



Multi-Jurisdictional Hazard Mitigation Plan 2016

For Carroll County and the Cities of Bowdon,
Bremen, Carrollton, Mount Zion, Roopville,
Temple, Villa Rica and Whitesburg

ABSTRACT

Carroll County and its cities have assessed major hazards facing the area, including: Flooding, Tornadoes, Severe Thunderstorms, Tropical Cyclones, Winter Storms, Drought and Wildfires, Earthquakes, Pandemics, Technological (Hazardous Materials Incidents and Dam Failure) and All-Hazards. For each hazard, goals, objectives and action steps were developed to mitigate the effects of each hazard to life, property and the environment.

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Chapter I. Introduction

Update for 2016: More detailed explanation on hazard mitigation planning origins, as well as processes and terminology, such as FEMA categories and STAPLEE method. Clarified county's processes and added a flow chart. Discussed public participation strategy in further detail.

A. Purpose and Need of the Plan, Authority and Statement of the Problem

Hazard Mitigation Plans are essential tools in protecting the public's health, safety and welfare in a disaster. In mitigating the potential effects ahead of time, Carroll County is acting proactively to protect life, safety, property and the environment from natural and technological hazards. As disasters become increasingly expensive, it is vital that the county has the necessary regulations in place to safeguard its interests. How can Carroll County build more sustainably and with more resilience? What policies could be put in place to better protect residents or increase public awareness? This update will seek to answer those questions and further expand on the risks and vulnerabilities that Carroll County faces in terms of disasters, as well as the mitigation steps needed to abate those concerns.

Mitigation offers an opportunity to save both lives and money, making communities more sustainable and resilient. Several acts make up the federal law as it pertains to disaster prevention and emergency management. To support the expanded role of emergency management, Congress passed the **Disaster Mitigation Act of 2000**, amending the **Stafford Act**, which deals with the development of local Hazard Mitigation Plans. Its purpose is to establish a national program for pre-disaster mitigation, streamline administration of disaster relief, and control federal costs of disaster assistance with the ultimate goal of reducing the loss of life and property during a disaster.

To remain eligible for federal grant funds, each jurisdiction in the state must adopt a Hazard Mitigation Plan to be approved by its state agency and by FEMA.

Established by Congress in 1988 and since amended, the **Hazard Mitigation Grant Program (HMG)** provides funds to mitigate development after a disaster so that it is more resilient against natural hazards. Examples of this include: property acquisition and relocation projects and structural retrofitting to minimize damages from natural hazards. Both are examples of projects that Carroll County has received HMG funds after past disasters.

Funding for the **Pre-Disaster Mitigation Program (PDM)** is to assist state, local and tribal governments in implementing cost-effective hazard mitigation activities that complement a comprehensive mitigation program, such as providing planning grants to local jurisdictions to enable them to develop local hazard mitigation plans. To qualify, the jurisdiction must participate in the **National Flood Insurance Program (NFIP)**, be in good standing with NFIP, and have a FEMA approved Hazard Mitigation Plan. Carroll County's participation in the NFIP is detailed in Chapter III. C. 1.

B. Local Methodology, Brief Description of Plan Update Process and Participants in the Update Process

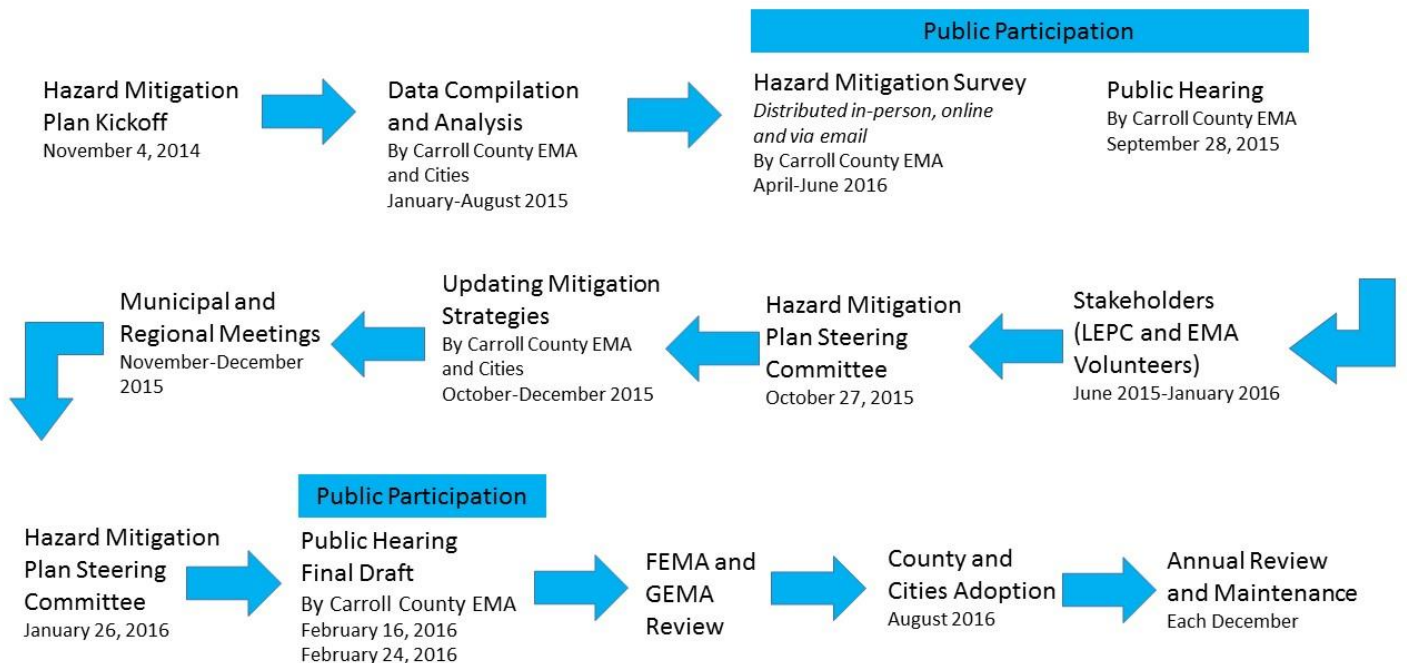
In updating this plan, the county relied on the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Planning's "How To" Guides. According to "Getting Started: Building Support for Mitigation

Planning;” the suggested process for preparing a Hazard Mitigation Plan is to 1) Organize resources and identify stakeholders and those holding technical expertise; 2) Assess risks to the community; 3) Develop a Mitigation Plan and lastly; 4) Implement and Monitor that plan once it is adopted. (FEMA 386-1)

In preparing the Hazard Mitigation Plan, staff conducted a review of the county’s 2008 Comprehensive Plan, the Local Emergency Operations Plan, and the county’s environmental ordinances. Additionally data for each of the hazard categories was analyzed and updated using the references included at the end of the document. In particular, the National Climate Data Center, National Weather Services, Georgia Department of Natural Resources, Georgia Forestry and Georgia Emergency Management Agency were useful sources of information. Carroll County’s Community Wildfire Protection Plan is currently “in process” and will be further incorporated upon the documents completion.

Below is a Flow Chart that details Carroll County’s Hazard Mitigation Planning Process.

Table 1.2 Hazard Mitigation Plan Flow Chart



1. Hazard Mitigation Plan Steering Committee

The Plan is the result of a community-wide effort put forth over the past fifteen months utilizing FEMA’s Hazard Mitigation Plan “How To” Guides to aid in laying out the planning process described above. Stakeholders and persons with technical expertise were identified early in the process. As was the case in the 2010 plan update, full participation was provided by Carroll County and the cities of Bowdon, Bremen, Carrollton, Mount Zion, Ropville, Temple, Villa Rica and Whitesburg. Each jurisdiction of Carroll County had representatives on the Hazard Mitigation Plan Steering Committee and were present at planning meetings and responsive to requests for information. The Hazard Mitigation Plan Steering Committee was comprised of representatives from the following agencies listed below.

Table 1.2: Participants in Hazard Mitigation Plan Update	
Carroll County Board of Commissioners Marty Smith (Chairman)	
Trent North, District 1 Commissioner Vickie Anderson, District 2 Commissioner Tommy Lee, District 3 Commissioner	Michelle Morgan, District 4 Commissioner Kevin Jackson, District 5 Commissioner George Chambers, District 6 Commissioner

Carroll County Community Development Peter Debick, GIS Manager	Carroll County Department of Family and Children Services Charlene Harrod
Carroll County E-911 Trish Orr, Director Tyler Shadix, Operations Manager	Carroll County Fire Department Scott Blue, Chief
Carroll County Public Works Charles Pope, Director	Carroll County Sheriff’s Office Terry Langley, Sheriff Craig Dodson, Major Guy Pope, Lieutenant
Carroll County Sheriff’s Office Emergency Management Tim Padgett, Director Amy Goolsby, Planner	
Utilities	
Carroll County Water Authority Matt Windom, Executive Director	Carroll EMC Susan Lester, Vice President
Georgia Power Bart Cater, Engineer	Plantation Pipeline Kevin Carroll, Regional Representative
Southern Natural Gas Alain Fain, Regional Representative	
Schools and Universities	
Carroll County Schools Terry Jones, Assistant Superintendent	Carrollton City Schools Mike Sanders, Assistant Superintendent
University of West Georgia Tom Machel, Police Chief	West Georgia Technical College James Perry, Police Chief

<i>Municipalities</i>	
City of Bowdon Bobby Elliott, City Manager	
City of Bremen Perry Hicks, City Manager Mike Thompson, Operations Manager Jason Hurley, Fire Chief	
City of Carrollton Walt Hollingsworth, Mayor Lynne Miller, Planner	City of Carrollton Fire Department Jimmy Bearden, Chief Tracy Smith, Marshall
City of Carrollton Police Department Joel Richards, Chief	
City of Mount Zion Police Department Brian Sims, Chief	
City of Roopville Bob Merrill, Mayor	
City of Temple Lester Harmon, Mayor Dwayne Eberhart, Public Works Director	
City of Villa Rica Janet Hyde, Planner	City of Villa Rica Police Department Michael Mansour, Police Chief Scott Parker, Captain Hunter Ethredge, Sergeant
City of Whitesburg Amy Williford, Council Member Juanita Howell, Police Chief	
<i>Agencies and Organizations</i>	
District 4 Public Health / Carroll County Health Department Amy McColley, Nurse Manager	
Georgia Emergency Management Agency Tim Reeve, Area 1 Field Coordinator	
Georgia Forestry Seth Holland, Ranger One	
Georgia State Patrol Michael Land, Corporal	
Three Rivers Red Cross Jessica McFadden, Program Manager	Salvation Army – Carrollton Glenda Lambert, Manager
Tanner Health System Gary Thomas, Associate Administrator	
West Georgia Ambulance Shane Bell, Director of Operations	
West Georgia Ham Radio Operators John Playford, Member	
West Georgia Local Emergency Planning Committee (LEPC) Danny Fowler, Chairman	

On November 4, 2014, the Carroll County Hazard Mitigation Plan kick-off meeting was held in the Training Room at the Carroll County Sheriff's Office. All of the elected officials, as well as representatives from each of the municipalities, were invited to participate in the meeting via email. Kelly Reeves, a planner with GEMA, attended the meeting and reviewed Hazard Mitigation Planning with the group. Local Emergency Management staff began collecting and updating data for the plan, as well as contacting the jurisdictions to determine the status of mitigation, goals, objectives and action steps. A second meeting followed on October 27, 2015, and a final meeting was held January 26, 2016 to review the draft plan. Meetings and phone calls with individual jurisdictions occurred during this period as well.

The responsibilities of a Hazard Mitigation Plan Steering Committee member were as follows:

- Attend Meetings
- Provide Information and Feedback
- Assess Mitigation Alternatives
- Adopt the Plan

2. Regional Outreach

Carroll County prides itself on working together with neighboring counties on regional projects as well as providing mutual aid. One example of this is the Western Area Regional Radio System (WARRS), an authority made up of Haralson, Carroll, Heard and Coweta counties which provides radio communications to the region. Along with Douglas County, each of our neighboring WARRS counties has signed off on our plan as being in supportive of regional goals and objectives. This is documented in Appendix I.

3. Public Participation Strategy

Via social media (Facebook, Twitter and the county website), the public was encouraged to provide comments to the local Emergency Management Agency (EMA) before, during and after the drafting of the Hazard Mitigation Plan by responding to requests for handwritten surveys, providing feedback through emails or attending a meeting.

Carroll County Sheriff's Office Emergency Management Agency has been proactive in engaging the public with social media. The public can find us at the following locations:

- <https://www.facebook.com/CarrollGAEMA> (Facebook)
- https://twitter.com/CarrollGA_EMA (Twitter)
- <http://www.carrollcountyga.com/150/Emergency-Management-Agency> (County Website)

This will continue on an ongoing basis after the plan is adopted, especially during the annual review and update which is detailed in G. For examples of our social media usage, please refer to Appendix B.

a. Hazards Survey

A survey was conducted to measure the residents' concerns as to the many threats that the county faces, including: tornadoes, hazmat releases, wildfires, flooding and earthquakes.

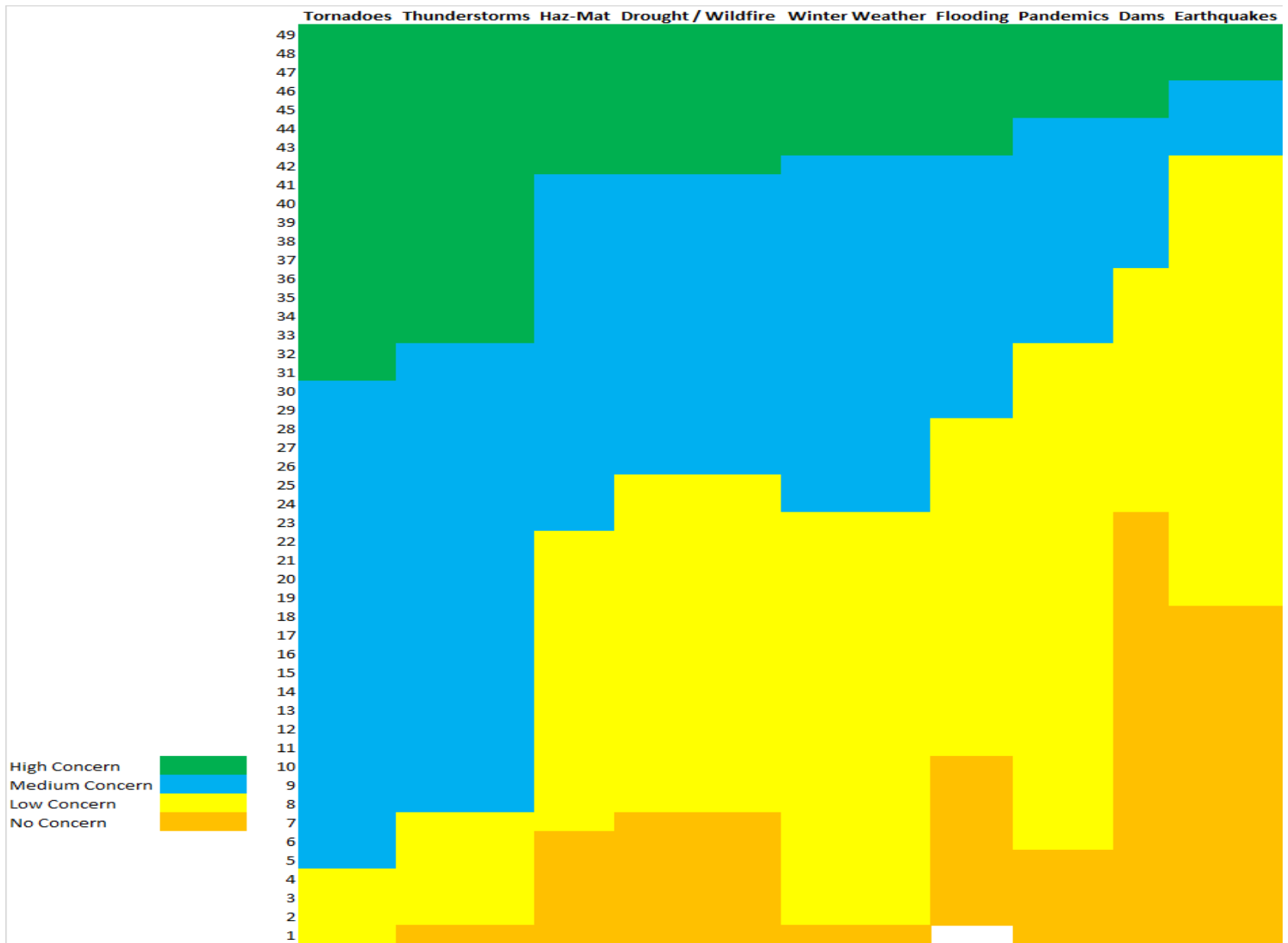


Figure 1.1: Residents' Concerns over Hazards Facing the County and Municipalities

Although the survey was primarily distributed electronically, a response was received from each of the jurisdictions represented in the Hazard Mitigation Plan, with the highest percentage coming from Unincorporated Carroll County.

Table 1.3: Percentage of Survey Participants by Jurisdiction

35%	Unincorporated County
2%	Bremen
6%	Bowdon
18%	Carrollton
4%	Mount Zion
4%	Roopville
4%	Temple
8%	Villa Rica
10%	Whitesburg
2%	Work in Carroll
6%	No Answer

The survey gauged how residents felt about the various hazards documented in the plan and asked if there were additional hazards not listed for which they had concerns. Finally, they were polled on which Mitigation actions they would suggest for the county.

The number one hazard for Carroll County was tornadoes, closely followed by thunderstorms. These categories received overwhelmingly medium to high responses. The next tier of hazard concerns included drought/wildfire, winter weather, and flooding, which had about half the responses as high to medium concern. Lastly, pandemics, dams, and earthquakes received mostly responses of no or low concern from residents.

In regards to hazards not listed in the plan, responses included crime, civil unrest, electromagnetic pulse, active shooter, and sewer failure. Mitigation suggestions included more planning and drills, retention walls to prevent flooding, dredging of ponds and better notification systems, and additional weather sirens (specifically for the west Carrollton area).

When asked which hazard concerned them the most, the answer was not surprisingly thunderstorms. With strong winds, hail and lightning, this is one of the most frequent hazards to affect the county.

b. Public Hearings

A public meeting was held on September 28, 2015 during the drafting stage, and final draft hearings were held on February 16, 2016 and February 24, 2016. The Board of Commissioners and each of the cities will adopt the plan after it has been approved by the Georgia Emergency Management Agency and Federal Emergency Management Agency, and these resolutions will be located in Appendix A. Requests for comments were also printed in the local newspaper, radio spots and social media, including the Carroll County Sheriff's Office EMA's Facebook and Twitter. The efforts to involve the public and obtain valuable citizen input are documented in Appendix B.

Table 1.4: Municipality Participation in Mitigation Plan			
<i>Municipality</i>	<i>2016 Plan</i>	<i>2010 Plan</i>	<i>2004 Plan</i>
Bowdon	✓	✓	✓
Bremen	✓	✓	✓
Carrollton	✓	✓	✓
Mount Zion	✓	✓	✓
Temple	✓	✓	✓
Roopville	✓	✓	✓
Villa Rica	✓	✓	✓
Whitesburg	✓	✓	✓

C. Original Plan Review and Revisions

The original plan was reviewed by the Hazard Mitigation Plan Steering Committee and changes to mitigation strategies were recommended and discussed. Each municipality located in the Carroll County also reviewed the original plan and made changes needed for their area. The completed and deleted action steps and the unchanged action steps are listed in Chapter IV in each section accordingly. The introduction to each chapter also contains a brief listing of changes made.

Public participation was welcomed in the process and sought utilizing a variety of methods. The updated plan was placed on the county website for review prior to meetings for final public comment held on February 16, 2016 and February 24, 2016. The update was also presented at a meeting of the Local Emergency Planning Committee (LEPC), which consists of public safety, private businesses and industry representatives, who develop and review the district’s emergency response plan, as well as to meetings of the Emergency Management Volunteers, a dedicated group of citizens who help when disaster strikes.

Citizen participation through the survey, social media blasts, stakeholder committees (Emergency Management Volunteers and LEPC) and public meetings was an important part of the drafting process, and comments received were reviewed and assessed by the Hazard Mitigation Team. A complete list of mitigation strategies and action steps can be found in Chapter IV.

D. Organization of the Plan

The Carroll County Hazard Mitigation Plan contains the following sections: Introduction, Community Profile and Capabilities Assessment, Hazard Vulnerability Assessment (Natural and Technological Hazards), Mitigation Goals (Natural and Technological), Plan Execution, Acknowledgments and References.

E. Local Hazard, Risk, and Vulnerability (HRV) Summary, Local Mitigation Goals and Objectives

The Hazard, Risk and Vulnerability Assessment was performed following guidelines set forth by FEMA in “Understanding Your Risks – Identifying Hazards and Estimating Losses” (FEMA 386-2). The process involved four steps. The four steps were:

1. Identify Hazards:
The history subcommittee collected information from a variety of sources to provide a detailed hazard history of Carroll County. The complete hazard history is provided in Appendix C (pages C-2 – C-16) of this document. This data was used to determine the probability of different hazards affecting Carroll County.
2. Profile Hazard Events:
This data combined hazard history and projections based upon historical data for predicting the possibilities for future events. A majority of the hazards in Carroll County are not location specific and are general to Carroll County. Flooding and hazardous materials spills are more likely to occur in specific zones within the county (flood plains, highways, etc.). The hazard event profile is available in Appendix C of this document.
3. Estimated Losses:
The combination of structure loss, contents loss and function loss was evaluated 100 percent of value.
4. Inventory Assets:
This process began with the identification of those facilities and infrastructure that are critical to Carroll County. The inventory included facility specific information such as structure value, replacement cost, contents value, displacement costs and much more. The completed inventory is available in Appendix A of this document. The map below shows all facilities critical to Carroll County.

In assessing the hazards facing Carroll County, the committee looked at Impact and Vulnerability. With impact, it is the effect of the hazard on the community and its assets, whereas vulnerability looks at how exposed or susceptible the asset is to damage.

The information that was obtained and/or developed during this project was used to identify possible mitigation efforts to further reduce the vulnerability of Carroll County to both natural and technological hazards. Each jurisdiction assigned a responsible organization, coordinating organization, timeline, costs, funding sources, estimated benefit and a priority for each of the mitigation action steps.

From FEMA publication 386 – 3 (Developing the Mitigation Plan), the committee utilized Worksheet #4 (Evaluate Alternative Mitigation Actions) in developing and prioritizing its mitigation actions, by determining the social, technical, administrative, political, lead, environmental, and economic considerations for each action. This is known as the STAPLEE method, considerations which guided the evaluation of the range of measures considered by the Hazard Mitigation Plan Steering Committee and the final recommended action programs for each participating jurisdiction.

The STAPLEE Criteria are listed as follows:

Social

- Community acceptance
- What is the impact on each segment of citizens?

Technical

- Feasible
- Is this a long term solution?
- Secondary impacts – Will this create other problems?

Administrative

- Staffing current- or can it be obtained
- Funding
- Can the jurisdiction provide maintenance?

Political

- Political support
- A local champion
- Will there be enough political support?

Legal

- State authority
- Existing local authority – will new ordinances/regulations be needed?
- Potential legal challenge

Economic

- Benefit of action
- Cost of action
- Contributes to economic goals
- Outside funding required

Environmental – especially when using federal funds

- Impact on land/water
- Endangered species
- Hazmat/waste sites
- Consistent with local environmental goals
- Consistent with federal laws

Mitigation actions from previous plans and recommended actions to add were reviewed against the STAPLEE criteria by local emergency management staff, and these were provided to the committee for review. These were reorganized into the 2016 plan in Chapter IV. STAPLEE worksheets can be found in Appendix H. All projects are deemed important to the county and municipalities. Some of the county's most critical projects may score lower with STAPLEE simply because of a lack of funding.

Additionally, the plan identifies which federal category each of the mitigation actions is grouped: prevention, property protection, public education and awareness, natural resource protection, structural projects and emergency services. Descriptions for each FEMA category can be found below:

- **Prevention.** Adopting and administering ordinances, regulations, and programs that manage the development of land and buildings to minimize risks of loss due to natural hazards.
- **Property Protection.** Actions that involve the modification of existing buildings or infrastructure to protect them from a hazard or removal from the hazard area.
- **Public Education and Awareness.** Educating and informing the public about risks of hazards and the techniques available to reduce loss of life or property.
- **Natural Resource Protection.** Minimizing hazard losses while preserving and restoring the functions of natural systems.
- **Structural Projects.** Construction of structures to reduce the impact of a hazard.
- **Emergency Services.** Actions such as hazard threat recognition, hazard warning systems, emergency response, protection of critical facilities, and health and safety maintenance

The methods above guided the Hazard Mitigation Plan Steering Committee in reviewing and prioritizing its mitigation goals, objectives and action steps.

F. Multi-Jurisdictional Special Consideration (HRV, Goals and At-Risk Populations)

The cities of Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg were active participants in the hazard mitigation planning process. Representatives from each of the cities participated in the general session meetings and via inter-agency correspondence. Mitigation projects were provided by each municipality within Carroll County. Considerations were given to at-risk populations in developing these strategies.

G. Adoption, Monitoring, Evaluation, Updating and Plan Maintenance

The Carroll County Board of Commissioners and the mayors of Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg will act to formally adopt this plan upon the confirmation of its approval by both Georgia Emergency Management Agency (GEMA) and FEMA Region IV.

The Carroll County Sheriff's Office Emergency Management Agency will be responsible for all monitoring, evaluating and updating of the plan. A copy of the adoption resolution for the County and each of the Cities will be located in Appendix A.

Updates to the plan will be conducted on an as-needed basis, with an annual review each December performed by Carroll County Sheriff’s Office Emergency Management Agency. The plan update will include the following milestones:

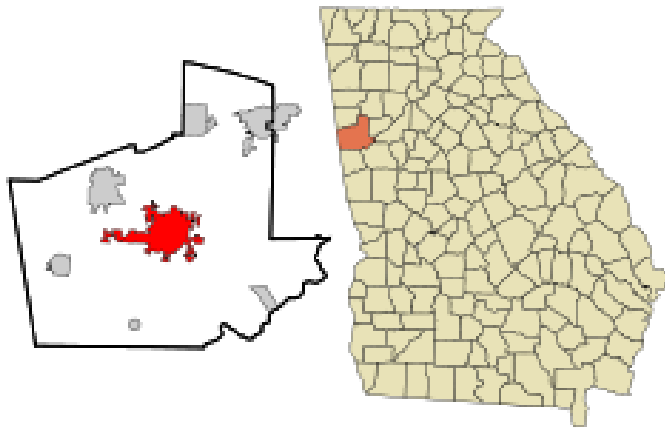
- Analyze, update and develop goals, objectives and action steps
- Mitigation Strategy Update
- Update the Planning Process
- Plan Adoption and Implementation
- Update Plan Maintenance and Implementation
- Submit Plan to GEMA/FEMA for review and approval (as required)

Through the continued use of social media, presentations to various civic groups and surveys, the public will be kept informed and engaged concerning the Hazard Mitigation Plan. The Carroll County Sheriff’s Office Emergency Management Agency will be reviewing the plan every five years to reflect changes in development, note progress in the county’s mitigation efforts and discuss any changes in priorities.

Carroll County’s Comprehensive Plan is scheduled to be updated in 2018, and the goals, objectives and action steps of the Hazard Mitigation Plan will be cross-referenced in the new plan, providing a guide for better, more resilient development.

Table 1.5: Plan Adoption by Jurisdiction	
City	Date Adoption
Carroll County	Upon GEMA and FEMA Approval
Bowdon	Upon GEMA and FEMA Approval
Bremen	Upon GEMA and FEMA Approval
Carrollton	Upon GEMA and FEMA Approval
Mount Zion	Upon GEMA and FEMA Approval
Roopville	Upon GEMA and FEMA Approval
Temple	Upon GEMA and FEMA Approval
Villa Rica	Upon GEMA and FEMA Approval
Whitesburg	Upon GEMA and FEMA Approval

Chapter II. Community Profile and Capabilities Assessment



Update for 2016: This chapter was added in an effort to better incorporate capabilities assessment and land use planning into the Hazard Mitigation Plan.

A. Carroll County

1. General

Carroll County is located on the western side of the state along the Alabama State line and is considered part of the Atlanta Metropolitan Region, located just 45 miles west of Atlanta along Interstate 20.

Carroll County was organized in 1826 from lands acquired by a treaty signed with the Cherokee and Creek Indian Nations. The signing of the Indian Springs Treaty resulted in the murder of Chief William McIntosh, the son of a Scotsman and a full-blood Creek woman, who owned a vast plantation along the Chattahoochee River in southeast Carroll.

The county's boundaries were created by the Georgia General Assembly on June 9, 1826 but it was not named until December 14, 1826. Carroll County takes its name from Charles Carroll of Maryland, at the time the last surviving signer of the *U.S. Declaration of Independence*. Carrollton, the county seat, was also named after Charles Carroll. Other incorporated areas include Bowdon, Bremen (which lies predominately in Haralson County), Mount Zion, Ropoville, Temple, Villa Rica and Whitesburg.

Settlers were drawn to the area by the prospects of good farming due to the rich soil. Others came looking for the once abundant amount of gold in the northern part of the county, the gold rush that gave the city of Villa Rica its name.

The population of Carroll County, as of 2014, was approximately 114,093 persons, covering a total area of 503 square miles. With healthcare, higher education and industry, Carroll is an economic center for the region, ranking second to Fulton County as of the 2000 Census for the number of commuters who commute to work within their home county. Carroll's manufacturing base remains strong, with 112 establishments employing over 7000 employees per the 2012 Economic Census. The county has a mixture of rural, urban and suburban land uses. Most of the residential uses can be found to the north

and east of Carrollton, while other parts tend to be more rural, agricultural uses. Carroll's rural roots remain healthy as the county continues as an agricultural leader, boasting the largest cattlemen's association in the state and continuing as a major poultry producer.

In terms of regional planning, the county is part of the Three Rivers Regional Commission and the Georgia Emergency Management Agency's Area One. Upon the last Census, a portion of the county has been deemed urbanized, pulling Carroll into the non-attainment area and requiring the county to enter a Metropolitan Planning Organization, which is the Atlanta Regional Commission.

2. Government

Carroll County is governed by a Board of Commissioners consisting of a Chairman elected at-large and six District Commissioners. Total appropriations for the county are \$50,920,454.00. A breakdown of public safety and other related departments is listed below. Over half of county appropriations go to public safety or related agencies, whose mission is to serve the public and promote health, safety and welfare of its residents.

Table 2.1: Carroll County Appropriations for 2014-2015	
Carroll County	\$50,920,454.00
Sheriff's Office	13,398,791.00
Fire Rescue	7,530,850.00
EMS Medical Services	837,000
800 MHz Communications	185,000
Emergency Management	224,750
Public Works	3,941,152.00
Health Department	300,000.00
Codes Enforcement / Community Development	868,023.00
Sub Total	\$27,285,566.00
Percentage of Total	53.6%

3. Public Safety

Additionally, Carroll County has a Special Purpose Local Option Sales Tax, a 1-cent tax on each dollar spent that helps fund capital projects in the community. For the most recent, SPLOST passed, the Board of Commissioners agreed to fund a \$5 million expansion of E-911 and the county's Emergency Operations Center. The expansion will give the dispatchers and emergency personnel the space and

equipment they need to respond, whether it is an average busy day or during a natural disaster. Emergency personnel already do a great job prioritizing calls to dispatchers and getting citizens the help they need. This will only be enhanced by the additional space and technology upgrades.

For the first time, the Emergency Management Agency will be housed with E-911, allowing for better coordination and response. Emergency management personnel will be able to send public alerts through the Integrated Public Alert Warning System (IPAWS), which will broadcast emergency messages to cell phones, television, and radio stations warning of a hazardous situation and how residents should respond. These alerts will be used sparingly and only for the high-level hazards that meet the qualifications (i.e. chemical leak on Main Street, please shelter in place if you reside within 1 mile).

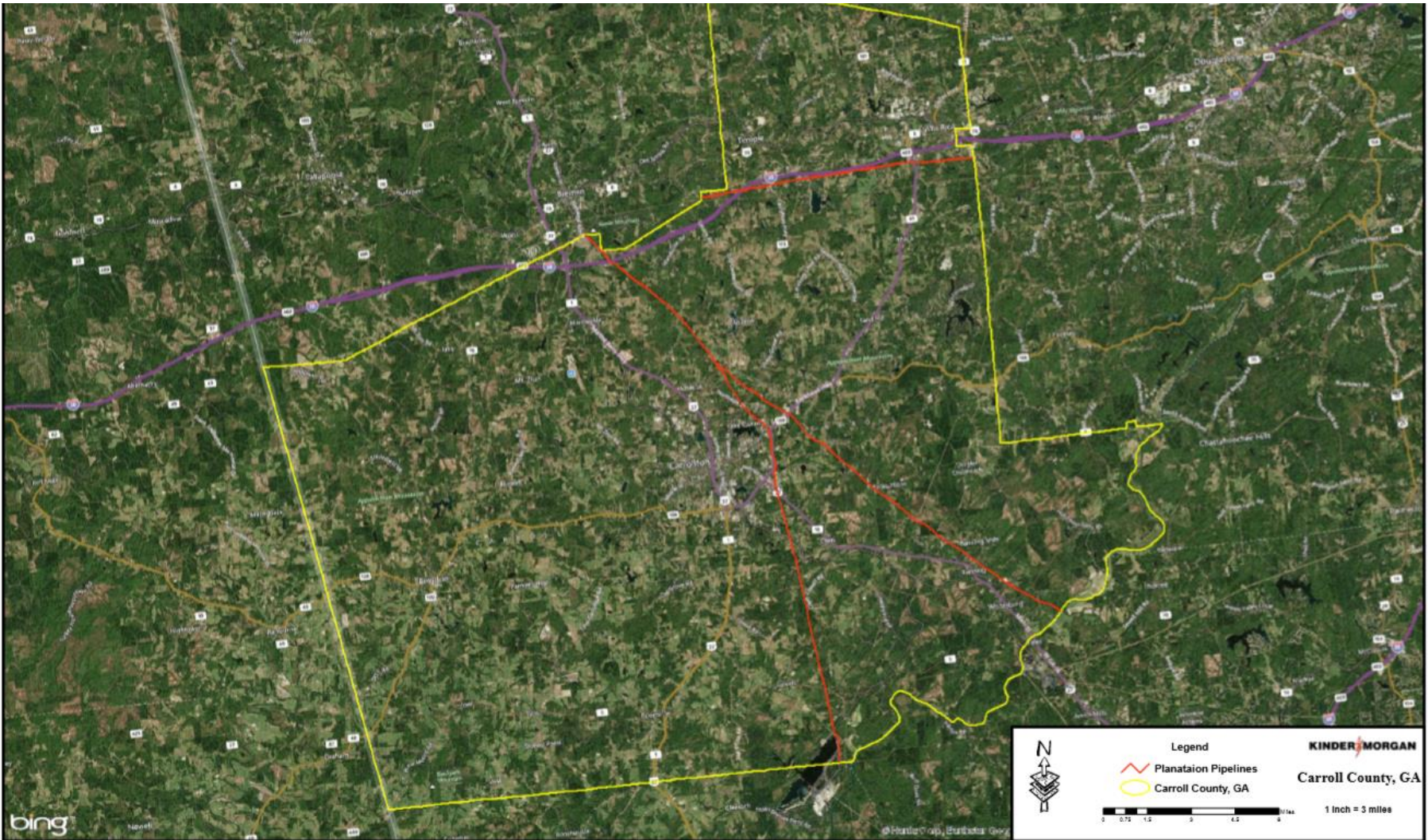
The upgrades to the consoles and Radio system will bring next Generation 911 to Carroll County and make our communications even stronger. Carroll County is currently a participant in the Western Area Regional Radio System, along with Coweta, Haralson and Heard, utilizing an 800-MHz system that allows for communication between all public safety personnel in the 4-county region. This encourages better mutual aid between the agencies.

4. Utilities

Carroll County has several water providers. Bowdon, Bremen, Carrollton, Villa Rica and Carroll County Water Authority all operate water treatment plants, with the latter providing water to the unincorporated area as well as the other cities. Roopville and Whitesburg both operate municipal wells. Carroll County Water Authority also operates sewer treatment at Fairfield Plantations, a large planned community on the east side of the county below Villa Rica. Villa Rica, Temple, Bowdon, Bremen and Carrollton all have municipal sewer treatment plants. The remainder of the county is on septic.

Carroll County is serviced by three electric providers: Georgia Power, Carroll EMC and Greystone Power. Georgia Power covers municipal areas, with Greystone covering a portion in the northeast adjacent to its service area in Douglas County. Carroll EMC covers the remainder of the unincorporated area.

Plantation Pipeline and Colonial Gas operate pipelines. Additionally, Plantation Pipeline operates a large storage facility near Bremen, Georgia. Local emergency management and fire rescue have participated in pipeline safety courses.



