of soil with water from overflowing streams and by runoff from adjacent slopes. Water standing for short periods after rainfalls is not considered flooding, nor is water in swamps. Floodplains in their natural or relatively undisturbed state are important water resources areas. They serve three major purposes: natural water storage and conveyance, water quality maintenance, and groundwater recharge. Unsuitable development can destroy their value. For example, any fill material placed in the floodplain eliminates essential water storage capacity causing water elevation to rise and resulting in the flooding of previously dry land.

The Federal Emergency Management Agency (FEMA) has identified and mapped the areas of Kennesaw prone to flooding in order to establish actuarial flood insurance rates and promote a sound flood plains management plan (refer to Fig. 5-4, Atlas of Maps). A management plan has been established for areas having high development potential and/or prone to a one percent annual chance (100-year) flood, primarily the flooding caused by overflow of the following lakes, rivers and streams:

- Proctor Creek*
- Butler Creek*
- Noonday Creek*

²⁷ City of Kennesaw Comprehensive Plan 2006-2026, Community Assessment, Analysis of Supporting Data. August 2006.

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Approximate analysis has been used for areas having low development potential or minimal flood hazards and other areas were previously studied. However, development in these areas should be carefully monitored to protect the functional integrity floodplains as well as the health, safety, and property in the City” (pp. 33-34).

“6.1.1 Stormwater Management

The City is responsible for the monitoring, maintenance and repair of all public stormwater systems in the City. The environmental specialist position is responsible for approving on-site stormwater management plans as well construction supervision and monitoring of the plans. Aging stormwater pipes will need to be identified and replaced in the coming months or years.

To combat elements damaging to stormwater systems, the Public Works Department provides tree limb chipping and leaf / hedge clipping removal, a recycling program for household recyclables as well as large metal objects and appliance. These services will be discussed under Solid Waste Management.

The City has also adopted ordinances for stormwater management practices as they pertain to stream and watershed protection, stream buffers and general public safety” (p. 42).

City of Marietta:

The City of Marietta Comprehensive Plan, 2006-2030²⁸ mentions the following as it relates to hazard mitigation:

“Floodplain exists along Noses Creek, Ward Creek, Westside Branch, Olley Creek, Rottenwood Creek, Hope Creek, Sope Creek, Wildwood Branch, Elizabeth Branch, Sope Branch, Poorhouse Creek, Noonday Creek Tributary #3, and Blackjack Creek. Marietta no longer permits new construction in floodplain zones” (p. 32).

“Steep Slopes

Marietta’s topography varies from 1,200 feet above sea level around Kennesaw Mountain to 850 feet above sea level around the tributaries of the Chattahoochee River. Marietta considers steep slopes to be areas with slopes of 35% or greater. Given the hilly and rocky terrain that persists in Cobb County, there are some areas that will be affected by the 35% slope. The majority of the areas are mostly undeveloped properties surrounding Kennesaw Mountain and Blackjack Mountain. The other areas of Marietta are already urbanized; therefore the alteration of the natural terrain has occurred during the construction of prior developments. Currently, there are no regulations that constrain development on steep slopes, but it is a factor staff analyses when making development recommendations” (p. 32).

“The City of Marietta offers 249 acres of park space for its residents with parks ranging from small pocket parks to larger community parks with athletic facilities. The City also provides numerous multi-use trails, including 27 acres of greenspace that was acquired in 2004 for floodplain protection” (p. 35).

“Create a Floodplain Overlay District for parcels that contain or abut floodplains, wetlands, or stream basins” (p. 40; p. 106).

“Coordinate floodplain protection requirements with Cobb County” (p. 41).

²⁸ City of Marietta Comprehensive Plan, 2006-2030.

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“Prepare stream buffer requirements in coordination with Cobb County and the Metro Rivers Protection Act” (p. 41).

“(Open Space & Conservation (OSC) - Conservation and open space areas should target areas that are environmentally sensitive lands such as creeks, streams, and floodplains (p. 67).

“Objective 1.8 Provide for, maintain, and improve upon environmentally responsible water supply, wastewater treatment, sanitary sewer, and stormwater systems that support desired growth (p. 86).

Policy 1.22 Ensure the City’s compliance with the Metropolitan North Georgia Water Planning District’s requirements for water supply and conservation, wastewater, and stormwater management (p. 87).

City of Powder Springs:

According to the City of Powder Springs narrative provided on the plan update Capabilities Assessment Questionnaire:

“The City of Powder Springs will strive to protect sensitive natural resources, such as floodplains and wetlands, from encroachment and development. While natural resources serve as a limitation to growth, they also provide opportunities for active and passive recreation. The city will expand its network of parks and greenways in order to serve as a key lifestyle amenity and refuge from automotive traffic. A network of open space, greenway trails, multi-use paths, and sidewalks will provide a fabric of linkages between neighborhoods and activity centers.

One of the Future Development categories is conservation/recreation. Implementation measures in this designation include regulating and limiting development in floodplain areas and environmental impact review for flood prone areas. Two goals in the comprehensive plan relate to environmental issues such as floodplain protection - Goal 15 Protect natural resources and sensitive environmental features from encroachment and Goal 18 Maintain compliance with state environmental planning regulations.

The Community Assessment portion of the plan identifies areas of steep slope, flood prone areas, soil types and addresses intergovernmental coordination. Areas of steep slope are limited in Powder Springs, with a few minor areas with slopes between 15-25%. The plan states that residential development should be limited to areas less than 12% and commercial should be in areas of 5% or less. The plan notes that the existing soil and erosion control ordinance is able to protect these areas. By effectively protecting the city’s floodplain areas and steep slopes, the impact of a hazardous situation such as flooding can be reduces on surrounding properties.

Intergovernmental coordination is also discussed in the comprehensive plan. The City coordinates with Cobb County on a variety of services including, Fire, EMS & 911 and Public Health. Additionally, the plan discusses the coordination between the City and the North Georgia Metropolitan Water Planning District. The district creates model ordinances, which the City has adopted. Specific policies include:

Policy 15.2 - Target environmentally sensitive areas such as floodplains and wetlands along Noses Creek and Powder Springs Creek for greenspace acquisition and explore funding opportunities through the Georgia Land Conservation Program and through Cobb County’s bond issue to help fund the acquisition.

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Policy 15.3 - Encourage use of conservation subdivision designation in appropriate areas for the protection of sensitive natural resources and provision of community open space implement and enforce the city's stormwater management ordinance.

Policy 18.2 - Maintain a stormwater management plan and consider joining Cobb County's effort to develop a stormwater utility and a stormwater management plan to support the utility.

Policy 18.3 - Enforce water supply watershed protection standards in order to protect community water supplies from potential sources of pollution.

Policy 18.6 - Continue working with the Metropolitan North Georgia Water District to ensure adequate water capacity and maintain water quality.

Implementation measures include: Regulate and Limit Development within Flood Prone Areas; Participate in Georgia Land Conservation Program, (Successor to the Georgia Greenspace Program); Environmental Impact Review for Flood Prone Areas; Conservation Easements; Riparian Buffers."

City of Smyrna²⁹:

"Floodplains and wetland are important resources because of the impact they can have on society at large. Floodplains are areas that can cause property damage and financial loss for individuals that own structures within their areas of influence. Floodplains, when left undisturbed, provide areas to accommodate the natural fluctuation of our hydrologic system while creating areas for plant and animal habitat. Wetlands are important because of their role in improving water quality. Wetlands are as effective and more efficient at taking silt and other pollutants from ground water when compared to the manmade structures currently being employed. Therefore, the protection of these resources will result in improved water quality in the watershed. These areas also provide plant and animal habitat for numerous species that have specific habitat requirements. Development that occurs in these areas has a negative impact on the manner in which the area functions as a natural habitat. Development in and around floodplains causes the alteration (usually in the form of expansion) of the floodplain areas, thus impacting a larger number of residents and homeowners. Wetlands, however, can be altered during the development process by altering water flow and adding fill. The alteration sometimes results in a loss of this resource resulting in mitigation measures as found appropriate by the United States Army Corp of Engineers" (p. 9).

"Smyrna's topography varies from 1,080 feet above sea level in the northwest portion of the city (near the intersection of South Cobb Drive and Pat Mell Road) to 800 feet above sea level near the Chattahoochee River (Map 6). Currently Smyrna does not allow development on slopes of 2:1 or greater (p. 52).

Floodplains exist along Nickajack Creek, Poplar Creek, the Chattahoochee River, and their tributaries. The City of Smyrna adopted Georgia EPD model floodplain ordinance. No increase of fill is allowed within the floodplain, and a structure's finish floor must be three feet above the 100-year floodplain" (p. 52).

"Goal 11: Maintain compliance with state environmental planning regulations³⁰.

Policy 11.1: Implement and enforce the city's stormwater management ordinance.

Policy 11.2: Maintain a stormwater management plan.

²⁹ City of Smyrna Comprehensive Plan, Community Assessment, 2005-2030

³⁰ City of Smyrna Comprehensive Plan, Community Agenda, 2005-2030

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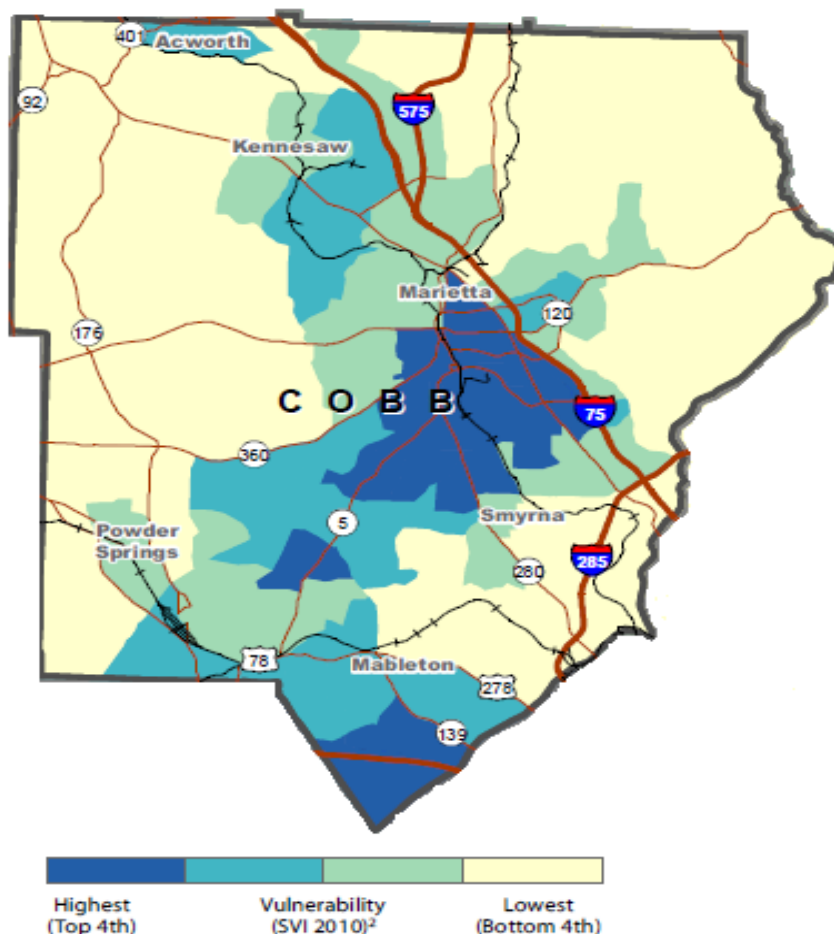
Policy 11.7: Implement and enforce the City's Stream Buffer Ordinance (City of Smyrna Comprehensive Plan, Community Agenda" (p. 31).