Map 2.1: Plantation Pipeline in Carroll County, Georgia

5. Transportation

a. Roadways

Carroll County does not offer Public Transportation, and as such most of the transportation is done by personal vehicles. There are three Georgia Department of Transportation Park and Rides in the county to help promote carpooling.

Interstate 20 runs east to west in the northern portion of Carroll, along with Highway 78. Highways 16, 166 and 5 also run east to west in central to southern Carroll. Running north to south, Highway 27 and Highway 61 are both 4-lane roads, carrying most of the traffic off of the interstate to Carrollton, the county seat. Additionally, 2-lane Highway 113 and Highway 100 run north to south.

Other major secondary roadways include:

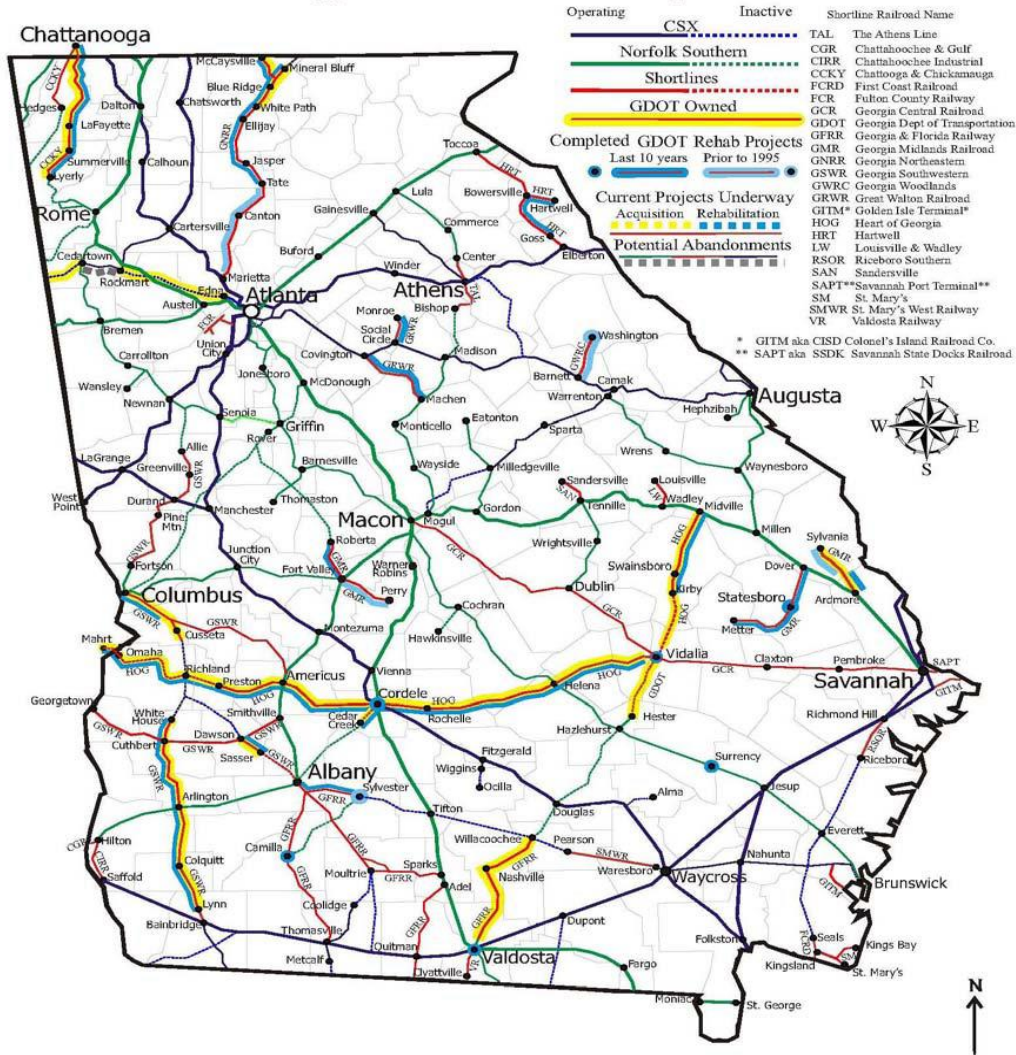
Tyus-Carrollton Road
Lovvorn Road
Smithville Road
Hog Liver Road
Shady Grove Road
Hickory Level Road
North and South Vanwert Road
Rainey Road
Center Point Road
Pleasant Ridge Road
Miller Academy Road
Jones Mill Road
Horsey Mill Road
Oak Mountain Road
Clem Lowell Road

While the Georgia Department of Transportation is charged with maintenance of the state and federal highways above, Carroll County is responsible for the secondary roadways in the event of an emergency.

b. Railways

Norfolk Southern operates rail service on an east-west and north-south line.

Georgia Rail System



Map 2.2: Georgia's Railway System

c. Airways

The West Georgia Regional Airport, located in western Carroll near Mount Zion, serves commercial and recreational air traffic for the region. Passenger air traffic is primarily serviced by Atlanta Hartsfield-Jackson International Airport, located to the northeast of Carroll County.

Additionally, there are 20 privately owned airstrips in the county.

A considerable number of commodities flow through Carroll County on a daily basis, and a hazardous materials (Haz Mat) incident is a primary concern for the county and its municipalities.

6. Schools

Carroll County is home to two school systems, Carrollton City Schools and Carroll County Schools. Carrollton operates five schools on a large campus near downtown Carrollton. Carroll County has five high schools, with 25 total schools across the county's seven school districts, with the largest high school, Villa Rica, located in the northeast area of the county. In addition to public schools, the county has a number of private schools, including Oak Mountain Academy.

Carroll County is also home to two institutions of higher learning. The University of West Georgia has a student population of approximately 13,000 spread across a 645-acre campus, enrolled in 86 programs of study. West Georgia Technical College has a Carrollton Campus, along with administrative offices downtown in Adamson Square.

School safety has been a top priority of the Carroll County Sheriff's Office Emergency Management Agency with the EMA Director participating in School Safety teams with each system that coordinate the annual Safety Summit, along with tabletops and drills with each school.

7. Recreation

Carroll County is home to six recreation departments, including the County, Villa Rica, Temple, Bowdon, Mount Zion and Carrollton, each offering recreational sports for their areas and operating ballfields, pavilions and senior centers. By tradition, active recreation districts follow school boundaries. As part of service delivery strategy, the county compensates each jurisdiction a portion of their recreation program funds.

The county also has four large passive recreation parks, ranging between 290 to 500 acres, open to the public - John Tanner Park, Little Tallapoosa Park, McIntosh Reserve Park, and Moore's Bridge Park. Future parks are planned at Blackjack Mountain and Snake Creek. These parks offer a variety of amenities from camping to multi-use trails.

The City of Carrollton is near completion of a 16 mile green belt around the city that provides recreational and alternative transportation to the city's residents.

Emergency Management has worked with recreation officials to provide National Weather Service (NWS) Storm Spotter training to recreation staff and further invites them to attend severe weather briefings. Knowledge of potential severe weather often leads to cancellation or postponement of an event or to move inside in case of imminent danger from lightning or a funnel cloud.

8. Healthcare

Tanner Health System operates three hospitals in the region with locations in Carrollton, Villa Rica and Bremen. There is also a behavioral health facility, Willowbrooke in Villa Rica, three urgent care centers and 24 practices operating under Tanner Medical Group.

The Carroll County Health Department is located in Carrollton and offers immunizations, family planning and screenings to the community, among many other services. Part of District 4 Public Health, the county participates in the Strategic National Stockpile (SNS) program and has established two potential Points of Distribution (POD) in the event of an epidemic/pandemic. Further, the county has signed up many of its larger employers as private Points of Distribution (POD), enabling them to distribute medicine to their employees and families.

West Georgia Ambulance operates the emergency medical services for the area. Two companies have established heliports in the county to provide air medical services when it is necessary to transport a patient to a trauma center.

9. Land Use and Development

Construction in Carroll County is subject to the following codes:

2012 International Residential Code
2012 International Building Code
2014 NEC Electrical Code
2012 International Plumbing Code
2012 International Mechanical Code
2012 International Gas Code
2012 International Energy Code
2012 International Existing Building Code
2012 International Fire Code

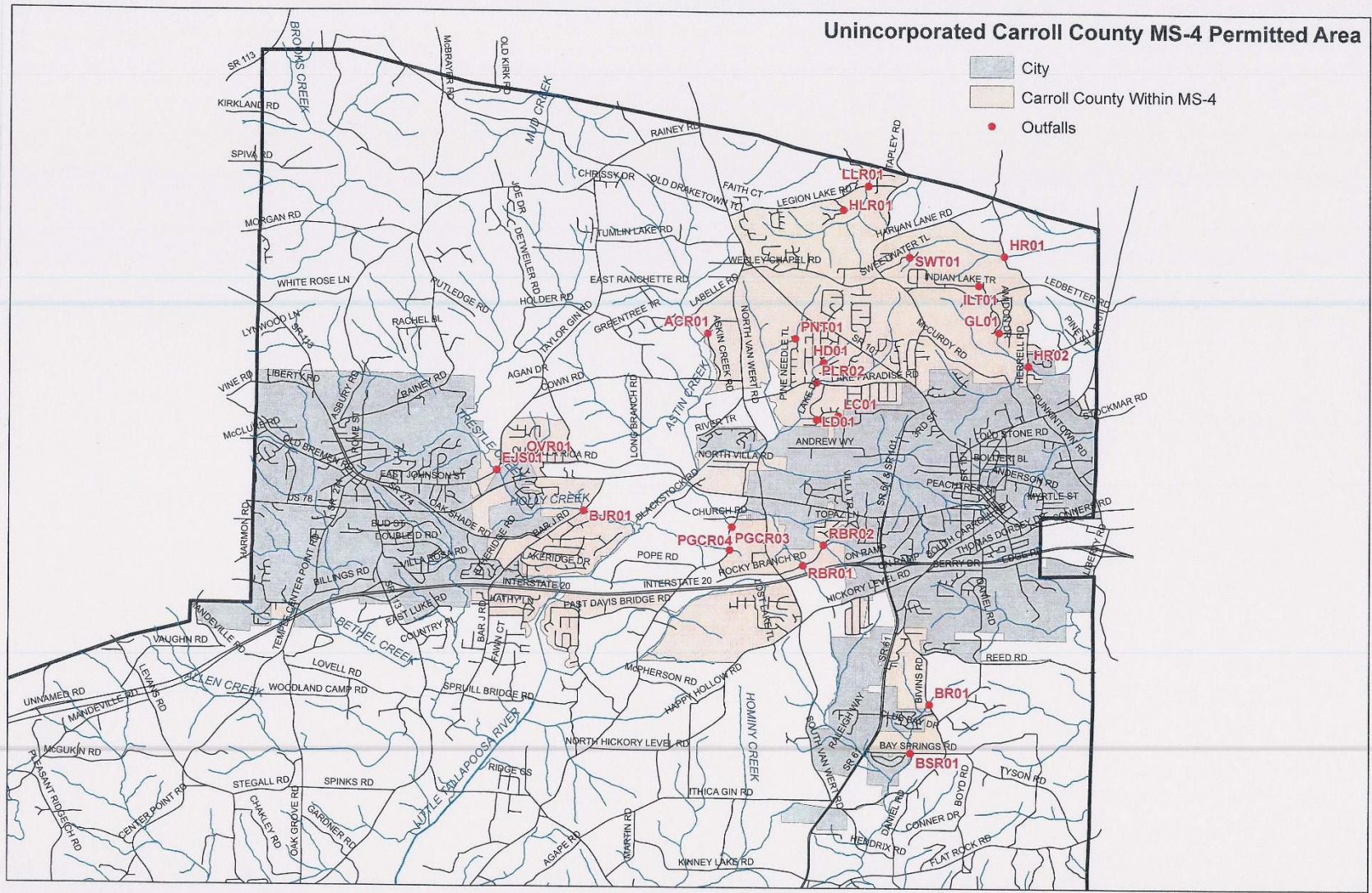
Including all Georgia amendments and supplements

Under the Department of Community Development, the county has a Chief Building Official and inspector charged with reviewing plans and inspecting construction to ensure that buildings are in compliance. New construction in the county must be built to withstand a 90-100 miles per hour wind.

Grading and land disturbance is reviewed by the County Engineer, with designated Erosion Control Officers charged with keeping sedimentation out of our streams. Engineering further checks that development does not encroach the minimum buffers required on streams. Each permit is reviewed by the Floodplain Manager to ensure that construction does not occur in the floodplain. Portions of northern Carroll County have now been designated as MS4 and require storm water permitting and enforcement, as depicted in 2.3 MS4 Outfalls.

Carroll County's zoning and land use plans apply to the unincorporated areas of the county. Northern Carroll between the cities of Temple and Villa Rica, down to Carrollton is where the most residential population growth has occurred since 1990. The southern and western part of the county is predominately rural/agricultural, characterized by larger tracts of agricultural or timber land mixed with home sites. Increasing population growth which necessitate increased public infrastructure and critical facilities has resulted in the county becoming more vulnerable to hazards, such as flooding, tornadoes, thunderstorms, tropical cyclones, winter storms, drought and wildfire and pandemics. The county must be vigilant in utilizing best management practices and in achieving its mitigation goals and objectives.

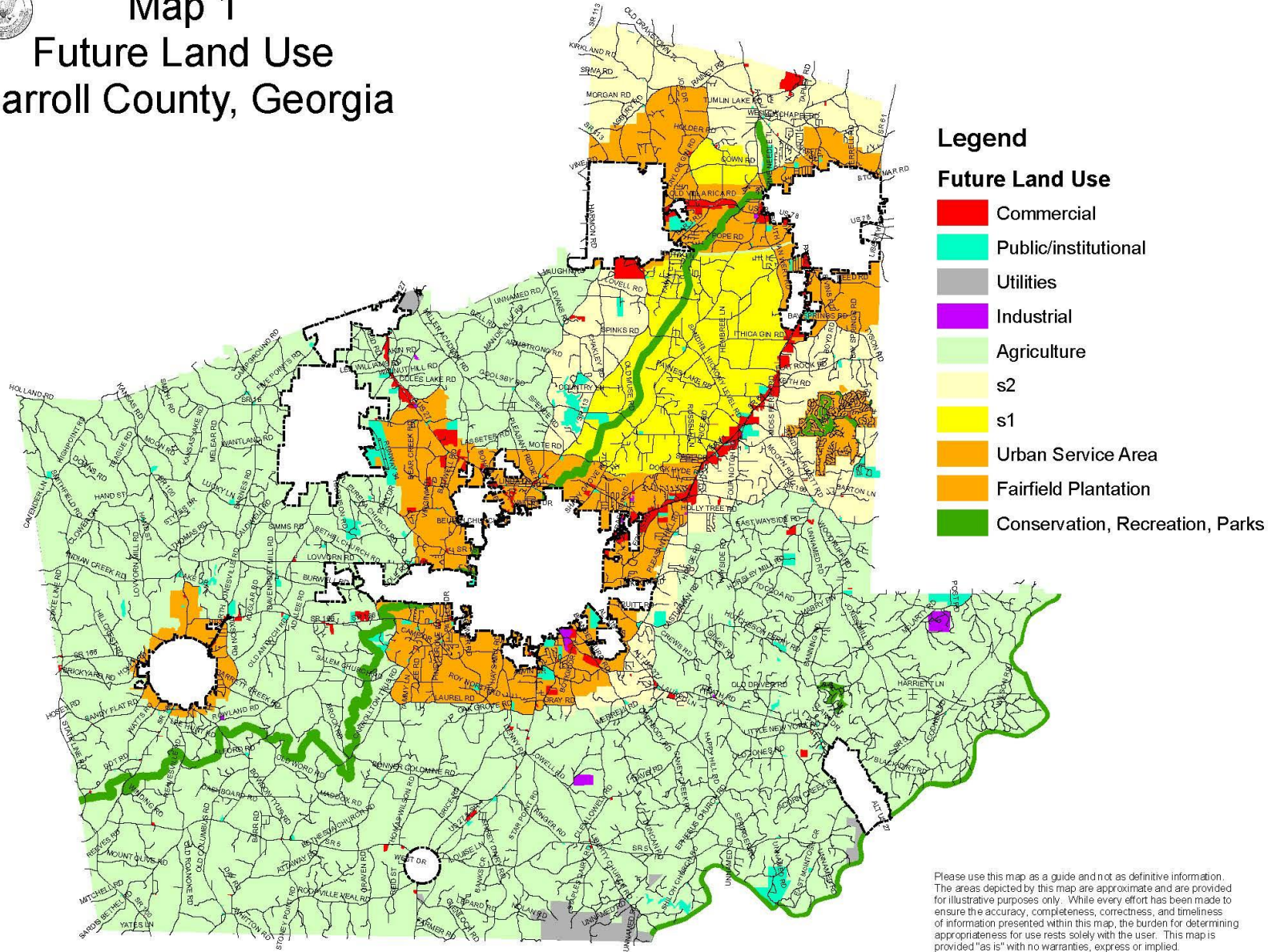
For additional Community information, please reference Appendix D, as well as the 2008 Carroll County Comprehensive Plan. Carroll County's Future Land Use Map is shown in Map 2.4 below.



Map 2.3: MS4 Outfalls



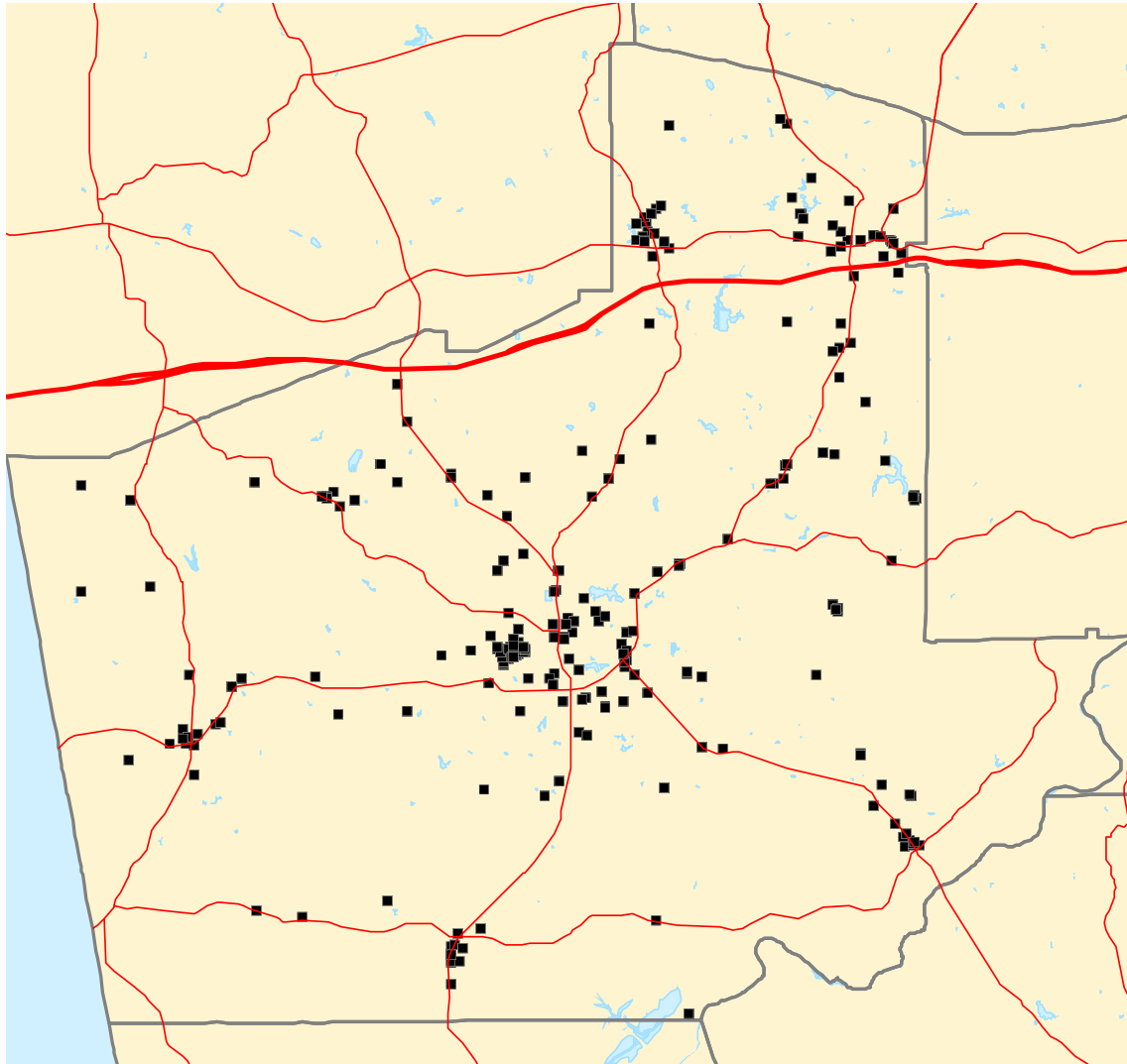
Map 1 Future Land Use Carroll County, Georgia



Map 2.4: Carroll County, Georgia Future Land Use Map

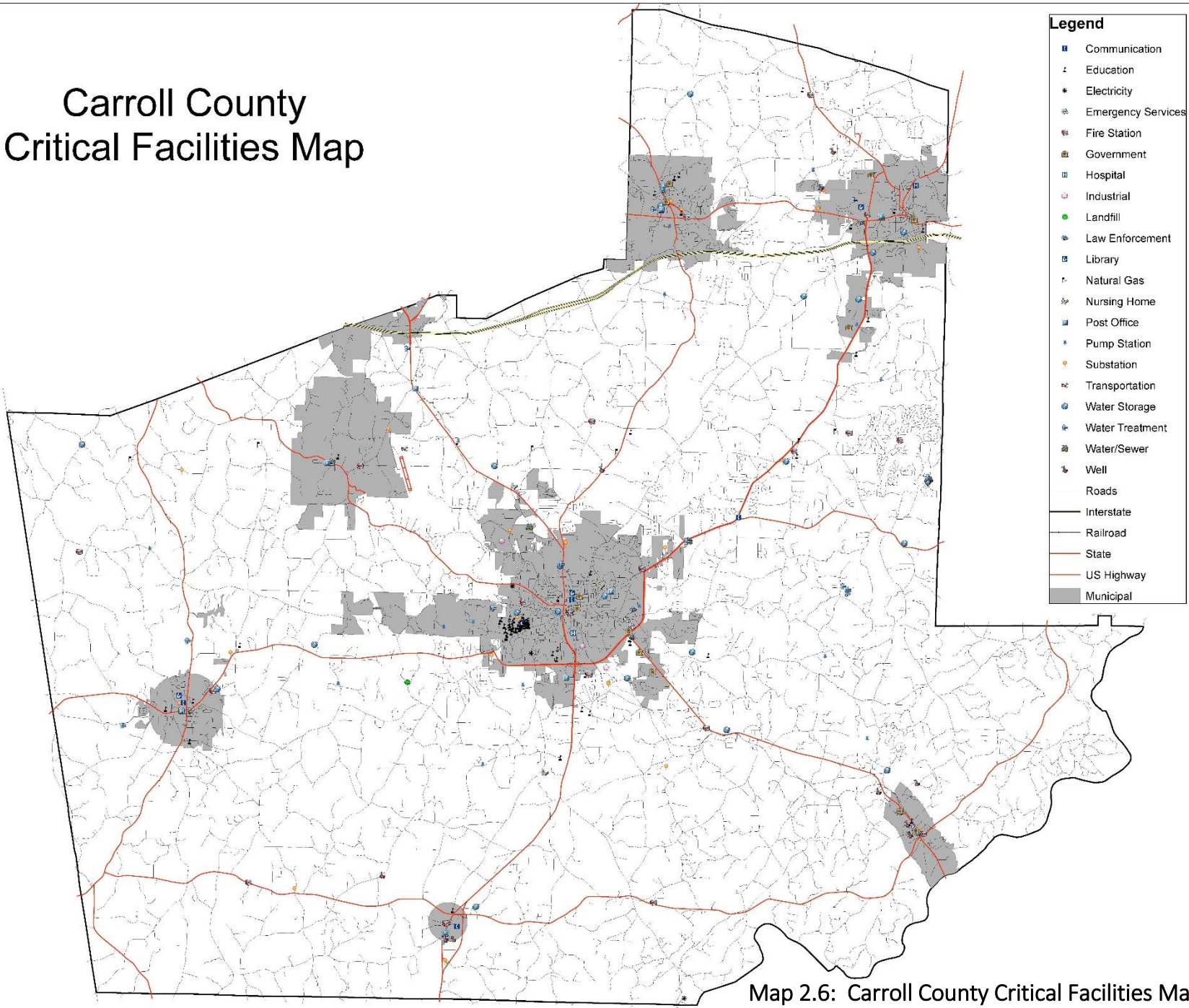
10. Critical Facilities

Carroll County and its cities, school systems, healthcare and public utility providers have identified numerous critical facilities that are essential to the community. For the 2016 plan, the Critical Facilities List was added as a layer to the county's Geographic Information Systems (GIS). As the county and its cities move forward, planning for the future, each will be able to better integrate Critical Facilities information into decision making processes. Below are maps of each municipality depicting their boundaries, streams and lakes, as well as transportation routes.



Map 2.5: GMIS Critical Facilities for Carroll

Carroll County Critical Facilities Map



Map 2.6: Carroll County Critical Facilities Map

B. City of Bowdon

1. General

Located in Carroll County, the City of Bowdon is approximately 10 miles south of the I-20 corridor. The community was incorporated on January 1, 1859 and was named for Franklin Welch Bowdon, an Alabama congressman in 1853. According to the United Census Bureau, Bowdon has a total area of 3.4 square miles with a population of 2,040. The City of Bowdon is affectionately referred to as the “Friendly City.” It lives up to the name with a thriving downtown business district that has recently undergone significant redevelopment, much in the Historic district. The downtown is home to several new restaurants, a specialty coffee roaster, an art gallery and a veterinary hospital.

The citizens of Bowdon can easily access medical care, educational institutions, entertainment and recreational venues. However, Bowdon’s most admirable qualities of life are the natural beauty of the farms and woodlands that surround the city.

2. Government

A mayor and 4 council members govern the City of Bowdon.

3. Public Safety

Bowdon has a municipal police department, while fire protection is provided by Carroll County Fire Rescue.

4. Parks and Recreation

Bowdon has a number of municipal parks, a senior center, and Copeland Hall, a cultural arts center where residents can enjoy the performance arts.

5. Land Use and Development

Bowdon has maintained its small town feel. It is located in the midst of a sparsely populated agricultural and timbered area. With its proximity to the interstate, a large number of trucks travel down Highway 100 from I-20, navigating the narrow streets of downtown. A road improvement project to construct a bypass to divert these large trucks from the center of town has been proposed. This will help with alleviate any Haz Mat concerns.

The city also operates its own water and wastewater treatment plants, the latter with interconnected lift stations.

C. City of Carrollton

1. General

Carrollton is the County seat, and sits in the center of the county, with transportation tentacles extending in all directions. The city’s population has grown 10% in the last five years, from 24,371 in 2009, to an estimated 26,690 in 2014. The city limits cover about 22.8 square miles, including 0.5 square miles of water. This gives Carrollton an average density of 1,094 persons per square mile.

The Norfolk Southern rail line winds through Carrollton, as it serves industries located, for the most part, in the south and northwest areas of the city. Carrollton’s key resources include the Tanner Hospital complex on the south side, and University of West Georgia immediately west of downtown. An established local industry – Southwire – is located near Tanner Hospital. The Carrollton City Schools are clustered together on the west side of town. Carrollton also has a robust number of restaurants, mainly in the downtown square.

Carrollton is a university town, and the majority of the city’s residents are renters. The 2010 Census found approximately 43% of residents in multi-family housing, and another 14% in rental houses or duplexes. In 2014 the City counted approximately 6,000 apartment units in Carrollton. The University is growing modestly but steadily, to an estimated 13,000 students today. Private student housing developments are growing exponentially, with more than 1,411 bedrooms of student housing permitted since 2010.

Roughly 16% of Carrollton residents live in homes where a language other than English is spoken. That rate is about 3 points above State average.

2. Government

The City of Carrollton is governed by a Mayor and City Council. The Mayor is elected at large and four city council members represent wards. General Fund appropriations for the City exceeded \$20 million in Fiscal Year 2015. Over half of these appropriations were for police and fire protection and response, and 10% were for Streets/Engineering and Planning/Community Development, as detailed below.

City of Carrollton General Fund	\$ 20,177,320
Police Department	6,278,865
Fire Department	4,822,913
Streets / Engineering	1,753,475
Planning/Community Development/Codes Enforcement	194,296
Subtotal	13,049,459
Percentage of total	64.7%

In addition to the General Fund, the City of Carrollton has a Water Enterprise Fund that totaled \$14,642,482 in FY 2014-15, and a Sanitation Enterprise Fund that was \$4,538,844 the same year.

The FY 2014-15 Water Enterprise Fund represented a \$3,529,547 increase over the previous year's budget. The majority of this increase was for the capital projects listed below.

Table 2.3: City of Carrollton Water Enterprise Fund for 2014-2015	
Total Water Enterprise Fund	\$ 14,642,482
Water Filter Plant	
▪ ½ Ton Pickup Truck	25,000
▪ Emergency Generator	250,000
▪ Northside Pump Station	300,000
▪ Transfer Pump	10,000
▪ Carbon Feed System	35,600
▪ Lime Feed System	89,800
System Upkeep	
▪ Water/Sewer Line Upgrades	1,000,000
▪ Lake Carroll Spillway	500,000
▪ (3) 4 wd Service Trucks	150,000
Wastewater Plant	
▪ Paving/Curb and Gutter	146,000
▪ Safety Railing	229,000
▪ Skidsteer	100,000
▪ (2) 4 x 4 Pickup Trucks	50,000
▪ Sprayfield Mowers	10,000
Subtotal	2,895,400
Percentage of total	20%

3. Public Safety

The City of Carrollton employs 78 full-time and 12 part-time sworn police officers, who are supported by 12 full-time and 3 part-time civilians. As part of its citywide duties, the Carrollton Police Department cooperates with the University of West Georgia's police officers, whose jurisdiction extends 500 yards beyond the University's boundaries.

Among the Carrollton PD's many community programs is one called S.N.A.P, which gathers information to assist individuals from at-risk populations during emergencies. Throughout the year, residents fill out S.N.A.P. information forms on a voluntary basis. This information is then given to 911 Dispatch to be entered into their system. During a 911 call from a resident, the S.N.A.P information allows Dispatch to advise all responding agencies that this residence may contain an individual from an at-risk population who may be non-ambulatory, wheelchair-bound or bedridden, hearing impaired, blind, etc. It also provides a secondary contact person for the residence.

The City of Carrollton Fire Department has 63 personnel, 4 engine crews, one ladder crew, and four fire stations. The Department takes a proactive approach towards fire safety and prevention, targeting home life, schools, and the work environment. The Department conducts a number of community programs, most of which are free, and which include:

- Fire Extinguisher Classes
- CPR First Aid Classes
- Fire Safety Education Classes (taught to schools, civic clubs, churches, and industries)
- Carbon Monoxide Monitoring
- Fire Safety Inspections
- Blood Pressure Checks
- Industrial Fire Brigade Checks

Each October, which is national fire safety month, the Carrollton Fire Department visits elementary schools to teach fire safety. Subjects include: How to use the 911 emergency phone system, how to escape from the house if there is a fire or if you see smoke, creating a safe meeting place outside the home, what to do if your clothes catch fire, how smoke detectors work and their importance, the dangers of playing with matches or lighters, and how firefighters look and sound with their protective clothing and air packs on.

At the high school level, the Fire Department teams with Police Department personnel to demonstrate vehicle extrication and dangers of drinking and driving. Advanced fire safety classes cover fire extinguisher operation, CPR and first aid.

4. Recreation

The City's Parks, Recreation and Cultural Arts Department maintains 22 city parks. The Department also provides a wide range of indoor and outdoor programs at eleven community facilities, including:

- Tracy P. Stallings Center (main office), 118 S. White Street
- Carrollton Senior Center, 220 West Avenue
- Carrollton Cultural Arts Center, 251 Alabama Street
- Bonner Recreation Center, 226 West Avenue

- Catherine Hardy Lavender Center, 425 Willie North Street
- Midtown Water Park, 125 Leroy Childs Drive
- WPA Center, 590 North Cliff Street
- East Carrollton Recreation Center, 410 North Lake Drive
- Lakeshore Recreation Center, 643 North Lakeshore Drive
- Lakeshore Pool, 116 Lumpkin Drive
- Log Cabin (Visitors Center), 102 North Lakeshore Drive

The Department is responsible for the popular 16-mile Carrollton Greenbelt, which encircles the city, almost entirely with 14-foot pavement width. While closed to motorized traffic, the Greenbelt can accommodate emergency vehicles if needed.

On October 22, 2015, staff and volunteers of the Carrollton Parks, Recreation and Cultural Arts Department received the following Georgia Recreation and Park Association Awards for 2014-15:

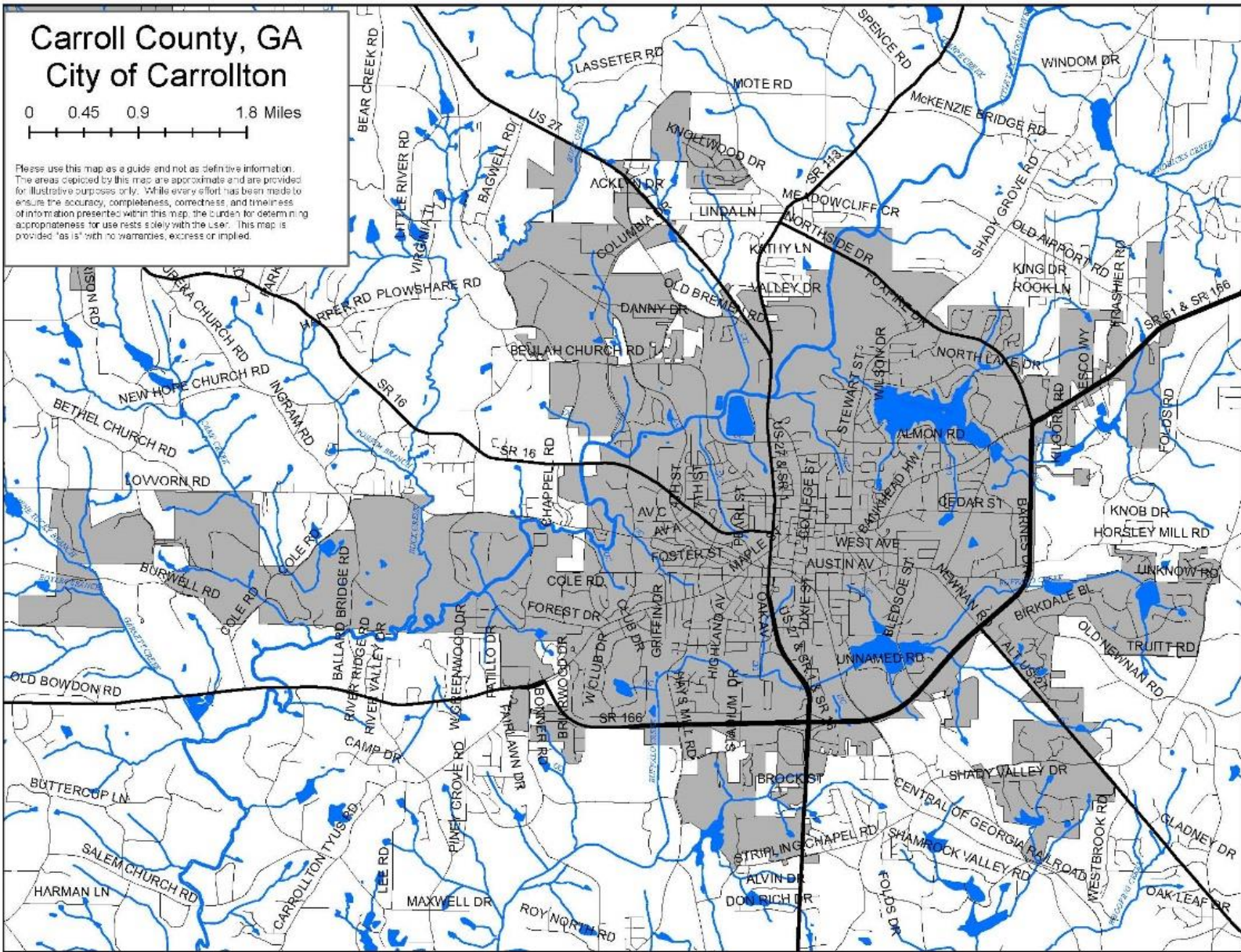
- Athletic/Aquatic Special Event Award for the 2015 Police and Fire Games
- Alzheimer’s Memory Garden at Worthy Park
- Special Event Program Award for the Miss Sparkle Pageant
- Volunteer of the Year Award for the Therapeutic Section

5. Land Use and Development

Building activity in Carrollton is strong overall, with building permits issued for 118 projects, including both new construction and additions, between July 1, 2014 and June 30, 2015.

The City’s Community Development Department reviews plans for new construction, and issues building permits, Land Disturbance, plumbing, electrical, and related permits. The City Engineer and Enforcement Officers inspect projects for code compliance, prior to issuing Certificates of Occupancy and at other times. The Department also works with its Planning Commission, Board of Development Appeals and Historic Preservation Commission to interpret, enforce and update the City’s 2007 Unified Development Ordinance and map, including environmental sections relating to Flood Damage Protection, Water Resource Districts, River Corridor Protection and Soil, Erosion and Sedimentation Control.

Carrollton has a number of lakes and streams, which make it vulnerable to flooding. With urban densities, it is also vulnerable to tornadoes, tropical cyclones, winter weather and pandemics. A number of industries reside in Carrollton, increasing the potential for a hazardous materials spill. Utilizing best management practices will help make the city more resilient.



Map 2.8: City of Carrollton

D. City of Bremen

1. General

Located in both Carroll and Haralson Counties, the City of Bremen lies on both the Interstate 20 and the Highway 27 corridors. An active railroad line runs through the center of town. The city, originally called Kramer, was incorporated on September 5, 1883 and named after the Germany city of Bremen. The largest city in Haralson County, Bremen has a population of 6,227 as of the 2010 Census, with a small percentage of residents in Carroll County.

2. Government

A mayor and 3 council members govern the City of Bremen.

3. Public Safety

Bremen has its own police and fire departments. Haralson County, along with Carroll, Heard and Coweta are members of a Western Area Regional Radio System, allowing for radio communications and mutual aid between the neighboring counties.

4. Parks and Recreation

Bremen has a number of municipal parks, a senior center, and other recreational opportunities.

5. Schools

The City of Bremen has its own school district, operating 4 schools: Jones Elementary, Bremen Middle, Bremen High and Bremen Academy. Consistently, Bremen is one of the top districts in the state in academia.

6. Land Use and Development

The Carroll County portion of the City of Bremen lies along the I-20 corridor and includes a mix of commercial, limited residential and timber land. Plantation Pipeline has a large facility near the county line. The city's vibrant downtown, located in Haralson County, is guided by a Downtown Development Authority.

With traffic along Interstate 20, Highway 27 and the rail line, a considerable amount of commodities flow through the town on a daily basis, causing some concern as to the possibility of a Haz Mat incident.

Bremen operates its own water and wastewater treatment plants, the latter with interconnected lift stations.

E. City of Mount Zion

1. General

The City of Mount Zion is located in northern Carroll County and has a population of 1,696 according to the 2010 U.S. Census. Mount Zion is spread over 9.8 square miles and is characterized by low-density development with a large amount of agriculture zoning designations. It is made up of mostly traditional single-family homes with acreage and some small livestock however the city is looking to grow.

Mount Zion does not have a designated center of town or main street area, but does support a local school cluster. Mount Zion would like to coordinate opportunities of growth without losing the small town atmosphere. Located in proximity to Highway 27 and the I-20 corridor, Mount Zion also abuts the West Georgia Regional Airport.

2. Government

A mayor and 4 council members govern the City of Mount Zion.

3. Public Safety

Mount Zion has a police department, relying on the county for fire and ambulance.

4. Land Use and Development

With one of the largest cities by size, Mount Zion is also one of the smallest in terms of population. It is sparsely populated. Some areas are prone to flooding, and it is important that development regulations are followed to restrict building in those areas.

F. City of Roopville

1. General

The City of Roopville is located in southern Carroll County at the intersection of GA Hwy 5, Old U.S. 27 and the new U.S. 27 Bypass. Roopville is distinctively situated on 0.77 square miles and on a ridge in which Old U.S. 27 divides the Tallapoosa and Chattahoochee River Basins. According to the U.S. Census Bureau, the total population of Roopville was 218 in 2010. Its location was on an historic trading route, the McIntosh Trail and historically it was a thriving business and trading community. But with the decline of trading opportunities in the new age, Roopville has become a quiet community. However, a few landmarks still exist, as well as the pride of its residents is very much alive.

2. Government

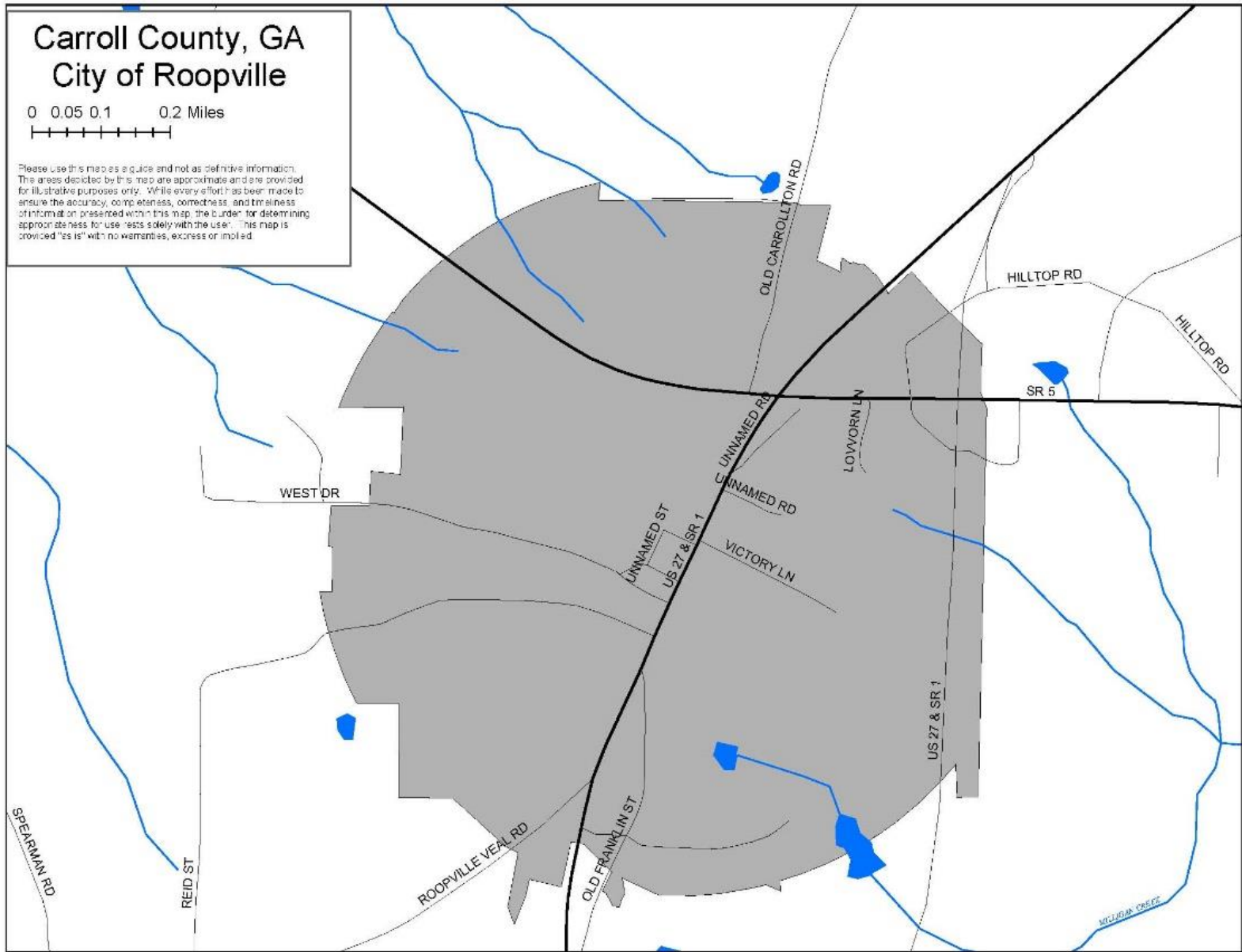
A mayor and 4 council members govern the City of Roopville.

3. Public Safety

As part of service delivery, police, fire and ambulance are provided by Carroll County.

4. Land Use and Development

Roopville is the smallest jurisdiction in acreage and in population. It has had very limited growth, and since Highway 27 has been rerouted, its vulnerability to hazardous materials incidents has been lessened.



Map 2.10: City of Roopville

G. City of Temple

1. General

Located off I-20, 42 miles west of Atlanta and only 11 miles north of Carrollton, the city of Temple can be found in Carroll and Haralson counties. Temple holds a rich history, known statewide because of the Temple Model School and having the nation's first school bus. The city's development can be traced from the cotton-farming era, through the Great Depression, and to the present time where most citizens earn their livelihood through employment in area businesses and industries. During the housing boom of the early 2000s, Temple experienced considerable population growth, as the population moved westward from Atlanta, increasing from 2,383 in 2000 to 4,228 in 2010.

2. Government

The City of Temple is governed by a Mayor and City Council. The Mayor is elected at large and five Council members represents wards. The General Fund appropriations for the City exceed \$3 million for Fiscal Year 2016.

Table 2.4: Temple General Fund Appropriations for 2016	
General Fund	\$3,422,671
Police Department	1,132,176
Streets	394,148
Subtotal	1,526,324
Percentage of Total	45%

Table 2.5: Temple Enterprise Funds for 2016	
Water/Sewer Fund	\$1,382,165
Wastewater Plant	391,457
Water Distribution	601,967
Subtotal	993,423
Percentage of Total	72%

3. Public Safety

Temple maintains a police department. Fire and ambulance services are provided by Carroll County. Temple Police Department has 14 employees. The Police Department is currently developing an explorer and citizens patrol program. Police department responsibilities include answering and responding to all

911 calls that are dispatched from the Carroll County 911 center, patrolling all businesses and residents throughout the city limits, reporting and investigating all criminal activity, and protecting lives and property. Temple Police Department is also proactive in the community. Officers participate in all parades and school events that involve public buildings, streets and recreation and take part in shop with a cop.

4. Public Works

The Public Works Department has five full-time employees. The Public Works Department provides many of the basic services that affect the daily lives of citizens. The responsibilities encompass the administration, planning, street maintenance, grass cutting/landscaping, construction management and technical engineering of the city's infrastructure including the roads, water distribution system and sanitary sewer treatment. The Public Works Department also offers a Spring/Fall clean-up yearly in an effort to help residents eliminate accumulated debris from their properties. This type of routine maintenance is referenced in the Hazard Mitigation Plan, as it helps reduce storm water and flash flooding.

5. Sewer

The Sewer Department has two employees. The department provides plant operations, sampling/monitoring for state required compliance, process control sampling and analyze solids, as well as spray field land application management compliance reporting.

6. Senior Center

The Temple Senior Center has seven employees. The Senior Center serves on average 150 meals a day, with over 60 of these to the homebound community, which are taken out by volunteers, they also offer blood pressure checks, provided by the local fire departments. A variety of activities are offered including fitness classes and games. The Senior Center is responsible for the safety of its food, following all the health department guidelines and having to pass a yearly inspection by the Carroll County Health Department. The Senior Center has received several Grants from the Trinker Davis Foundation as well as the Power of the Purse and Carroll EMC.

7. Utility Billing

The Billing Department employs one full time employee. The Utility Billing Customer Service Department compiles meter readings based on meters read, billing of water, sewer, and garbage collection, issues work orders for rechecks of meters, turn on and off of services, monitors and collects on delinquent accounts, and provides customer service.

8. Accounts Receivable

The Accounts Receivables Department employs one full time employee. The department keeps track and processes accounts and incoming payments in compliance with financial policies and procedures. Accounts receivables performs day to day financial transactions including verifying, classifying, computing, posting and recording accounts receivable data and reconciles the accounts receivable ledger to ensure that all payments are accounted for and properly posted.

9. Parks and Recreation

The Parks and Recreation Department employs three full time workers and eight part time seasonal workers. Depending on the season, the Recreation Department can have 350 kids participating in various sports-related activities. Programs that are offered include basketball, football, baseball, softball, soccer, volleyball, track and field, cheerleading and zumba classes. Responsibilities include game management, fields and building maintenance, scheduling and community service work.

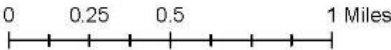
10. Land Use and Development

Temple has a number of lakes and streams within its boundaries, which make it vulnerable to flooding. The diligence of the Public Works Department in requiring annual yard maintenance will aid in the city's efforts to reduce flash flooding.

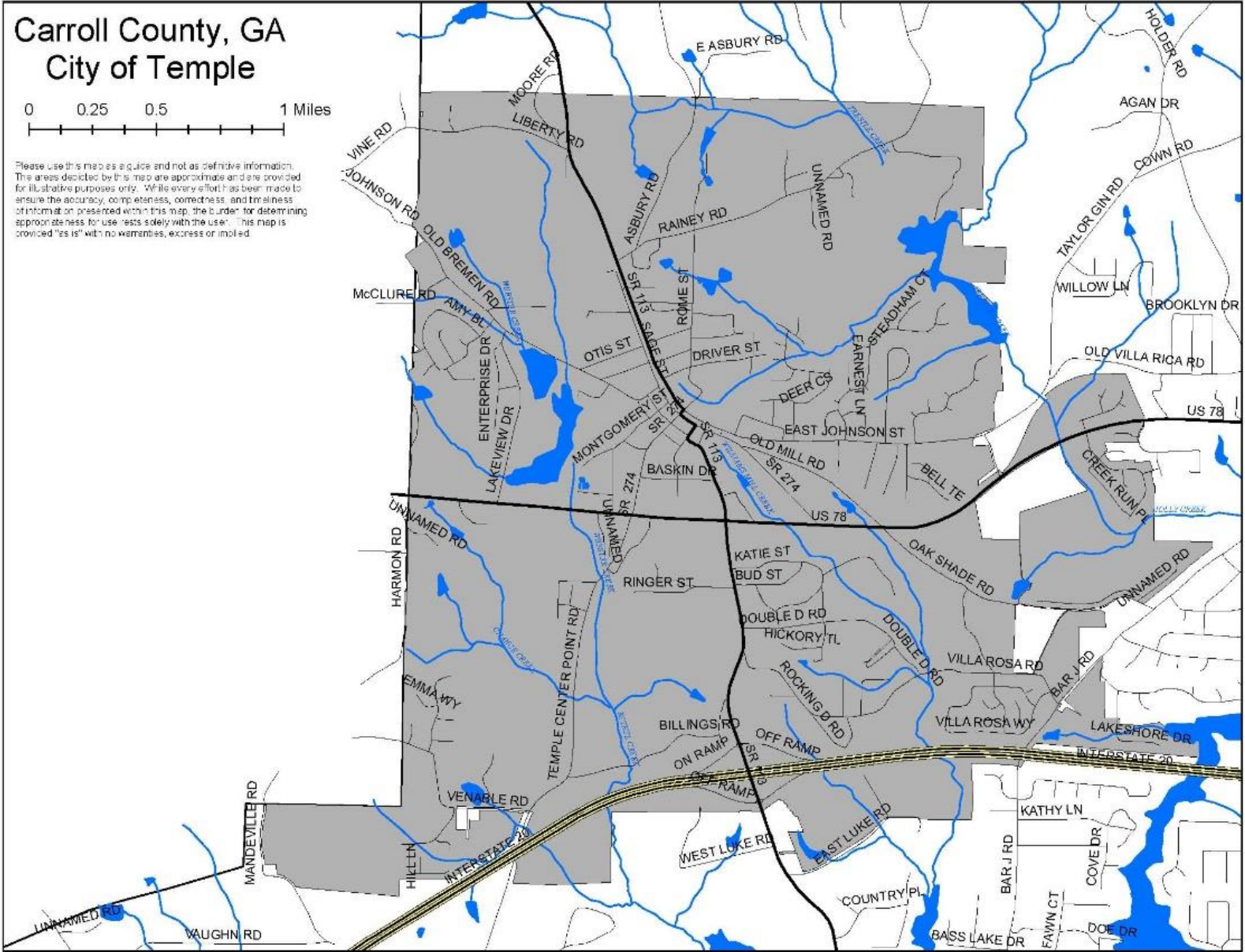
Temple's Industrial Park and the city's location on the Interstate and rail line increase the potential for a hazardous materials spill. Mitigation of rail line crossings would greatly help to reduce those risk, as trucks and buses are routinely stuck on the tracks.

The city's suburban densities make it vulnerable to tornadoes, tropical cyclones, winter weather and pandemics. Utilizing best management practices will help make the city more resilient.

Carroll County, GA City of Temple



Please use this map as a guide and not as definitive information. The areas depicted by this map are approximate and are provided for illustrative purposes only. While every effort has been made to ensure the accuracy, completeness, correctness, and timeliness of information presented within this map, the burden for determining appropriateness for use rests solely with the user. This map is provided "as is" with no warranties, express or implied.



Map 2.11: City of Temple

H. City of Villa Rica

1. General

Villa Rica is known as the City of Gold, where arts and culture are at the heart and soul of the community. Located just 35 miles west of downtown Atlanta, Villa Rica is conveniently located just off Interstate 20. Jobs, a relatively low cost of living, and access to healthcare and excellent schools are responsible for the city's 5.1 percent population growth since the 2010 census. The city is currently experiencing an uptick in growth with an average of 24 persons moving to Villa Rica each month thanks to new industry and the expansion of existing businesses throughout the community.

Villa Rica is a city on the move where residents take much civic pride in the community. The city recently broke ground on a new \$4.8M public library that is being constructed on the Tanner Medical Center Campus along Dallas Highway as a joint project with the West Georgia Regional Library System. The 16,370 sq. ft. building is expected to be open to the public in June 2016. Villa Rica also recently purchased 13.44 acres of land abutting the Villa Rica Civic Center & Sports Complex (V-Plex) for new ball fields as well as 75.48 acres of land off Georgia Highway 101 – Rockmart Road for future economic development.

A key strategy in economic development has been the expansion of existing businesses and industry in Villa Rica. Tanner Health System recently announced some \$40M in new construction and renovations on the Villa Rica campus, including a three-story, 25,000 sq. ft. building to house new services and provides room for expansion of current offerings.

Sugar Foods also penned a deal for the 60-year-old food products company to invest more than \$30M into an addition at its Industrial Park location. The proposed expansion is expected to result in 100 new jobs. And the Southwire Company – the nation's largest maker of wire and cable – is also expanding its operations in Villa Rica with plans to increase employment in the area by 60 jobs. A number of other economic development deals are in the works and are expected to be announced soon.

2. Government

The City of Villa Rica is governed by a Mayor and 5 council members. The Mayor is elected at large and five city council members represent wards. General fund appropriations for the City for 2015 were over \$10 million and the major appropriations were divided as detailed below:

Table 2.6: Villa Rica General Fund Appropriations for 2016	
General Fund	\$10,000,000+
Police Department	3,104,151
Streets	745,710
Community Development	363,888
Parks and Recreation	1,711,656
Library	368,517
Subtotal	\$6,293,922

3. Public Safety

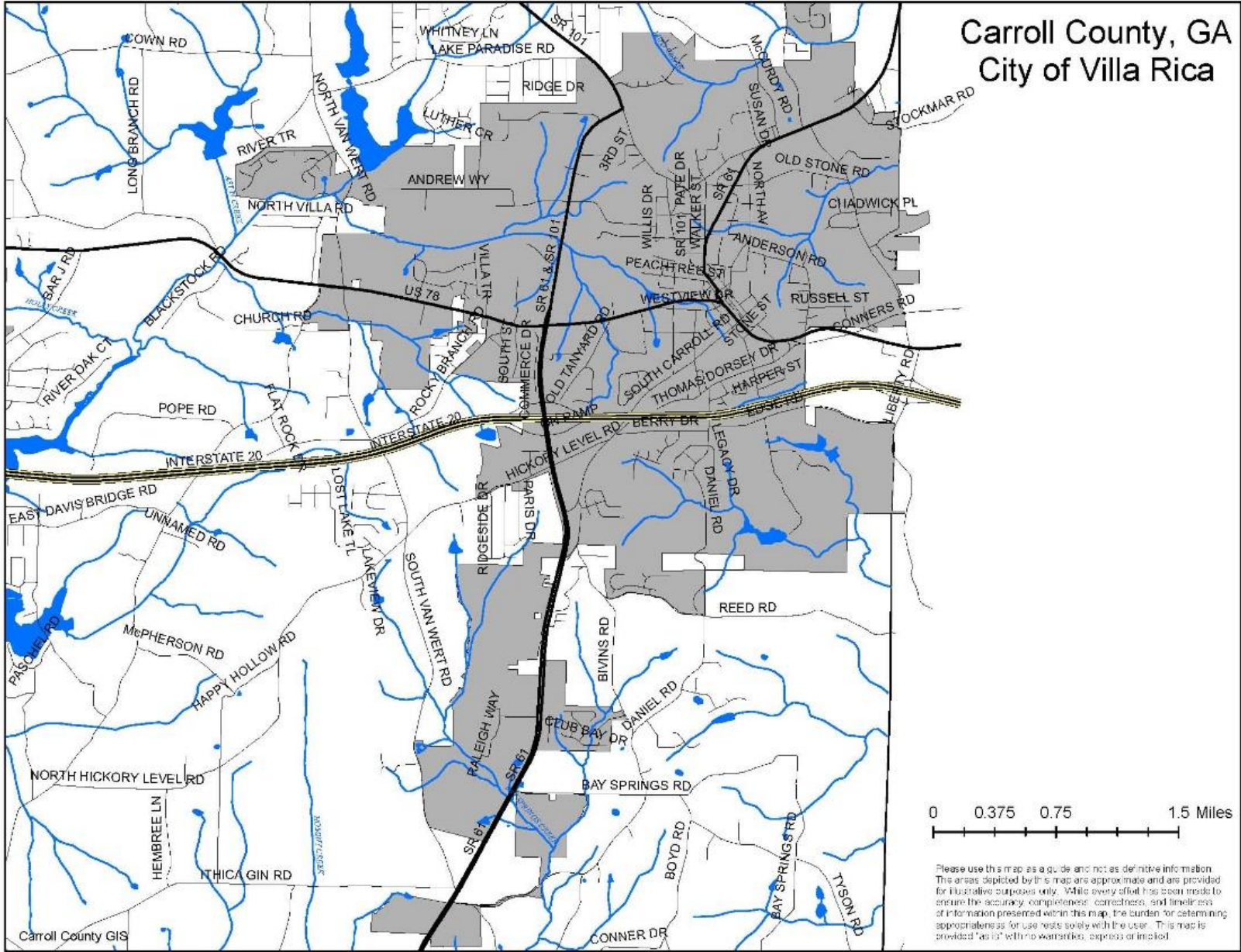
Villa Rica has a police department. Fire and ambulance services are provided by Carroll and Douglas counties.

4. Land Use and Development

Villa Rica has a number of lakes and streams, which make it vulnerable to flooding. A portion of the city's urbanized area has been designated as MS4, requiring the development and implementation of a storm water management program (SWMP) to reduce the contamination of storm water runoff and prohibit illicit discharges. The MS4 Outfalls Map (2.3) can be found in II.A.10.

Villa Rica's Industrial Parks and its location on the highway and rail line increase its vulnerability for a hazardous materials spill. Mitigation of rail line crossings would greatly help to reduce those risk, as trucks and buses are routinely stuck on the tracks.

The city's urban and suburban densities make it vulnerable to tornadoes, tropical cyclones, winter weather and pandemics. Utilizing best management practices will help make the city more resilient.



Map 2.12: City of Villa Rica

I. City of Whitesburg

1. General

The City of Whitesburg is made up of 2.8 square miles and had a population of 589 as of 2013. With a charming small-town atmosphere, Whitesburg is located between the intersections of Highway 5 and Highway 16 (27 alternate). Its elementary school is located in the Central School District cluster.

2. Government

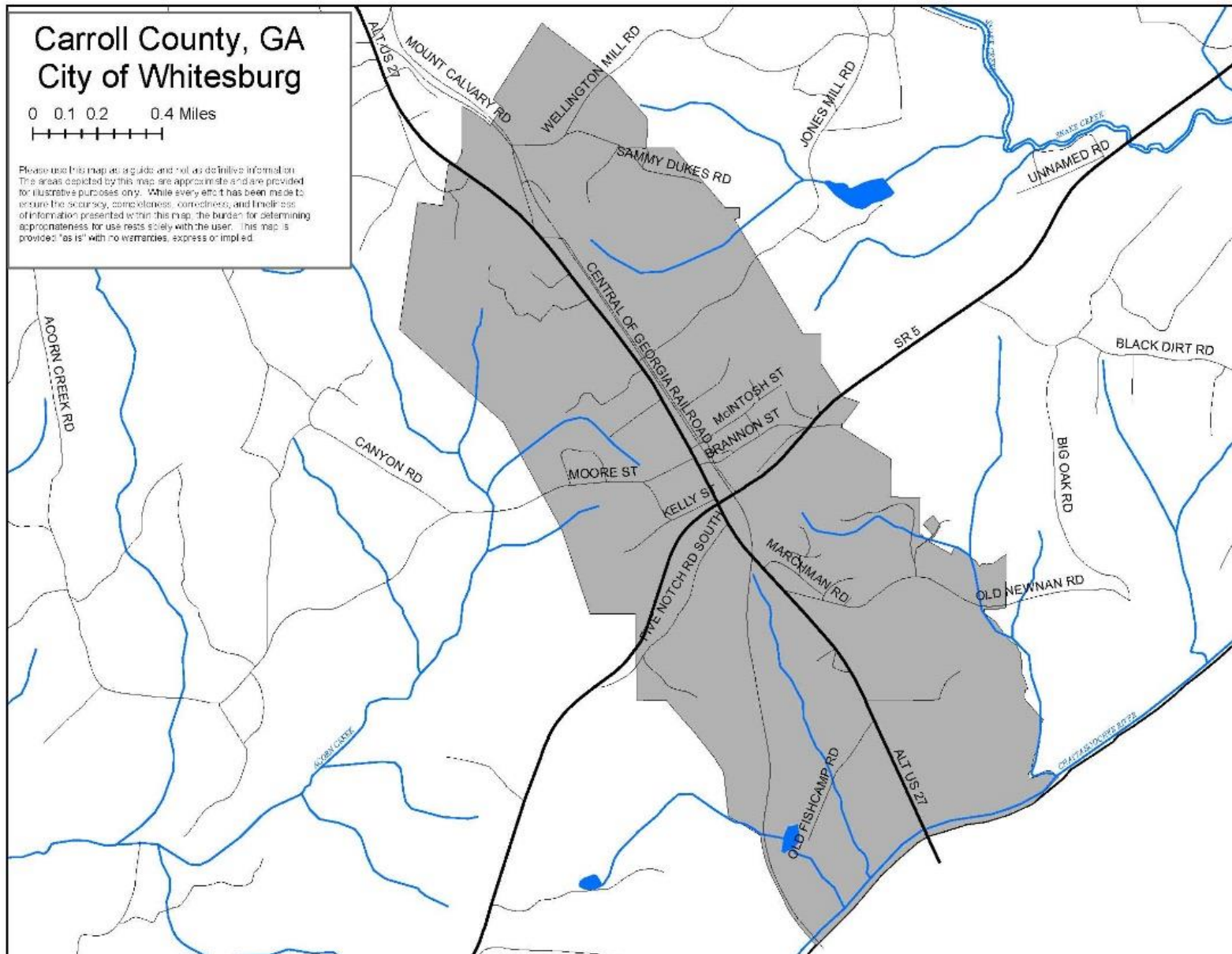
The City of Whitesburg is governed by a Mayor and 4 council members.

3. Public Safety

Whitesburg has a police department, while receiving fire and ambulance service from Carroll County.

4. Land Use and Development

Whitesburg is small in terms of acreage and in population. With Highway 16 (Alternate 27) and Highway 5 intersecting the town, there is considerable traffic, making it vulnerable to a hazardous materials spill. The Chattahoochee River borders the south side of town, putting it at high risk for flooding.



Map 2.13: City of Whitesburg

J. Multi-Jurisdictional Planning and the Incorporation of Existing Planning Mechanisms

In future updates, all of the municipalities in Carroll County will work with the Carroll County Sheriff's Office Emergency Management Agency and the Department of Community Development to better cross-reference and enhance the plans and programs that are already in place. The Hazard Mitigation Plan Steering Committee will also use information from the plans, codes and programs listed below in Table 2.4, when drafting the future mitigation strategies.

Carroll County's Hazard Mitigation Plan and Comprehensive Plans are completed in-house by county staff, allowing for better local coordination of planning efforts. Carrollton and Villa Rica have full time planning staff as well. Many of the other cities utilize the Three Rivers Regional Commission for their land use planning. Through participation in comprehensive and mitigation planning processes, all jurisdictions are encouraged to consider the integration of mitigation strategies into both plans, as well as into their capital improvement plans, economic development plans, local emergency operations plans (LEOP), continuity of operations plans, transportation plans, and storm water management plans if applicable. Another useful tool for the county and city governments for hazard information is the State of Georgia's Hazard Mitigation Plan.

The 2008 Carroll County Comprehensive Plan took into consideration FEMA flood zones and environmental character areas in developing its future land use. Mitigation planning will be further noted in the 2018 Comprehensive Plan.

The county has traditionally relied on the Carroll County Chamber of Commerce in guiding its economic development, and capital improvements have been funded through a Special Purpose Local Option Sales Tax (SPLOST). The LEOP is updated annually by the Carroll County Sheriff's Office Emergency Management Agency. Carroll County's Community Wildfire Protection Plan is currently being drafted.

In 2015, a portion of northern Carroll County fell under the MS4 guidelines, requiring storm water reporting. The area is reflected in Map 2.12.

A summary of the review and incorporation of existing plans, studies, reports and technical information can be found in Table 2.4.

Table 2.7: Review of Existing Plans, Reports and Technical Information

Planning Document	Considered in Developing Mitigation Plan
Comprehensive Plan	Yes, Environmental, Population, Transportation and Land Use Elements
Economic Development Plan	Yes, Economic Reports (Appendix D)
Local Emergency Operations Plan	Yes
Continuity of Operations Plan	N/A – county is drafting a COOP
Transportation Plan	Yes, transportation routes (Appendix D)
Storm Water Management Plan	Yes, MS4 area (Map 2.6)
Community Wildfire Protection Plan	Currently being drafted
State of Georgia Hazard Mitigation Plan	Yes, hazard information

Table 2.8: Existing Programs, Policies, or Technical Documents

	<i>Bowdon</i>	<i>Bremen</i>	<i>Carrollton</i>	<i>Mount Zion</i>	<i>Roopville</i>	<i>Temple</i>	<i>Villa Rica</i>	<i>Whitesburg</i>	<i>Carroll County</i>
Comprehensive Plans	✓	✓	✓	✓	✓	✓	✓	✓	✓
Watershed Management Plans							✓		✓
Regional Development Plans	✓	✓	✓	✓	✓	✓	✓	✓	✓
Downtown Redevelopment	✓	✓	✓				✓		
Airport Plans									✓
Long-range Recreation Plans			✓						
Open Space Plans			✓						✓
Building Codes	✓	✓	✓	✓	✓	✓	✓	✓	✓
Land Development Codes	✓	✓	✓	✓	✓	✓	✓	✓	✓
Zoning Ordinance	✓	✓	✓			✓	✓	✓	✓
Historic Preservation Ordinance	✓	✓	✓		✓		✓		✓
Development/ Subdivision Guidelines	✓	✓	✓	✓	✓	✓	✓	✓	✓
Service Delivery Act	✓	✓	✓	✓	✓	✓	✓	✓	✓

Chapter III. Hazard Vulnerability Assessment

Update for 2016: Further explanation and updated numbers for the following sections: Hazard Identification Flooding, Assets Exposed to Flooding Hazard, Repetitive Loss Properties, Hazard Profile Flooding, Land Use Flooding (updated Building Code, detailed TPL project on Little Tallapoosa River and new monitoring flood levels at Chattahoochee River in Whitesburg), Hazard Identification Tornado, Enhanced Fujita Scale (replacing Fujita Scale), Hazard Profile Tornado, Land Use and Development Tornado (updated Building Code), Hazard Identification Severe Thunderstorms (added Hail), Hazard Profile Severe Thunderstorms, Land Use Severe Thunderstorms (updated Building Code, added Preparedness section), Hazard Identification and Profile Winter Storms (added Extreme Cold / Wind Chill), Hazard Identification and Profile Drought and Wildfires (added latest data from Georgia Forestry), Land Use Drought (added discussion of green building and best management practices), Earthquakes Profile and Identification, (added Richter scale/map and updated latest numbers for Georgia), Hazard Profile and Identification Pandemic/Epidemic (added livestock, POD information), Hazard Profile and Identification Hazardous Materials (added information about Nuclear spills, removed statement on Methamphetamines as production has shifted to outside Carroll County), and Tropical Cyclones were added as a Hazard.

A. Comparison of State and County Hazards

The Natural and Man-Made Hazards documented in III. follow the hazards listed in the State of Georgia's Hazard Mitigation Plan, except where documented in the following table:

Hazards Identified in 2008 Georgia State Plan	Equivalent Hazards Identified in the 2016 Carroll County Plan	Difference
Inland Flooding	Flooding	Difference in terminology.
Tornadoes	Tornado	
Drought	Drought	
Severe Winter Storms	Winter Storms	
Wind	Severe Thunderstorms	The county views wind as an associated hazard.
Wildfire	Wildfire	
Tropical Cyclonic Events	Tropical Cyclones	Difference in terminology.
Severe Weather	Severe Thunderstorms	Difference in terminology.
Hailstorm	Severe Thunderstorms	The county views hail as an associated hazard.
Lightning	Severe Thunderstorms	The county views lightning as an associated hazard.
Dam Failure	Dam Failure	
Heat		County does not view as a threat.
Earthquake	Earthquake	
Coastal Flooding		Due to county's inland location, not viewed as a threat.
Sinkhole		County does not view as a threat.
Landslide		County does not view as a threat.

B. Federal and Local Declared Disasters

Carroll County has been federally declared for many types of disasters over the years, including hurricanes, tornadoes, flooding, and winter storms. Locally, it has been declared for droughts.

Here is a list of the declarations:

Georgia Severe Winter Storm (DR-4165)

Incident period: February 10, 2014 to February 15, 2014
Major Disaster Declaration declared on March 06, 2014

Carroll County, Georgia Drought

Incident period: April, 2013
Local Declared State of Emergency

Georgia Severe Storms and Flooding (DR-1858)

Incident period: September 18, 2009 to October 08, 2009
Major Disaster Declaration declared on September 24, 2009

Georgia Severe Storms and Flooding (DR-1761)

Incident period: May 11, 2008 to May 12, 2008
Major Disaster Declaration declared on May 23, 2008

Georgia Hurricane Ivan (DR-1554)

Incident period: September 14, 2004 to October 30, 2004
Major Disaster Declaration declared on September 18, 2004

Carroll County, Georgia Drought

Incident period: August, 2000
Local Declared State of Emergency (funding received from State of Georgia)

Georgia Tornadoes (DR-1315)

Incident period: February 14, 2000
Major Disaster Declaration declared on February 15, 2000

Georgia Winter Storm (DR-1311)

Incident period: January 22, 2000 to February 01, 2000
Major Disaster Declaration declared on January 28, 2000

Georgia Hurricane Floyd (EM-3144)

Incident period: September 14, 1999 to September 17, 1999
Emergency Declaration declared on September 14, 1999

Georgia Severe Storms and Tornadoes (DR-1271)

Incident period: April 15, 1999
Major Disaster Declaration declared on April 20, 1999

Georgia Severe Storms, Tornadoes and Flooding (DR-1209)

Incident period: February 14, 1998 to May 11, 1998

Major Disaster Declaration declared on March 11, 1998

Georgia Hurricane Opal (DR-1071)

Incident period: October 04, 1995 to October 05, 1995

Major Disaster Declaration declared on October 10, 1995

Georgia Heavy Rains, Tornadoes, Flooding, High Winds (DR-1042)

Incident period: October 01, 1994 to November 16, 1994

Major Disaster Declaration declared on October 19, 1994

Georgia Tornadoes, Flooding, Heavy Rain, Tropical Storm Alberto (DR-1033)

Incident period: July 03, 1994 to July 25, 1994

Major Disaster Declaration declared on July 07, 1994

Georgia Severe Storm, Tornadoes, Flooding (DR-1020)

Incident period: March 27, 1994 to April 10, 1994

Major Disaster Declaration declared on March 31, 1994

Georgia Severe Snowfall, Winter Storm (EM-3097)

Incident period: March 13, 1993 to March 17, 1993

Emergency Declaration declared on March 15, 1993

Georgia Tornadoes, High Winds, Heavy Rain (DR-980)

Incident period: February 21, 1993 to February 22, 1993

Major Disaster Declaration declared on March 04, 1993

Georgia Heavy Rain, High Winds, Tornadoes (DR-969)

Incident period: November 22, 1992 to December 07, 1992

Major Disaster Declaration declared on December 01, 1992

Georgia Flooding, Severe Storm (DR-897)

Incident period: March 01, 1991 to March 21, 1991

Major Disaster Declaration declared on March 15, 1991

Georgia Flooding, Severe Storm (DR-880)

Incident period: October 11, 1990 to October 29, 1990

Major Disaster Declaration declared on October 19, 1990

Georgia Flooding, Severe Storm, Tornado (DR-857)

Incident period: February 10, 1990 to February 24, 1990

Major Disaster Declaration declared on February 23, 1990

C. Natural Hazard, Risk and Vulnerability (HRV) Summary

The Natural Hazard, Risk, and Vulnerability (HRV) Summary was put together using the “How To” Guide from FEMA, “Understanding Your Risks: Identifying Hazards and Estimating Losses (FEMA 386-2). This process was described in more detail in a Chapter I. E. The committee assessed hazards based on Impacts and Vulnerability. With impact, it is the effect of the hazard on the community and its assets, whereas vulnerability looks at how exposed or susceptible the asset is to damage.