The general conclusion that can be made from this brief analysis of Comprehensive Plans in Cobb County is that they all identify the flood hazard within their plans. Future Hazard Mitigation Plan updates will continue to include these local plans to better link planning efforts that take place within the community.

SECTION 5 – Social Vulnerability Index

Every community must prepare for and respond to hazardous events, whether a natural disaster like a tornado, or a human-made event like a harmful chemical spill. A number of factors, including poverty, lack of access to transportation, and crowded housing may weaken a community's ability to prevent human suffering and financial loss in the event of disaster. These factors are known as social vulnerability.

Map 15 – Social Vulnerability Index 2010, Cobb County, GA



Source: Centers for Disease Control, Agency for Toxic Substances & Disease Registry

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The Center for Disease Control, Agency for Toxic Substances & Disease Registry, has created a tool to help emergency response planners and public health officials identify and map the communities that will most likely need support before, during, and after a hazardous event.

The Social Vulnerability Index (SVI) uses U.S. Census data to determine the social vulnerability of every Census tract. Census tracts are subdivisions of counties for which the Census collects statistical data. The SVI ranks each tract on 14 social factors, including poverty, lack of vehicle access and crowded housing, and groups them into four related themes. Those themes are Socioeconomic Status; Household Composition; Race Ethnicity and Language; and Housing / Transportation. Each of these themes has been analyzed collectively to generate an overall Social Vulnerability Index. Map 15 shows this overall vulnerability index for Cobb County, Georgia – with the dark blue areas indicating the highest vulnerability levels and the lighter areas indicating the lowest levels.

This index is incorporated into the hazard mitigation plan as an additional tool for city and county officials to better understand social vulnerabilities within the community. This can have an impact on not only education and outreach before emergency events occur, but also assist in response and recovery efforts as well. Tools like these can assist in mitigating hazards and will continue to be referenced in the future within this document, as appropriate. Additional information on this index can be found at <http://svi.cdc.gov/>.

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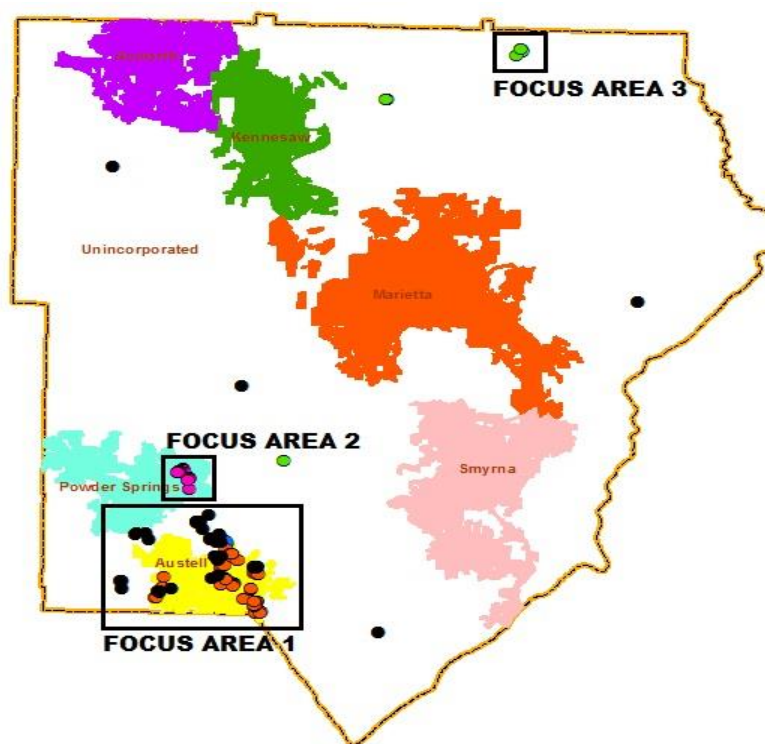
CHAPTER 5 – OVERVIEW OF MITIGATION GRANTS & PROJECTS

Plan Revised To Reflect Progress Made
Requirement §201.6(d)(3)

SECTION I – MITIGATION GRANTS IMPLEMENTED THE PAST 5 YEARS

An important part of the mitigation planning process is documenting achievements made in recent years within Cobb County and municipalities. From the year 2010 to the present, many hazard mitigation grant projects were implemented due to the receipt of FEMA Hazard Mitigation Grant awards. All of these properties were acquisition/demolition projects of residential properties – removing them from the floodplain (correlates to Goal 1.1.1, Table 27). The lots are to forever remain as green space. At the time of the 2016 Plan Update, two grant awards, **HMGP 1858-0013** administered by Cobb County Government and **HMGP 1858-0039** administered by the City of Austell are still open and additional properties are expected to be added to these FEMA grant awards to remove more properties out of the floodplain.

Map 16 - Countywide Map Showing Locations of Flood Acquisition and Demolition Projects Completed Since 2010



Source: Cobb County GIS County and City Boundary Layers & GEMA Project Data.
Map created by CEMA.

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A total of 140 individual properties have been mitigated, from four FEMA grant awards, as shown on Map 16. Tables 22-26 list the projects completed by street in each jurisdiction receiving the grant awards. Maps 17-19 provide a very general, street level view of project locations.

**Table 22 – City of Austell
Hazard Mitigation Project Listing, Project # 1858-0039**

Hazard Mitigation Grant Program Project # 1858-0039 Grant Recipient: City of Austell [Focus Area 1 on Map] Grant Open at Time of 2016 Plan Update	
<u>Property Location</u>	<u>Number of Properties Mitigated</u>
Austell-Powder Springs Road, Austell	1
Brookfield Drive, Austell	2
Brooks Drive, Austell	2
Cypress Club Trail, Austell	1
Edith Street, Austell	1
Egret Court, Austell	3
Garrett Springs Dr., Austell	1
Hiram Lithia Springs, Austell	1
Jones Road, Austell	2
Lazy Hollow Lane, Austell	4
Locust Lane, Austell	6
Maxham Road, Austell	1
Nature Trail, Austell	1
Newburn Court, Austell	1
Owens Road, Austell	2
Pontiac Circle, Austell	5
Perkerson Drive, Austell	1
Pine Grove Drive, Austell	5
Red Cloud Court, Austell	1
Salt Springs Place, Austell	6
Shadix Lane, Austell	1
Sunlight Drive, Austell	7
Winternest Drive, Austell	5
Windy Lane, Austell	5
Total	65

Source: Georgia Emergency Management Agency

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**Table 23 – Cobb Board of Commissioners
Hazard Mitigation Project Listing, Project # 1858-0013**

Hazard Mitigation Grant Program Project # 1858-0013 Grant Recipient: Cobb County Board of Commissioners [Focus Area 1 on Map] Grant Open at Time of 2016 Plan Update	
<u>Property Location</u>	<u>Number of Properties Mitigated</u>
Austell Powder Springs Rd., Austell	1
Brass Drive, Austell	1
Ceylon Drive, Austell	1
Clay Road, Austell	7
Doe Run Drive, Powder Springs	3
Fairfield Court, Marietta	1
Five Oaks Court, Powder Springs	1
Flint Hill Road, Austell	3
Glory Drive, Austell	1
Goodwin Drive, Austell	1
Hyacinth Drive, Austell	3
Inverwood Drive, Acworth	1
Jones Road Austell	1
Lindsey Drive, Powder Springs	2
Mableton Parkway, Mableton	1
Oglesby Road, Powder Springs	3
Pavia Circle, Austell	4
Pheasant Drive, Marietta	1
Stovall Road, Austell	1
Valley Lane, Austell	2
Water Valley Rd., Austell	3
Wesley Drive, Austell	6
Westerling Place, Powder Springs	1
Total	49