The Hazard Mitigation Plan Steering Committee collected data related to all natural hazards which have historically affected the county. The types of events determined to have a significant impact included floods, tornadoes, thunderstorm winds and lightning, tropical cyclones, winter storms, drought and wildfires, earthquakes, and pandemics and epidemics. Floods are generally more localized in their impacts, whereas the rest of the hazards threaten the entire community. Since the last adopted plan in 2010, the county has added tropical cyclones as a hazard group. The hazards are broken down by frequency and extent in the table below and further describe the potential impact on each jurisdiction, based on FEMA 386-8. Extent of damage, its vulnerability, is calculated by multiplying the total value of the assets by the percentage of property loss.

Valuations were provided by the Carroll County Tax Assessors Office and the Carroll County Sheriff’s Office Emergency Management Agency. For the categories Agricultural, Commercial, Industrial and Residential, the loss values are taken from the assessed values for that district. These values do not include personal property. Critical Facilities loss values were taken from the GMIS table used in the 2010 plan that was updated by the county staff, reflecting increased values as well as a number of capital investments in buildings and equipment.

Table 3.1: Overall Likelihood and Extent of Hazards for the County	
Dam Failure	
Frequency	Low
Severity	Moderate
Probability	Low
Drought	
Frequency	Medium
Severity	Moderate
Probability	Medium
Earthquake	
Frequency	Very Low
Severity	Low
Probability	Very Low
Flooding	
Frequency	High
Severity	Extensive
Probability	High
Hazardous Materials Incident	
Frequency	Medium
Severity	Moderate
Probability	Medium
Pandemic and Epidemic	
Frequency	Medium
Severity	High
Probability	Medium
Severe Thunderstorm (includes Hail, Wind and Lightning)	
Frequency	High
Severity	Extensive
Probability	High
Tornado	
Frequency	Medium
Severity	High
Probability	Medium
Tropical Cyclone	
Frequency	Low
Severity	Extensive
Probability	Low
Wildfire	
Frequency	Medium
Severity	Moderate
Probability	Low
Winter Storms	
Frequency	High
Severity	Extensive
Probability	High

Table 3.2: Overall Likelihood and Extent of Hazards for Municipalities

Hazard		<i>Bowdon</i>	<i>Bremen</i>	<i>Carrollton</i>	<i>Mount Zion</i>	<i>Roopville</i>	<i>Temple</i>	<i>Villa Rica</i>	<i>Whitesburg</i>
Dam Failure	Frequency	Low	Low	Medium	Low	Low	Medium	Medium	Low
	Severity	Moderate	Moderate	High	Moderate	Moderate	High	High	Moderate
	Probability	Low	Low	Medium	Low	Low	Medium	Medium	Low
Drought	Frequency	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Severity	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
	Probability	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Earthquake	Frequency	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
	Severity	Low	Low	Low	Low	Low	Low	Low	Low
	Probability	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Flooding	Frequency	Medium	Medium	High	Medium	Low	High	High	Low
	Severity	Moderate	Moderate	Extensive	Moderate	Low	Extensive	Extensive	Moderate
	Probability	Medium	Medium	High	Medium	Low	High	High	Low
Hazmat Release	Frequency	Medium	Medium	Medium	Low	Low	Medium	Medium	Low
	Severity	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
	Probability	Medium	Medium	Medium	Low	Low	Medium	Medium	Low

Hazard		<i>Bowdon</i>	<i>Bremen</i>	<i>Carrollton</i>	<i>Mount Zion</i>	<i>Roopville</i>	<i>Temple</i>	<i>Villa Rica</i>	<i>Whitesburg</i>
Pandemics/ Epidemics	Frequency	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Severity	High	High	High	High	High	High	High	High
	Probability	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Severe Thunderstorms (Hail, Wind, and Lightning)	Frequency	High	High	High	High	High	High	High	High
	Severity	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
	Probability	High	High	High	High	High	High	High	High
Tornado	Frequency	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Severity	High	High	High	High	High	High	High	High
	Probability	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Tropical Cyclone	Frequency	Low	Low	Low	Low	Low	Low	Low	Low
	Severity	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
	Probability	Low	Low	Low	Low	Low	Low	Low	Low
Wildfire	Frequency	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Severity	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
	Probability	Low	Low	Low	Low	Low	Low	Low	Low

Hazard		<i>Bowdon</i>	<i>Bremen</i>	<i>Carrollton</i>	<i>Mount Zion</i>	<i>Roopville</i>	<i>Temple</i>	<i>Villa Rica</i>	<i>Whitesburg</i>
Winter Storms	Frequency	High	High	High	High	High	High	High	High
	Severity	High	High	High	High	High	High	High	High
	Probability	High	High	High	High	High	High	High	High

Key for Table 3.1 and 3.2 – Vulnerability Assessment Frequency and Probability Definitions

VL	=	Very low risk/occurrence
L	=	Low risk; little damage potential (for example, minor damage to less than 5% of the jurisdiction)
M	=	Medium risk; moderate damage potential (for example, causing partial damage to 5-15% of the jurisdiction, infrequent occurrence)
H	=	High risk; significant risk/major damage potential (for example, destructive, damage to more than 15% of the jurisdiction, regular occurrence)
EX	=	Extensive risk/probability/impact

Key for Table 3.1 and 3.2 – Vulnerability Assessment Severity Definitions

Hazards	Low	Mod	High	Ext.
Tropical Cyclonic Events	<i>(See Wind & Inland Flooding)</i>			
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	½" or less	½ – 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 Acres	<50	50-110	110-200	200+
Earthquake - Magnitude	1-2	3	4	5+
Pandemics	Cluster: Few cases	Outbreak: More cases linked Epi (person, place, time)	Multiple Outbreaks (small scale)	Epidemic (large scale)
Hazardous Materials Incidents				
Fixed	0-2	3-5	6-8	9-10+
Transportation	0-1	2-3	4-5	6+

1. Flooding

a. Hazard Identification

One of the most costly of natural disasters, flooding occurs from the overflow of rivers and streams due to severe storms or torrential rains and also as a secondary effect of a tropical storm or hurricane. Different variables impact flooding: topography, ground saturation, previous rainfall, soil types, drainage, basin size, drainage patterns of streams and vegetative cover. Georgia's red clay contributes to the problem of flooding in the Piedmont area of the state.

Flooding may occur slowly or become a flash flood, such as in the case of dam failure. The potential failure of a dam may result in people living downstream being in imminent danger from flooding. Weathering, mechanical changes and chemical agents can impact a dam, and reservoir sedimentation can significantly reduce flood control capability.

This section was updated utilizing historical data from the National Weather Service, National Climatic Data Center, Georgia Department of Natural Resources and other published reports.

b. National Flood Insurance Program

Carroll County and the jurisdictions within participate in the National Flood Insurance Program (NFIP) and will continue to participate.

NFIP identification numbers for Carroll County and its municipalities

# 130464	CARROLL COUNTY
# 130208	CARROLLTON
# 130335	BREMEN
# 130244	BOWDON
# 130286	MOUNT ZION
# 130287	ROOPVILLE
# 130288	TEMPLE
# 130289	VILLA RICA
# 130503	WHITESBURG

c. Repetitive Loss Projects

Carroll County has several potential repetitive loss areas. Evaluating and prioritizing these properties could result in elimination of qualified properties from their current locations in the flood plain. This program can reduce the flood insurance burden and add green space to the county.

Fourteen residential properties have been purchased through the Repetitive Loss Program. The City of Carrollton is the only jurisdiction to have purchased repetitive loss properties, identifying a group of homes on Valley Circle that experienced prior flooding loss that benefitted from acquisition.

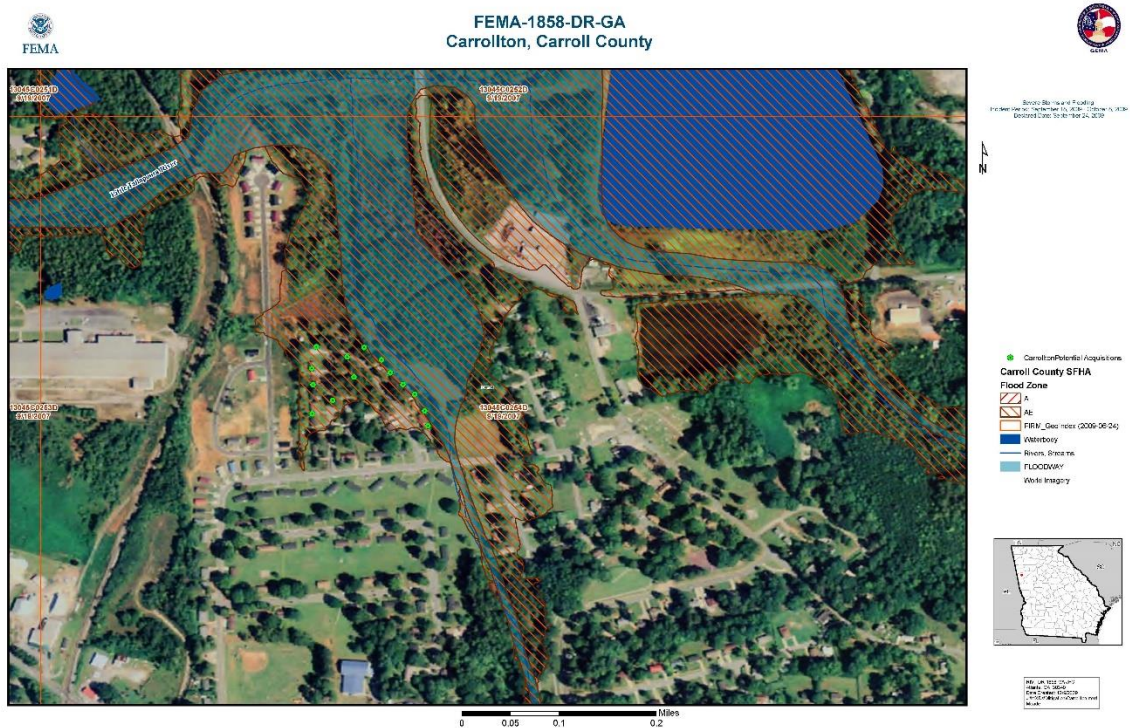


Figure 3.1: Repetitive Loss Properties Acquired (Georgia Emergency Management Agency/Federal Emergency Management Agency)

Carroll County is developing a proactive program to evaluate and prioritize homes in the county that should be bought, demolished and retained as green space because of frequent flooding. As detailed below in Assets Exposed to Flooding, there are a considerable number of structures in the special flood hazard areas. As of December 2015, there are approximately 20 residential repetitive loss properties in the county and municipalities combined. Carroll County will continue participating in NFIP, with diligence in progressing in achieving its mitigation strategies, such as acquisition, zoning and code enforcement.

d. Hazard Profile

There are 24 significant flooding and flash flooding events on record at the National Climatic Data Center for Carroll County since 1996, resulting in approximately \$26 million in property damage. The most significant flood occurred on September 21, 2009 and was described as a 500-year flood event. The 2009 flood received a Federal Declaration (DR-1858) and resulted in approximately \$22,950,000 in damage throughout Carroll County and its municipalities and one fatality.

In terms of government assistance, the county and municipalities received the following amounts from FEMA to help repair and rebuild after the floods.

Table 3.3: Amounts Received from 2009 Floods

Jurisdiction	Amount
Carroll County	\$3,505,134.28
Carrollton	\$556,308.11
Temple	\$49,415.16
Villa Rica	\$158,926.50
Water Authority	\$681,631.90
Board of Education	\$36,134.43
	\$4,987,550.38

Georgia Emergency Management Agency

In the 2009 Flood, the county’s reservoir dam on Snake Creek performed as designed with only minor damage to the left spillway, which has since been repaired. Protective construction techniques of dams may assist in mitigating such a hazard.

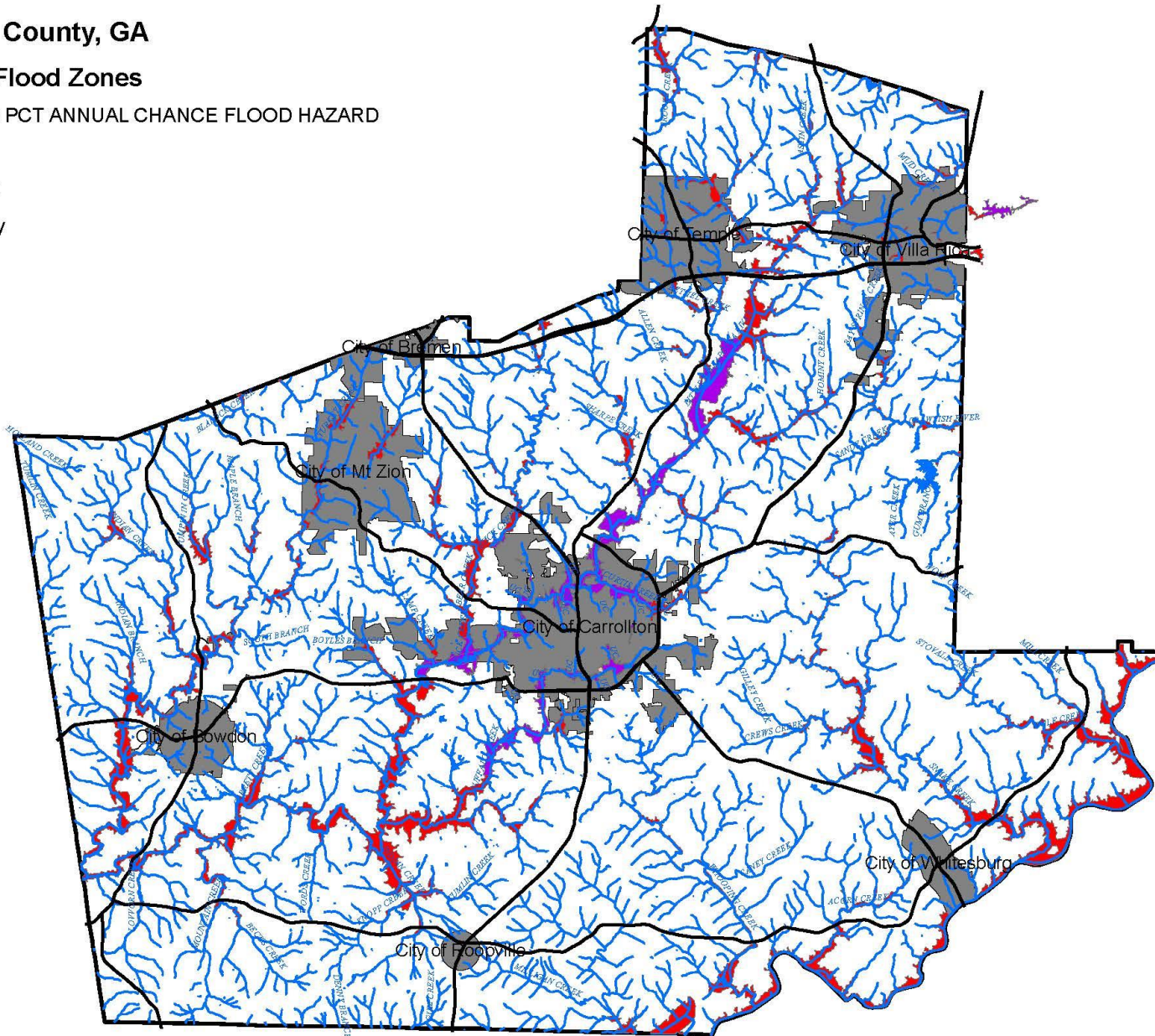
Since the devastating flood in 2009, Carroll County has been fortunate to have only experienced flash flooding, which resulted in minimal damage to unpaved road culverts.

Historically, there is an 89% chance that a flood will occur in Carroll County each year. Localized flooding is commonplace in Carroll County. This is mainly due to flash flooding from storm runoff, causing a rise in creeks over roadways. Typically, these streams recede without the need for significant repairs.

Carroll County, GA

FEMA Flood Zones

- 0.2 PCT ANNUAL CHANCE FLOOD HAZARD
- A
- AE
- City



Map 3.1: FEMA Flood Zones (Carroll County GIS)

e. Assets Exposed to Hazard

There are many assets within Carroll County which are exposed to flooding hazards. There are 100 bridges, 44 culverts, and 104 dams that were determined to be critical to Carroll County. For more information on Dams, please see III. B. 2.

Of the 503 square miles that make Carroll County approximately 41.7 square miles lie within special flood hazard areas. 4,352 parcels make up this 41.7 square miles with roughly half (2,934 parcels) having structures on the parcel. Only 880 structures within the special flood area are part of platted subdivision communities. Almost all structures in the special flood area are contained to the banks of the major streams and rivers in the County, most notably along the Little Tallapoosa River and its reservoir Lake Buckhorn. This data was obtained from overlaying the 2015 County parcel data with the 2007 FEMA FIRM data effective September 19, 2007.

Table 3.4 Areas of Concern for Localized Flooding
Wiley Wilson Road
Brickyard Road (east of bridge)
Laurel Road
Old Five Notch Road
Yates Lane
Craven- Roopville Road
Horsley Drive
Bagwell Road
J.C. Daniel Road
Holder Road (at creek)
Little Joe Road
Martin Road
Grimmett Road
Tanyard Road (at creek)
Carrollton Tyus Road (at 3 bridges)
Denny Road (at creek)
Wantland Road
Campground Road (at creek)

Davenport Mill Road (at creek near Caldwell Road)

McIntosh Reserve

Victory Church Road at Victory Dashboard

Rocky Branch Road (across from car wash)

Lake Drive (past Luther Circle)

Old Bremen Road, Carrollton

Valley Circle

Bankhead Highway (at bridge)

West View Drive

Kansas and Agnes Streets at Lake Buckhorn

Shadow Lake Drive

Molete Street

Strickland and Blandenburg Roads

Rome Street at John Wesley Plaza

Candler Street

Punkintown Road at Old Stone Road

Amberwood Lane

Rainey Road

Villa Rosa Road

Rome Street, Temple

Old Bremen Road, Temple

Holliday Overlook

Bankhead at South Dogwood

Almon Rd at Lake Carroll Blvd

Carroll County Public Works, Carroll County Sheriff's Office Emergency Management Agency

f. Estimate of Potential Losses

Complete losses of those properties located within flood zones which make up approximately 13 percent (or 66 square miles) of Carroll County would result in \$980,820,028 in damages (assuming 100% loss). This includes \$361,019,166 in residential losses, \$270,657,203 in critical facility losses, \$78,685,772 in commercial property losses, \$24,333,362 in industrial losses and \$246,124,526 in agricultural losses.

Structure Type and Amount of Structures	Value	75%	50%	25%
Residential	\$361,019,166	\$270,764,374	\$180,509,583	\$90,254,791
Commercial	\$78,685,772	\$59,014,329	\$39,342,886	\$19,671,443
Industrial	\$24,333,362	\$18,250,021	\$12,166,681	\$6,083,340
Agricultural	\$246,124,526	\$184,593,395	\$123,062,263	\$61,531,132
Critical Facilities	\$270,657,203	\$202,992,902	\$135,328,601	\$67,664,301
<i>Values provided by the Carroll County Tax Assessors and Carroll County Sheriff's Office Emergency Management Agency</i>				

g. Land Use and Development Trends

Carroll County is making significant efforts to reduce building in flood hazard districts. Carroll County has adopted the 2012 Building Code (see II. A. 9 for more details), and has a flood plain manager who checks properties who are located in the FEMA Flood Plain when a permit is requested.

Additionally, Carroll County Community Development reviews Erosion Sedimentation Plans and issues Land Disturbance Permits. Inspectors monitor the sites to ensure that sedimentation does not get into streams, potentially making flood conditions worse.

On the public side, the county has benefitted from mitigation efforts of the past by upsizing its culvert pipes whenever repairs are needed. This proved fortunate during a recent flood event in December, 2015, when Public Works Director Charles Pope noted on WLBB's Community Voice Program (12/28/2015) that the "Reason we didn't have as much damage this time is because of the 84 road projects we had in the '09 storms where we upgraded all of our storm [culvert] pipes." The county would have had more damage with that flooding event had it not been for those previous mitigation efforts.

These actions and a slower paced population growth have helped steady the county's vulnerability to flooding, which remains high, as it does for Carrollton, Temple and Villa Rica.

Two projects that have benefitted the county indirectly in addressing the county’s flooding hazard:

1. Trust for Public Land Pilot Study

Carroll County participated in a Trust for Public Lands Pilot Study in 2002 that looked at the effects of land use on water quality in the Upper Little Tallapoosa Watershed. As a result of that study, the county passed a Special Purpose Local Option Sales Tax that allocated \$20 million for green space acquisitions and development. Two passive use parks, one on the Little Tallapoosa River and another on the Chattahoochee River were purchased as a result.

The study also recommended increased monitoring and oversight of development in the watershed to ensure that erosion control best management practices were being enforced. The county obtained funds under an Environmental Protection Division 319 Grant to hire another enforcement officer. As indicated above, sedimentation buildup can diminish a reservoir’s flood control capability. Stopping sedimentation before it enters a stream is an important preventative action.

2. Monitoring the Chattahoochee

The National Weather Service in conjunction with the Southeast River Forecast Center have adjusted flood stage levels for the Chattahoochee River at Whitesburg and will issue warnings accordingly in an effort to promote public safety and welfare. The following critical threshold levels were changed as of August 6, 2014 for the Chattahoochee River at Whitesburg (WHTG1):

Bankfull/Action Stage	15 feet
Flood Stage/Minor Flood	17 feet
Moderate flood Stage	21 feet
Major Flood Stage	26 feet

This allows public safety officials a better opportunity to respond in a flooding situation. Below is an example of the monitoring station’s recorded values.

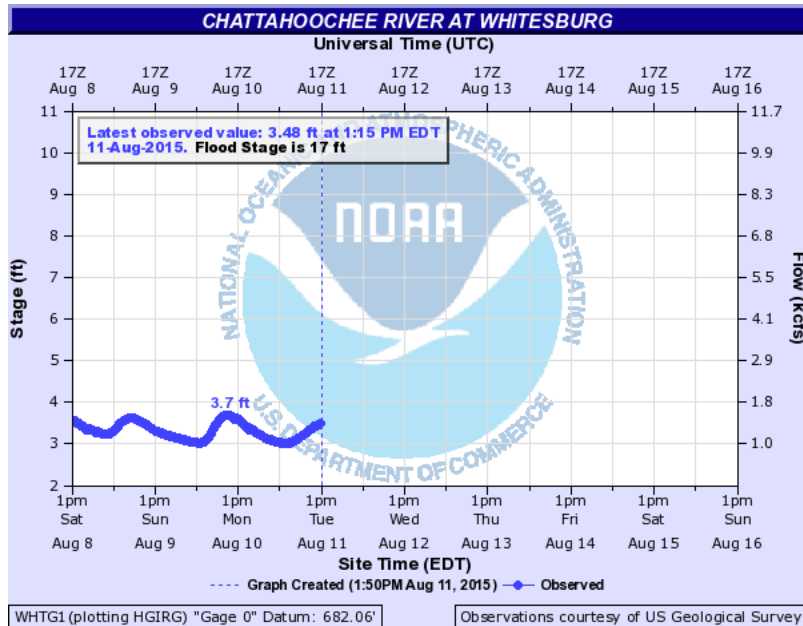


Figure 2: Monitoring Flood Level of Chattahoochee River at Whitesburg

h. Multi-Jurisdictional Concerns

All jurisdictions within Carroll County can potentially be affected by flooding. Based on current data limitations, the Hazard Mitigation Plan Steering Committee are unable to determine significant differences between the county and municipalities in terms of risk and vulnerabilities associated with flooding with the exception of specifically designated flood plains. The flood zones have been identified on Map 3.1 on page 73, primarily depicting possible flood areas in both the Little Tallapoosa and Chattahoochee River Basins.

Please see Chapter IV for flood objectives, goals, and projects for specific flooding areas identified. As a result, any mitigation steps taken related to flooding should be undertaken on a countywide basis and include all the cities. The county and two municipalities (Carrollton and Villa Rica) have identified areas where localized flooding (due to flash floods) is a concern. Individual projects must be undertaken to further characterize these events. When relevant flood data becomes available, it will be incorporated into future projects.

i. Hazard Summary

Floods pose a significant threat to Carroll County. Although there is a low probability of a significant occurrence, there is a high probability of damage when flooding occurs. Flooding has caused extensive damage in the past. Carroll County remains vulnerable to flooding. Please find mitigation strategies related to flooding in IV. A. 1.

2. Tornadoes

a. Hazard Identification

A violent rotating wind accompanied by a funnel-shaped cloud is classified as a tornado. Severe weather conditions, such as a supercell thunderstorm or hurricane, can produce a tornado. With average speeds on the ground of 30 miles per hour, tornados can do considerable damage depending how long they remain on the ground, which varies from seconds to hours although most are in the 10 minute range. Tornados typically travel from southwest to northeast. In Carroll County, they generally travel northeast from the Alabama or Heard County line. With the combined action of strong rotating winds and the impact of wind-born debris, devastating destruction can occur. Typical severe weather patterns are depicted in the map below.

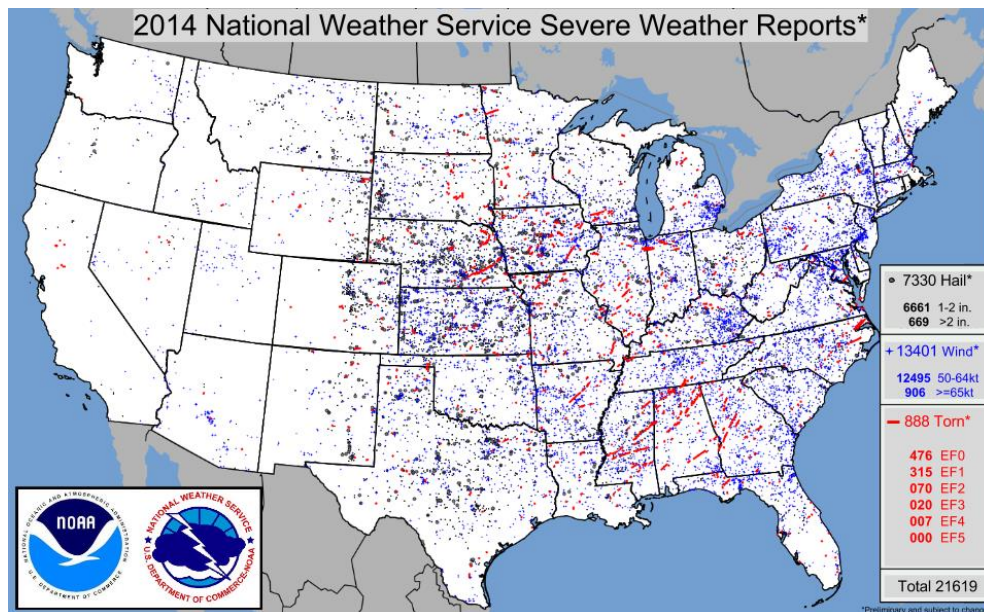


Figure 3: 2014 National Weather Service Severe Weather Reports (NOAA/NWS)

In measuring tornadoes, the National Weather Service relies on the Enhanced Fujita Scale, a modification of the Fujita Scale that was in previous plans. The Enhanced Fujita Scale is the standard scale for rating the severity of a tornado as measured by the damage it causes (see table below). According to insurance estimates, about 39 percent of insured catastrophic losses were the result of tornadoes. In the United States, approximately 80 percent of tornadoes are EF1 or smaller. Less than 1 percent are EF4 or greater, but by far, those tornadoes cause the vast majority of damage. Carroll County and its municipalities have traditionally seen EF0 to EF3 tornadoes.

Table 3.6: The Enhanced Fujita Scale

Scale	Wind speed MPH	Potential damage
EF0	65–85	Minor or no damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e., those that remain in open fields) are always rated EF0.
EF1	86–110	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111–135	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136–165	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations are badly damaged.
EF4	166–200	Extreme damage. Well-constructed and whole frame houses completely leveled; cars and other large objects thrown and small missiles generated.
EF5	>200	Total destruction of buildings. Strong framed, well built houses leveled off foundations and swept away; steel-reinforced concrete structures are critically damaged; tall buildings collapse or have severe structural deformations; some cars, trucks and train cars can be thrown approximately 1 mile.

The official tornado season begins in March and continues through August, but tornadoes occur throughout the year. In putting together this hazard profile, historical data from the National Weather Service, National Climatic Data Center, and Georgia Tornado Database was used.

b. Hazard Profile

Per the National Weather Service Storm Prediction Center, Carroll County averages two tornado days per year. Twenty-one tornadoes have been recorded in the hazard history of Carroll

County, with six tornadoes in the last 15 years and 21 since 1954. These tornadoes have resulted in 10 deaths, 18 reported injuries and millions of dollars in damages.

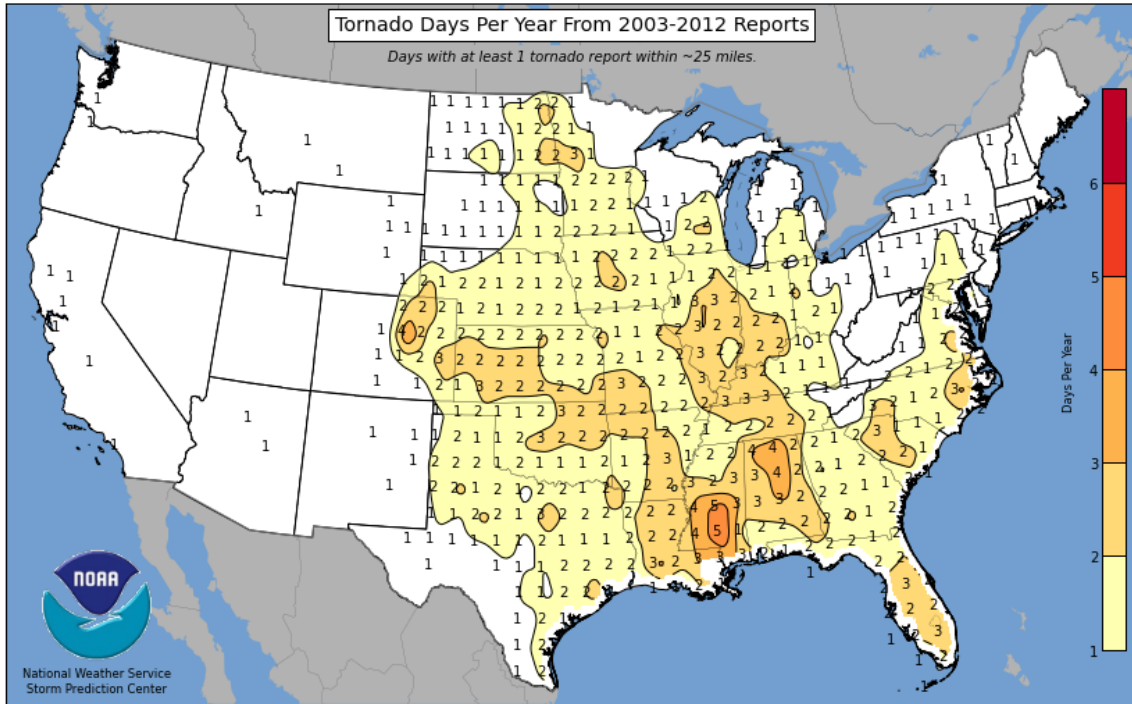


Figure 3.2: Tornado Days Per Year (NOAA)

Although they can occur at any time of the year, spring tornadoes have proven a significant hazard to Carroll County, mirroring nation-wide trends as shown in the chart below. In 2008, Carroll County experienced five tornadoes from February to May, ranging from EF1 to EF3 in strength. Since peaking in 2008, no damaging tornadoes have been reported. It is unlikely for this trend to hold, as an above average year is likely to occur.

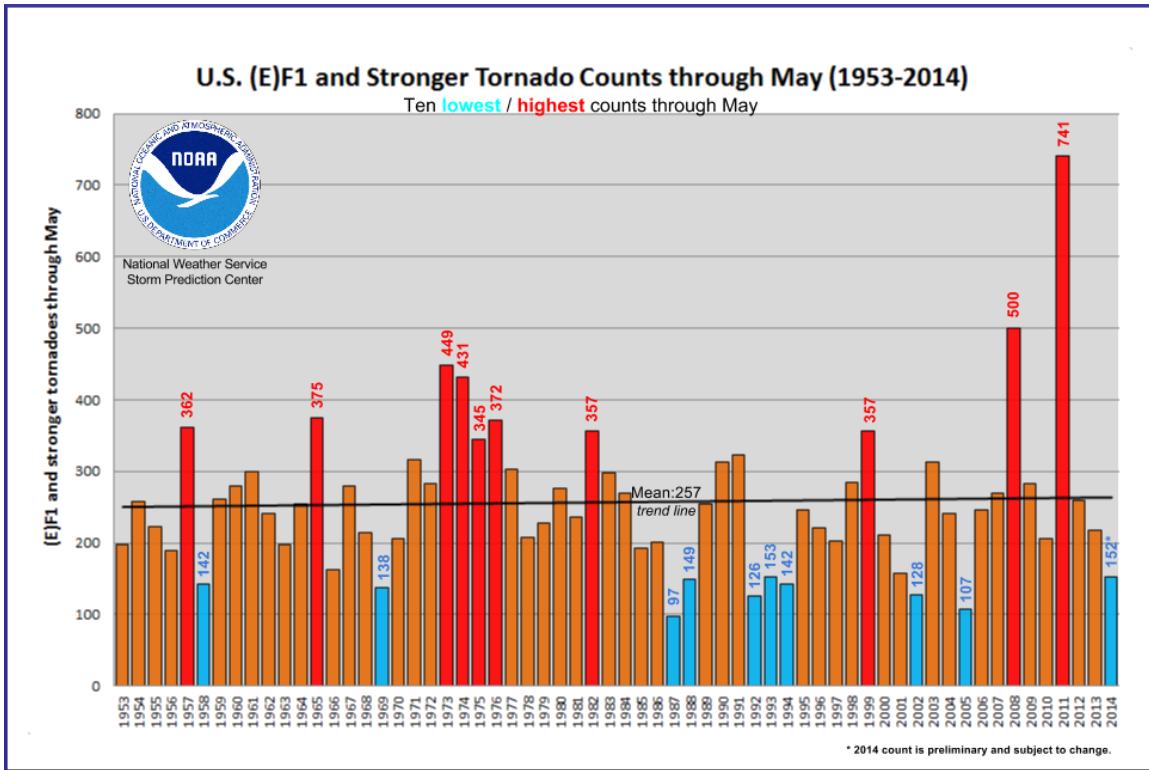


Figure 3.3: May Tornadoes (NOAA)

c. Assets Exposed to Hazard

All of Carroll County is susceptible to tornadoes as they are unpredictable in nature and do not follow any given pattern.

d. Estimate of Potential Losses

Because all facilities within the county are subject to potential losses via tornadoes, estimations were made assuming 100% losses. This data is contained in Appendix C.

Table 3.7: Total Property Losses for Carroll County on a Percentage Basis for Tornadoes				
Structure Type and Amount of Structures	Value	75%	50%	25%
Residential	\$2,777,070,504	\$208,280,2878	\$1,388,535,252	\$694,267,626
Commercial	\$605,275,170	\$453,956,376	\$302,637,585	\$151,318,793
Industrial	\$187,179,707	\$140,384,780	\$93,589,854	\$46,794,927
Agricultural	\$246,124,526	\$184,593,395	\$123,062,263	\$61,531,132
Critical Facilities	\$2,081,978,481	\$ 1,561,483,861	\$1,040,989,241	\$520,494,620
<i>Values provided by the Carroll County Tax Assessors and Carroll County Sheriff's Office Emergency Management Agency</i>				

e. Land Use and Development

Carroll County is located in wind zone III, which is associated with 200 mph wind speeds. Carroll County’s adopted 2012 Building Code (see II. A. 9 for more details) requires construction to comply with a wind speed of 80 mph. In Carroll County’s Comprehensive Plan, any newly constructed manufactured home community is recommended to install a tornado shelter for its residents use.

As a county that had experienced a high rate of growth during the early 2000s, the land use in many areas transitioned from rural to suburban, particularly in northern Carroll County between Temple and Villa Rica. Denser populations make the county more vulnerable to damage from a tornado. The probability of a tornado remains medium, with a high level of severity.