Source: Georgia Emergency Management Agency

Cobb County Hazard Mitigation Plan – 2016

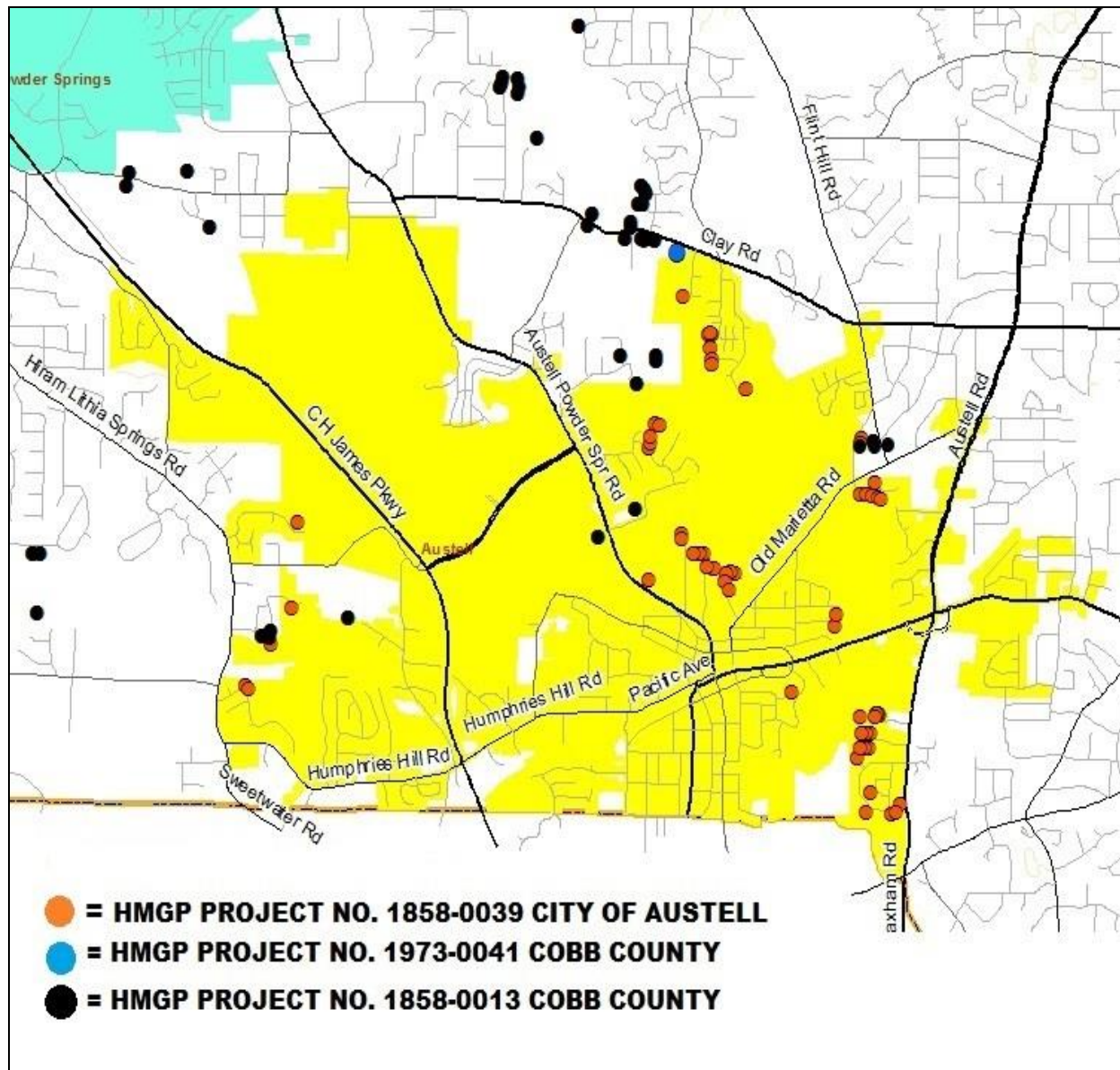
**Table 24 – Cobb Board of Commissioners
Hazard Mitigation Project Listing, Project # 1973-0041**

Hazard Mitigation Grant Program Project # 1973-0041 Grant Recipient: Cobb County Board of Commissioners [Focus Area 1 on Map] Grant Award Period of Performance Ended 3/31/14	
<u>Property Location</u>	<u>Number of Properties Mitigated</u>
Clay Road, Austell, Cobb County Unincorporated	
Total	1

Source: Georgia Emergency Management Agency

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Map 17 - Focus Area 1 - Mitigated Properties - City of Austell and Surrounding Unincorporated Area



Source: Cobb County GIS County and City Boundary Layers & GEMA Project Data. Map created by CEMA.

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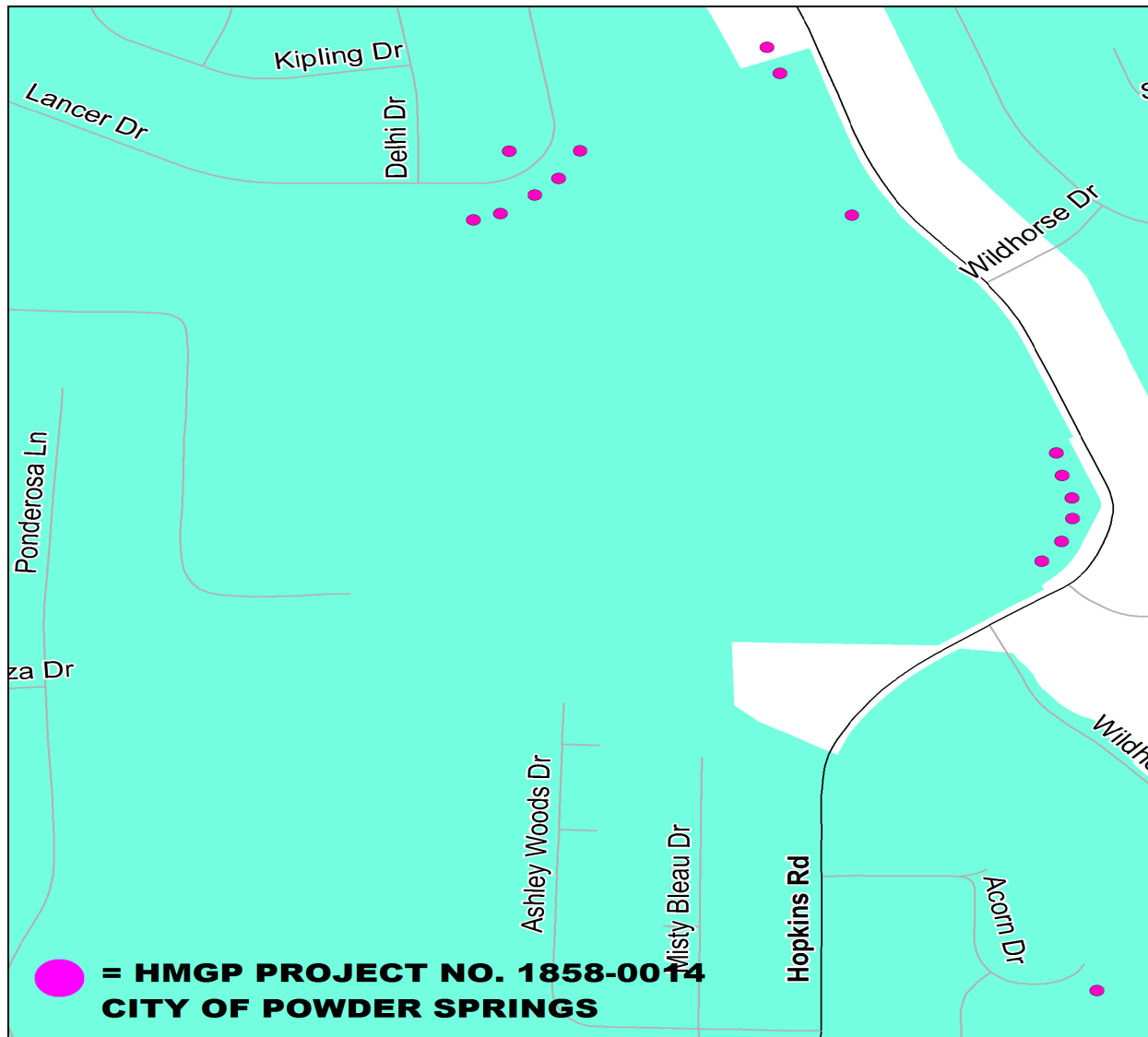
**Table 25 – City of Powder Springs
Hazard Mitigation Project Listing, Project # 1858-0014**

Hazard Mitigation Grant Program Project # 1858-0014 Grant Recipient: City of Powder Springs Grant Award Period of Performance Ended 3/31/14	
<u>Property Location</u>	<u>Number of Properties Mitigated</u>
Acorn Drive, Powder Springs	1
Hopkins Road, Powder Springs	9
Lancer Drive, Powder Springs	6
Total	16

Source: Georgia Emergency Management Agency

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Map 18 - Focus Area 2 - Mitigated Properties - City of Powder Springs



Source: Cobb County GIS County and City Boundary Layers; GEMA Project Data. Map created by CEMA.

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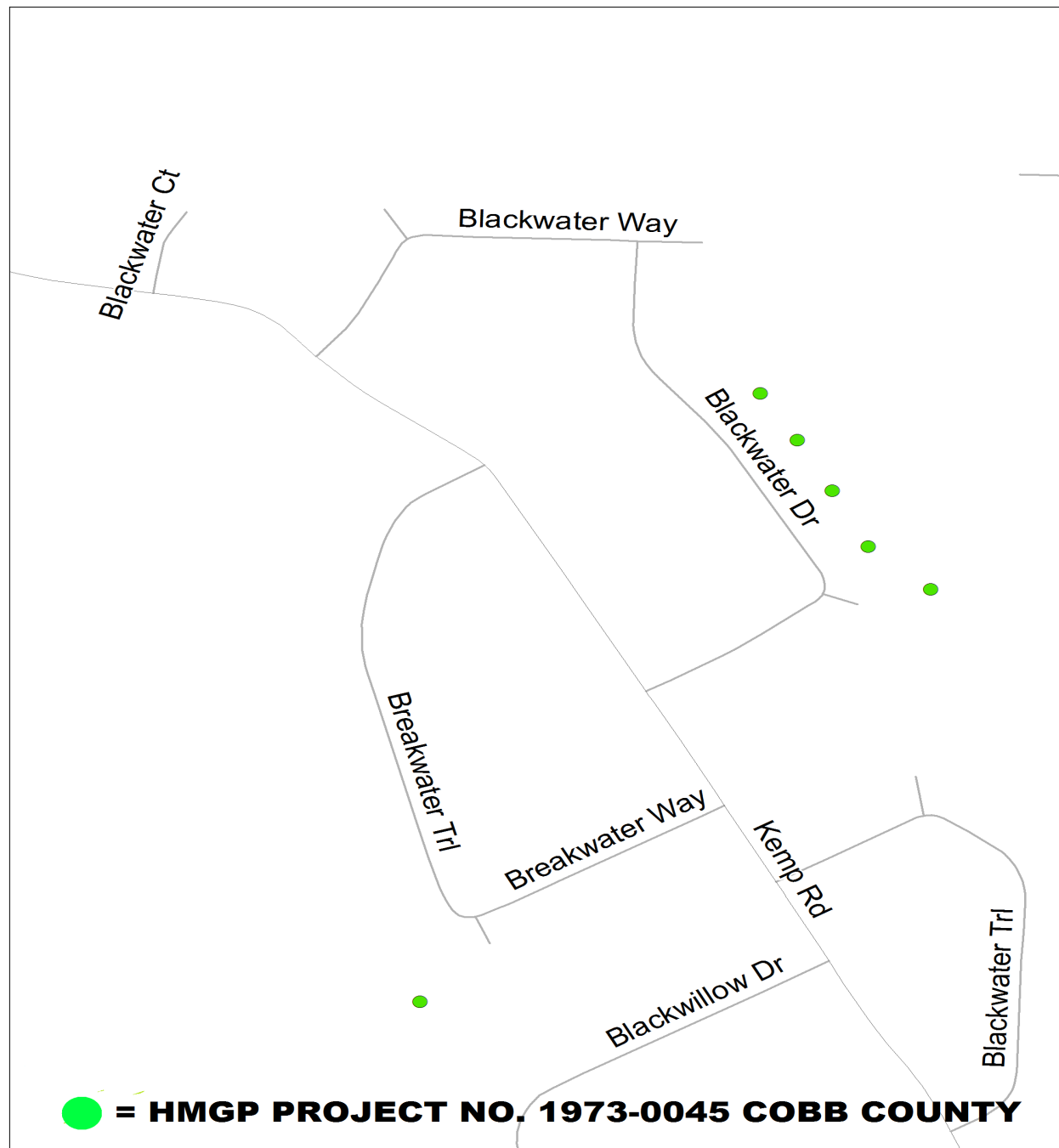
**Table 26 – Cobb Board of Commissioners
Hazard Mitigation Project Listing, Project # 1973-0045**

Hazard Mitigation Grant Program # 1973-0045 Grant Recipient: Cobb County Board of Commissioners Grant Award Period of Performance Ended 3/31/15	
<u>Property Location</u>	<u>Number of Properties Mitigated</u>
Pair Road, Marietta, Cobb County Unincorporated	1
N. Lakeside Drive, Kennesaw, Cobb County Unincorporated	1
Northside Drive, Kennesaw, Cobb County Unincorporated	1
Blackwater Drive, Marietta, Cobb County Unincorporated	5
Breakwater Way, Marietta, Cobb County Unincorporated	1
Total	9

Source: Georgia Emergency Management Agency

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**Map 19 - Focus Area 3 - Mitigated Properties - Northeast Cobb
County, Unincorporated Marietta**



Source: Cobb County GIS County and City Boundary Layers; GEMA Project Data. Map created by CEMA.