Figure 3.4: Wind Zones in the United States (Federal Emergency Management Agency)

f. Multi-Jurisdictional Concerns

All jurisdictions within Carroll County can be affected by tornadoes and are in the same wind zone. There are no significant differences between the county and its municipalities. Therefore, all mitigation projects should consider a county wide approach.

g. Hazard Summary

Carroll County has a significant history with tornado activity. For this reason, the identified mitigation projects are seen as a high priority for life safety, especially for the protection of vulnerable populations. Although a tornado has not occurred since 2008, the severity of damage when they do occur is high. Tornado specific mitigation actions are provided in Chapter IV. A. 2.

3. Severe Thunderstorms

a. Hazard Identification

Thunderstorm winds tend to be short in duration involving straight-line winds and/or gusts in excess of 58 mph. By definition, all thunderstorms are accompanied by lightning. Lightning strikes precede from cloud-to-cloud, cloud-to-ground and ground-to-cloud. The sound of lightning is thunder. Lastly, hail often accompanies severe thunderstorms and can cause considerable damage to personal property, such as roofs and cars.

Data for this hazard category comes from: National Climatic Data Center and the National Weather Service.

b. Hazard Profile

As indicated in the figure below, Carroll County experiences about 25 severe weather days per year, and of those, thunderstorms are the most prevalent natural hazards. Since 1957, 120 occurrences of thunderstorm winds have been reported, with 82 reports of property damage and four fatalities. There were 36 reports of damages due to thunderstorm winds since 2005. Lightning resulted in 19 instances of damage. 78 occurrences of hail with seven causing significant damage. Thunderstorm winds, hail and lightning were found to be responsible for millions of dollars in property damages, significant enough to be reported.

Trends analysis shows that Carroll County is subject to approximately 25 days per year with severe thunderstorms. There is a high probability of occurrence, leaving the county vulnerable to damage.

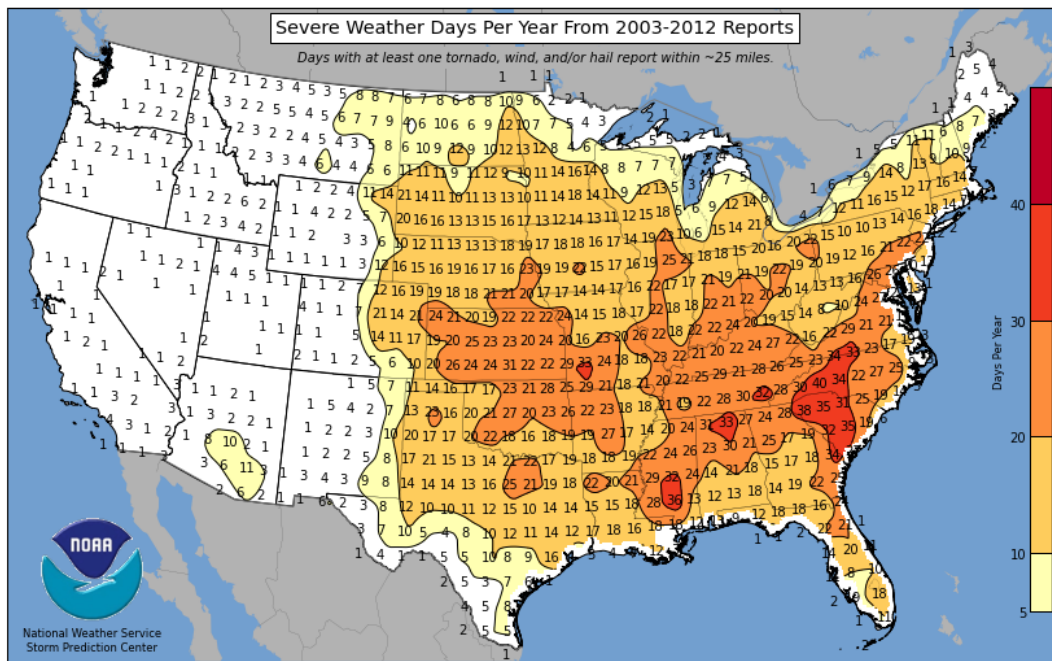


Figure 3.5: Severe Weather Days Per Year (NOAA)

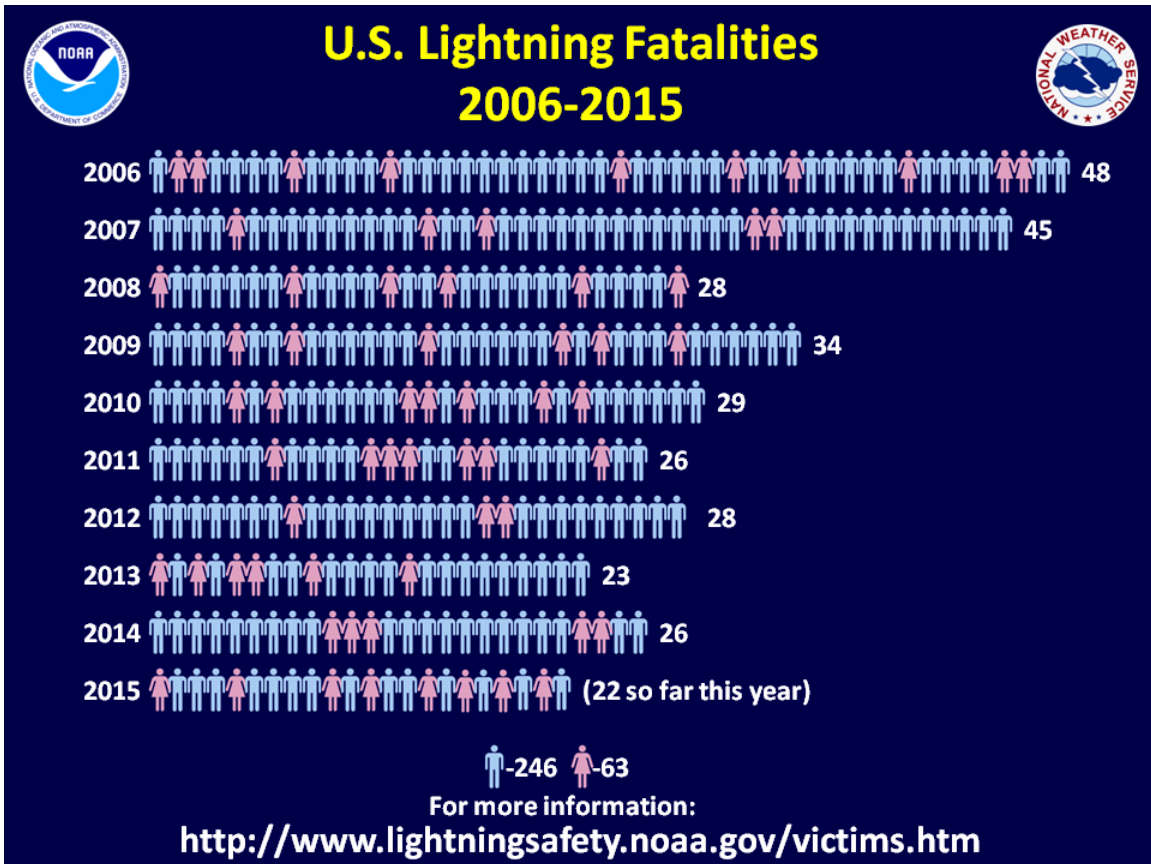


Figure 3.6: Lightning Deaths 2006-2015 (NOAA)

c. Assets Exposed to Hazards

There is no way to estimate the facilities most likely damaged by thunderstorm winds, hail and lightning due to their widespread nature.

d. Estimate of Potential Losses

Because all facilities within the county are subject to potential losses via thunderstorm winds and lightning, estimations were made assuming 100% losses. A list of Critical Facilities including estimated values can be found in Appendix C.

Table 3.7: Total Property Losses for Carroll County on a Percentage Basis for Thunderstorm Winds, Hail and Lightning				
Structure Type and Amount of Structures	Value	75%	50%	25%
Residential	\$2,777,070,504	\$208,280,2878	\$1,388,535,252	\$694,267,626
Commercial	\$605,275,170	\$453,956,376	\$302,637,585	\$151,318,793
Industrial	\$187,179,707	\$140,384,780	\$93,589,854	\$46,794,927
Agricultural	\$246,124,526	\$184,593,395	\$123,062,263	\$61,531,132
Critical Facilities	\$2,081,978,481	\$ 1,561,483,861	\$1,040,989,241	\$520,494,620
<i>Values provided by the Carroll County Tax Assessors and Carroll County Sheriff's Office Emergency Management Agency</i>				

e. Land Use and Development Trends

Carroll County’s adopted 2012 Building Code (see II. A. 9 for more details) provides for reasonable protection from most natural hazards although they are not hazard specific. Mitigation actions to reduce the possibility of property damage, including interlocking shingles and surge protectors are encouraged.

The county and municipalities all have critical facilities, including recreational fields and parks that are subject to the effects of thunderstorm damage. This is especially true in the county’s most populated areas between Carrollton, Villa Rica and Temple.

Preparedness

For thunderstorm wind, lightning and hail, the focus is on preparedness. Notice is key. This past year, the National Weather Service conducted two Storm Spotter Classes for the county: the first with departments who offer outdoor events and the second with Emergency Management Volunteers.

Through social media, Emergency Management notifies the public of NWS forecasts and through Weather Warn, any severe thunderstorm warnings are sent out via weather sirens and social media. Funding from Georgia Emergency Management Agency and the Sheriff’s Office initiated a program of giving weather radios to local citizens in need. The public is encouraged to take shelter from storms to possibly prevent injury or loss of life. Because these alerts have been so successful, the county will continue to utilize them into the future.

Despite these programs, Carroll County and its municipalities remain extremely vulnerable to thunderstorm winds, hail and lightning that occur frequently and are known to cause extensive damage.

f. Multi-Jurisdictional Concerns

There is no significant difference between Carroll County and its municipalities based upon the chance of occurrence of thunderstorms winds and lightning because they are random events.

g. Hazard Summary

Severe storms are the most prevalent natural hazards in Carroll County. They have the capability of producing widespread property and crop damage, injuries and even death. Mitigation projects must be considered which reduce the overall damage due to thunderstorm winds, hail and lightning. Severe thunderstorms occur frequently in Carroll County, and as such, probability is high and damage can be extensive. Mitigation plans in relation to severe storms are contained in IV. A. 3.

4. Tropical Cyclones

a. Hazard Identification

Tropical Cyclones are among nature's most dangerous and costly storms. Since 1970, there has been an average of 11 Atlantic tropical storms per year, with 6 of those becoming hurricanes. These storms bring a combination of winds, tornadoes and flooding to the area. Even to those counties that lie further inland, the effects of a tropical cyclone can be devastating.

A tropical cyclone can come in the form of a Tropical Depression (sustained winds of 38 mph), a Tropical Storm (sustained winds of 39 to 73 mph), Hurricane (maximum sustained winds of 74 mph or higher) and major hurricane (maximum sustained winds of 111mph or higher. Major hurricanes correspond to Category 3, 4, or 5 on the Saffir-Simpson Hurricane Wind Scale.

Table 3.8: The Enhanced Fujita Scale		
Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph	Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 mph or higher	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power

Table 3.8: The Enhanced Fujita Scale		
Category	Sustained Winds	Types of Damage Due to Hurricane Winds
		outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Data for this hazard category comes from: National Climatic Data Center and the National Weather Service.

b. Hazard Profile

Carroll County has a significant history with tropical cyclones considering its placement in-land at the foothills of the Appalachian Mountains, particularly with storms coming north out of the Gulf of Mexico. Since 2002, the National Weather Service has documented 14 occurrences of tropical cyclones (including 3 hurricanes) that have impacted the county. Five storms alone occurred in 2005, the year of Hurricane Katrina. The most memorable of tropical cyclones that directly hit the area occurred from Hurricane Eloise in 1975, which caused considerable damage from its winds and from Hurricane Opal in 1995 with overall damages exceeding \$5 billion dollars and 5 fatalities in Georgia alone. With Hurricane Opal, many residents lost power for a week, while schools and businesses were closed. Its magnitude illustrates the importance of preparation to families during a Tropical Cyclone event. The probability of a tropical cyclone event effecting the county remains high.

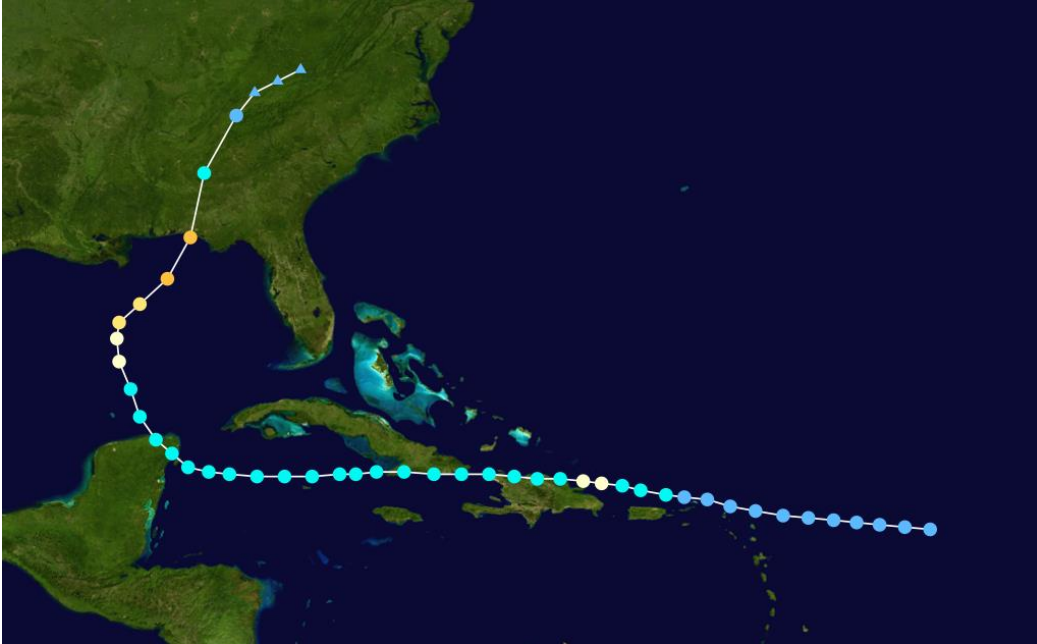


Figure 3.7: Hurricane Eloise, 1975



Figure 3.8: Hurricane Opal, 1995

Even without a direct hit from a Hurricane, damage can be significant. Due to Carroll County’s location, it has experienced tornadoes spun from outlying bands, such as occurred with Hurricane Katrina. Even if the storm is located along the coasts, evacuees fill local hotels and may necessitate opening of a shelter. Whether directly or indirectly, tropical cyclones have a costly impact on the county.

c. Assets Exposed to Hazards

There is no way to estimate the facilities most likely damaged by tropical cyclones due to their magnitude. Strong winds can topple trees and buildings, while overflowing rivers can cause flooding.

d. Estimate of Potential Losses

Because all facilities within the county are subject to potential losses via tropical cyclones, estimations were made assuming 100% losses. A list of Critical Facilities including estimated values can be found in Appendix C.

Table 3.9: Total Property Losses for Carroll County on a Percentage Basis for Tropical Cyclones				
Structure Type and Amount of Structures	Value	75%	50%	25%
Residential	\$2,777,070,504	\$208,280,2878	\$1,388,535,252	\$694,267,626
Commercial	\$605,275,170	\$453,956,376	\$302,637,585	\$151,318,793
Industrial	\$187,179,707	\$140,384,780	\$93,589,854	\$46,794,927
Agricultural	\$246,124,526	\$184,593,395	\$123,062,263	\$61,531,132
Critical Facilities	\$2,081,978,481	\$ 1,561,483,861	\$1,040,989,241	\$520,494,620
<i>Values provided by the Carroll County Tax Assessors and Carroll County Sheriff’s Office Emergency Management Agency</i>				

e. Land Use and Development Trends

Carroll County’s adopted 2012 Building Code (see II. A. 9 for more details) provides for reasonable protection from most natural hazards although they are not hazard specific. The codes require building that will sustain an 80 mph wind.

With an increased suburban population since the early 2000s housing boom, which necessitated the construction of additional critical facilities, the county remains vulnerable to the effects of

tropical cyclones, particularly to high winds and flooding. Although there is a low probability of occurrence, tropical cyclones cause extensive damage.

f. Multi-Jurisdictional Concerns

When a tropical cyclone occurs, it will affect the entire county, resulting in downed trees, widespread power outages and flooding.

Cities along evacuation routes are more likely to be impacted by evacuees, particularly those along I-20 or Highway 27, including Carrollton, Bremen, Temple and Villa Rica.

g. Hazard Summary

A somewhat rare occurrence, but when it does, the level of severity is extensive. Tropical cyclones have the potential for direct and indirect devastation. They have the capability of producing widespread property and crop damage, injuries and even death. Mitigation projects must be considered which reduce the overall damage due to tropical cyclones. Mitigation plans in relation to tropical cyclones are contained in IV. A. 4.

5. Winter Storms

a. Hazard Identification

Historical data from the National Climactic Data Center and the National Weather Service was collected for this plan. Winter storms bring threat of freezing rain, snow and ice to Carroll County. A heavy accumulation of ice, especially when accompanied by high winds, devastates trees and power lines, causing wide spread outages. Streets and highways become extremely hazardous to motorists and pedestrians when winter weather occurs.

Extreme cold and wind chill are also hazards during the winter months, necessitating calls to the public to protect pets, pipes, plants and people. When a hard freeze occurs, it is damaging to crops. Nationally, more fatalities occur each year due to winter cold than summer heat per the Centers for Disease Control.

b. Hazard Profile

Since 1996, there have been 23 snow and ice events recorded in the winter storm history for Carroll County, indicating a high probability of an annual occurrence. These events have ranged in magnitude from ½ inch to 1 inch of snow to the blizzard of 1993. The blizzard caused extensive damage across Georgia. The most damaging of winter storms involve ice because it sticks to tree limbs and tends to bring down power lines. For many in Carroll County, solely on electricity, this means a lack of power and heat for a considerable period of time. The most recent federally declared winter storm that occurred in Carroll County in February 2014, resulted in the county and local nonprofits receiving reimbursements of over \$1 million in federal assistance to cover costs associated with storm debris.

In addition to precipitation with winter storms, there is also the threat of winter chill. Over 10 instances of winter chill were reported by the National Weather Service in Carroll County in the early 2000s. In 2015, Carroll County experienced temperatures as low as 6 degrees Fahrenheit. Many area homes lack the needed insulation to protect pipes, resulting in costly water line repairs. Further, there is a potential for damage to crops.

c. Assets Exposed to Hazard

All assets within the county are susceptible to winter storms. Mitigation projects focusing on back-up power sources and debris removal should be given high priority county wide.

In addition to state and federal routes, the following county roads listed in 3.11 have been identified as being critical to treating in event of icing and clearing of storm debris, due to their importance as secondary transportation routes.

Table 3.10: Secondary Transportation Routes

Tyus-Carrollton Road
Lovvorn Road
Smithville Road
Hog Liver Road
Shady Grove Road
Hickory Level Road
North and South Vanwert Road
Rainey Road
Center Point Road
Pleasant Ridge Road
Miller Academy Road
Jones Mill Road
Horsey Mill Road
Oak Mountain Road
Clem Lowell Road

d. Estimate of Potential Losses

Because all facilities within the county are subject to potential losses due to winter storms, estimations were made assuming 100% losses. This data is contained in Appendix C.

Table 3.11: Total Property Losses for Carroll County on a Percentage Basis for Winter Weather				
Structure Type and Amount of Structures	Value	75%	50%	25%
Residential	\$2,777,070,504	\$208,280,2878	\$1,388,535,252	\$694,267,626
Commercial	\$605,275,170	\$453,956,376	\$302,637,585	\$151,318,793
Industrial	\$187,179,707	\$140,384,780	\$93,589,854	\$46,794,927
Agricultural	\$246,124,526	\$184,593,395	\$123,062,263	\$61,531,132
Critical Facilities	\$2,081,978,481	\$ 1,561,483,861	\$1,040,989,241	\$520,494,620
<i>Values provided by the Carroll County Tax Assessors and Carroll County Sheriff's Office Emergency Management Agency</i>				

e. Land Use and Development Trends

Carroll County's adopted 2012 Building Code (see II. A. 9 for more details) provides for reasonable protection from most natural hazards although they are not hazard specific.

Because of the infrequency of extreme chill, many county homes have insufficient insulation around water pipes, resulting in damage when they burst. The Carroll County Sheriff's Office Emergency Management Agency has utilized social media to remind residents to protect the P's during winter weather, which includes people, pipes, pets and plants.

Most of the county's power lines are above ground, making them subject to damage from falling trees.

As such, Carroll County's vulnerability to winter storms and extreme chill remain high, and the occurrence is increasing.

f. Multi-Jurisdictional Concerns

All of Carroll County is subject to winter storms and therefore should be included in any prospective mitigation projects.

g. Hazard Summary

Carroll County's vulnerability to winter storms is high, with an increasing probability of occurrence. When winter storms hit the southeastern United States, they generally are destructive. Buildings are generally not built to withstand large amounts of accumulated snowfall. Motorists are not culturally accustomed to driving in snow and ice conditions, thereby increasing the chances for accidents. Moreover, a hard freeze and excessive wind chill can have damaging impacts on pipes and crops. Winter storm related mitigation activities can be viewed in IV. A. 5.

6. Drought and Wildfires

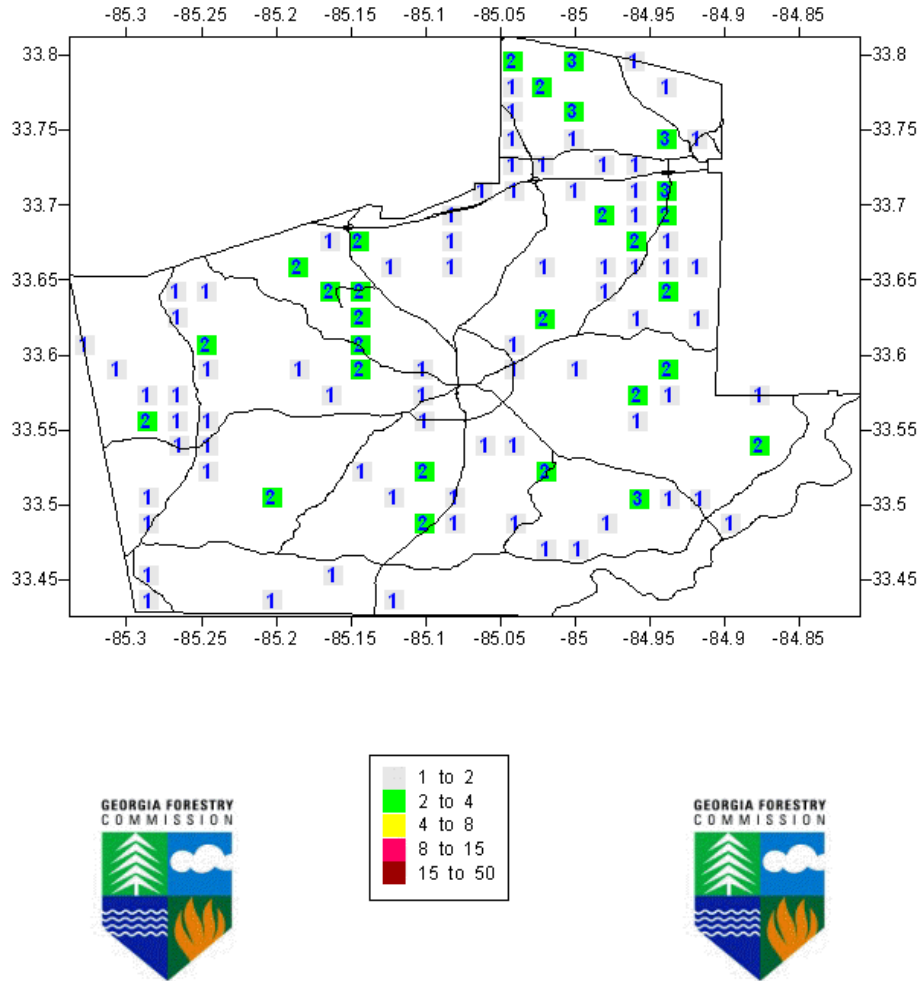
a. Hazard Identification

A drought is a prolonged period without rain, particularly during the planting and growing season in agricultural areas. It can range from two weeks to six months or more and affects water availability and quality. In Georgia, droughts affect municipal and industrial water supplies, stream water quality, recreation at reservoirs, hydropower generation, navigation, agricultural and forest resources. Additionally, droughts can impact the spread of wildfires. Data collected from the National Climatic Data Center and the Georgia Forestry Commission was used for this report.

b. Hazard Profile

There have been 22 drought events recorded since 1997, but none in the last four years with the last occurring in 2011. During this span, there was one reported instance of crop damage due to drought. From 2005 to 2015, there have been numerous small brush fires that had to be put out by the Georgia Forestry Commission and local fire service. Causes of these fires ranged from campfires, smoking and debris burning to incendiary and lightning. The right combination of drought and small brush fire could lead to a more significant wildfire considering the amount of wooded acreage in Carroll County. Carroll County has been fortunate to have not experienced a wildfire in recent history. There is a high probability of drought and wildfire affecting Carroll County.

Fire Occurrence Map for Carroll County for Fiscal Year 2009-2013



Map 3.2: Fire Occurrence Map from Georgia Forestry Commission

c. Assets Exposed to Hazard

The exposure of assets to drought-related hazards are generally indirect. The occurrence of a drought drastically increases the risk of fire and the loss of crops due to low water tables.

d. Estimate of Potential Losses

With over 70% of Carroll County deemed agricultural/rural (approximately 350 square miles), the potential effects of a wildfire or a long-term drought are devastating. There is no estimated damage to facilities due to droughts. All impact would be secondary in nature. Potential losses

to crops or livestock cannot be accurately quantified unless all of the drought variables are known (such as duration, temperatures, severity, crop type, etc.). Wildfires generally occur under drought conditions, and given the county’s rural characteristics, do pose a threat to all structure types.

Table 3.12: Total Property Losses for Carroll County on a Percentage Basis for Wildfires				
Structure Type and Amount of Structures	Value	75%	50%	25%
Residential	\$1,943,949,353	\$1,457,962,015	\$971,974,676	\$485,987,338
Commercial	\$423,692,619	\$317,769,464	\$211,846,310	\$105,923,155
Industrial	\$131,025,795	\$98,269,346	\$65,512,897	\$32,756,449
Agricultural	\$172,287,168	\$129,215,376	\$86,143,584	\$43,071,792
Critical Facilities	\$1,457,384,937	\$1,093,038,703	\$728,692,468	\$364,346,234
<i>Values provided by the Carroll County Tax Assessors and Carroll County Sheriff’s Office Emergency Management Agency</i>				

e. Land Use and Development Trends

There are currently no specific land use or development trends related to drought. In terms of development trends, the green building initiative which promotes energy efficient, low-flow systems can certainly reduce the effects of drought, as is the saving of rain water in cisterns.

Timber best management practices, utilized by timber companies, help to grow a healthy forest of trees to be harvested, reducing the risks of wildfires.

The county’s vulnerability to drought remains moderate, although vulnerability to wildfires has been reduced due to utilizing best management practices.

f. Multi-Jurisdictional Concerns

The highest occurrence of crop losses due to drought will be in the rural areas of Carroll County. The entire county should be included in drought planning.

g. Hazard Summary

Carroll County is vulnerable to droughts, but fortunately, they have had a short duration. Although droughts do not generally have an immediate effect, they cause havoc through secondary means such as wildfires, crop loss, reduction in water supplies and economic stress. Drought-related mitigation strategies are present in IV. A. 6.

7. Earthquakes

a. Hazard Identification

An earthquake is a sudden movement of the earth, caused by abrupt release or strain that has accumulated over a long time. The forces of plate tectonics shape the earth as the huge plates that form the earth's surface slowly move over, under and past each other. Sometimes the movement is gradual. At other times, the plates are locked together, unable to release the accumulated energy. When the accumulated energy grows strong enough, the plates break free. If the earthquake occurs in a populated area, it may cause many deaths, injuries and extensive property damage.

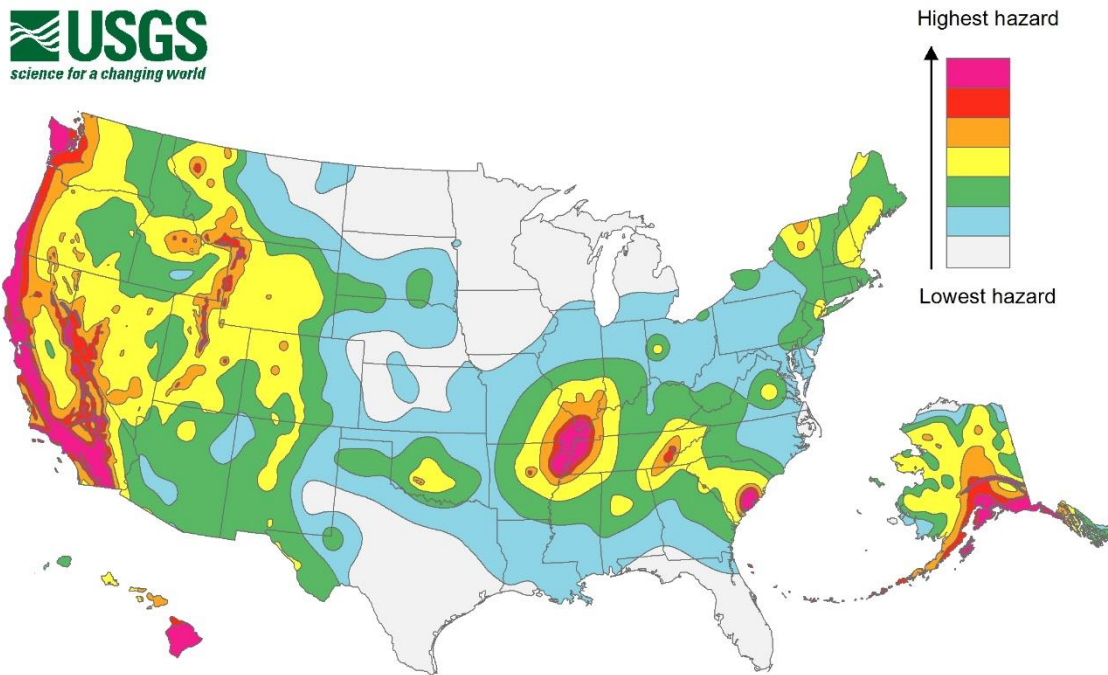


Figure 3.9: United States Geological Society (USGS) Earthquake Hazard Zone Map

Table 3.13: Richter Scale of Magnitudes			
Magnitude	Description	Average earthquake effects	Average frequency of occurrence (estimated) Worldwide
Less than 2.0	Micro	Micro earthquakes, not felt, or felt rarely by sensitive people. Recorded by seismographs.	Continual/several million per year

2.0–2.9	Minor	Felt slightly by some people. No damage to buildings.	Over one million per year
3.0–3.9		Often felt by people, but very rarely causes damage. Shaking of indoor objects can be noticeable.	Over 100,000 per year
4.0–4.9	Light	Noticeable shaking of indoor objects and rattling noises. Felt by most people in the affected area. Slightly felt outside. Generally causes none to minimal damage. Moderate to significant damage very unlikely. Some objects may fall off shelves or be knocked over.	10,000 to 15,000 per year
5.0–5.9	Moderate	Can cause damage of varying severity to poorly constructed buildings. At most, none to slight damage to all other buildings. Felt by everyone.	1,000 to 1,500 per year
6.0–6.9	Strong	Damage to a moderate number of well-built structures in populated areas. Earthquake-resistant structures survive with slight to moderate damage. Poorly designed structures receive moderate to severe damage. Felt in wider areas; up to hundreds of miles/kilometers from the epicenter. Strong to violent shaking in epicentral area.	100 to 150 per year
7.0–7.9	Major	Causes damage to most buildings, some to partially or completely collapse or receive severe damage. Well-designed structures are likely to receive damage. Felt across great distances with major damage mostly limited to 250 km from epicenter.	10 to 20 per year
8.0–8.9	Great	Major damage to buildings, structures likely to be destroyed. Will cause moderate to heavy damage to sturdy or earthquake-resistant buildings. Damaging in large areas. Felt in extremely large regions.	One per year
9.0 and greater		Near or at total destruction - severe damage or collapse to all buildings. Heavy damage and shaking extends to distant locations. Permanent changes in ground topography.	One per 10 to 50 years

Source: United States Geological Survey

b. Hazard Profile

The state of Georgia has experienced seven earthquakes from 1974 to 2003, according to USGS (United States Geological Survey) information. On April 29, 2003, Georgia was hit with a 4.9 magnitude earthquake. The earthquake could be felt across Carroll County. The major fault line in the state is located north of Carroll and most of the state’s earthquakes are located in north Georgia. In the past year, there have been seven earthquakes in Georgia, with the largest in Dalton, a 2.5 magnitude earthquake. The closest to Carroll County was in Rome, measuring 1.8 on the Richter scale. With only minor fault lines located beneath the county’s soil, the probability of damage from an earthquake to the county and its municipalities is considered low. As depicted in the USGS map above, Carroll is one of the lowest hazard zones.

c. Assets Exposed to Hazard

All structures and facilities within Carroll County are susceptible to earthquake damage since they can occur in any portion of the county.

d. Estimate of Potential Losses

Because all facilities within the county are subject to potential losses due to earthquakes, estimations were made assuming 100% losses. A list of Critical Facilities including estimated values can be found in Appendix C.

Table 3.14: Total Property Losses for Carroll County on a Percentage Basis for Earthquakes				
Structure Type and Amount of Structures	Value	75%	50%	25%
Residential	\$2,777,070,504	\$208,280,2878	\$1,388,535,252	\$694,267,626
Commercial	\$605,275,170	\$453,956,376	\$302,637,585	\$151,318,793
Industrial	\$187,179,707	\$140,384,780	\$93,589,854	\$46,794,927
Agricultural	\$246,124,526	\$184,593,395	\$123,062,263	\$61,531,132
Critical Facilities	\$2,081,978,481	\$ 1,561,483,861	\$1,040,989,241	\$520,494,620
<i>Values provided by the Carroll County Tax Assessors and Carroll County Sheriff's Office Emergency Management Agency</i>				

e. Land Use and Development Trends

Due to its low probability, there are currently no specific land use or development regulations related to earthquakes. New construction is subject to Carroll County's adopted 2012 Building Code, which is deemed sufficient given the county's low vulnerability to earthquakes.

f. Multi-Jurisdictional Concerns

Any portion of Carroll County, including each of the municipalities, could potentially be affected by earthquakes. All areas within Carroll County, including the Cities of Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg, carry the same threat level for earthquakes. Any steps taken to mitigate the effects of earthquakes should be undertaken on a county wide basis and include all municipalities.

g. Hazard Summary:

The probability of an earthquake causing significant damage to Carroll County is limited. Earthquake specific mitigation actions are provided in IV. A. 7 of this document.

8. Pandemic and Epidemics

a. Hazard Identification

A widespread pandemic or epidemic event is a major hazard to Carroll County. Pandemic/epidemic events are not only a threat to the citizens of Carroll County but also to the emergency responders who serve the county. This can include influenza, tuberculosis, polio, smallpox, Severe Acute Respiratory Syndrome (SARS), Swine Influenza (H1N1) and other health related events. With many parents choosing to not vaccinate their children, diseases that had been previously thought eradicated, such as measles, have resurfaced.

In addition to humans, epidemics can cause widespread devastation to livestock, as evidenced by the recent concerns for Avian Influenza in poultry. Bioterrorism incidents can also be included in this identified hazard area.

b. Hazard Profile

Influenza cases began to come into the Carroll County Health Department every winter, usually between October and March. Influenza, often referred to as "the flu," is a specific viral infection that is responsible for a substantial number of deaths each year. It is particularly deadly among seniors 65 and older, when combined with another infection such as pneumonia. In 2013, the number of deaths in the United States from Influenza/Pneumonia was 56,979, according to the Centers for Disease Control and Prevention. In addition to the flu, Carroll County has also experienced outbreaks of meningitis in its schools and Cryptosporidium in the City of Carrollton's water supply since 1985.

In the event of an epidemic, the county in cooperation with the Carroll County Health Department, would open one or two Points of Distribution (POD) to distribute its share of the Strategic National Stockpiles' (SNS) supply of vaccinations. Many of the county's largest employers such as Southwire, Tanner Health, Carroll EMC, the county, and its larger cities, have signed on as a private POD to disseminate to their employees, helping to expedite the distribution process.

c. Assets Exposed to Hazard

All critical facilities, as well as all public, private, and commercial property, are susceptible to being impacted by a pandemic/epidemic event due to people being infected transmitting it in school or the workplace. The entire population of Carroll County is vulnerable to pandemic/epidemics outbreaks. There is no way for the county to predict the impact, magnitude, location or time these events will occur. The local health department and Carroll County Emergency Management continue to monitor reports from state Public Health officials and the Centers for Disease Control as to possible epidemics.

d. Estimate of Potential Losses

There is no estimated damage to facilities due to pandemic/epidemic events in Carroll County. The impact of human resources would suffer the most with the potential of 30% of the workforce becoming ill. The economy of Carroll County could take a major hit should a pandemic/epidemic event occur.

Table 3.15: Total Property Losses for Carroll County on a Percentage Basis for Pandemics or Epidemic				
Structure Type and Amount of Structures	Value	75%	50%	25%
Residential	\$2,777,070,504	\$208,280,2878	\$1,388,535,252	\$694,267,626
Commercial	\$605,275,170	\$453,956,376	\$302,637,585	\$151,318,793
Industrial	\$187,179,707	\$140,384,780	\$93,589,854	\$46,794,927
Agricultural	\$246,124,526	\$184,593,395	\$123,062,263	\$61,531,132
Critical Facilities	\$2,081,978,481	\$ 1,561,483,861	\$1,040,989,241	\$520,494,620
<i>Values provided by the Carroll County Tax Assessors and Carroll County Sheriff's Office Emergency Management Agency</i>				

e. Land Use and Development Trends

All of Carroll County is susceptible to pandemic/epidemic outbreaks due to a continual growth in the county and the social nature of humans.

Carroll County is located on a major interstate (I-20) and federal routes (US 27 and US 78) that carry a significant amount of people to and across the county on a daily basis. Densely populated cities, with schools and places of work or worship allow for the spread of communicable diseases. Even in more rural areas, diseases among livestock or crops may spread. The county's probability of an outbreak is medium, although if it occurred, the severity could be high.

f. Multi-Jurisdictional Concerns

All of Carroll County is susceptible to the effects of pandemic/epidemic events. Of course, the more densely populated the area is the greater threat the pandemic/epidemic will spread.

g. Hazard Summary

Pandemic/epidemic events do pose a threat to all of Carroll County. All of the critical facilities as well as workplaces and schools could ultimately be affected. A pandemic/epidemic event could have an added negative effect, with a large percentage of the workforce potentially being affected. Pandemic/epidemic specific mitigation actions are provided in IV. A. 8 of this document.

D. Technological Hazard, Risk and Vulnerability (HRV) Summary

1. Hazardous Material Spills

a. Hazard Identification

A major source of hazardous material accidents are spills along roadways, railways, pipelines, rivers and port areas. Hazardous materials are substances which are harmful to the health and safety of people and property. Jurisdictions with facilities that produce, process or store hazardous materials are at risk, as are facilities that treat, store or dispose of hazardous wastes. Mitigation of this hazard may be accomplished by adherence to federal, state and manufacturer safety standards. Proper packaging, storage and handling will assist in elimination of hazardous materials incidents. Historical data was collected from Carroll County Fire Department and Emergency Management, Carrollton Fire Department, Georgia Department of Natural Resources and the Environmental Protection Division.

b. Hazard Profile

Hazardous materials are prevalent in Carroll County. They are used, stored, and transported via truck, railway and pipe across the county, ranging from the combustible to corrosive substances. As seen in the county profile above, Norfolk-Southern runs an east-west and north-south line, while Plantation Pipeline (shown) and Colonial Gas both have pipelines in Carroll County. Since 2010, there have been 55 reported hazardous materials spills in Carroll County to the Georgia Environmental Protection Division, ranging from industrial sites to transportation-related incidents, averaging 11 per year. These numbers do not include routine calls for natural gas leaks or small fuel spills. The large number of instances is partly due to the county's large industrial base, allowing for the possibility of fixed-facility spills, as well as to the presence of the Interstate 20 corridor, accounting for some of the transportation-related events. A complete list of reported hazardous materials incidents can be found in Appendix G, and a copy of the 2008 Commodity Flow Study is located in Appendix F. There is a high probability of a hazardous materials spill in the county.

The railroad system in Carroll County is an area where there is a potential for hazardous material spills. For planning purpose, Norfolk-Southern has provided Carroll County Emergency Management with a log of substances transported along the railway, including the corrosive and combustible.

Waste Isolation Pilot Plant Recovery (Nuclear)

In addition to hazardous materials, nuclear waste is also being transported via Interstate 20 from the Savannah River site to Carlsbad, New Mexico for storage in a salt mine. Through GEMA/FEMA, local first responders are receiving training on how to deal with a nuclear spill in the unlikely event of an occurrence. On a much smaller scale, nuclear materials are used for such healthcare procedures such as radiation therapy and must be treated with safety precautions.

c. Assets Exposed to Hazard

The most prevalent asset damaged during a hazardous materials release is the environment. The waterways tend to have the highest impact (with air quality issues dissipating over time). The waterways in Carroll County which are most susceptible to hazardous materials spills are the Little Tallapoosa River and Lake Buckhorn due to their location along Interstate 20. Another waterway susceptible to spills is the Lake Seaton Reservoir, a 600-acre lake which supplies the drinking water to Carroll County. It should also be noted that one of the largest chemical fixed facility users in Carroll County is located within ½ mile of Tanner Medical Center- Carrollton, the largest healthcare provider.

d. Estimate of Potential Losses

The damage to the environment due to hazardous materials spills cannot be estimated. The permanent damage to a critical facility due to a fixed facility spill has not been recorded. Values below assume 100% losses. A list of Critical Facilities including estimated values can be found in Appendix C.

Structure Type and Amount of Structures	Value	75%	50%	25%
Residential	\$2,777,070,504	\$208,280,2878	\$1,388,535,252	\$694,267,626
Commercial	\$605,275,170	\$453,956,376	\$302,637,585	\$151,318,793
Industrial	\$187,179,707	\$140,384,780	\$93,589,854	\$46,794,927
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Critical Facilities	\$2,081,978,481	\$ 1,561,483,861	\$1,040,989,241	\$520,494,620
<i>Values provided by the Carroll County Tax Assessors and Carroll County Sheriff's Office Emergency Management Agency</i>				

e. Land Use and Development Trends

Per the Carroll County Future Land Use Map, Commercial and Industrial sites are encouraged in more appropriate areas designated for that use, away from residential neighborhoods. This helps to limit exposure to residents. With its many transportation corridors, Carroll County is vulnerable to a hazardous materials release.

Because of a strong Local Emergency Planning Committee and the use of best management practices by local industry, the county's vulnerability to hazardous materials has declined since the last plan. There is a medium risk of occurrence.

f. Multi-Jurisdictional Concerns

Hazardous materials incidents have been recorded in all of the Carroll County jurisdictions. Those jurisdictions that fall along the I-20, US-78, SR-61, US-27, and SR-16 as well as the jurisdictions surrounding the railroad corridors are the most susceptible to transportation-related events.

g. Hazard Summary

Hazardous materials spills are a common occurrence in Carroll County, although with best management practices this has declined in recent years with fewer occurrences. The county is still moderately vulnerable. Mitigation plans must be executed to reduce the threat to lives and property as a result of hazardous materials releases. Mitigation strategies specific to this threat can be found in IV. B. 1 of this document.

2. Dam Failure

a. Hazard Identification

The potential failure of a dam may result in people living downstream being in imminent danger of flooding. Weather, structural changes, and chemical agents can impact a dam. Reservoir sedimentation can significantly reduce flood control capacity. Protective construction of dams may assist in mitigating such a hazard. The Hazard Mitigation Plan Steering Committee gathered research from the Georgia Department of Natural Resources during its research on dam failures in Carroll County.

b. Hazard Profile

Eight dam failures were recorded since 1999. The dams involved included: Fairfield Plantation (leak), Papillion (failure of principal spillway), Sioux (breach of spillway), and Legion (overtopping), farm pond on Four Notch Road (dam failure), Lake Seaton (spillway), Twin Lakes (overtopping), Paynes Lake (Spillway Activation). Because of the oversight of county dams, there is a medium to low probability of dam failure in any given year.

There are 116 dams in Carroll County. Of these Twenty-five (25) are high hazard dams. They include the dams at:

Table 3.17: High Hazard Dams
Lake Carroll
George Lake
H.C Seaton Lake
Jerry Driver Pond
Little Tallapoosa River STR #13
Little Tallapoosa River STR #21
Little Tallapoosa River STR #25
Little Tallapoosa River STR #29
Little Tallapoosa River STR #30
Little Tallapoosa River STR #31
Little Tallapoosa River STR #36
Little Treasure Lake

Lower Little Tallapoosa River #35
Lower Little Tallapoosa River #36
Lower Little Tallapoosa River #82
Lower Little Tallapoosa River #86
Plant Wansley Main Storage Lake
H.C. Seaton Reservoir #2
Richard's Lake
Sharpe Creek
Sharpe Creek Reservoir Lake
Snake Creek Reservoir
Sunset Hills Country Club Lake
Tara Lake
Walkers Lake

Georgia Safe Dams

c. Assets Exposed to Hazard

There are 116 dams in Carroll County which are exposed to the potential for failure. There are also numerous residences and agricultural properties located close to these dams. Approximately 1% of the properties in Carroll County are located in a flood zone. Each individual dam will have a different number and value of properties associated with it.

d. Estimate of Potential Losses

It is difficult to extrapolate the potential damage from a dam failure without knowing the type of break, the extent of the break and other factors. For this reason, the standard 25%, 50%, 75%, and 100% damage estimates were performed on all properties county wide.

Table 3.18: Total Property Losses for Carroll County on a Percentage Basis for Dam Failure				
Structure Type and Amount of Structures	Value	75%	50%	25%
Residential	\$2,777,070,504	\$208,280,2878	\$1,388,535,252	\$694,267,626
Commercial	\$605,275,170	\$453,956,376	\$302,637,585	\$151,318,793
Industrial	\$187,179,707	\$140,384,780	\$93,589,854	\$46,794,927
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Critical Facilities	\$2,081,978,481	\$ 1,561,483,861	\$1,040,989,241	\$520,494,620
<i>Values provided by the Carroll County Tax Assessors and Carroll County Sheriff's Office Emergency Management Agency</i>				

e. Land Use Development Trends

Carroll County is making significant efforts to reduce building in a flood hazard districts through zoning. Carroll County and its municipalities participate in the National Flood Insurance Program (NFIP). The 2012 Edition of the International Building Codes, which were adopted by Carroll County and its municipalities, provide reasonable guidance for development within flood prone areas.

The Carroll County Sheriff's Office Emergency Management Agency in conjunction with Carroll County Community Development is looking to map high hazard dams and their spill ways. This will help restrict residential growth from hazardous areas.

f. Multi-Jurisdictional Concerns

There is no way to determine with any statistical significance whether dams in one area of Carroll County are in danger of failure more than others (as most are similar in construction and age).

g. Hazard Summary

The potential for dam failure in Carroll County is great due to the presence of 116 dams (25 Category I), but because of their maintenance and participation in the Safe Dams program, the county is at a low probability for dam failure. If dam failure occurred, there is a possibility of significant damage to life and/or property. Mitigation efforts for dam failures are located in IV. B. 2.

Chapter IV. Mitigation Strategies

In Chapter 4, all action steps were evaluated by the respective jurisdictions and updated for all hazards. The STAPLEE Method (described in Chapter I. E.) was utilized to prioritize action steps and to identify new ones. Completed action steps and ones no longer being considered were removed and placed on the completion lists in each respective section.

Additionally, action steps now specify FEMA categories and are sorted by FEMA category in IV. C.

The following is a brief summary of changes to Mitigation Strategies:

Action Item: Replace culverts under Rome Street at John Wesley Plaza with large diameter culverts should read Bradley instead of Rome.

Action Item: Add an additional culvert on Old Five Notch Rd should read Old Four Notch Rd

Action Item: Replace bridge on Carrollton Tyus Rd. is now Replace bridge at Carrollton-Tyus Rd due to repetitive flooding and traffic hazards.

After the Christmas Eve 2015 flooding, the following action steps were added:

- 1. Replace culvert on Mt. Olive Church Rd with larger diameter culvert to mitigate flooding.*
- 2. Replace culvert on Oak Grove Church Rd at Nugget Rd with a larger diameter culvert.*
- 3. Replace culvert on Harris Rd with a larger diameter culvert.*
- 4. Replace culvert on Spruill Creek Dr. with a larger diameter culvert.*
- 5. Replace culvert on Stogner Rd. with a larger diameter culvert.*
- 6. Assess the flood plain of Milner Lake (off Shadow Lake Drive) to determine ways to mitigate flooding for repetitive loss properties was added.*
- 7. Upgrade culverts on Almon Rd. at Lake Carroll Blvd.*
- 8. Replace culvert with a box concrete culvert on Ben Scott Blvd*

Action Item: Tornado safety training for city and county employees was added.

Action item: Improve Lake Carroll dam/spillway based on assessment was added for the City of Carrollton.

Action Items: Provide cooling shelters and offer free admission to City of Carrollton Pools during extreme heat were added.

Action Item: Provide warming shelters in cases of extreme cold was added.

Additionally, a series of action items were added in response to mitigation of the 2014 Winter Storm, adding generators to critical facilities for the City of Carrollton and Carroll County.

Goals, Objectives and Action Items were added for Tropical Cyclones:

- 1. Develop a readiness program to encourage citizens to prepare a storm kit in the event of an emergency.*

2. *Promote the construction of safe rooms in shelter areas and in public buildings.*
3. *Promote the use of special roofing shingles designed to interlock and resist uplift forces for both new construction and retrofits.*
4. *Research the feasibility of using underground utilities.*
5. *Retrofit public schools with special high wind-resistant films for doors and windows.*

The following Action Steps were added under All-Hazards:

1. *Acquire a portable digital reader board to utilize during disasters.*
2. *Maintain stock of supplies and equipment for mass casualty.*
3. *Encourage best management practices in development ordinances to build stronger, more resilient communities.*
4. *Construct an emergency access road at Mount Zion Middle School.*

Action Item: Provide continual training and equipment for Community Emergency Response Team (CERT) has been amended to include Emergency Management Agency Volunteers.

Action Item: Provide confined space Haz Mat training at the county's Confined Space Training Center.

Mitigation objective to enhance workplace safety for employees of critical facilities was added.

Action Item: Develop safety flip charts for all critical facilities and provide active shooter/safety training for employees of all critical facilities were added.

A. Natural Mitigation Goals and Objectives

1. Flooding

a. Mitigation Goals

As noted in III. C. 1, flooding has caused significant damage throughout the years in Carroll County. There are (41) locations throughout the county where localized flooding is continuously a problem during heavy rains. This effects approximately 20 properties that are considered repetitive loss. The county and its cities are diligent in in pursuing mitigation strategies that improve incidents of repetitive loss and in furthering the goals of the NFIP. For more details, please see Repetitive Loss Properties in III. C. 1. c.

b. Range of Mitigation Options

The suggested mitigation options to reduce the effects of flooding in Carroll County include new policies and procedures, enhanced data collection and efforts to reduce localized flooding. The community has identified both structural and non-structural mitigation efforts to reduce the future impacts of floods on Carroll County.

c. Mitigation Strategies for Flooding

Action steps were given priority using a benefit-cost review. This process consisted of listing the actions, identifying the benefits and cost of each action step, and assigning a priority of low, medium, and high. With priorities being reviewed, there was no change in priorities since the last plan. The STAPLEE method described in Chapter I was utilized to rank the projects.

For each mitigation action, timeline refers to the amount of time it would take to finish the mitigation project after funding has been secured. Continuous refers to projects or programs that are ongoing.

Mitigation Actions: Flooding

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Flooding											
Mitigation Goal 1: To minimize the losses of life and property in Carroll County due to flooding.											
Objective 1: To protect the citizens, critical facilities and critical infrastructure of Carroll County from the effects of flooding.											
1.1.1	<i>Continued vigilance in issuing permits on property with special flood hazard areas.</i>	Carroll County and Cities*	Department of Community Development	Continuous	Unknown	Grants and General Funds	Unknown	High	New	Prevention	23
1.1.2	<i>Ensuring that future dwellings comply with NFIP and the county flood ordinance.</i>	Carroll County and Cities*	Department of Community Development	Continuous	Unknown	Grants, General Funds, SPLOST	Unknown	High	New	Prevention	23
1.1.3	<i>Inventory and plot in Geographical Information Systems (GIS) all drain facilities on public property (right of ways).</i>	Carroll County and Cities*	Department of Community Development	1 year	\$1,200,000	Grants and General Funds	\$20,000,000	Low	Both	Property Protection	23
1.1.4	<i>Develop a procedure for and initiate routine drainage system maintenance to ensure all storm drains are free of debris.</i>	Carroll County and Cities*	Public Works	Continuous	\$80,000	General Funds	\$20,000,000	Medium	Both	Property Protection, Prevention	21
1.1.5	<i>Install water level monitoring devices on all category one (1) dams and on all major tributaries in Carroll County.</i>	Carroll County	Carroll County EMA	2 years	Unknown	Grants and General Funds	Unknown	Medium	Existing	Emergency Services	18
1.1.6	<i>Enhance warning system below Lake Seaton Dam.</i>	Carroll County Water Authority	Carroll County EMA	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Emergency Services	14
1.1.7	<i>Conduct a study to properly size culverts to drainage basins.</i>	Carroll County	Carroll County Public Works	3 years	\$200,000	Grants, General Funds, SPLOST	\$20,000,000	Medium	Both	Property Protection	14
1.1.8	<i>Conduct an engineering study comparing base flood elevation to the emergency spillway elevation on all category one (1) dams.</i>	Carroll County	Department of Community Development	2 years	Unknown	Grants, General Funds, SPLOST	Unknown	Low	Existing	Property Protection	14

*Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg

Mitigation Actions: Flooding

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Flooding											
Mitigation Goal 1: To minimize the losses of life and property in Carroll County due to flooding.											
Objective 2: To reduce the incident rates of localized flooding in Carroll County.											
1.2.1	<i>Replace bridge on Carrollton Tyus Road.</i>	Carroll County	Public Works and Transportation	2 years	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Structural Projects	19
1.2.2	<i>Assess the flood plain of Milner Lake (off Shadow Lake Drive) to determine ways to mitigate flooding for repetitive loss properties.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Existing	Prevention	19
1.2.3	<i>Install culverts on Kansas and Agnes Streets at Lake Buckhorn.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.4	<i>Replace the bridge at McIntosh Reserve.</i>	Carroll County	Public Works and Transportation	1 year	\$500,000	Grants, General Funds, SPLOST	Unknown	High	Both	Structural Projects	19
1.2.5	<i>Install bridge on Bagwell Road.</i>	Carroll County	Public Works and Transportation	3 years	\$500,000	Grants, General Funds, SPLOST	Unknown	High	Both	Structural Projects	19
1.2.6	<i>Replace bridge at Victory Church Road at Victory Dashboard.</i>	Carroll County	Public Works and Transportation	2 years	\$500,000	Grants, General Funds, SPLOST	Unknown	High	Both	Structural Projects	19
1.2.7	<i>Replace the culvert on Holder Road (at creek) with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	2 years	\$25,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.8	<i>Add an additional culvert on Old Four Notch Rd.</i>	Carroll County	Public Works and Transportation	1 year	\$25,000	Grants, General Funds, SPLOST	Unknown	High	Both	Structural Projects	19

Mitigation Actions: Flooding

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Flooding											
Mitigation Goal 1: To minimize the losses of life and property in Carroll County due to flooding.											
Objective 2: To reduce the incident rates of localized flooding in Carroll County.											
1.2.9	<i>Replace the culvert at the creek on Davenport Mill Road (near Caldwell Road) with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	\$12,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.10	<i>Install a culvert at creek on Campground Road.</i>	Carroll County	Public Works and Transportation	1 year	\$8,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.11	<i>Replace the culvert at Shadow Lake Drive with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	2 year	\$8,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.12	<i>Replace the culvert on Craven- Roopville Veal Road with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	2 year	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.13	<i>Replace the culvert on J.C. Daniel Road with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	2 years	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.14	<i>Replace the culvert on Little Joe Road with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	2 years	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.15	<i>Replace the culvert on Martin Road with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	2 years	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.16	<i>Install a larger culvert on Grimmitt Road.</i>	Carroll County	Public Works and Transportation	2 years	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19

Mitigation Actions: Flooding

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Flooding											
Mitigation Goal 1: To minimize the losses of life and property in Carroll County due to flooding.											
Objective 2: To reduce the incident rates of localized flooding in Carroll County.											
1.2.17	<i>Install a culvert on Tanyard Road (where the creek crosses the road).</i>	Carroll County	Public Works and Transportation	2 years	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.18	<i>Install a culvert at creek on Denny Road.</i>	Carroll County	Public Works and Transportation	2 years	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.19	<i>Install a culvert at creek on Wantland Road.</i>	Carroll County	Public Works and Transportation	1 year	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.20	<i>Replace the culverts at Holliday Overlook with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	Structural Project	19
1.2.21	<i>Property acquisitions/raze homes at Old Bremen Road (Carrollton) to NFIP compliance/standards.</i>	Carroll County	Public Works and Transportation	3 years	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.22	<i>Upgrade culverts on Almon Rd. at Lake Carroll Blvd.</i>	City of Carrollton	Public Works and Transportation	2 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.23	<i>Replace culverts under Bradley Street at John Wesley Plaza with larger diameter culverts.</i>	City of Carrollton	Public Works and Transportation	2 years	\$500,000	General Funds, SPLOST, Private Investment	Unknown	High	Both	Property Protection	19
1.2.24	<i>Address drainage issues on Ben Scott Blvd.</i>	City of Carrollton	Public Works and Transportation	2 years	\$200,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19

Mitigation Actions: Flooding

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Flooding											
Mitigation Goal 1: To minimize the losses of life and property in Carroll County due to flooding.											
Objective 2: To reduce the incident rates of localized flooding in Carroll County.											
1.2.25	<i>Property acquisitions/address drainage at River and House Streets to NFIP compliance/ standards.</i>	City of Carrollton	City of Carrollton Housing Authority	2 years	\$2,000,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.26	<i>Replace the culvert at Old Bremen Road with a larger diameter culvert.</i>	City of Temple	Public Works and Transportation	2 years	\$10,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.27	<i>Replace the culvert at Rome Street with a larger diameter culvert.</i>	City of Temple	Public Works and Transportation	1 year	\$10,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.28	<i>Replace the culvert at Rainey Road with a larger diameter culvert.</i>	City of Temple	Public Works and Transportation	1 year	\$8,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.29	<i>Address drainage issues at Baskin St at Carrollton St.</i>	City of Temple	Public Works and Transportation	2 year	\$10,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.30	<i>Replace Old Tanyard Road Steam Culvert</i>	City of Villa Rica	Public Works and Transportation	2 years	\$30,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.31	<i>Property acquisitions/raze businesses at Bankhead at South Dogwood to NFIP compliance/ standards.</i>	City of Villa Rica	Public Works and Transportation	3 years	\$2,000,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.32	<i>Address drainage issues at Rockmart and 2nd St.</i>	City of Villa Rica	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19

Mitigation Actions: Flooding

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Flooding											
Mitigation Goal 1: To minimize the losses of life and property in Carroll County due to flooding.											
Objective 2: To reduce the incident rates of localized flooding in Carroll County.											
1.2.33	<i>Replace the West View Drive culvert with a larger diameter culvert.</i>	City of Villa Rica	Public Works and Transportation	3 years	\$500,000	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.34	<i>Address drainage issues on Vanwert Rd (before the railroad tracks).</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.35	<i>Replace (or install) culvert on Bagwell Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	3 years	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.36	<i>Replace (or install) culvert on Brickyard Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	3 years	Unknown	Grants, General Funds, SPLOST	Unknown	High	Existing	Property Protection	19
1.2.37	<i>Replace (or install) culvert on Daniel Rd in Bowdon with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.38	<i>Replace (or install) culvert on East Wayside Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.39	<i>Replace (or install) culvert on Four Notch Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19

Mitigation Actions: Flooding

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Flooding											
Mitigation Goal 1: To minimize the losses of life and property in Carroll County due to flooding.											
Objective 2: To reduce the incident rates of localized flooding in Carroll County.											
1.2.40	<i>Replace (or install) culvert on Harman Rd at Harman Ln with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.41	<i>Replace (or install) culvert on Oak Grove Church Rd at Nugget Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.42	<i>Replace (or install) culvert on Old Word Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.43	<i>Replace (or install) culvert on Smyrna Church Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.44	<i>Replace (or install) culvert on Wiley Wilson Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.45	<i>Replace (or install) culvert on Whooping Creek Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	2 years	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.46	<i>Replace (or install) culvert on Yancey with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.47	<i>Replace (or install) culvert on Old Carrollton Rd (off Hwy 61) with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19

Mitigation Actions: Flooding

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Flooding											
Mitigation Goal 1: To minimize the losses of life and property in Carroll County due to flooding.											
Objective 2: To reduce the incident rates of localized flooding in Carroll County.											
1.2.48	<i>Replace (or install) culvert on Mount Olive Church Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19
1.2.49	<i>Replace (or install) culvert on Spruill Creek Dr. with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	Property Protection	19

d. Multi-Jurisdictional Considerations

Flooding events have affected all areas of Carroll County. All municipalities in Carroll County are participants in flood planning, education and mitigation activities.

e. Public Information and Awareness Strategies

The Hazard Mitigation Plan Steering Committee has identified many public awareness campaigns to ensure that the citizens of Carroll County are kept abreast of the hazards affecting them and the mitigation effort to alleviate potential situations. Many of the public awareness campaigns are all-hazard in nature and include educational brochures and programs, warning sirens and public notification systems, and workshops.

f. Completed and Deleted Action Steps from Plan

The Carroll County Public Works Director Charles Pope recently commented after a flooding event in December 2015 that the situation would have been much worse had the county not mitigated the culverts after the 2009 floods, when 84 road projects were upsized. Carroll County has made significant strides in mitigating flooding in the community. Some of the strategies have been significant and beneficial to reducing loss of life and property from flooding throughout Carroll County. Among those completed are the following:

For 2016 Update:

1. Replace the culvert on Rocky Branch Road (across from car wash) with a larger diameter culvert.
2. Install a bridge on Lake Drive (past Luther Circle) to replace the culvert.
3. Replace the Wiley Wilson Road culvert with a larger diameter culvert.
4. Replace the Brickyard Road (east of bridge) culvert with a larger diameter culvert.
5. Replace the bridge at Laurel Road.
6. Raze homes on Valley Circle.
7. Replace culvert at 408 Candler Street.
8. Replace culvert at Punkintown and Old Stone Road.

Previously completed:

1. Develop new county and city soil erosion and sediment ordinances in order to further protect valuable water resources.
2. Develop Watershed Management Plans and Source Water Protection Plans to ensure protection of water quality.
3. Update the FEMA flood map for Carroll County and its municipalities- Updated in 2008.
4. Install additional drainage on Lovvorn Road at Brumbelow Road- Completed in 2009.
5. Replace the Old Jones Road culvert with a larger diameter culvert- Damaged in flooding (DR-1858) and repaired.
6. Replace the culvert on Cumbie Road with a larger diameter culvert- Damaged in flooding (DR-1858) and repaired.
7. Replace the bridge on Horsley Mill Road- Damaged in flooding (DR-1858) and repaired.
8. Install a bridge on Holmes Road- Culverts upgraded by the county in 2007.

The following action steps from the previous plan were removed because they were no longer found as a threat to Carroll County:

For 2016 Update:

1. Replace the bridge on Bankhead Highway at Lake Carroll.
2. Property acquisitions/raze homes on Molete Street to NFIP compliance/ standards.
3. Raise Strickland and Blandenburg Roads where they cross Richards Lake (culvert work was performed there instead.)

Previously removed:

1. Install an additional culvert on Moss Ferry Road (at the lake).
2. Install a larger culvert on Lakeview Drive.
3. Build road up at low points on Tallapoosa between Muse Bridge and Northside Drive.
4. Add additional culvert on Cavender Creek Road.
5. Replace the culvert on Truitt Road.

g. Unchanged Action Steps

The Hazard Mitigation Plan Steering Committee found that some of the action steps from the previous plan had either not been completed or were still a hazard to the citizens of Carroll County. The steps that remain unchanged include:

1. Inventory and plot in GIS all drain facilities on public property.
2. Develop a procedure for and initiate routine drainage system maintenance to ensure all storm drains are free of debris.
3. Replace the bridge at Carrollton Tyus.
4. Install an additional culvert on Highway 101 at the Hickory Point Subdivision.
5. Replace the culvert at the creek in Davenport Mill Road with a larger diameter culvert.
6. Replace the bridge on Bankhead Highway at Lake Carroll.
7. Add an additional culvert on Old Four Notch Road.
8. Replace the culvert on Yates Lane with a larger diameter culvert.
9. Replace the culvert in Craven-Roopville Veal Road with a larger diameter culvert.
10. Replace the culvert on Horsley Drive with a larger diameter culvert.
11. Replace the culvert on J.C. Daniel Road with a larger diameter culvert.
12. Replace the culvert on Holder Road with a larger diameter culvert.
13. Replace the culvert on Little Joe Road with a larger diameter culvert.
14. Replace the culvert on Martin Road with a larger diameter culvert.
15. Replace the culvert on Grimmett Road with a larger diameter culvert.
16. Replace the culvert on Tanyard Road with a larger diameter culvert.
17. Install a culvert at creek on Denny Road.
18. Install a culvert at creek on Wantland Road.
19. Install a culvert at creek on Campground Road.
20. Replace the Bridge at McIntosh.
21. Replace the culvert at Shadow Lake Drive with a larger diameter culvert.
22. Install culverts on Kansas and Agnes Streets at Lake Buckhorn.
23. Property acquisitions/raze homes at Old Bremen Road (Carrollton) to NFIP compliance/ standards.

2. Tornadoes

a. Mitigation Goals

The potential for significant damage to property and crops as well as injuries and or deaths are often associated with tornadoes. There is a great need for advanced planning due to the major consequences of this type of event. There are also several courses of action which could greatly increase the survival chances of vulnerable populations while also reducing the overall damages to facilities.

b. Range of Mitigation Options

The suggested mitigation options for tornadoes in Carroll County provide enhanced sheltering options as well as options for more sustainable facilities. These mitigation efforts include both structural and non-structural programs. Modifications to structures should be made to enhance structural integrity in order to minimize loss of life and damage to property. The non-structural projects identify policies and procedures that need to be implemented to reduce overall chances of damage due to a tornado.

c. Mitigation Strategies for Tornadoes

Action steps were given priority using a benefit-cost review. This process consisted of listing the actions, identifying the benefits and cost of each action step, and assigning a priority. The Hazard Mitigation Plan Steering Committee gave projects a priority of low, medium, and high, and a STAPLEE review was conducted to rank them. With priorities being reviewed, there was no change in priorities since the last plan.

For each mitigation action, timeline refers to the amount of time it would take to finish the mitigation project after funding has been secured. Continuous refers to projects or programs that are ongoing.

Mitigation Actions: Tornadoes

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Tornadoes											
Mitigation Goal 2: To minimize the losses of life and property due to tornadoes in Carroll County.											
Objective 1: To reduce the effects of high winds from tornadoes on residential, commercial and governmental properties.											
2.1.1	<i>Perform tornado safety training for the government employees.</i>	Carroll County and Cities*	Carroll County EMA and municipal police+	3 years	Negligible	Grants and General Funds	Unknown	High	Both	Public Education and Awareness	23
2.1.2	<i>Retrofit public schools with special high wind-resistant films for doors and windows.</i>	Carroll County School System and Carrollton City Schools	Carroll County EMA	3 years	Unknown	Grants and General Funds	Unknown	High	Both	Property Protection	21
2.1.3	<i>Research the feasibility of using underground utilities.</i>	Georgia Power, Carroll EMC, Others	Carroll County EMA	3 years	Unknown	State and Federal Grants	Unknown	Medium	Both	Property Protection, Structural Projects	19
2.1.4	<i>Promote the use of special roofing shingles designed to interlock and resist uplift forces for both new construction and retrofits.</i>	Carroll County	Carroll County EMA	3 years	Unknown	State and Federal Grants	Unknown	Medium	Both	Structural Projects	17
2.1.5	<i>Promote the construction of safe rooms in shelter areas and in public buildings.</i>	Carroll County	Carroll County EMA	3 years	\$5,000,000	Grants and General Funds	Unknown	Medium	Both	Structural Projects	16

*Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Roodville, Temple, Villa Rica and Whitesburg

+Municipal police refers to Bremen, Bowdon, Carrollton, Mount Zion, Temple and Villa Rica

d. Multi-Jurisdictional Considerations

Tornadoes have affected all areas of Carroll County. All of the municipalities in Carroll County should be participants in tornado mitigation activities. There is no significant difference in the risk for a tornado between any of the municipalities in Carroll County. The random nature of tornadoes requires that all areas of the county be prepared for these events.

e. Public Information and Awareness Strategies

The Hazard Mitigation Plan Steering Committee has identified many public awareness campaigns to ensure that the citizens of Carroll County are kept aware of the hazards affecting them and the mitigation efforts to alleviate potential situations. Many of the public awareness campaigns are all-hazard in nature and include: educational brochures and programs, warning sirens and public notification systems, and workshops.

f. Completed and Deleted Action Steps from Plan

The Hazard Mitigation Plan Steering Committee found that the county has worked diligently to reduce the loss of life and property as a result of tornadoes. The following step was completed:

1. Implement a county wide mandate requiring enhanced anchoring of manufactured homes

g. Unchanged Action Steps

Because many of the action steps from the previous plan are not shown as completed or deleted doesn't mean that progress has not been made. The following steps remain unchanged:

1. Promote the construction of safe rooms in shelter areas and in public buildings
2. Promote the use of special roofing shingles designed to interlock and resist uplift forces for both new construction and retrofits
3. Research the feasibility of using underground utilities
4. Retrofit public schools with special high wind-resistant films for doors and windows

3. Severe Thunderstorms

a. Mitigation Goals

Thunderstorm winds and lightning have caused numerous injuries and deaths and millions of dollars in property damages to Carroll County over the past 45 years. There is a great need to reduce the risk to lives and property due to this hazard. There is a lot of overlap for mitigation needs for thunderstorm winds and tornadoes, therefore this section mainly deals with mitigation solutions to lightning events.

b. Range of Mitigation Options

Possible mitigation options for severe storms including early warning devices and property protection systems. The early warning devices should allow residents to take shelter before the storm approaches. These suggestions may also result in changes to current policies.

c. Mitigation Strategy for Thunderstorm Winds and Lightning

Action steps were given priority using a benefit-cost review. This process consisted of listing the actions, identifying the benefits and cost of each action step, and assigning a priority. The Hazard Mitigation Plan Steering Committee gave projects a priority of low, medium, and high, and the STAPLEE method was used to rank the action steps. With priorities being reviewed, there was no change in priorities since the last plan.

For each mitigation action, timeline refers to the amount of time it would take to finish the mitigation project after funding has been secured. Continuous refers to projects or programs that are ongoing.

Mitigation Actions: Thunderstorms

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Severe Thunderstorms											
Mitigation Goal 3: To minimize the losses of life and property due to thunderstorm winds and lightning in Carroll County.											
Objective 1: To protect people and property from the effects of electrical storms in Carroll County.											
3.1.1	<i>Distribute severe weather preparedness literature at appropriate/ identified events.</i>	Carroll County	Carroll County EMA	Continuous	\$2,000	General Fund, State and Federal Grants	Unknown	High	Both	Public Education and Awareness	23
3.1.2	<i>Provide National Oceanic and Atmospheric Administration (NOAA) weather radios to identified citizens from at-risk populations.</i>	Carroll County	Carroll County EMA	Continuous	\$5,000	Grants and General Funds	Unknown	High	Both	Public Education and Awareness	23
3.1.3	<i>Install generator back-up at all critical facilities in Carroll County.</i>	Carroll County and Cities*	Carroll County EMA	5 years	Unknown	Grants and General Funds	\$ 80,000,000	Medium	Both	Property Protection	19
3.1.4	<i>Install surge protectors on critical facilities' electronic equipment in essential county and city facilities.</i>	Carroll County and Cities*	Carroll County EMA	5 years	Unknown	Grants and General Funds	\$ 80,000,000	High	Both	Property Protection	18
3.1.5	<i>Equip all county and city recreation parks with lightning detectors.</i>	Carroll County and Cities*	Parks and Recreation Departments+ and Carroll County EMA	3 years	\$36,000	Grants and General Funds	Unknown	High	Both	Property Protection	17

*Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg

+Parks and Recreation refers to Bremen, Bowdon, Carrollton, Mount Zion, Temple, Villa Rica and Carroll County

d. Multi-Jurisdictional Considerations

All of Carroll County will be considered when developing mitigation strategies related to thunderstorm winds and lightning. Thunderstorms have caused damage in all areas of the counties in the past. There is no significant difference in the risks and vulnerabilities each of the jurisdictions. As a result, all mitigation strategies will have a county wide focus.

e. Public Information and Awareness Strategies

The Carroll County public safety community is taking all-hazards approach to community awareness programs. Thunderstorm winds and lightning events are portions of this all-hazards program. Some of the suggested public awareness campaigns include educational brochures and programs, warning sirens and public notification systems, and workshops.

f. Completed and Deleted Action Steps from the Plan

There were no completed or deleted action steps in reference to thunderstorms and lightning.

g. Unchanged Action Steps

The following action steps are ongoing or have not been completed:

1. Equip all county and city recreation parks with lightning detectors
2. Install surge protectors on critical facilities' electronic equipment in essential county and city buildings
3. Install generator back-up at all critical facilities in Carroll County.
4. Distribute severe weather preparedness literature at appropriate/ identified events.
5. Provide National Oceanic and Atmospheric Administration (NOAA) weather radios to identified at-risk populations.