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SECTION II – OTHER MITIGATION ACTIONS IMPLEMENTED

In addition to the projects implemented due to the receipt of grant awards, there are various actions that have been completed at the local level through local staff time and funding that have mitigated the flood hazard. They include:

Update the Countywide Flood Insurance Rate Maps for Unincorporated and Incorporated Areas and educate citizens on updates (relates Goal 1.1.6, Table 27)

This process was completed in March, 2013 and at the time of the 2016 Hazard Mitigation Plan update, the Cobb County Stormwater Management Division noted that additional studies & possible map revisions are anticipated for the areas of Butler Creek and Tate Creek.

Perform limited detail analyses to determine base flood elevations for approximate “ZONE A” floodplain areas (relates to Goal 1.1.6, Table 27)

According to Cobb County Stormwater Management, this was completed.

Comply with District mandates to compute full basin build out future-conditions floodplains and extend limits of floodplain mapping upstream to the 100-acre basin limit (relates Goal 1.1.6, Table 27)

According to Cobb County Stormwater Management, the requirements set forth by the Metropolitan North Georgia Water Planning District have been fulfilled.

Construction of Stormwater Management Facilities (relates to Goal 2.1.2, Table 27)

The Chastain Meadows Regional Stormwater Management Facility for flood mitigation was completed in 2011.

The Mark Avenue Regional Stormwater Management Facility for flood mitigation was completed in 2012.

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CHAPTER 6 –MITIGATION GOALS & OBJECTIVES

SECTION I - FLOODS

Mitigation Goals

As previously indicated in *Chapter 2, Section I*, flooding caused considerable damage within Cobb County over the past half century. The Hazard Mitigation Executive Planning Committee determined that efforts to mitigate potential flooding are necessary. This is due to more than an estimated 20% of Cobb County being floodplain with the majority of the flood hazard concentrated in seven areas: Sweetwater Creek; Chattahoochee River floodplain; Sope Creek; Sewell Mill Creek; Noses Creek; Wildhorse Creek, and Noonday Creek. This is in addition to the presence of 31 Category-I “high risk” state-regulated dams out of 159 dams that may pose a threat within Cobb County. The number of Category I dams identified in the previous Plan Update was 25. The number of dams placed on the Category I list will likely increase as the State of Georgia continues assessing dams.

Historically, flood damage has been sustained to roads, bridges, natural resources, and public facilities, as well as private homes and businesses. Specific mitigation measures identified by the Executive Planning Committee are designed to lessen the effects of such damage in the future. However, because the flooding events from 2005 and 2009 demonstrated how widespread this risk is to the county, it has been agreed that a broad approach would be more beneficial. Structural goals such as property acquisitions will be prioritized as a mitigation goal throughout the county and its six municipalities. Educating the public and performing basin studies will be a continuous non-structural mitigation effort as well.

Range of Mitigation Options

The Hazard Mitigation Executive Planning Committee, working with the Cobb County Water System, has identified both structural and non-structural mitigation measures to ensure that the community adequately addresses all relevant flooding issues³¹. The Mitigation Action Matrix (Table 27) identifies the various goals and projects by number for each hazard and structural vs. non-structural. Suggested mitigation actions recognize Cobb’s efforts to minimize future loss of life, and property damage, or economic losses.

The following highlights some of the mitigation goals, objectives, action items and strategies for flooding, as developed by the Executive Planning Committee in 2011 and continuing for the 2016 Plan update:

³¹ The Cobb County Flood Mitigation Plan is located in Appendix C.

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Repetitive Loss Properties (See Goal 1.1.1)

Continue to leverage local funds with GEMA grant funds to purchase “repetitive loss” properties, substantially damaged properties, properties contained within the regulatory floodway, properties contained within floodplain, specifically targeted properties, which have been subject to chronic flooding. Flood buyouts are continuing at the county and municipal level as funding becomes available.

Acquire Vacant Floodplain Property (See Goal 1.1.4)

Continue to acquire by donation, grant, or direct purchase vacant tracts of floodplain property adjacent to major waterways. At the time of the 2016 plan update, Cobb County is in the process of purchasing or has already purchased property (25 acres) near Butler Creek south of State Road 41 and a tract (15 ½ acres) near Jim Owens Road in Unincorporated Cobb County. Additional buyouts of vacant land to inhibit development in food hazard areas will be sought after when funding is available.

Map in further detail creek and flood areas in jurisdictions to provide up to date information for floodplain managers and planners (See Goal 1.1.6)

This was added to this section due to the City of Acworth Floodplain Administrator noting that more detailed maps would be useful for its floodplain management program.

Increase Network of Stream Monitoring Gauges (See Goal 1.1.9)

At the time of the 2016 plan update, the U.S. Geological Survey had 19 gauges located strategically in Cobb County and bordering areas to monitor water levels, as shown on Map 5. These locations include target areas of the Chattahoochee River, Nickajack Creek, Noonday Creek, Noses Creek, Sewell Mill Creek, Sope Creek, and Sweetwater Creek.

Increase monitoring and enforcement of routine maintenance at privately-owned stormwater detention facilities (See Goal 1.1.10)

While privately-owned facilities are the responsibility of individual owners, ongoing education between county and municipal stormwater officials will be ongoing to ensure that private stormwater facilities remain effective in handling stormwater.

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Perform targeted storm drainage capital improvement projects to mitigate existing identified chronic flooding problems (See Goal 2.1.2)

Cobb County and municipalities will continue to budget capital improvement projects accordingly within their budgets. This correlates to Goal 2.1.2.

Multi-Jurisdictional Considerations

The Hazard Mitigation Plan is intended to augment the Cobb County Water System Flood Mitigation Plan (FMP). This has required close coordination with the Storm Water Management Division (SWMD) regarding county and local flood mitigation goals. All six cities - Acworth, Austell, Kennesaw, and Marietta actively participated in developing the Hazard Mitigation Plan. The six cities will also partner with the county in adopting, implementing, and maintaining it. Additionally, it is hoped that the use of future grant funds received by Cobb County will support all mitigation goals already submitted by the six cities, as well as any future submissions. Cobb County cities will continue to examine their respective storm water flood conditions and it is anticipated that additional flood mitigation goals may be submitted in the future.

Education & Awareness

The Cobb County Hazard Mitigation Plan Executive Planning Committee identified several methods of public education and awareness regarding hazard mitigation during the planning meetings. All public information efforts are aimed at keeping the citizens of Cobb County fully engaged in the implementation and periodic maintenance of this mitigation plan. Many of these education and awareness tools are multi-hazard in nature and include distribution of informational brochures or pamphlets, and public and private sector briefings and workshops. Additionally, the county along with all six cities (Acworth, Austell, Kennesaw, Marietta, Powder Springs and Smyrna) continue to participate in the National Flood Insurance Program (NFIP) and promotes educating and encouraging citizens to participate and obtain flood insurance to protect their properties.

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SECTION II – TORNADOES

Mitigation Strategy for Tornadoes

Mitigation Goals

The mitigation goals, objectives and action items represent Cobb County's mitigation strategy to avoid long-term vulnerabilities associated with tornadoes.

Range of Mitigation Options

The mitigation measures identified for tornadoes should be considered when evaluating mitigation actions for thunderstorms as well. The range of mitigation actions noted with Table 27 include warning siren maintenance, upgrades and additions, an emergency notification system, providing weather radios to county government facilities and developing and conducting public awareness programs for Cobb County.

Warning Siren Maintenance (See Goal 3.1.1)

Warning siren maintenance is an ongoing activity at the Cobb Emergency Management Agency. Technicians diagnose problems and make repairs to be sure sirens are operational. Monthly, audible tests are conducted and "silent" tests are conducted to the siren system without them being heard by the public. The City of Smyrna has its own siren system that it maintains for Smyrna residents.

Emergency Notification Systems (See Goals 4.1.1 & 4.1.3)

Cobb County's emergency notification system, Code Red, is available on the county web site for residents to register to receive alerts for various hazards. The City of Austell and the City of Powder Springs also use Code Red and have links on their respective sites for residents. Kennesaw State University uses "Rave Alert" as its mass notification system.

Public Awareness Programs (See Goal 4.1.2)

Public awareness programs are an ongoing effort of Cobb County EMA and the City of Smyrna EMA. Cobb County's Community Emergency Response Team (CERT) program continues to train individuals on personal preparedness for themselves, their families and neighbors. Smyrna EMA has also been recognized for its "Ready Smyrna PrepareAThon!" initiative, which is a community-based campaign for action to increase emergency preparedness and resilience. The Ready.Ga.Gov web site also provides citizens with information on a variety of hazards, including tornadoes.

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Weather Radios (See Goals 5.1.1 & 5.1.4)

Weather radios have been and continue to be distributed by Cobb EMA to government facilities, including schools, as funding is available. Future grants would also provide the ability to distribute weather radios to vulnerable populations within the community.