4. Tropical Cyclones

a. Mitigation Goals

Tropical cyclones have caused numerous injuries and deaths and millions of dollars in property damages to Carroll County over the past 45 years. There is a great need to reduce the risk to lives and property due to this hazard. There is some overlap for mitigation needs for tropical cyclones with those of severe thunderstorms and tornadoes.

b. Range of Mitigation Options

Possible mitigation options for tropical cyclones include active citizen preparedness and best management practices for building.

c. Mitigation Strategy for Tropical Cyclones

Action steps were given priority using a benefit-cost review. This process consisted of listing the actions, identifying the benefits and cost of each action step, and assigning a priority of low, medium, and high. The STAPLEE method was used to evaluate the action steps and rank them. This is a new plan category for 2016.

For each mitigation action, timeline refers to the amount of time it would take to finish the mitigation project after funding has been secured. Continuous refers to projects or programs that are ongoing.

Mitigation Actions: Tropical Cyclones

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Tropical Cyclones											
Mitigation Goal 4: To minimize the losses of life and property due to tropical cyclones in Carroll County.											
Objective 1: To protect people and property from the effects of electrical storms in Carroll County.											
4.1.1	<i>Develop a readiness program to encourage citizens to prepare a storm kit in the event of an emergency.</i>	Carroll County	Carroll County EMA	Continuous	\$10,000	General Fund, State and Federal Grants	Unknown	High	Both	Public Education and Awareness	21
4.1.2	<i>Retrofit public schools with special high wind-resistant films for doors and windows.</i>	Carroll County School System and Carrollton City Schools	Carroll County EMA	3 years	Unknown	Grants and General Funds	Unknown	High	Both	Property Protection	20
4.1.3	<i>Promote the construction of safe rooms in shelter areas and in public buildings.</i>	Carroll County and Cities*	Carroll County EMA	3 years	\$5,000,000	Grants and General Funds	Unknown	Medium	Both	Property Protection	18
4.1.4	<i>Promote the use of special roofing shingles designed to interlock and resist uplift forces for both new construction and retrofits.</i>	Carroll County	Carroll County EMA	3 years	Unknown	State and Federal Grants	Unknown	Medium	Both	Structural Projects	17
4.1.5	<i>Research the feasibility of using underground utilities.</i>	Georgia Power, Carroll EMC, Others	Carroll County EMA	3 years	Unknown	State and Federal Grants	Unknown	Medium	Both	Property Protection, Structural Projects	15

*Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg

d. Multi-Jurisdictional Considerations

All of Carroll County will be considered when developing mitigation strategies related to tropical cyclones. Tropical Cyclones have caused damage in all areas of the county in the past. There is no significant difference in the risks and vulnerabilities between each of the jurisdictions. As a result, all mitigation strategies will have a county wide focus.

e. Public Information and Awareness Strategies

The Carroll County public safety community is taking all-hazards approach to community awareness programs. Tropical cyclonic events are portions of this all-hazards program. Some of the suggested public awareness campaigns include educational brochures and programs, warning sirens and public notification systems, and workshops.

f. Completed and Deleted Action Steps from the Plan

This is a new Hazard for the 2016 Plan Update.

g. Unchanged Action Steps

This is a new Hazard for the 2016 Plan Update.

5. Winter Storms

a. Mitigation Goals

Although winter storms are not a frequent occurrence in Carroll County, they have the potential to cause extensive problems when they do occur. The county and municipalities do not have the proper equipment to efficiently deal with snow and ice removal.

b. Range of Mitigation Goals

The major mitigation need for Carroll County in relation to winter storms is the purchase of the proper equipment to keep roadways clear. The infrequency of winter storms would make structural projects impractical. The majority of past damages and injuries were due to icy road conditions and downed trees. Mitigation efforts will focus on reducing these adverse conditions.

c. Mitigation Strategy for Winter Storms

Action steps were given priority using a benefit-cost review. This process consisted of listing the actions, identifying the benefits and cost of each action step, and assigning a priority of low, medium, and high. The STAPLEE method was used to evaluate the action steps and prioritize them. With priorities being reviewed, there was no change in priorities since the last plan.

For each mitigation action, timeline refers to the amount of time it would take to finish the mitigation project after funding has been secured. Continuous refers to projects or programs that are ongoing.

Mitigation Actions: Winter Storms

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Winter Storms											
Mitigation Goal 5: To minimize the losses of lives and property due to winter storms in Carroll County.											
Objective 1: Protect people and property from the effects of winter storms in Carroll County.											
5.1.1	<i>Distribute severe winter weather preparedness literature at appropriate/ identified community events.</i>	Carroll County	Carroll County EMA	Continuous	\$5,000	Grants and General Funds	Unknown	High	Both	Public Education and Awareness	23
5.1.2	<i>Research, purchase and installation of a fixed Natural Gas Generator for Carrollton Water Treatment Plant.</i>	City of Carrollton	Carrollton Fire Department	2 years	\$450,000	Grants and General Funds	Unknown	High	Both	Property Protection	22
5.1.3	<i>Research, purchase and installation of a portable Natural Gas Generator for Carrollton Wastewater Lift Stations.</i>	City of Carrollton	Carrollton Fire Department	2 years	\$95,000	Grants and General Funds	Unknown	High	Both	Property Protection	22
5.1.4	<i>Research, purchase and installation of a fixed Natural Gas Generator for Carrollton Wastewater Little Tallapoosa Lift Station.</i>	City of Carrollton	Carrollton Fire Department	2 years	\$296,000	Grants and General Funds	Unknown	High	Both	Property Protection	22
5.1.5	<i>Research, purchase and installation of a fixed Natural Gas Generator for Carrollton Wastewater Buffalo Creek Lift Station.</i>	City of Carrollton	Carrollton Fire Department	2 years	\$418,000	Grants and General Funds	Unknown	High	Both	Property Protection	22
5.1.6	<i>Research, purchase and installation of a portable Natural Gas Generator for Bowdon Waste Water Lift Stations (11).</i>	City of Bowdon	Carroll County EMA	2 years	\$450,000	Grants and General Funds	Unknown	High	Both	Property Protection	22
5.1.7	<i>Research, purchase and installation of a portable Natural Gas Generator for Temple Waste Water Lift Stations (13).</i>	City of Temple	Carroll County EMA	2 years	\$550,000	Grants and General Funds	Unknown	High	Both	Property Protection	22
5.1.8	<i>Purchase the equipment necessary to maintain adequate road, debris and clearing capabilities.</i>	Carroll County	Carroll County EMA	3 years	Unknown	Grants and General Funds	Unknown	High	Both	Emergency Services	21

*Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg

Mitigation Actions: Winter Storms

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Winter Storms											
Mitigation Goal 5: To minimize the losses of lives and property due to winter storms in Carroll County											
Objective 1: Protect people and property from the effects of winter storms in Carroll County.											
5.1.9	<i>Research, purchase and installation of a fixed Natural Gas Generator for Carroll County Critical Facility, Emergency Shelter.</i>	Carroll County	Carroll County EMA	2 years	\$97,000	Grants and General Funds	Unknown	Medium	Both	Emergency Services	20
5.1.10	<i>Research, purchase and installation of a fixed Natural Gas Generator for Carrollton Fire Station 22.</i>	City of Carrollton	Carrollton Fire Department	2 years	\$73,050	Grants and General Funds	Unknown	Medium	Both	Property Protection	20
5.1.11	<i>Purchase spreader trucks for Carroll County, the City of Carrollton, the City of Villa Rica, the City of Temple, the City of Bowdon, the City of Bremen, the City of Mt. Zion, the City of Whitesburg and the City of Roopville.</i>	Carroll County and Cities*	Carroll County EMA	2 years	\$130,000	Grants and General Funds	Unknown	High	Both	Emergency Services	18
5.1.12	<i>Purchase a small sand spreader to attach to a 4-wheel drive pickup truck.</i>	City of Bowdon	Carroll County EMA	2 years	\$15,000	Grants and General Funds	Unknown	Medium	Both	Emergency Services	18
5.1.13	<i>Purchase 4-wheel drive vehicles for emergency responders.</i>	Carroll County and Cities*	Carroll County EMA	1 year	\$600,000	Grants and General Funds	Unknown	High	Both	Emergency Services	17
5.1.14	<i>Purchase a 4-wheel drive pickup truck.</i>	City of Bowdon	Carroll County EMA	1 year	\$35,000	Grants and General Funds	Unknown	Medium	Both	Emergency Services	17
5.1.15	<i>Purchase an All Terrain Vehicle 4-wheeler</i>	City of Temple	Carroll County EMA	1 year	\$6,500	Grants and General Funds	Unknown	Medium	Both	Emergency Services	17
5.1.16	<i>Purchase brush chipper.</i>	City of Bowdon	Carroll County EMA	1 year	\$70,000	Grants and General Funds	Unknown	Medium	Both	Emergency Services	17

*Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg

Mitigation Actions: Winter Storms

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Winter Storms											
Mitigation Goal 5: To minimize the losses of lives and property due to winter storms in Carroll County											
Objective 1: Protect people and property from the effects of winter storms in Carroll County.											
5.1.17	<i>Purchase brush chipper.</i>	City of Temple	Carroll County EMA	1 year	\$70,000	Grants and General Funds	Unknown	Medium	Both	Emergency Services	17
5.1.18	<i>Purchase a 4-wheel drive Gator.</i>	City of Temple	Carroll County EMA	1 year	\$8,000	Grants and General Funds	Unknown	Medium	Both	Emergency Services	17
5.1.19	<i>Purchase a pallet jack.</i>	City of Temple	Carroll County EMA	1 year	\$600	Grants and General Funds	Unknown	Medium	Both	Emergency Services	17
5.1.20	<i>Purchase a portable 6" centrifugal pump, towable with hoses.</i>	City of Temple	Carroll County EMA	1 year	\$21,500	Grants and General Funds	Unknown	Medium	Both	Emergency Services	17
5.1.21	<i>Purchase gas powered pressure washer, wand and hoses, tips operating at >/=2500 PSI.</i>	City of Temple	Carroll County EMA	1 year	\$1,950	Grants and General Funds	Unknown	Medium	Both	Emergency Services	17
5.1.22	<i>Provide warming shelters during extreme cold.</i>	Nonprofit Emergency Shelter	City of Carrollton	Continuous	Unknown	Grants and General Funds	Unknown	Low	Both	Emergency Services	14

d. Multi-Jurisdictional Considerations

Winter storms have affected all areas of Carroll County. All of the municipalities in Carroll County will be participants in winter storm mitigation activities as there are no significant differences in their risks and vulnerabilities.

e. Public Information and Awareness Strategies

The Hazard Mitigation Plan Steering Committee has identified many public awareness campaigns to ensure that the citizens of Carroll County are kept aware of the hazards affecting them and the mitigation efforts to alleviate potential situations. Some of the suggested public awareness campaigns include educational brochures and programs, warning sirens and public notification systems, and workshops.

f. Completed and Deleted Action Steps from Plan

There were no completed or deleted action steps in reference to winter storms.

g. Unchanged Action Steps

The following action steps have not been completed and have been left in the plan:

1. Purchase the equipment necessary to maintain adequate road and debris and clearing capabilities
2. Purchase spreader trucks for Carroll County, the City of Carrollton, the City of Villa Rica, the City of Temple, the City of Bowdon, the City of Bremen, the City of Mount Zion, the City of Whitesburg and the City of Roopville.
3. Purchase 4-wheel drive vehicles for emergency responders.
4. Distribute severe winter weather preparedness literature at appropriate/ identified community events.

6. Drought and Wildfires

a. Mitigation Goals

Droughts have had severe effects upon the southern states during the past decade. Carroll County has seen its share of water shortages as a result of the widespread droughts. Because of this, there is a great deal of concern to be better prepared for the future.

b. Range of Mitigation Goals

The main areas where mitigation projects are needed for drought conditions include expanding and enhancing the public water supply as well as increasing the public awareness to wildfire conditions.

c. Mitigation Strategy for Droughts

Action steps were given priority using a benefit-cost review. This process consisted of listing the actions, identifying the benefits and cost of each action step, and assigning a priority of low, medium, and high. The STAPLEE method was used to evaluate the action steps and rank them. With priorities being reviewed, there was no change in priorities since the last plan.

For each mitigation action, timeline refers to the amount of time it would take to finish the mitigation project after funding has been secured. Continuous refers to projects or programs that are ongoing.

Mitigation Actions: Drought and Wildfires

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Drought and Wildfires											
Mitigation Goal 6: To minimize the losses of lives and property due to drought in Carroll County.											
Objective 1: To protect the people and property of Carroll County from the devastating effects of a drought.											
6.1.1	<i>Educate citizens and farmers about the potential negative effects that arise from extended drought conditions.</i>	Carroll County EMA	Carroll County EMA	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Both	Public Education and Awareness	21
6.1.2	<i>Offer free admission to Midtown Water Park and Lakeshore Pool during heat waves.</i>	City of Carrollton	City of Carrollton	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Existing	Emergency Services	21
6.1.3	<i>Provide cooling stations during heat waves.</i>	Nonprofit Emergency Shelter	City of Carrollton	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Existing	Emergency Services	17
6.1.4	<i>Develop public awareness to promote water saving campaigns (such as low-flow water saving showerheads and toilets).</i>	Carroll County and Cities Water Authority/ Departments*	Carroll County EMA	Continuous	\$50,000	Grants and General Funds	Unknown	Medium	Both	Public Education and Awareness	16
6.1.5	<i>Expand the Carroll County water system (county wide).</i>	Carroll County Water Authority	Carroll County Water Authority	5 years	Unknown	Grants and General Funds	Unknown	Medium	Both	Structural Projects	15
Mitigation Goal 6: To minimize the losses of lives and property due to drought in Carroll County.											
Objective 2: To protect the people and property of Carroll County from the devastating effects of wildfires due to drought conditions.											
6.2.1	<i>Develop a public awareness campaign to heighten awareness about brush fires and preventive maintenance to homeowners.</i>	Carroll County and Carrollton Fire Department	Carroll County EMA	Continuous	\$36,000	Grants and General Funds	Unknown	High	Both	Emergency Services	16
6.2.2	<i>Become a Firewise Community and integrate firewise standards into development codes</i>	Carroll County and Carrollton Fire Department	Carroll County EMA	3 years	Unknown	Grants and General Funds	Unknown	High	Both	Public Education and Awareness	21

*City Water Departments include Bowdon, Bremen, Carrollton, Temple, Villa Rica and Whitesburg

d. Multi-Jurisdictional Considerations

Drought has affected all areas of Carroll County. No significant differences exist between the county and its municipalities in terms of risk and vulnerabilities associated with droughts. Therefore, all of the municipalities in Carroll County will be represented in drought-related mitigation activities.

e. Public Information and Awareness Strategies

The Hazard Mitigation Plan Steering Committee has identified many public awareness campaigns to ensure that the citizens of Carroll County are kept aware of the hazards affecting them and the mitigation efforts to alleviate potential situations. Some of the suggested all-hazard public awareness campaigns include educational brochures and programs, warning sirens and public notification systems, and workshops.

f. Completed and Deleted Action Steps from the Plan

The following actions have been completed in reference to droughts.

1. *Map all wells in Carroll County with a flow of 100 Gallons Per Minute (GPM) or more for use by Emergency Management during a drought*
2. *Map all government wells in Carroll County*

g. Unchanged Action Steps

The following actions have not been completed and have been left in the plan:

1. Develop public awareness to promote water-saving campaigns
2. Expand all Carroll County water systems
3. Develop a public awareness campaign to heighten awareness about brush fires and preventative maintenance for homeowners
4. Educate citizens and farmers about the potential negative effects that arise from extended drought conditions.

7. All-Hazards

a. Mitigation Goals

Carroll County follows an all-hazards approach to community planning. There are many mitigation projects which can positively influence the outcomes of any natural disaster – these projects are described in this All-Hazard section. These projects have the potential to have great impacts due to their all-hazard nature.

b. Range of Mitigation Goals

All-hazards mitigation goals cover a wide variety of projects, both structural and non-structural. Mitigation options range from warning systems and sirens to public policy changes and public awareness campaigns. The following section details potential mitigation strategies.

c. Mitigation Strategies for All-Hazards

Action steps were given priority using a benefit-cost review. This process consisted of listing the actions, identifying the benefits and cost of each action step, and assigning a priority of low, medium, and high. The STAPLEE method was used to evaluate the action steps and rank them. With priorities being reviewed, there was no change in priorities since the last plan.

For each mitigation action, timeline refers to the amount of time it would take to finish the mitigation project after funding has been secured. Continuous refers to projects or programs that are ongoing.

Mitigation Actions: All Hazards

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
All Hazards											
Mitigation Goal 7: To minimize the losses of life and property due to all natural hazards in Carroll County.											
Objective 1: To protect people and property from the effects of all natural hazards in Carroll County through public awareness campaigns.											
7.1.1	<i>Improve interconnectivity of water systems to surrounding municipalities and counties.</i>	Carroll County and Cities Water Authority / Department+	Carroll County and Cities Water Authority / Department+	3 years	\$1,500,000	Grants and General Funds	Unknown	Medium	Both	Structural Projects	19
7.1.2	<i>Work with local cable and radio providers to enhance and broadcast public education on Emergency Preparedness.</i>	Carroll County EMA	Carroll County EMA	Continuous	\$25,000	Grants and General Funds	Unknown	Medium	Both	Public Education and Awareness	17
7.1.3	<i>Acquire a portable digital reader board to utilize during disasters.</i>	Carroll County EMA	Carroll County EMA	2 years	\$10,000	Grants and General Funds	Unknown	High	Both	Emergency Services	15
Mitigation Goal 7: To minimize the losses of life and property due to all natural hazards in Carroll County.											
Objective 2: To provide the equipment, organization and training necessary to protect the citizens of Carroll County from all-hazards.											
7.2.1	<i>Build a state-of-the-art Emergency Operations Center (EOC).</i>	Carroll County and Cities*	Carroll County EMA	2 years	\$5,000,000	General Funds and SPLOST	Unknown	High	Both	Structural Projects, Emergency Services and Prevention	23
7.2.2	<i>Purchase and install tracking devices on all County Government Vehicles.</i>	Carroll County	Carroll County Public Works	3 years	\$500,000	Grants and General Funds	Unknown	Medium	Both	Emergency Services	18
7.2.3	<i>Provide continual training and equipment for Emergency Management Agency Volunteers and Community Emergency Response Team (CERT).</i>	Carroll County EMA	Carroll County EMA	Continuous	\$50,000	Grants and General Funds	Unknown	Medium	Both	Emergency Services	17
7.2.4	<i>Provide the emergency response personnel capable of responding to the effects of all hazards.</i>	Carroll County and Cities*	Carroll County and Cities*	Continuous	\$600,000	Grants and General Funds	Unknown	Medium	Both	Emergency Services	17

*Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg

+City Water Departments include Bowdon, Bremen, Carrollton, Temple, Villa Rica and Whitesburg

Mitigation Actions: All Hazards

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Drought and Wildfires											
Mitigation Goal 7: To minimize the losses of life and property due to all natural hazards in Carroll County.											
Objective 2: To provide the equipment, organization and training necessary to protect the citizens of Carroll County from all-hazards.											
7.2.5	<i>Construct an emergency access road to Mount Zion Middle School.</i>	Carroll County Board of Education, Carroll County Public Works and City of Mt. Zion	Carroll County Board of Education	1 year	\$300,000	Grants and General Funds	Unknown	Medium	Both	Property Protection	17
7.2.6	<i>Maintain stock of supplies and equipment for mass casualty.</i>	Carroll County EMA	Carroll County EMA	5 years	Unknown	Grants and General Funds	Unknown	High	Both	Emergency Services	15
Mitigation Goal 7: To minimize the losses of life and property due to all natural hazards in Carroll County.											
Objective 3: To protect the people and property from the effects of all hazards in Carroll County through effective planning.											
7.3.1	<i>Review current land use plans to modify or incorporate into the plan guidelines to direct development away from hazardous areas.</i>	Carroll County and Cities*	Department of Community Development	Continuous	\$20,000	Grants and General Funds	Unknown	Medium	Both	Prevention	17
7.3.2	<i>Encourage best management practices in development ordinances to build stronger, more resilient communities.</i>	Carroll County and Cities*	Department of Community Development	Continuous	\$25,000	Grants and General Funds	Unknown	Medium	Both	Prevention	17
Mitigation Goal 7: To minimize the losses of life and property due to all natural hazards in Carroll County.											
Objective 4: To implement a means of early warning throughout Carroll County.											
7.4.1	<i>Assess outdoor warning for mass notification as a method of early warning for possible inclement weather or other hazards.</i>	Carroll County EMA	Carroll County EMA	Continuous	\$5,000	Grants and General Funds	Unknown	High	Both	Emergency Services	18
7.4.2	<i>Purchase Public Notification System to warn residents of hazards.</i>	Carroll County EMA	Carroll County EMA	3 years	\$150,000	Grants and General Funds	Unknown	High	Both	Emergency Services	18

*Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg
 +City Water Departments include Bowdon, Bremen, Carrollton, Temple, Villa Rica and Whitesburg

Mitigation Actions: All Hazards

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Drought and Wildfires											
Mitigation Goal 7: To minimize the losses of life and property due to all natural hazards in Carroll County.											
Objective 4: To implement a means of early warning throughout Carroll County.											
7.4.3	<i>Identify populations at-risk within Carroll County and implement individual notification of warnings and conditions.</i>	Carroll County EMA	Carroll County EMA	2 years	\$35,000	Grants and General Funds	Unknown	High	Both	Emergency Services	17
7.4.4	<i>Purchase and install 10 weather sirens throughout the county.</i>	Carroll County EMA	Carroll County EMA	3 years	\$300,000	Grants and General Funds	Unknown	High	Both	Structural Projects, Emergency Services	15

*Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg

+City Water Departments include Bowdon, Bremen, Carrollton, Temple, Villa Rica and Whitesburg

d. Multi-Jurisdictional Considerations

Some of the above projects cross jurisdictional boundaries (such as training and early warning). There are no significant differences between the county and its municipalities in terms of the risk and vulnerabilities associated with the hazards identified. All jurisdictions will be represented in the planning process.

e. Public Information and Awareness Strategies

The Hazard Mitigation Plan Steering Committee has identified many public awareness campaigns to ensure that the citizens of Carroll County are kept aware of the hazards affecting them and the mitigation efforts to alleviate potential hazards. Some of the suggested public awareness campaigns include educational brochures and programs, warning sirens and public notification systems, and workshops.

f. Completed and Deleted Action Steps from the Plan

The following items were completed.

1. To hire a planner to assist with disaster and emergency planning.
2. Contract with someone to write the Hazard Mitigation Plan for the next update.

As Carroll County has become an operator of the Integrated Public Alert Warning System, launched social media Facebook and Twitter sites, and launched a new website that includes an Emergency Alert Center, the following item is no longer deemed necessary:

1. Purchase Public Notification System to warn residents of hazards

g. Unchanged Action Steps

The Hazard Mitigation Plan Steering Committee found that some of the action steps from the previous plan had either not been completed or were still a hazard to the citizens of Carroll County. Those steps remain unchanged include:

1. Work with local cable and radio providers to enhance public education on emergency preparedness
2. Provide continual training and equipment for the Community Emergency Response Team (CERT)
3. Provide the emergency response personnel capable of responding to the effects of all hazards
4. Build a state-of-the-art Emergency Operations Center (EOC)
5. Review current land use plans to modify or incorporate into the plan guidelines to direct development away from hazardous areas
6. Assess large outdoor venues for feasibility and impact of placing warning sirens as a method of early warning for possible inclement weather or other hazards

8. Earthquakes

a. Mitigation Goals

Although earthquakes are not frequent events in Carroll County, they are still a potential hazard for the county and the citizens within.

b. Range of Mitigation Goals

As a result of earthquakes being rare to both Georgia and Carroll County, there is a lack of preparedness and training for emergency responders and the citizens.

c. Mitigation Strategy for Earthquakes

Action steps were given priority using a benefit-cost review. This process consisted of listing the actions, identifying the benefits and cost of each action step, and assigning a priority of low, medium, and high. The STAPLEE method was used to evaluate the action steps and rank them. With priorities being reviewed, there was no change in priorities since the last plan.

For each mitigation action, timeline refers to the amount of time it would take to finish the mitigation project after funding has been secured. Continuous refers to projects or programs that are ongoing.

Mitigation Actions: Earthquakes

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Earthquakes											
Mitigation Goal 8: To minimize the losses of lives and property due to earthquakes in Carroll County.											
Objective 1: Improve Carroll County's earthquake information distribution and warning to citizens.											
8.1.1	<i>Distribute earthquake preparedness literature at community events.</i>	Carroll County EMA	Carroll County EMA	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Both	Public Education and Awareness	20
Mitigation Goal 8: To minimize the losses of lives and property due to earthquakes in Carroll County.											
Objective 2: Improve Carroll County's first responders' capabilities to prepare for and respond to earthquake events.											
8.2.1	<i>Train all first responders on earthquakes search and rescue techniques.</i>	Carroll County and Cities*	Carroll County EMA	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Both	Emergency Services	17
8.2.2	<i>Provide Confined Space Haz Mat Training in Earthquake Scenario.</i>	Carroll County and Cities*	Carroll County and Cities*	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Both	Emergency Services	16

*Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg

d. Multi-Jurisdictional Considerations

Earthquakes could potentially affect all of Carroll County. No significant differences exist between the county and its municipalities in terms of risks and vulnerabilities associated with earthquakes. Therefore, all of the municipalities in Carroll County will be represented in earthquake-related mitigation activities.

e. Public Information and Awareness Strategies

The Hazard Mitigation Plan Steering Committee has identified many public awareness campaigns to ensure that the citizens of Carroll County are kept aware of the hazards affecting them and the mitigation efforts to alleviate potential situations. Some of the suggested public awareness campaigns include educational brochures and programs, warning sirens and public notification systems, and workshops.

f. Completed and Deleted Action Steps from the Plan

There were no completed or deleted action steps in this section.

g. Unchanged Action Steps

The following action steps have not been completed and have been left in the plan:

1. Distribute earthquake preparedness literature at community events.
2. Train all first responders on earthquakes search and rescue techniques.

9. Pandemics/Epidemics

a. Mitigation Goals

Carroll County has a history of pandemics/epidemics but not any more than other parts of the state. Due to the fact that pandemics/epidemics can be so widespread, a great deal of training is needed on all levels.

b. Range of Mitigation Goals

The Hazard Mitigation Plan Steering Committee found many goals that if met could really help prepare for pandemic/epidemic events. Mitigation actions advancing these goals range from improving information distribution and warning citizens to training and preparing first responders to respond and handle these events.

c. Mitigation Strategy for Pandemics/Epidemics

Action steps were given priority using a benefit-cost review. This process consisted of listing the actions, identifying the benefits and cost of each action step, and assigning a priority of low, medium, and high. The STAPLEE method was used to evaluate the action steps and rank them. With priorities being reviewed, there was no change in priorities since the last plan.

For each mitigation action, timeline refers to the amount of time it would take to finish the mitigation project after funding has been secured. Continuous refers to projects or programs that are ongoing.

Mitigation Actions: Pandemics/Epidemics

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Pandemics											
Mitigation Goal 9: To minimize the loss of lives due to pandemics/epidemics in Carroll County.											
Objective 1: To protect the people and property of Carroll County from the effects of pandemic/epidemic events.											
9.1.1	<i>Participate in Strategic National Stockpile drills and exercises.</i>	Carroll County and Cities*	Carroll County EMA	Continuous	\$15,000	Grants and General Funds	Unknown	High	Both	Emergency Services	20
9.1.2	<i>Educate the public on pandemics, including isolation, quarantine, triage and medical care.</i>	Carroll County EMA	Carroll County EMA	Continuous	\$10,000	Grants and General Funds	Unknown	High	Both	Public Education and Awareness	18
9.1.3	<i>Train all first responders on pandemic flu response.</i>	Carroll County and Cities*	Carroll County EMA	Continuous	\$25,000	Grants and General Funds	Unknown	High	Both	Emergency Services	18
9.1.4	<i>Assist all critical departments in developing continuity of operations (COOP) plans.</i>	Carroll County EMA	Carroll County EMA	5 years	\$25,000	Grants and General Funds	Unknown	Medium	Both	Emergency Services	17
9.1.5	<i>Acquire infectious diseases personal protective equipment for all first responders.</i>	Carroll County and Cities*	Carroll County EMA	2 years	\$75,000	Grants and General Funds	Unknown	High	Both	Emergency Services	16
9.1.6	<i>Provide chemical and biological safety training to employees</i>	Carroll County and Cities*	Carroll County EMA	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Both	Public Education and Awareness	16

*Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg

d. Multi-Jurisdictional Considerations

Pandemics/epidemics have affected all areas of Carroll County. No significant differences exist between the county and its municipalities in terms of risk and vulnerabilities associated with these events. Therefore, all of the municipalities in Carroll County will be represented in pandemic/epidemic related mitigation activities.

e. Public Information and Awareness Strategies

The Hazard Mitigation Plan Steering Committee has identified many public awareness campaigns to ensure that the citizens of Carroll County are kept aware of the hazards affecting them and the mitigation efforts to alleviate potential hazardous situations. Some of the suggested public awareness campaigns include educational brochures and programs, public notification systems and workshops.

f. Completed and Deleted Action Steps from the Plan

There are no completed or deleted action steps in this section.

g. Unchanged Action Steps

The following action steps have not been completed and have been left in the plan:

1. Educate the public on pandemics, including isolation, quarantine, triage and medical care.
2. Train all first responders on pandemic flu response.
3. Participate in Strategic National Stockpile drills and exercises.
4. Acquire infectious diseases personal protective equipment for all first responders.
5. Assist all critical departments in developing continuity of operations (COOP) plans.

B. Technological Hazard Mitigation Goals and Objectives

1. Hazardous Materials Incidents

a. Mitigation Goals

Hazardous materials spills were identified as the only significant technological hazard affecting Carroll County. As seen in III. B. 1, historical trends suggest that there will be approximately ten hazardous materials events in the county during any given year. This includes both fixed-facility and transportation-related incidents. The transportation threat is exacerbated due to the presence of an Interstate Highway, a major state route, and two rail transportation routes.

b. Range of Mitigation Options

The identified mitigation strategies for hazardous materials include training first responders to efficiently respond to a threat. The identified strategy is non-structural.

c. Mitigation Strategy for Hazardous Material Spills

Action steps were given priority using a benefit-cost review. This process consisted of listing the actions, identifying the benefits and cost of each action step, and assigning a priority of low, medium, and high. The STAPLEE method was used to evaluate the action steps and rank them. With priorities being reviewed, there was no change in priorities since the last plan.

For each mitigation action, timeline refers to the amount of time it would take to finish the mitigation project after funding has been secured. Continuous refers to projects or programs that are ongoing.

Mitigation Actions: Hazardous Materials Incidents

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Hazardous Materials Incidents											
Mitigation Goal 10: To minimize the losses of lives and property due to hazardous materials spills in Carroll County.											
Objective 1: To provide enhanced training for hazardous materials emergency response in Carroll County.											
10.1.1	<i>Implement a county wide training program for emergency response to hazardous material incidents.</i>	Carroll County and Cities*	Carroll County and Cities*	2 years	\$60,000	Grants and General Funds	Unknown	Medium	Both	Emergency Services	17
10.1.2	<i>Provide Confined Space Haz Mat Training.</i>	Carroll County and Cities*	Carroll County and Cities*	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Both	Emergency Services	16

*Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg

d. Multi-Jurisdictional Considerations

Hazardous materials events have occurred throughout Carroll County; however, the areas around I-20, SR-78, SR-61, US-27 and the railroad tracks have the greatest tendency for transportation-related events. There is no significant difference between the county and its municipalities in terms of the risks and vulnerabilities associated with hazardous materials. All jurisdictions should participate in training first responders.

e. Public Information and Awareness

The Hazard Mitigation Plan Steering Committee has identified many public awareness campaigns to ensure that the citizens of Carroll County are kept abreast of the hazards affecting them and the mitigation efforts to alleviate potential situations. Some of the suggested public awareness campaigns include educational brochures and programs, warning sirens and notification systems, and workshops.

f. Completed and Deleted Action Steps from the Plan

There were no completed or deleted action steps in reference to Hazardous Material Spills.

g. Unchanged Action Steps

The following action step has not been completed and has been left in the plan:

1. Implement a county wide training program for emergency response to hazardous materials incidents

2. Dam Failure

a. Mitigation Goals

Dam failure was identified as a hazard affecting Carroll County. As seen in III. D. 2, the potential failure of a dam may result in downstream flooding, which may endanger lives and property. Failures can be due to weather, structural changes or chemical agents.

b. Range of Mitigation Options

The identified mitigation strategies for dam failure include public awareness and accurate mapping of dams and spillways. The identified mitigation goals include maintaining watershed dams and developing appropriate land uses downstream of dams.

c. Mitigation Strategy for Dam Failure

Action steps were given priority using a benefit-cost review. This process consisted of listing the actions, identifying the benefits and cost of each action step, and assigning a priority of low, medium, and high. The STAPLEE method was used to evaluate the action steps and rank them. With priorities being reviewed, there was no change in priorities since the last plan.

For each mitigation action, timeline refers to the amount of time it would take to finish the mitigation project after funding has been secured. Continuous refers to projects or programs that are ongoing.

Mitigation Actions: Dam Failure

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
Dam Failure											
Mitigation Goal 11: To minimize the losses of lives and property due to incidents involving dam failure in Carroll County.											
Objective 1: To enhance the awareness of the existence of dams throughout the county and their potential for flooding downstream.											
11.1.1	<i>Maintain/Update all watershed dams in Carroll County.</i>	Carroll County and Cities*	Carroll County and Cities*	Continuous	\$25,000	Grants and General Funds	Unknown	High	Both	Property Protection	20
11.1.2	<i>Improve Lake Carroll dam/spillway based on assessment.</i>	Carroll County and Cities*	City of Carrollton Engineering and Community Development	5 years	\$800,000	Grants and General Funds	Unknown	High	Both	Property Protection, Natural Resource Protection	19
11.1.3	<i>Accurately plot in GIS the location of each category (1) and (2) dam and their emergency spillways.</i>	Carroll County and Georgia DNR Safe Dams	Carroll County Community Development and Carroll County EMA	1 year	\$25,000	Grants and General Funds	Unknown	Medium	Both	Property Protection	17
11.1.4	<i>Develop land use strategies to promote the safe use of land downstream from a dam.</i>	Carroll County and Cities*	Carroll County and Cities*	3 years	\$25,000	Grants and General Funds	Unknown	Medium	Both	Prevention	16

*Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg

d. Multi-Jurisdictional Considerations

Dams are located throughout the county and its municipalities. Therefore, no significant differences exist between the county and its municipalities in terms of risks and vulnerabilities associated with dam failure. As a result, all jurisdictions will be represented in the planning and implementation process.

e. Public Information and Awareness Strategies

The Hazard Mitigation Plan Steering Committee has identified many public awareness campaigns to ensure that the citizens of Carroll County are kept aware of the hazards affecting them and the mitigation efforts to alleviate potential situations. Some of the suggested public awareness campaigns include educational brochures and programs, warning sirens and public notification systems, and workshops.

f. Completed and Deleted Action Steps from the Plan

There were no completed or deleted action steps in reference to dam failure.

g. Unchanged Action Steps

The following action step have not been completed and have been left in the plan:

1. Accurately plot the location of each category one (1) and category two (2) dam and their emergency spillways
2. Develop land use strategies to promote the safe use of land downstream from a dam
3. Maintain/Update all watershed dams in Carroll County.

3. All-Hazards (Technological)

a. Mitigation Goals

Carroll County identified other hazards that were technological in nature, but were not as widespread as the hazardous materials problems. These other hazards are included in this all-hazards section.

b. Range of Mitigation Options

Dangerous intersections, unmarked railroad crossings and fire prevention are technological hazards that have been identified as important issues in Carroll County.

c. Mitigation Strategy for All Hazards (Technological)

Action steps were given priority using a benefit-cost review. This process consisted of listing the actions, identifying the benefits and cost of each action step, and assigning a priority of low, medium, and high. The STAPLEE method was used to evaluate the action steps and rank them. With priorities being reviewed, there was no change in priorities since the last plan.

For each mitigation action, timeline refers to the amount of time it would take to finish the mitigation project after funding has been secured. Continuous refers to projects or programs that are ongoing.