Multi-Jurisdictional Considerations

Planning representatives from the cities of Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna will continue to assess the tornado hazard in their respective cities. Cobb County EMA has 74 operational emergency warning sirens currently operational in Cobb County. Lockheed Martin (one siren), Kennesaw State University (seven sirens), and the City of Smyrna (10 sirens) also own and maintain outdoor warning sirens. These sirens are used primarily for tornado warnings but could be used in the event of other hazards. The projected range of each siren is approximately a one mile radius. Several areas in the county do not fall into these warning radiuses with approximately 25% of the county out of range of the warning system. Efforts continue to update and maintain current systems and add additional sirens as needed throughout the county.

Education & Awareness

All public information efforts aimed at keeping the citizens of Cobb County fully engaged in the implementation and periodic maintenance of this mitigation plans. Many of these education and awareness tools are multi-hazard in nature and include implementing a countywide crisis alert or notification system, distribution of informational brochures or pamphlets, public and private sector briefings, and workshops.

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SECTION III – SEVERE WEATHER

As mentioned in Chapter 5, for the purpose of this plan's analysis, severe weather encompasses thunderstorms (including hail), lightning, and winter storms.

THUNDERSTORMS

Mitigation Goals

It should be noted that many of the goals, objectives, and related action items associated with tornadoes also pertain to thunderstorms. Tornadoes are much more destructive and less frequent than thunderstorms, but both pose serious threats to Cobb County citizens. Hail is also a hazard throughout all Cobb County. The mitigation goals, objectives, and action items identified for thunderstorms represents Cobb's mitigation strategy to reduce, or avoid, long term vulnerabilities associated with these hazards. The mitigation goal for hail represents the need to learn more about how to mitigate property damage.

Range of Mitigation Options

The mitigation measures identified for addressing the effects of thunderstorms and hail in Cobb County range from providing weather radios for government facilities and to the elderly and low-income citizens, to increasing public awareness and conducting additional studies about protecting property from both.

Multi-Jurisdictional Considerations

All of Cobb County potentially can be affected by thunderstorm winds. No significant differences exist between the unincorporated county and its six municipalities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna) in terms of the risks and vulnerabilities associated with thunderstorm winds. Weather reports, the Emergency Alert System, and outdoor warning sirens represent an effective means to warn residents of impending high winds.

However, few business and industries have televisions or radios on during working hours. The weather radio is a valuable means to alert business, industries and residents of potential inclement conditions. As a result suggested mitigation actions related to thunderstorm winds should be undertaken on a countywide basis and include the six municipalities Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna.

Education & Awareness

The Cobb County Hazard Mitigation Planning Committee has identified several potential methods of public education and awareness regarding hazard mitigation. All public

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information efforts are aimed at keeping the citizens of Cobb County fully engaged in the implication and periodic maintenance of this mitigation plan. Many of these education and awareness tools are multi-hazard in nature and include implementation of a countywide crisis alert or notification system, distributing informational brochures or pamphlets, and conducting public and private sector briefings and workshops. Additionally, consistent assessment and updating of policies and procedures are effective methods of assisting the county with remaining abreast of changing guidelines and taking a proactive approach in the effort to mitigate the threat of thunderstorms.

LIGHTNING

Mitigation Goals

Lightning strikes, although relatively rare in occurrence, have a high danger potential associated with them. Lightning can cause severe damage to both structures and their contents. Fire, resulting from a lightning strike, is also a constant threat. Although critical facilities have not experienced significant damage from lightning strikes, there are still several mitigation measures that can be initiated to guard against future damaging strikes. The mitigation measures suggested by the Executive Planning Committee can be used by both local officials and Cobb County citizens in initiating effective mitigation actions.

Range of Mitigation Options

The Cobb County Hazard Mitigation Executive Planning Committee has identified both structural and non-structural mitigation measures to ensure that the community addresses all relevant considerations. This may result in alterations to current policies and building codes if necessary. Technology which providing methods of alerting citizens of immediate danger of a potential lightning strike may also be an option. Public education and awareness is also a key component of any mitigation strategy dealing with the dangers posed by lightning. Historical considerations include all of the Cobb County structures listed on the National Register of Historic Places³². General and specific measures are suggested to aid in the mitigation of the potential negative impact lightning may impose on Cobb County and the cities of Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna.

Education & Awareness

The HMP Executive Planning Committee has several methods of public education and awareness to increase awareness about hazard mitigation. All public information efforts are aimed at keeping the citizens of Cobb County involved in the implementation and maintenance of the HMP. Many of these education and awareness tools are multi-

³² See Appendix B-2 for list of historic places in Cobb County

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hazard in nature and include distributing informational brochures or pamphlets, and public and private sector meetings.

WINTER STORMS

Mitigation Goals

The threat of winter storms is a concern in Cobb County. Unlike other portions of the United States, Cobb County does not typically receive the amounts of snow and ice that other regions do, nor do they experience winter storms as frequently as other regions. The formation of ice on roads and bridges, tree limbs, and power lines is the cause of most damage. The Cobb County Hazard Mitigation Executive Planning Committee has determined that several steps could be undertaken to ensure the effects of winter storms within the community are minimized.

The Cobb County Dept. of Transportation has significantly enhanced its storm response capabilities since the winter storm events of 2014. This includes additional supplies and equipment, as well as training staff and refining route strategies to maximize effectiveness during winter storm events. The Dept. of Transportation *Inclement Weather Manual* is now included as part of the Hazard Mitigation Plan in Appendix C.

Range of Mitigation Options

The Cobb County Hazard Mitigation Executive Planning Committee has identified non-structural mitigation measures in addressing winter storm conditions. Because of the infrequent nature of winter storms in Cobb County and the cost-prohibitive nature of many structural mitigation projects, the Executive Planning Committee focused on measures related to the safety, comfort, and continuation of services for Cobb County citizens. To ensure that proper mitigation measures are undertaken, current policies may have to be amended or modified. There are no historic or special considerations related to winter storm mitigation measures.

Multi-Jurisdictional Considerations

Winter storms affect all of Cobb County. No significant differences exist between the county and its six municipalities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna) in terms of the risks and vulnerabilities associated with winter storms. As a result, any mitigation steps taken related to winter storms should be undertaken on a countywide basis and include the six cities.

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Education & Awareness

The Cobb County Hazard Mitigation Executive Planning Committee has identified several potential methods of public education and awareness regarding hazard mitigation. All public information efforts are aimed at keeping the citizens of Cobb County fully engaged in the implementation and periodic maintenance of this mitigation plan. Many of these education and awareness tools are multi-hazard in nature and include the following: utilizing and maintaining a countywide crisis alert or notification system, distribution of informational brochures or pamphlets, public and private sector briefings and workshops, as previously identified.

SECTION IV - EARTHQUAKES

Mitigation Goals

Cobb County's history of earthquakes is extensive, yet the effects of earthquakes on the County have been limited. With no active faults in or near its borders, Cobb County residents typically feel the effects of earthquakes that originate from outside the area. However, considering the unpredictable nature of earthquakes and seismic activity in general, it is a hazard that must be addressed. Protecting the life and property of Cobb County residents is the main goal for this hazard.

Range of Mitigation Options

The current mitigation strategies for earthquakes reside mainly in building codes. Public education is one area that lacks great emphasis in this region. Mitigation strategies will be primarily focused on education and awareness.

Multi-Jurisdictional Considerations

No significant differences exist between the county and its six municipalities in terms of the risks and vulnerabilities associated with earthquakes. As a result, any mitigation steps taken related to earthquakes should be undertaken on a countywide basis and include the six cities.

Education & Awareness

The Cobb County Hazard Mitigation Executive Planning Committee has identified several methods of public education and awareness regarding hazard mitigation. All public information efforts are aimed at keeping the citizens of Cobb County fully engaged in the implementation and periodic maintenance of this mitigation plan. Many of these education and awareness tools are multi-hazard in nature and include the following: a countywide crisis alert system, distribution of informational brochures or pamphlets, public and private sector briefings and workshops, as previously identified.

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SECTION V – DROUGHT

Mitigation Goals

As indicated in Chapter 2, drought conditions can prove costly to Cobb County due to agricultural crop damage. The Cobb County Hazard Mitigation Executive Planning Committee determined that little could be done to mitigate the effects of severe drought.

Range of Mitigation Options

The Cobb County Hazard Mitigation Executive Planning Committee has identified several non-structural mitigation measures in hopes of minimizing the potentially destructive effects of drought. The Executive Planning Committee's focus is on the preservation of life and property, with particular emphasis on vulnerable populations and critical facilities. This may result in modifications to current policies and the implementation of local ordinances to ensure suggested mitigation measures are initiated.

Multi-Jurisdictional Considerations

Drought conditions affect all of Cobb County. Farms and other vulnerable populations are located in the six cities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna) as well as in unincorporated areas of the county. No significant differences exist between the county and its six municipalities in terms of the risks and vulnerabilities associated with drought. As a result, any mitigation steps taken related to drought should be undertaken on a countywide basis and include the six cities.

Education & Awareness

The Cobb County Hazard Mitigation Executive Planning Committee has identified several methods of public education and awareness regarding hazard mitigation. All public information efforts are aimed at keeping the citizens of Cobb County fully engaged in the implementation and periodic maintenance of this mitigation plan. Many of these education and awareness tools are multi-hazard in nature and include the following: distribution of informational brochures or pamphlets, public and private sector briefings and workshops, as previously identified.

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SECTION VI – DAMS (Failure)

Mitigation Goals

An assessment of the countywide hazard posed by existing dams is needed to support the range of mitigation options being proposed in the Flood Mitigation Plan and presented in the Hazard Mitigation Plan. There may also be additional staffing requirements for the Stormwater Management Division in order to accomplish the assessment and maintain current operations. Additional Cobb County code revisions may be required so that dam owners can be compelled to make improvements once deficiencies are identified.

Range of mitigation options

The range of mitigation options includes retrofitting existing dams, determining the dam reach zones below all potentially hazardous dams, regulating existing dams, a reverse callout system linked to dam breach zone mapping (data would include residential owners in the breach zones). The Georgia Dept. of Natural Resources has provided some Emergency Action Plans that have been incorporated into the Hazard Mitigation Plan for the 2016 Plan Update. Some of the key items relating to dams within the Mitigation Actions and Projects Matrix (Table 27) include:

Identify potentially hazardous dams in the County. Compute and delineate (map) hypothetical dam break zones (See Goals 11.1.2 & 11.1.3)

Since the 2011 Plan Update, there has been progress made at the State level (Georgia Dept. of Natural Resources, Flood Mapping Assessment and Planning) to create dam break scenarios for use by local officials to estimate damage created by dam failures. The Flood section of Chapter 3 highlighted findings of scenarios generated with Kellner Lake Dam, Lower Loch Highland Dam and Laurel Lake Dam breaches. Additional studies will be incorporated into the Hazard Mitigation Plan and Cobb County Flood Plan as they are developed.

Storage Volume Purchase Program (See Goal 11.1.4)

Retrofit existing dams using Cobb County's Storage Volume Purchase Program to create additional freeboard and additional volume available in existing ponds and lakes to store flood waters.

According to Cobb County Stormwater Management, new in-stream impoundments are difficult to permit through the Section 404 Wetlands Permitting Program. To address this situation, the concept to acquire, create, and/or purchase significant new storage volume areas in existing impoundments emerged to at least partially offset increased stormwater volumes resulting from

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urbanization. Additional stormwater flood storage volumes can most easily be created on the surface of existing impoundments, by simply lowering the normal pool level of the lake. Dropping the normal pool level in these existing impoundments creates more “freeboard” (which also promotes dam safety). Purchasing the created flood storage volumes pays for the public benefit while simultaneously providing the dam owners revenue to perform necessary maintenance or upgrades on their dam(s) and/or lake(s).

At the time of the 2016 plan update, Cobb County is in the process of creating additional storage volume at North Landing Lake Dam (to 1.87 million cubic feet). Additional sites that have been approved by the Board of Commissioners in the past to participate in this program include Cochran Lake Dam, GB’s Lake Dam, Gordon and Dees Dam, Laura Lake Dam and McNeel Dam. The Storage Volume Purchase Program was also identified in the 2015 update to the Cobb County Comprehensive Plan.

Multi-Jurisdictional Considerations

Presently, Cobb County’s Stormwater Management Division provides services for the unincorporated portion of the county. The HMP is a collaborative effort between the County and the six Cities of Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna. The intent of the Hazard Mitigation Plan is to promote coordination of future dam hazard mitigation strategies between the County and the six Cities.

Education & Awareness

The Cobb County Hazard Mitigation Executive Planning Committee has identified several methods of public education and awareness regarding hazard mitigation. All public information efforts are aimed at keeping the citizens of Cobb County fully engaged in the periodic maintenance of this mitigation plan. Many of these education and awareness tools are multi-hazard in nature and include the following: utilizing and maintaining a countywide crisis alert or notification system, distribution of informational brochures or pamphlets, public and private sector briefings and workshops, as previously identified.

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SECTION VII – HAZARDOUS MATERIAL SPILLS

Mitigation Goals

The Hazard Mitigation Executive Planning Committee recognizes hazardous material spills as a serious technological hazard that can cause serious damage to Cobb County and the six municipalities (Acworth, Austell, Kennesaw, Marietta, Powder Springs and Smyrna). The threat to Cobb County and the six municipalities is exacerbated due to the presence of three Interstate Highways running through the county Interstate 20, Interstate 75, Interstate 575 and Interstate 285. Mitigation of this hazard is best accomplished by close adherence to rules, regulations, and procedures established by the chemical manufacturers and the federal government, primarily the Department of Transportation, the Environmental Protection Agency and the Occupational Safety and Health Administration. With this in mind, the Executive Planning Committee identified mitigation measures geared towards training and awareness with an emphasis placed on natural resource protection.

Cobb County Fire and Emergency Services has a highly trained Hazardous Materials (HAZMAT) Response Team in which A, B, and C Shifts at Station 8 (North team) and Station 22 (South team) each have eight State Certified HAZMAT Technicians (total of 48 Techs). In addition, there are over 400 Fire Fighters trained at NPQ Hazardous Materials Operations Level. The HAZMAT Team operates a mass decontamination trailer capable of handling multiple patients while separating males from females. The HAZMAT Team possesses a variety of apparatus' needed to deploy the team and equipment for Nuclear, Chemical and Biological incidents. The apparatus' contain equipment used for entry (up to Level A), monitoring, decontamination, and all hazards mitigation. All CCFES field personnel have been trained to a HAZMAT Operations Level in which they can assist the HAZMAT team in a limited function.

Range of Mitigation Options

The Cobb County Hazard Mitigation Executive Planning Committee has identified non-structural mitigation measures related to hazardous material spills. This may result in modifications to current policies to ensure these mitigation measures are instituted. No historic or special considerations pose extraordinary challenges for community facilities that are subject to hazardous material spills.

Multi-Jurisdictional Considerations

Hazardous material spills have the potential to affect all of Cobb County and its six municipalities. No significant differences exist between the county and its six municipalities in terms of the risks and vulnerabilities associated with hazardous materials. Mitigation steps should be undertaken on a countywide basis and its six municipalities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna).

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Education & Awareness

The Cobb County Hazard Mitigation Executive Planning Committee has identified several methods of public education and awareness regarding hazard mitigation. All public information efforts are aimed at keeping the citizens of Cobb County and its six municipalities (Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna) fully engaged in the periodic maintenance of this mitigation plan. Many of these education and awareness tools are multi-hazard in nature and include the following: a countywide crisis alert or notification system, distribution of informational brochures or pamphlets, public and private sector briefings and workshops, as previously identified.

SECTION VIII – TERRORISM

Mitigation Goals

The continuous monitoring and assessment of terrorist activity is confidential. The county's mitigation goals are therefore omitted from this document.

Range of mitigation options

The range of mitigation options include monitoring terrorist activity, assessing risks for critical facilities and areas and thoroughfares which may be high risk for terrorism, and conducting exercises.

Multi-Jurisdictional Considerations

The HMP is a collaborative effort between the County and the six Cities of Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna. All jurisdictions will continue to coordinate to find solutions to mitigate the threat of terrorism.

Education & Awareness

The county has taken the approach of distributing informational brochures or pamphlets to encourage residents to report suspicious activities or persons to help mitigate the threat of terrorism. Additionally, the county and cities continue to promote the "See Something, Say Something" campaign, to educate and encourage residents to report activity, no matter how insignificant the information may seem.

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SECTION IX – MITIGATION PROJECTS & ACTIONS MATRIX

The Hazard Mitigation Plan's master matrix of mitigation actions and projects is within Table 27. Hazard mitigation activities in recent years have largely been focused on removing flood prone properties from the floodplain. This has required a substantial amount of local match dollars and county and city governments have demonstrated their commitment to hazard mitigation. This plan is an ongoing process and the initiatives on this listing are largely ongoing. The Flood hazard will continue to be a priority, and remain #1 on the listing. However, all viable applications to fund projects through future FEMA hazard mitigation grant funding cycles are encouraged to be submitted for funding consideration, regardless of the hazard, as long as they correlate with identified hazards, Goals/Objectives and project matrix identified within the Cobb County Hazard Mitigation Plan.

Plan Revised Reflecting Changes in Priorities

Requirement §201.6(d)(3)

All of the information within the Mitigation Actions and Project Matrix (Table 27) remained the same as the 2011 plan, with the exception of the following changes or additions:

- Every item in the matrix has been updated with the current status and even if completed remain on the list. Often times completed projects require ongoing activities subsequent to initial completion.
- Some projects are contingent on available funding – either locally or through grants. Therefore, they are marked as “Pending, Awaiting Funding” status.
- Many initiatives related to public education materials are ongoing and costs associated with them are staff time and locally-provided materials.
- ‘Ongoing’ projects represent a timeframe of 2016-2021.

The following are the key changes to the Goals for the 2016 plan:

- **New Goal 1.1.8:** Promote educational opportunities for county and city floodplain managers.

This was added to ensure that the Hazard Mitigation Plan reflects support of local floodplain managers to ensure they receive the ongoing education and training they need to serve Cobb communities.

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- **Update of Goal 8.1.1:** Inventory, test, and assess shortages of generators at all county and city critical facilities. Purchase and install where needed.

“Purchase and install where needed” was added so that future project applications for generator purchases and installations has a goal within the plan that has specific language including the purchase and install.

- **New Goal 11.1.3:** Educate dam owners and the general public about Dam hazards. Promote development of Emergency Action Plans (EAPs) for dams.

This language was included because with limitations on spending public dollars on private property/dams, a huge component of mitigating this hazard is education and planning- and promoting the development of Emergency Action Plans for dams located in Cobb County.

- **Closed Goal:** Perform Countywide Mitigation Banking program, to facilitate implementation of future Stormwater Management Capital Improvement projects.

According to Cobb County Stormwater Management, this program is not financially feasible and is no longer being pursued and is therefore closed. As a note, this Goal was not given a goal number within the 2011 Plan’s Mitigation Actions and Project Matrix (Table 27), but was identified within the plan.

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Table 27 - Mitigation Actions and Projects Matrix³³

Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure ³⁴	Action or Project	Responsible Jurisdiction ³⁵	Status ³⁶ / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
1	N/A	Goal for Prevention: Mitigate Flood hazards through non-structural means							
1.1	N/A	Identify specific action steps for accomplishing goal							
1.1.1	N/A	Acquisitions of residential and commercial structures in the floodplain	Flood	Existing	Project	All	In Progress / Ongoing	2,000,000 / Federal Grants and local match	2011 Plan, 2016 plan update

³³ The county and cities agreed to take a multi-jurisdictional approach in 2011 and that continues. The goals and the objectives for the cities are no longer differentiated from that of the county to facilitate a more thorough and standardized approach mitigation planning.

³⁴ “**New**” refers to new construction / projects receiving mitigation measures, E.g.: new building implementing mitigation to build it above code.

“**Existing**” refers to existing construction or projects receiving mitigation measures. “**Both**” refers to new and existing.

³⁵ All jurisdictions (Acworth, Austell, Cobb County, Kennesaw, Marietta, Powder Springs, Smyrna) identified within this plan implementing actions / projects are responsible for their respective actions or projects, thus “**All**” is denoted to streamline the plan.

³⁶ **In Progress/Ongoing** indicates projects that have started and do not yet have a final date of completion. **Pending / Awaiting Funding** indicates a project is on standby until funding can be obtained to start and complete it. **Completed** means it is completed. **Completed / Ongoing** means that although it was initially completed, it requires ongoing actions. **Pending / New Initiative** means it is a new initiative at the time of the plan update and has not yet been implemented.

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
1.1.2	N/A	Stream bank mitigation studies	Flood	Both	Project	All	Pending, Awaiting Funding / 2017	40,000 / Cobb Water System, Grant Funds	2011 Plan, 2016 Plan update
1.1.3	N/A	Form workgroups to assess mitigation strategies for high flood risk areas	Flood	Both	Project	All	In Progress / Ongoing	40,000 / Cobb Water System, Grant Funds	2011 Plan, 2016 Plan update
1.1.4	N/A	Acquisitions of vacant floodplain land	Flood	Both	Action	All	In Progress / Ongoing	1,000,000 / Cobb Water System, Grant Funds	2011 Plan, 2016 Plan update
1.1.5	N/A	Update current flood damage prevention regulations	Flood	Both	Project	All	Completed in 2007	N/A	2005 Plan

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
1.1.6	N/A	Promote floodplain mapping including updates / enhancements using GIS	Flood	Both	Project	All	In Progress / Ongoing	1,000,000 / Cobb Water System, Grant Funds	2011 Plan, 2016 Plan update
1.1.7	N/A	Develop information brochures and schedule public meetings about home elevation in Cobb floodplains	Flood	Both	Project	All	In Progress / Ongoing	25,000 / Cobb Water System, Grant Funds	2011 Plan, 2016 Plan update
1.1.8	N/A	Promote educational opportunities for county and city floodplain managers	Flood	Both	Action	All	Pending, New Initiative	1,000 / City / County staff time	2016 Plan Update

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
1.1.9	N/A	Increase network of stream monitoring gauges	Flood	Both	Action	All	In Progress / Ongoing This is not a new initiative but was added to this matrix as 1.1.9 in 2016. It was identified in the 2011 plan within the narrative but not given a goal number at that time	25,000 / USGS Funds	2011 Plan, 2016 Plan update

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
1.1.10	N/A	Increase monitoring and enforcement of routine maintenance at private-owned stormwater detention facilities	Flood	Both	Action	All	In Progress / Ongoing This is not a new initiative but was added to this matrix as 1.1.10 in 2016. It was identified in the 2011 plan within the narrative but not given a goal number at that time	1,000 / City / County staff time	2011 Plan, 2016 Plan update
2	N/A	Goal for Prevention: Mitigate flood hazards through structural means							
2.1	N/A	Identify specific action steps for accomplishing goal							
2.1.1	N/A	Promote structural adjustments such as elevation for homes in floodplain area	Flood	Both	Project	All	In Progress / Ongoing	25,000 / Cobb Water System, Grant Funds	2011 Plan, 2016 Plan update

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
2.1.2	N/A	Evaluate all major basins in the County and identify potential sites for construction of storm water structures	Flood	Both	Project	All	In Progress / Ongoing	150,000 / Cobb Water System, Grant Funds	2011 Plan, 2016 Plan update
2.1.3	N/A	Convert identified floodplain lots to relieve areas downstream	Flood	Both	Action	All	Pending, Awaiting funding. Completed lots identified in 2004. May resume in 2016	1,000,000 / Cobb Water System, Grant Funds	2011 Plan, 2016 Plan update
2.1.4	N/A	Conduct assessments for widening stream buffers	Flood	Both	Action	All	Pending, Awaiting funding. May resume 2016	150,000 / Cobb Water System, Grant Funds	2011 Plan, 2016 Plan update

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
3	N/A	Goal for Prevention: Mitigate tornado hazards through structural means							
3.1	N/A	Identify specific action steps for accomplishing goal							
3.1.1	N/A	Install major upgrades to warning sirens throughout the county	Tornado	Both	Project	All	In Progress / Ongoing	1,000,000 / Federal Grants and local match	2011 Plan, 2016 Plan update
3.1.2	N/A	Install additional warning sirens throughout the county to achieve 100% coverage	Tornado	Both	Project	All	Pending, Awaiting funding / 2017	1,000,000/ Federal Grants and local match	2011 Plan, 2016 Plan update
3.1.3	N/A	Wind retrofit vulnerable 911 / EMA / Police HQ facilities	Tornado	Both	Project	All	Pending, Awaiting funding / 2017	25,000 / County general fund / Grants	2011 Plan, 2016 Plan Update

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
3.1.4	N/A	Construct Safe Rooms for vulnerable areas which lack safer shelter areas	Tornado	Both	Project	All	Pending, Awaiting funding / 2017	100,000 / County general fund / Grants	2011 Plan, 2016 Plan Update
4	N/A	Goal for Prevention: Mitigate tornado hazards through non – structural means							
4.1	N/A	Identify specific action steps for accomplishing goal							
4.1.1	N/A	Implement a reverse call out system	Tornado	Both	Action	All	Completed in 2009 Code Red mass notification system and various phone apps available to population	N/A	2005 Plan

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
4.1.2	N/A	Develop public education and awareness program regarding high winds and tornadoes	Tornado	Both	Action	All	Completed in 2006 / Ongoing State of Georgia implemented Ready.Ga.Gov website which is promoted as a resource	City / County staff time	2011 Plan, 2016 Plan update
4.1.3	N/A	Implement and aggressive campaign to identify Cobb's special-needs citizens for individual notification of warnings and conditions	Tornado	Both	Action	All	Completed in 2006 / Ongoing Code Red mass notification system and various phone apps available to population	City / County staff time	2011 Plan, 2016 Plan Update

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
4.1.4	N/A	Identify safer areas within county government buildings	Tornado	Both	Action	All	In progress / Ongoing	City / County staff time	2011 Plan, 2016 Plan Update
5	N/A	Goal for Prevention: Mitigate thunderstorm hazards through non-structural means							
5.1	N/A	Identify specific action steps for accomplishing goal							
5.1.1	N/A	Provide weather radios to vulnerable populations	Thunderstorms	Both	Action	All	Pending, Awaiting funding / 2017	50,000 / City / County general fund / grants	2011 Plan, 2016 Plan update

Cobb County Hazard Mitigation Plan – 2016

Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
5.1.2	N/A	Initiate a countywide natural hazard public awareness campaign that includes recommendations for weather radios, etc.	Thunderstorms	Both	Action	All	Completed / Ongoing. State of Georgia implemented Ready.Ga.Gov website which is promoted as a resource	City / County staff time	2011 Plan, 2016 Plan update
5.1.3	N/A	Conduct a study about how to increase protection for properties from hail	Thunderstorms	Both	Action	All	Pending, Awaiting funding / 2018	15,000 / County general fund / grants	2011 Plan, 2016 Plan update

Cobb County Hazard Mitigation Plan – 2016

Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
5.1.4	N/A	Provide weather radios to departments within county government buildings	Thunderstorms	Both	Action	All	Completed in 2009 / CEMA continues to provide radios as needed	5,000 / County general fund / grants	2011 Plan, 2016 Plan update
6	N/A	Goal for Prevention: Mitigate lightning hazards through non-structural means							
6.1	N/A	Identify specific action steps for accomplishing goal							
6.1.1	N/A	Inspect all city and county critical facilities for proper grounding	Lightning	Both	Action	All	Awaiting funding / 2013	12,000 / County / city general fund / grants	2011 Plan, 2016 Plan update

Cobb County Hazard Mitigation Plan – 2016

Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
6.1.2	N/A	Promote the use of lightning rods and surge protectors as part of a public awareness initiative	Lightning	Both	Action	All	In Progress / Ongoing	City / County staff time	2011 Plan, 2016 Plan update
7	N/A	Goal for Prevention: Mitigate lightning hazards through structural means							
7.1	N/A	Identify specific action steps for accomplishing goal							
7.1.1	N/A	Install lightning rods on high value critical facilities, including schools, law enforcement facilities, etc.	Lightning	Both	Action	All	Pending, Awaiting funding / 2016	5,000,000 / county and city general funds	2011 Plan, 2016 Plan update

Cobb County Hazard Mitigation Plan – 2016

Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
7.1.2	N/A	Install surge protectors at power entrance of applicable critical facilities	Lightning	Both	Action	All	Pending, Awaiting funding / 2016	5,000,000 / county/city general funds	2011 Plan, 2016 Plan update
8	N/A	Goal for Prevention: Mitigate winter storm hazards through non-structural means							
8.1	N/A	Identify specific action steps for accomplishing goal							
8.1.1	N/A	Inventory, test, and assess shortages of generators at all county and city critical facilities. Purchase and install where needed	Winter storms	Both	Action	All	In Progress / Ongoing	10,000 / county/city general funds / grants	2011 Plan, 2016 Plan update

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
8.1.2	N/A	Develop brochures and related training materials to better educate the public as part of a public awareness campaign about natural hazards	Winter storms	Both	Project	All	Completed in 2006/ Ongoing State of Georgia implemented Ready.Ga.Gov website which is promoted as a resource TV23, Cobb Public Access Channel, is also a resource	City/ County staff time	2011 Plan, 2016 Plan update
8.1.3	N/A	Develop a comprehensive strategy for improving a countywide crisis alert or notification system	Winter storms	Both	Project	All	Complete / 2009	N/A	2005 Plan

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
9	N/A	Goal for Prevention: Mitigate Earthquake hazards through non-structural means							
9.1	N/A	Identify specific action steps for accomplishing goal							
9.1.1	N/A	Create earthquake information materials as part of all-hazards, public awareness initiative	Earth-quakes	Both	Action	All	Completed / Ongoing. State of Georgia implemented Ready.Ga.Gov website which is promoted as a resource	City / County staff time	2011 Plan, 2016 Plan update
10	N/A	Goal for Prevention: Mitigate hazards caused by Drought conditions							
10.1	N/A	Identify Specific action steps for accomplishing goal							
10.1.1	N/A	Identify areas vulnerable to the effect of drought conditions and develop a protective action plan	Drought	Both	Project	All	Pending, Awaiting funding / 2018	1,000 / City / County staff time	2011 Plan, 2016 Plan update

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
10.1.2	N/A	Educate citizens and farm owners in the County about the potential negative effects that arise from extended drought conditions	Drought	Both	Project	All	Pending, Awaiting funding / 2018	8,000 / City / County staff time	2011 Plan, 2016 Plan update
10.1.3	N/A	Conduct feasibility study of proactive measures for Cobb agriculture to include livestock watering ponds and capturing storm water	Drought	Both	Project	All	Pending, Awaiting funding / 2018	35,000 / City / County staff time	2011 Plan, 2016 Plan update

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
10.1.4	N/A	Conduct study about how best to coordinate the range of Federal support programs potentially available to support Cobb agriculture.	Drought	Both	Project	All	Pending, Awaiting funding / 2018	20,000 / City / County staff time	2011 Plan, 2016 Plan update
11	N/A	Goal for Prevention: Mitigate Dam (failure) hazards through non-structural means							
11.1	N/A	Identify Specific action steps for accomplishing goal							
11.1.1	N/A	Inventory Cobb dams, record GPS coordinates and conduct initial assessment of dam safety	Dams	Both	Project	All	Completed 2006	N/A - completed	2005 Plan

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
11.1.2	N/A	Perform field survey including dams, spill-ways, downstream cross section and downstream structures within dam breach zone.	Dams	Both	Project	All	Pending, Awaiting funding / 2016	2,000,000 / County / City funds / grants	2011 Plan, 2016 Plan update
11.1.3	N/A	Educate dam owners and the general public about Dam hazards. Promote development of Emergency Action Plans (EAPs) for dams	Dams	New	Action	All	Pending, New Initiative GA Safe Dams Program also developing EAPs with info. such as vulnerable structures downstream	1,000 / City / County staff time	2016 Plan update

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
11.1.4	N/A	Retrofit existing dams using Cobb County's Storage Volume Purchase Program to create additional freeboard and volume to store flood waters	Flood	Both	Action	All	In Progress, Ongoing This is not a new initiative but was added to this matrix as 11.1.4 in 2016. It was identified in the 2011 plan within the narrative but not given a goal number at that time	100,000 Cobb Water System, Grant Funds	2011 Plan, 2016 Plan update
12	N/A	Goal for Prevention: Mitigate the threat of hazardous material spills							
12.1	N/A	Identify Specific action steps for accomplishing goal							

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
12.1.1	N/A	Identify ground-water recharge areas in County near transportation routes and assess / correct for vulnerability	Hazardous Materials	Both	Action	All	Pending, Awaiting funding / 2016	55,000 / County / City general funds / grants	2011 Plan, 2016 Plan update
12.1.2	N/A	Assess current resource requirements of the Cobb HAZMAT Team and fire and emergency services in general	Hazardous Materials	Both	Project	All	Completed / Ongoing	3,000 / City / County staff time	2011 Plan, 2016 Plan update

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
12.1.3	N/A	Develop proposal identifying current resource requirements needed to maintain peak operating proficiency of the Cobb HAZMAT Team	Hazardous Materials	Both	Project	All	Completed / Ongoing	15,000 / City / County staff time	2011 Plan, 2016 plan update

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Current #	Rescinds 2011 PDMP Goal	Goals, Objectives and Mitigation Measures	Hazards Addressed	Affects New or Existing Buildings or Infrastructure	Action or Project	Responsible Jurisdiction	Status / Anticipated Date of Completion / Notes	Approx. Cost / Funding Source	Plan Source
12.1.4	N/A	Fund ongoing HAZMAT training to help maintain the required skills, knowledge, and abilities of the Cobb HAZMAT Response Team	Hazardous Materials	Both	Project	All	Completed / Ongoing	10,000 / LEPC, DOT Hazardous Materials Preparedness Grant, FEMA Hazardous Materials Training Program	2011 Plan, 2016 Plan update
13	N/A	Goal for Prevention: Mitigate the threat of terrorism							
13.1	N/A	Identify Specific action steps for accomplishing goal							
		CONFIDENTIAL							

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CHAPTER 7 – EXECUTING THE PLAN

SECTION I – IMPLEMENTATION ACTION PLAN

Cobb County Emergency Management Agency was responsible for managing the plan update process through its Emergency Management Planner on staff. The plan will be submitted to both the county and city managers for approval and to the city councils and the Cobb County Board of Commissioners for formal adoption. Once GEMA approves the plan, it will then be forwarded to FEMA for review. The document will be reviewed and validated by the Planning Committee as needed, but will be updated continually by Cobb EMA. As required, it will be forwarded to GEMA at least every five years.

The CEMA Director or his/her designee shall assume responsibility for the upkeep and maintenance of the plan. The CEMA Director shall ensure that the Hazard Mitigation Plan is used as a blueprint for initiating the identified mitigation measures within Cobb County and its six local Cities: Acworth; Austell; Kennesaw; Marietta; Powder Springs; and Smyrna. The CEMA Director, or designee, shall be authorized to convene a committee to review and update this plan as needed throughout the useful life of the plan, not to exceed five years. Through this plan update process, the CEMA Director or his/her designee shall identify projects successfully undertaken in initiating mitigation measures within Cobb County and the six cities: the planning document will reflect completion dates of all projects. When convened by the CEMA Director, the committee will identify any new or additional mitigation projects that can be undertaken in the county or the six cities.

The Executive Planning Committee compiled the list of mitigation action items. The mitigation goals, objectives, and actions were first identified and individually organized by goal and objective. The mitigation actions were then prioritized based on what was perceived as most beneficial to the county and its six cities. Several criteria were established to assist planners in the prioritization of these suggested mitigation actions. Criteria included perceived cost benefit or cost effectiveness; availability of potential funding sources; overall feasibility; measurable milestones; and both public and political support for the proposed actions.

Relevant sections of this Hazard Mitigation Plan should also be included in the next revision of the Cobb County Local Emergency Operations Plan (LEOP) and is encouraged to be used a reference by city and county planners and as many complementary programs as feasible. Cobb County Water System and CEMA already have programs that are complimentary to the goals of pre-disaster mitigation. Some of these programs include safety education programs, Citizen Corps Council, Keep Cobb Beautiful and Community Emergency Response Team (CERT). The Water System also conducts community programs that include flood-related issues. In addition, Cobb's TV23/Communications runs continual public service programming.

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SECTION II – EVALUATION

The CEMA Director, or designee, will ensure that the HMP is updated at least every five years. The evaluation will use a checklist to determine what mitigation actions were undertaken, the completion date of these actions, the cost associated with each completed action, and whether or not the actions were successful.

The CEMA Director, or designee, will schedule meetings to preserve continuity and consistency throughout the review process. These meetings will provide an opportunity to discuss the progress of the action items and maintain the partnerships that are essential to sustain the mitigation plan.

It should be noted that the emergence of these partnerships between the county and the cities is one of the most important outcomes of the Hazard Mitigation planning process.

The CEMA Director, or designee, will be responsible for ensuring that the results of the plan evaluation(s) are reported to the Cobb County Board of Commissioners, and to any agency or organization having an interest in the hazard mitigation activities identified in the plan.

SECTION III – MULTI-JURISDICTIONAL STRATEGY AND CONSIDERATIONS

The Cobb Emergency Management Agency is the lead agency for implementing the Hazard Mitigation Plan. Cobb County and the Cities of Acworth; Austell; Kennesaw; Marietta; Powder Springs; and Smyrna, have authorized the CEMA to act on their behalf. The Hazard Mitigation planners have identified the importance of cooperation and collaboration regarding mitigation-related projects.

The Cities of: Acworth; Austell; Kennesaw; Marietta; Powder Springs; and Smyrna; and unincorporated Cobb County provided the core members to the planning process. Participation from each jurisdiction was solicited and provided to the Cobb Emergency Management Agency. As a result, a multi-jurisdictional plan was created for Cobb County with all participants contributing to the document. A positive outcome of this process was the strengthening of intra-government relationships between the various government departments that provided information to CEMA.

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SECTION IV – PLAN UPDATE AND MAINTENANCE

In accordance with the requirements set forth in the Disaster Mitigation Act of 2000, Cobb County is required to update and revise the plan every five years. The 2016 plan update and maintenance process continues in the same manner as the previous plan update. At the direction of the CEMA Director, the Cobb County Hazard Mitigation Executive Planning Committee can be reconvened in order to accomplish this revision. The revision process will include a schedule, a timeline, and list of the agencies or organizations participating in the plan revision. The mitigation goals, objectives and action items will be reviewed to determine their relevance given the changing situations in the County, the State, or Federal policy. The risk assessment portion of the plan will also be reviewed to determine if this information should be updated.

Cobb County is committed to having active public participation during reviews and updates of the Hazard Mitigation Plan. During plan revisions, the committee will conduct at least one public survey giving the public an opportunity to offer input.

CEMA will maintain documentation that captures any public participation in the plan review process. This documentation may include newspaper clippings reflecting the advertised public hearing notice, sign-in sheets, meeting minutes, etc. This information will be specifically identified in proposed plan revisions forwarded to GEMA and FEMA.

The CEMA Director or designee will also present Hazard Mitigation Plan revisions to the Cobb County Board of Commissioners for formal adoption.

A current distribution list for the Hazard Mitigation Plan will be maintained to ensure that revised versions of the Plan are properly distributed. A copy of the final plan will be available in hard copy at the Cobb County Emergency Management Agency headquarters, as well as the Emergency Management Agency web site at www.cobbcounty.org/ema.

By conclusion of the five-year period following initial approval of the plan, the CEMA Director or designee shall be responsible for submitting a revised Hazard Mitigation Plan to the Georgia Emergency Management Agency and the Federal Emergency Management Agency for review.

Items for Future Committee Consideration

From information gathered January 12, 2016 Planning Committee meeting and public comments, items to be addressed at future meetings and potential plan updates include:

- Integrating the Wildfire hazard into the mitigation plan including analysis of the Wildland Urban Interface within Cobb County.

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- Separating the Winter Weather hazard from Severe Weather in order to make it a standalone hazard.

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CHAPTER 8 – CONCLUSION

SECTION I – SUMMARY

The CEMA will document all future hazardous events. As a result of the Hazard Mitigation planning process, Cobb County has compiled a central repository of information and knowledge regarding:

- The county's disaster history
- The presence of natural and technological hazards
- The likelihood of these hazards occurring within the county
- The potential impacts and challenges these hazards present to the community

The Hazard Mitigation planning process followed established GEMA/FEMA guidelines. It began with the identification of hazards that have occurred within Cobb County over the past fifty to sixty years. This was followed with the identification of critical facilities within the County and six cities of Acworth, Austell, Kennesaw, Marietta, Powder Springs and Smyrna. Vulnerability assessments of various hazards were then made that included potential hazard-specific losses. After evaluating potential losses within the county/cities, mitigation goals, objectives, and related action items were then developed and prioritized. The planning process served as the mechanism for crafting the document.

The planning initiative was preceded by formation of the Executive Planning Committee. Citizens throughout the county and in all jurisdictions were given the opportunity to provide public comment via an online survey.

Hazard mitigation planners found that it is often difficult to predict the potential threats from some hazards. Tornadoes and other types of severe weather may strike randomly. The hazards may affect a small, localized area or blanket the entire county, affecting all businesses, public facilities, and residents within. Recognizing this uncertainty, planners proposed both general and specific measures to aid in the mitigation of the natural and technological hazards most likely to affect Cobb County. These measures include, but are not limited to, the protection of public facilities and infrastructure, proposing progressive government policies, and the proactive use of codes and regulations.

In summary, the mission of the Cobb County Hazard Mitigation Executive Planning Committee is to make Cobb County and the cities of Acworth, Austell, Kennesaw, Marietta, Powder Springs, and Smyrna less vulnerable to the effects of natural and human-caused hazards through effective and efficient planning, hazard risk assessments, and a coordinated feasible mitigation strategy. The planners believe that this plan, when properly implemented, will help to make all of Cobb County a safer place to live and work for all citizens.

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