Mitigation Actions: All Technological Hazards

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
All Technological Hazards											
Mitigation Goal 12: To minimize the losses of life and property due to technological hazards in Carroll County.											
Objective 1: To enhance residential fire safety in Carroll County.											
12.1.1	<i>Promote an updated fire prevention and public education program.</i>	Carroll County and City of Carrollton Fire	Carroll County and City of Carrollton Fire	Continuous	\$20,000	Grants and General Funds	Unknown	High	Both	Emergency Services	19
Mitigation Goal 12: To minimize the losses of life and property due to technological hazards in Carroll County.											
Objective 2: To enhance traffic safety in Carroll County.											
12.2.1	<i>Construct an emergency access road to Mount Zion Middle School.</i>	Carroll County Schools, City of Mt. Zion and Carroll County Public Works	Carroll County EMA	1 year	\$300,000	Grants and General Funds	Unknown	High	Existing	Property Protection, Emergency Services	20
12.2.2	<i>Review traffic reports for hazardous intersections to determine if traffic signals are needed.</i>	Carroll County and Cities*	Carroll County and Cities*	3 years	Unknown	Grants and General Funds	Unknown	High	Both	Property Protection, Emergency Services	15
12.2.3	<i>Enhance safety at the railroad crossing at Cheeves Street in Villa Rica.</i>	City of Villa Rica	City of Villa Rica	5 years	Unknown	Grants and General Funds	Unknown	High	Existing	Property Protection, Emergency Services	15
12.2.4	<i>Enhance safety at the railroad crossing at E. Johnson St. and Sage St. in Temple.</i>	City of Temple	City of Temple	5 years	Unknown	Grants and General Funds	Unknown	High	Existing	Property Protection, Emergency Services	15
12.2.5	<i>Ensure that all railroad crossings are properly marked and gated if needed.</i>	Carroll County	Carroll County EMA	5 years	Unknown	Grants and General Funds	Unknown	High	Existing	Property Protection, Emergency Services	15

*Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Ropoville, Temple, Villa Rica and Whitesburg

Mitigation Actions: All Technological Hazards

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	FEMA Category	STAPLEE Score
All Technological Hazards											
Mitigation Goal 12: To minimize the losses of life and property due to technological hazards in Carroll County.											
Objective 3: To enhance workplace safety at all critical facilities.											
12.3.1	<i>Provide active shooter/safety training to all critical facilities.</i>	Carroll County and Cities*	Carroll County EMA	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Both	Public Education and Awareness	21
12.3.2	<i>Develop safety flip charts for all critical facilities.</i>	Carroll County and Cities*	Carroll County EMA	3 years	\$50,000	Grants and General Funds	Unknown	Medium	Both	Public Education and Awareness	21

*Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg

d. Multi-Jurisdictional Considerations

The above hazards can potentially affect all areas of Carroll County, therefore all jurisdictions should be involved in the planning and implementation process. However, no significant differences exist between the county and its municipalities in terms of the risks and vulnerabilities associated with technological hazards.

e. Public Information and Awareness Strategies

The Hazard Mitigation Plan Steering Committee has identified many public awareness campaigns to ensure that the citizens of Carroll County are kept abreast of the hazards affecting them and the mitigation efforts to alleviate potential situations. Some of the suggested public awareness campaigns include educational brochures and programs, warning sirens and public notification systems, and workshops.

f. Complete and Deleted Action Steps from the Plan

The Hazard Mitigation Plan Steering Committee found that the county has worked diligently to reduce the loss of life and property as a result of all-hazards. The following steps were completed or deleted:

From a Previous Plan:

1. Implement a county wide mandate for fire sprinklers in new residential construction
2. Check railroad crossings to determine where crossings need to be repaired or signals need to be installed

g. Unchanged Action Steps

The following action steps have not been completed and have been left in the plan:

1. Promote an updated fire prevention and public education program
2. Review traffic reports to determine hazardous intersections and if traffic signals are needed

C. FEMA Action Steps by Category

The Action Steps from IV. A. and IV. B. can be found below sorted by FEMA categories. It was important to the Hazard Mitigation Plan Steering Committee that the action steps covered a cross section of the six FEMA categories. Several of the steps had aspects that fit more than one category and are listed accordingly.

The FEMA categories, which were described in Chapter I are as follows:

- **Prevention.** Adopting and administering ordinances, regulations, and programs that manage the development of land and buildings to minimize risks of loss due to natural hazards.
- **Property Protection.** Actions that involve the modification of existing buildings or infrastructure to protect them from a hazard or removal from the hazard area.
- **Public Education and Awareness.** Educating and informing the public about risks of hazards and the techniques available to reduce loss of life or property.
- **Natural Resource Protection.** Minimizing hazard losses while preserving and restoring the functions of natural systems.
- **Structural Projects.** Construction of structures to reduce the impact of a hazard.
- **Emergency Services.** Actions such as hazard threat recognition, hazard warning systems, emergency response, protection of critical facilities, and health and safety maintenance

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	STAPLEE Score
Emergency Services										
1.1.5	<i>Install water level monitoring devices on all category one (1) dams and on all major tributaries in Carroll County.</i>	Carroll County	Carroll County EMA	2 years	Unknown	Grants and General Funds	Unknown	Medium	Existing	18
5.1.8	<i>Purchase the equipment necessary to maintain adequate road, debris and clearing capabilities.</i>	Carroll County	Carroll County EMA	3 years	Unknown	Grants and General Funds	Unknown	High	Both	21
5.1.9	<i>Research, purchase and installation of a fixed Natural Gas Generator for Carroll County Critical Facility, Emergency Shelter.</i>	Carroll County	Carroll County EMA	2 years	\$97,000	Grants and General Funds	Unknown	Medium	Both	20
7.2.2	<i>Purchase and install tracking devices on all County Government Vehicles.</i>	Carroll County	Carroll County Public Works	3 years	\$500,000	Grants and General Funds	Unknown	Medium	Both	18
6.2.1	<i>Develop a public awareness campaign to heighten awareness about brush fires and preventive maintenance to homeowners.</i>	Carroll County and Carrollton Fire Department	Carroll County EMA	Continuous	\$36,000	Grants and General Funds	Unknown	High	Both	16
5.1.11	<i>Purchase spreader trucks for Carroll County, the City of Carrollton, the City of Villa Rica, the City of Temple, the City of Bowdon, the City of Bremen, the City of Mt. Zion, the City of Whitesburg and the City of Roopville .</i>	Carroll County and Cities ¹	Carroll County EMA	2 years	\$130,000	Grants and General Funds	Unknown	High	Both	18
5.1.13	<i>Purchase 4-wheel drive vehicles for emergency responders.</i>	Carroll County and Cities ¹	Carroll County EMA	1 year	\$600,000	Grants and General Funds	Unknown	High	Both	17
7.2.4	<i>Provide the emergency response personnel capable of responding to the effects of all hazards.</i>	Carroll County and Cities ¹	Carroll County and Cities ¹	Continuous	\$600,000	Grants and General Funds	Unknown	Medium	Both	17
8.2.1	<i>Train all first responders on earthquakes search and rescue techniques.</i>	Carroll County and Cities ¹	Carroll County EMA	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Both	17
8.2.2	<i>Provide Confined Space Haz Mat Training in Earthquake Scenario.</i>	Carroll County and Cities ¹	Carroll County and Cities ¹	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Both	16
9.1.1	<i>Participate in Strategic National Stockpile drills and exercises.</i>	Carroll County and Cities ¹	Carroll County EMA	Continuous	\$15,000	Grants and General Funds	Unknown	High	Both	20

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	STAPLEE Score
9.1.3	<i>Train all first responders on pandemic flu response.</i>	Carroll County and Cities ¹	Carroll County EMA	Continuous	\$25,000	Grants and General Funds	Unknown	High	Both	18
9.1.5	<i>Acquire infectious diseases personal protective equipment for all first responders.</i>	Carroll County and Cities ¹	Carroll County EMA	2 years	\$75,000	Grants and General Funds	Unknown	High	Both	16
10.1.1	<i>Implement a county wide training program for emergency response to hazardous material incidents.</i>	Carroll County and Cities ¹	Carroll County and Cities ¹	2 years	\$60,000	Grants and General Funds	Unknown	Medium	Both	17
10.1.2	<i>Provide Confined Space Haz Mat Training.</i>	Carroll County and Cities ¹	Carroll County and Cities ¹	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Both	16
12.1.1	<i>Promote an updated fire prevention and public education program.</i>	Carroll County and City of Carrollton Fire	Carroll County and City of Carrollton Fire	Continuous	\$20,000	Grants and General Funds	Unknown	High	Both	19
7.1.3	<i>Acquire a portable digital reader board to utilize during disasters.</i>	Carroll County EMA	Carroll County EMA	2 years	\$10,000	Grants and General Funds	Unknown	High	Both	15
7.2.3	<i>Provide continual training and equipment for Emergency Management Agency Volunteers and Community Emergency Response Team (CERT).</i>	Carroll County EMA	Carroll County EMA	Continuous	\$50,000	Grants and General Funds	Unknown	Medium	Both	17
7.2.6	<i>Maintain stock of supplies and equipment for mass casualty.</i>	Carroll County EMA	Carroll County EMA	5 years	Unknown	Grants and General Funds	Unknown	High	Both	15
7.4.1	<i>Assess outdoor warning for mass notification as a method of early warning for possible inclement weather or other hazards.</i>	Carroll County EMA	Carroll County EMA	Continuous	\$5,000	Grants and General Funds	Unknown	High	Both	18
7.4.2	<i>Purchase Public Notification System to warn residents of hazards.</i>	Carroll County EMA	Carroll County EMA	3 years	\$150,000	Grants and General Funds	Unknown	High	Both	18
7.4.3	<i>Identify populations at-risk within Carroll County and implement individual notification of warnings and conditions.</i>	Carroll County EMA	Carroll County EMA	2 years	\$35,000	Grants and General Funds	Unknown	High	Both	17
9.1.4	<i>Assist all critical departments in developing continuity of operations (COOP) plans.</i>	Carroll County EMA	Carroll County EMA	5 years	\$25,000	Grants and General Funds	Unknown	Medium	Both	17

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	STAPLEE Score
1.1.6	<i>Enhance warning system below Lake Seaton Dam.</i>	Carroll County Water Authority	Carroll County EMA	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	14
5.1.12	<i>Purchase a small sand spreader to attach to a 4-wheel drive pickup truck.</i>	City of Bowdon	Carroll County EMA	2 years	\$15,000	Grants and General Funds	Unknown	Medium	Both	18
5.1.14	<i>Purchase a 4-wheel drive pickup truck.</i>	City of Bowdon	Carroll County EMA	1 year	\$35,000	Grants and General Funds	Unknown	Medium	Both	17
5.1.16	<i>Purchase brush chipper.</i>	City of Bowdon	Carroll County EMA	1 year	\$70,000	Grants and General Funds	Unknown	Medium	Both	17
6.1.2	<i>Offer free admission to Midtown Water Park and Lakeshore Pool during heat waves.</i>	City of Carrollton	City of Carrollton	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Existing	21
5.1.15	<i>Purchase an All Terrain Vehicle 4-wheeler</i>	City of Temple	Carroll County EMA	1 year	\$6,500	Grants and General Funds	Unknown	Medium	Both	17
5.1.17	<i>Purchase brush chipper.</i>	City of Temple	Carroll County EMA	1 year	\$70,000	Grants and General Funds	Unknown	Medium	Both	17
5.1.18	<i>Purchase a 4-wheel drive Gator.</i>	City of Temple	Carroll County EMA	1 year	\$8,000	Grants and General Funds	Unknown	Medium	Both	17
5.1.19	<i>Purchase a pallet jack.</i>	City of Temple	Carroll County EMA	1 year	\$600	Grants and General Funds	Unknown	Medium	Both	17
5.1.20	<i>Purchase a portable 6" centrifugal pump, towable with hoses.</i>	City of Temple	Carroll County EMA	1 year	\$21,500	Grants and General Funds	Unknown	Medium	Both	17
5.1.21	<i>Purchase gas powered pressure washer, wand and hoses, tips operating at >=2500 PSI.</i>	City of Temple	Carroll County EMA	1 year	\$1,950	Grants and General Funds	Unknown	Medium	Both	17
5.1.22	<i>Provide warming shelters during extreme cold.</i>	Nonprofit Emergency Shelter	City of Carrollton	Continuous	Unknown	Grants and General Funds	Unknown	Low	Both	14

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	STAPLEE Score
6.1.3	<i>Provide cooling stations during heat waves.</i>	Nonprofit Emergency Shelter	City of Carrollton	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Existing	17
Prevention										
1.2.2	<i>Assess the flood plain of Milner Lake (off Shadow Lake Drive) to determine ways to mitigate flooding for repetitive loss properties.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Existing	19
1.1.1	<i>Continued vigilance in issuing permits on property with special flood hazard areas.</i>	Carroll County and Cities ¹	Department of Community Development	Continuous	Unknown	Grants and General Funds	Unknown	High	New	23
1.1.2	<i>Ensuring that future dwellings comply with NFIP and the county flood ordinance.</i>	Carroll County and Cities ¹	Department of Community Development	Continuous	Unknown	Grants, General Funds, SPLOST	Unknown	High	New	23
11.1.4	<i>Develop land use strategies to promote the safe use of land downstream from a dam.</i>	Carroll County and Cities ¹	Carroll County and Cities ¹	3 years	\$25,000	Grants and General Funds	Unknown	Medium	Both	16
7.3.1	<i>Review current land use plans to modify or incorporate into the plan guidelines to direct development away from hazardous areas.</i>	Carroll County and Cities ¹	Department of Community Development	Continuous	\$20,000	Grants and General Funds	Unknown	Medium	Both	17
7.3.2	<i>Encourage best management practices in development ordinances to build stronger, more resilient communities.</i>	Carroll County and Cities ¹	Department of Community Development	Continuous	\$25,000	Grants and General Funds	Unknown	Medium	Both	17
Property Protection										
1.1.7	<i>Conduct a study to properly size culverts to drainage basins.</i>	Carroll County	Carroll County Public Works	3 years	\$200,000	Grants, General Funds, SPLOST	\$20,000,000	Medium	Both	14
1.1.8	<i>Conduct an engineering study comparing base flood elevation to the emergency spillway elevation on all category one (1) dams.</i>	Carroll County	Department of Community Development	2 years	Unknown	Grants, General Funds, SPLOST	Unknown	Low	Existing	14
1.2.10	<i>Install a culvert at creek on Campground Road.</i>	Carroll County	Public Works and Transportation	1 year	\$8,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.11	<i>Replace the culvert at Shadow Lake Drive with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	2 year	\$8,000	Grants, General Funds, SPLOST	Unknown	High	Both	19

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	STAPLEE Score
1.2.12	<i>Replace the culvert on Craven- Roopville Veal Road with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	2 year	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.13	<i>Replace the culvert on J.C. Daniel Road with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	2 years	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.14	<i>Replace the culvert on Little Joe Road with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	2 years	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.15	<i>Replace the culvert on Martin Road with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	2 years	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.16	<i>Install a larger culvert on Grimmatt Road.</i>	Carroll County	Public Works and Transportation	2 years	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.17	<i>Install a culvert on Tanyard Road (where the creek crosses the road).</i>	Carroll County	Public Works and Transportation	2 years	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.18	<i>Install a culvert at creek on Denny Road.</i>	Carroll County	Public Works and Transportation	2 years	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.19	<i>Install a culvert at creek on Wantland Road.</i>	Carroll County	Public Works and Transportation	1 year	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.20	<i>Replace the culverts at Holliday Overlook with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	\$5,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.21	<i>Property acquisitions/raze homes at Old Bremen Road (Carrollton) to NFIP compliance/ standards.</i>	Carroll County	Public Works and Transportation	3 years	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.3	<i>Install culverts on Kansas and Agnes Streets at Lake Buckhorn.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.34	<i>Address drainage issues on Vanwert Rd (before the railroad tracks).</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	STAPLEE Score
1.2.35	<i>Replace (or install) culvert on Bagwell Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	3 years	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.36	<i>Replace (or install) culvert on Brickyard Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	3 years	Unknown	Grants, General Funds, SPLOST	Unknown	High	Existing	19
1.2.37	<i>Replace (or install) culvert on Daniel Rd in Bowdon with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.38	<i>Replace (or install) culvert on East Wayside Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.39	<i>Replace (or install) culvert on Four Notch Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.40	<i>Replace (or install) culvert on Harman Rd at Harman Ln with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.41	<i>Replace (or install) culvert on Oak Grove Church Rd at Nugget Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.42	<i>Replace (or install) culvert on Old Word Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.43	<i>Replace (or install) culvert on Smyrna Church Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.44	<i>Replace (or install) culvert on Wiley Wilson Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.45	<i>Replace (or install) culvert on Whooping Creek Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	2 years	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.46	<i>Replace (or install) culvert on Yancey with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	STAPLEE Score
1.2.47	<i>Replace (or install) culvert on Old Carrollton Rd (off Hwy 61) with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.48	<i>Replace (or install) culvert on Mount Olive Church Rd with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.49	<i>Replace (or install) culvert on Spruill Creek Dr. with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.7	<i>Replace the culvert on Holder Road (at creek) with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	2 years	\$25,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.8	<i>Add an additional culvert on Old Four Notch Rd.</i>	Carroll County	Public Works and Transportation	1 year	\$25,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.9	<i>Replace the culvert at the creek on Davenport Mill Road (near Caldwell Road) with a larger diameter culvert.</i>	Carroll County	Public Works and Transportation	1 year	\$12,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.1.3	<i>Inventory and plot in Geographical Information Systems (GIS) all drain facilities on public property (right of ways).</i>	Carroll County and Cities ¹	Department of Community Development	1 year	\$1,200,000	Grants and General Funds	\$20,000,000	Low	Both	23
11.1.1	<i>Maintain/Update all watershed dams in Carroll County.</i>	Carroll County and Cities ¹	Carroll County and Cities ¹	Continuous	\$25,000	Grants and General Funds	Unknown	High	Both	20
3.1.3	<i>Install generator back-up at all critical facilities in Carroll County.</i>	Carroll County and Cities ¹	Carroll County EMA	5 years	Unknown	Grants and General Funds	\$ 80,000,000	Medium	Both	19
3.1.4	<i>Install surge protectors on critical facilities' electronic equipment in essential county and city facilities.</i>	Carroll County and Cities ¹	Carroll County EMA	5 years	Unknown	Grants and General Funds	\$ 80,000,000	High	Both	18
3.1.5	<i>Equip all county and city recreation parks with lightning detectors.</i>	Carroll County and Cities ¹	Parks and Recreation Departments ³ and Carroll County EMA	3 years	\$36,000	Grants and General Funds	Unknown	High	Both	17

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	STAPLEE Score
4.1.3	<i>Promote the construction of safe rooms in shelter areas and in public buildings.</i>	Carroll County and Cities ⁴	Carroll County EMA	3 years	\$5,000,000	Grants and General Funds	Unknown	Medium	Both	18
11.1.3	<i>Accurately plot in GIS the location of each category (1) and (2) dam and their emergency spillways.</i>	Carroll County and Georgia DNR Safe Dams	Carroll County Community Development and Carroll County EMA	1 year	\$25,000	Grants and General Funds	Unknown	Medium	Both	17
7.2.5	<i>Construct an emergency access road to Mount Zion Middle School.</i>	Carroll County Board of Education, Carroll County Public Works and City of Mt. Zion	Carroll County Board of Education	1 year	\$300,000	Grants and General Funds	Unknown	Medium	Both	17
2.1.2	<i>Retrofit public schools with special high wind-resistant films for doors and windows.</i>	Carroll County School System and Carrollton City Schools	Carroll County EMA	3 years	Unknown	Grants and General Funds	Unknown	High	Both	21
4.1.2	<i>Retrofit public schools with special high wind-resistant films for doors and windows.</i>	Carroll County School System and Carrollton City Schools	Carroll County EMA	3 years	Unknown	Grants and General Funds	Unknown	High	Both	20
5.1.6	<i>Research, purchase and installation of a portable Natural Gas Generator for Bowdon Waste Water Lift Stations (11).</i>	City of Bowdon	Carroll County EMA	2 years	\$450,000	Grants and General Funds	Unknown	High	Both	22
1.2.22	<i>Upgrade culverts on Almon Rd. at Lake Carroll Blvd.</i>	City of Carrollton	Public Works and Transportation	2 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.23	<i>Replace culverts under Bradley Street at John Wesley Plaza with larger diameter culverts.</i>	City of Carrollton	Public Works and Transportation	2 years	\$500,000	General Funds, SPLOST, Private Investment	Unknown	High	Both	19
1.2.24	<i>Address drainage issues on Ben Scott Blvd.</i>	City of Carrollton	Public Works and Transportation	2 years	\$200,000	Grants, General Funds, SPLOST	Unknown	High	Both	19

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	STAPLEE Score
5.1.10	<i>Research, purchase and installation of a fixed Natural Gas Generator for Carrollton Fire Station 22.</i>	City of Carrollton	Carrollton Fire Department	2 years	\$73,050	Grants and General Funds	Unknown	Medium	Both	20
5.1.2	<i>Research, purchase and installation of a fixed Natural Gas Generator for Carrollton Water Treatment Plant.</i>	City of Carrollton	Carrollton Fire Department	2 years	\$450,000	Grants and General Funds	Unknown	High	Both	22
5.1.3	<i>Research, purchase and installation of a portable Natural Gas Generator for Carrollton Wastewater Lift Stations.</i>	City of Carrollton	Carrollton Fire Department	2 years	\$95,000	Grants and General Funds	Unknown	High	Both	22
5.1.4	<i>Research, purchase and installation of a fixed Natural Gas Generator for Carrollton Wastewater Little Tallapoosa Lift Station.</i>	City of Carrollton	Carrollton Fire Department	2 years	\$296,000	Grants and General Funds	Unknown	High	Both	22
5.1.5	<i>Research, purchase and installation of a fixed Natural Gas Generator for Carrollton Wastewater Buffalo Creek Lift Station.</i>	City of Carrollton	Carrollton Fire Department	2 years	\$418,000	Grants and General Funds	Unknown	High	Both	22
1.2.25	<i>Property acquisitions/address drainage at River and House Streets to NFIP compliance/ standards.</i>	City of Carrollton	City of Carrollton Housing Authority	2 years	\$2,000,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.26	<i>Replace the culvert at Old Bremen Road with a larger diameter culvert.</i>	City of Temple	Public Works and Transportation	2 years	\$10,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.27	<i>Replace the culvert at Rome Street with a larger diameter culvert.</i>	City of Temple	Public Works and Transportation	1 year	\$10,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.28	<i>Replace the culvert at Rainey Road with a larger diameter culvert.</i>	City of Temple	Public Works and Transportation	1 year	\$8,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.29	<i>Address drainage issues at Baskin St at Carrollton St.</i>	City of Temple	Public Works and Transportation	2 year	\$10,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
5.1.7	<i>Research, purchase and installation of a portable Natural Gas Generator for Temple Waste Water Lift Stations (13).</i>	City of Temple	Carroll County EMA	2 years	\$550,000	Grants and General Funds	Unknown	High	Both	22

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	STAPLEE Score
1.2.30	<i>Replace Old Tanyard Road Steam Culvert</i>	City of Villa Rica	Public Works and Transportation	2 years	\$30,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.31	<i>Property acquisitions/raze businesses at Bankhead at South Dogwood to NFIP compliance/ standards.</i>	City of Villa Rica	Public Works and Transportation	3 years	\$2,000,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.32	<i>Address drainage issues at Rockmart and 2nd St.</i>	City of Villa Rica	Public Works and Transportation	1 year	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.33	<i>Replace the West View Drive culvert with a larger diameter culvert.</i>	City of Villa Rica	Public Works and Transportation	3 years	\$500,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
Property Protection and Emergency Services										
12.2.5	<i>Ensure that all railroad crossings are properly marked and gated if needed.</i>	Carroll County	Carroll County EMA	5 years	Unknown	Grants and General Funds	Unknown	High	Existing	15
12.2.2	<i>Review traffic reports for hazardous intersections to determine if traffic signals are needed.</i>	Carroll County and Cities ¹	Carroll County and Cities ¹	3 years	Unknown	Grants and General Funds	Unknown	High	Both	15
12.2.1	<i>Construct an emergency access road to Mount Zion Middle School.</i>	Carroll County Schools, City of Mt. Zion and Carroll County Public Works	Carroll County EMA	1 year	\$300,000	Grants and General Funds	Unknown	High	Existing	20
12.2.4	<i>Enhance safety at the railroad crossing at E. Johnson St. and Sage St. in Temple.</i>	City of Temple	City of Temple	5 years	Unknown	Grants and General Funds	Unknown	High	Existing	15
12.2.3	<i>Enhance safety at the railroad crossing at Cheeves Street in Villa Rica.</i>	City of Villa Rica	City of Villa Rica	5 years	Unknown	Grants and General Funds	Unknown	High	Existing	15
Property Protection and Natural Resource Protection										
11.1.2	<i>Improve Lake Carroll dam/spillway based on assessment.</i>	Carroll County and Cities ¹	City of Carrollton Engineering and Community Development	5 years	\$800,000	Grants and General Funds	Unknown	High	Both	19

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	STAPLEE Score
Property Protection and Prevention										
1.1.4	<i>Develop a procedure for and initiate routine drainage system maintenance to ensure all storm drains are free of debris.</i>	Carroll County and Cities ¹	Public Works	Continuous	\$80,000	General Funds	\$20,000,000	Medium	Both	21
Property Protection and Structural Projects										
2.1.3	<i>Research the feasibility of using underground utilities.</i>	Georgia Power, Carroll EMC, Others	Carroll County EMA	3 years	Unknown	State and Federal Grants	Unknown	Medium	Both	19
4.1.5	<i>Research the feasibility of using underground utilities.</i>	Georgia Power, Carroll EMC, Others	Carroll County EMA	3 years	Unknown	State and Federal Grants	Unknown	Medium	Both	15
Public Education and Awareness										
3.1.1	<i>Distribute severe weather preparedness literature at appropriate/ identified events.</i>	Carroll County	Carroll County EMA	Continuous	\$2,000	General Fund, State and Federal Grants	\$ 200,000	High	Both	23
3.1.2	<i>Provide National Oceanic and Atmospheric Administration (NOAA) weather radios to identified citizens from at-risk populations.</i>	Carroll County	Carroll County EMA	Continuous	\$5,000	Grants and General Funds	Unknown	High	Both	23
4.1.1	<i>Develop a readiness program to encourage citizens to prepare a storm kit in the event of an emergency.</i>	Carroll County	Carroll County EMA	Continuous	\$10,000	General Fund, State and Federal Grants	Unknown	High	Both	21
5.1.1	<i>Distribute severe winter weather preparedness literature at appropriate/ identified community events.</i>	Carroll County	Carroll County EMA	Continuous	\$5,000	General Fund, State and Federal Grants	Unknown	High	Both	23
6.2.2	<i>Become a Firewise Community and integrate firewise standards into development codes</i>	Carroll County and Carrollton Fire Department	Carroll County EMA	3 years	Unknown	Grants and General Funds	Unknown	High	Both	21
6.1.4	<i>Develop public awareness to promote water saving campaigns (such as low-flow water saving showerheads and toilets).</i>	Carroll County and Cities Water Authority/ Departments ⁴	Carroll County EMA	Continuous	\$50,000	Grants and General Funds	Unknown	Medium	Both	16
12.3.1	<i>Provide active shooter/safety training to all critical facilities.</i>	Carroll County and Cities ¹	Carroll County EMA	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Both	21

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	STAPLEE Score
12.3.2	<i>Develop safety flip charts for all critical facilities.</i>	Carroll County and Cities ¹	Carroll County EMA	3 years	\$50,000	Grants and General Funds	Unknown	Medium	Both	21
2.1.1	<i>Perform tornado safety training for the government employees.</i>	Carroll County and Cities ¹	Carroll County EMA and municipal police ²	3 years	Negligible	Grants and General Funds	Unknown	High	Both	23
9.1.6	<i>Provide chemical and biological safety training to employees</i>	Carroll County and Cities ¹	Carroll County EMA	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Both	16
6.1.1	<i>Educate citizens and farmers about the potential negative effects that arise from extended drought conditions.</i>	Carroll County EMA	Carroll County EMA	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Both	21
7.1.2	<i>Work with local cable and radio providers to enhance and broadcast public education on Emergency Preparedness.</i>	Carroll County EMA	Carroll County EMA	Continuous	\$25,000	Grants and General Funds	Unknown	Medium	Both	17
8.1.1	<i>Distribute earthquake preparedness literature at community events.</i>	Carroll County EMA	Carroll County EMA	Continuous	Unknown	Grants and General Funds	Unknown	Medium	Both	20
9.1.2	<i>Educate the public on pandemics, including isolation, quarantine, triage and medical care.</i>	Carroll County EMA	Carroll County EMA	Continuous	\$10,000	Grants and General Funds	Unknown	High	Both	18
Structural Projects										
1.2.1	<i>Replace bridge on Carrollton Tyus Road.</i>	Carroll County	Public Works and Transportation	2 years	Unknown	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.4	<i>Replace the bridge at McIntosh Reserve.</i>	Carroll County	Public Works and Transportation	1 year	\$500,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.5	<i>Install bridge on Bagwell Road.</i>	Carroll County	Public Works and Transportation	3 years	\$500,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
1.2.6	<i>Replace bridge at Victory Church Road at Victory Dashboard.</i>	Carroll County	Public Works and Transportation	2 years	\$500,000	Grants, General Funds, SPLOST	Unknown	High	Both	19
2.1.4	<i>Promote the use of special roofing shingles designed to interlock and resist uplift forces for both new construction and retrofits.</i>	Carroll County	Carroll County EMA	3 years	Unknown	State and Federal Grants	Unknown	Medium	Both	17

Number	Mitigation Action	Responsible Organization	Coordinating Organization	Timeline	Approximate Cost	Funding Sources	Estimated Benefit	Priority	Structures Affected	STAPLEE Score
2.1.5	<i>Promote the construction of safe rooms in shelter areas and in public buildings.</i>	Carroll County	Carroll County EMA	3 years	\$5,000,000	Grants and General Funds	Unknown	Medium	Both	16
4.1.4	<i>Promote the use of special roofing shingles designed to interlock and resist uplift forces for both new construction and retrofits.</i>	Carroll County	Carroll County EMA	3 years	Unknown	State and Federal Grants	Unknown	Medium	Both	17
7.1.1	<i>Improve interconnectivity of water systems to surrounding municipalities and counties.</i>	Carroll County and Cities Water Authority / Department ⁴	Carroll County and Cities Water Authority / Department ⁴	3 years	\$1,500,000	Grants and General Funds	Unknown	Medium	Both	19
6.1.5	<i>Expand the Carroll County water system (county wide).</i>	Carroll County Water Authority	Carroll County Water Authority	5 years	Unknown	Grants and General Funds	Unknown	Medium	Both	15
Structural Projects and Emergency Services										
7.4.4	<i>Purchase and install 10 weather sirens throughout the county.</i>	Carroll County EMA	Carroll County EMA	3 years	\$300,000	Grants and General Funds	Unknown	High	Both	15
Structural Projects, Emergency Services and Prevention										
7.2.1	<i>Build a state-of-the-art Emergency Operations Center (EOC).</i>	Carroll County and Cities ¹	Carroll County EMA	2 years	\$5,000,000	General Funds and SPLOST	Unknown	High	Both	23

¹Cities refers to the following: Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg

²Municipal police refers to Bremen, Bowdon, Carrollton, Mount Zion, Temple and Villa Rica

³Parks and Recreation refers to Bremen, Bowdon, Carrollton, Mount Zion, Temple, Villa Rica and Carroll County

⁴City Water Departments include Bowdon, Bremen, Carrollton, Temple, Villa Rica and Whitesburg

D. Reducing Vulnerabilities to Disasters

In developing and reaffirming the mitigation goals, objectives and action steps, Carroll County and its Cities are striving to protect the community's people, property and the environment from natural and man-made disasters. In doing so, the jurisdictions will become more resilient to disasters. To achieve resilience, there must be a long-term diligence in completing projects that are preventative, protect property and improve the structural framework. This will help reduce the community's vulnerability to disasters. For example, with repetitive loss properties due to flooding, every property that has a FEMA flood plain is reviewed by the building department and restricted from building. When a culvert is washed out by flooding, the county documents it in its Geographic Information Systems and if a larger pipe can be put in place, Public Works will do so. These policies are helping prevent disaster damage in the future.

Carroll County's Hazard Mitigation Steering Committee is focused on the reduction of vulnerabilities by developing and codifying these steps into ordinances and each jurisdiction's Comprehensive Plan. There are many preventive steps that can be achieved at the onset of a building or modification permit. Further policies need to be in place that pursue projects that protect property and improve the structural framework in a capital improvement element. At this time, the county does not have an official Capital Improvement Plan. Instead, it relies on the Special Purpose Local Option Sales Tax to fund many of its capital projects. The committee needs to work with local officials to get consistent funding for these mitigation steps.

As the community moves forward with its 2018 Comprehensive Plan Updates and any update to Service Delivery, these goals, objectives and action steps need to be considered.

Chapter V. Executing the Plan

A. Implementing Action Plan

The Carroll County Hazard Mitigation Plan process was coordinated and written by the Carroll County Sheriff's Office Emergency Management Agency. The Carroll County Board of Commissioners and the Mayors of each municipality will adopt the plan upon the approval of FEMA and GEMA.

B. Monitoring the Plan

Carroll County and its municipalities have designated that all emergency management and emergency planning functions will fall under the Carroll County Sheriff's Office Emergency Management Agency, which is a division of the Carroll County Sheriff's Office, and it will be responsible for the Hazard Mitigation Plan's upkeep and maintenance. The mitigation plan will be monitored and evaluated annually and revised as needed and in accordance with the FEMA standards. It is the responsibility of the EMA Director to ensure that the plan is used as a guide for implementation of mitigation measures within Carroll County and its municipalities.

C. Evaluation of the Plan

The Hazard Mitigation Plan Steering Committee will reconvene periodically to ensure that the projects are on track and to reevaluate the mitigation goals, objectives and action steps. The steering committee will review the mitigation strategies to ensure that the plan is inclusive and further that the mitigation actions that are being implemented are effective. Should a disaster occur the Hazard Mitigation Plan Steering Committee will call a special meeting to assess the mitigation actions and evaluate whether changes should be made to the plan. The steering committee should also review the mitigation actions when funding becomes available to ensure that the actions are making the community safer and more resilient.

The Hazard Mitigation Plan Steering Committee needs to continue to educate the public on the importance of the Hazard Mitigation Plan to increase public interest and input. All information will be put on the county website for public input and meetings will be announced in the newspaper should a public meeting be called. The mitigation plan shall be viewed as a "living document" in that it should be continuously evolving as the needs of Carroll County and its municipalities change. Periodically, mitigation items will be discussed utilizing social media to gather feedback.

D: Updating the Plan

Although the plan must be updated every 5 years per federal requirements, Carroll County will perform an annual review to ensure that the county is doing everything possible to keep the

citizens safe from all hazards. This review will indicate which action steps have been achieved and determine if further action steps are needed. Should a disaster occur or funding come available, there will be a called Hazard Mitigation Meeting to discuss the action steps and their priority.

When updating the plan, Carroll County will continue to use the same participants and team members to review the plan. Through the plan update process, the EMA Director shall identify projects which have been undertaken in the community to successfully mitigate hazards. These projects shall be noted within the document to indicate completion. During the plan update process, the Hazard Mitigation Plan Steering Committee should also reconvene to identify additional mitigation projects that need progress and/or to be included in the plan.

A list of possible mitigation goals, objectives and implementation steps was compiled with input from the entire steering committee.

E. Further Incorporation of Existing Planning Mechanisms

In future updates, all of the municipalities in Carroll County will work with the Carroll County Sheriff's Office Emergency Management Agency and the Department of Community Development to better cross-reference and enhance the plans and programs that are already in place. The Hazard Mitigation Plan Steering Committee will also use information from the plans, codes and programs listed below, when drafting the future mitigation strategies.

Table 5.1: Existing Program, Policy, or Technical Documents

	<i>Bowdon</i>	<i>Bremen</i>	<i>Carrollton</i>	<i>Mount Zion</i>	<i>Roopville</i>	<i>Temple</i>	<i>Villa Rica</i>	<i>Whitesburg</i>	<i>Carroll County</i>
Comprehensive Plans	✓	✓	✓	✓	✓	✓	✓	✓	✓
Watershed Management Plans							✓		✓
Regional Development Plans	✓	✓	✓	✓	✓	✓	✓	✓	✓
Downtown Redevelopment	✓	✓	✓				✓		
Airport Plans									✓
Long-range Recreation Plans			✓						
Open Space Plans			✓						✓
Building Codes	✓	✓	✓	✓	✓	✓	✓	✓	✓
Land Development Codes	✓	✓	✓	✓	✓	✓	✓	✓	✓
Zoning Ordinance	✓	✓	✓			✓	✓	✓	✓
Historic Preservation Ordinance	✓	✓	✓		✓		✓		✓
Development/ Subdivision Guidelines	✓	✓	✓	✓	✓	✓	✓	✓	✓
Service Delivery Act	✓	✓	✓	✓	✓	✓	✓	✓	✓

Chapter VI. Acknowledgments

The Carroll County Hazard Mitigation Plan Steering Committee has worked to ensure that the citizens of Carroll County are kept safe and aware of the potential hazards. The plan's mission is ultimately, "To minimize the losses of lives and property due to natural and man-made hazards in Carroll County." The goals, objectives and mitigation steps put forth in this plan would not have been possible without the contributions of representatives from all jurisdictions, as well as the numerous agencies, businesses and citizens throughout the county. All jurisdictions of Carroll County, including the County and the Cities of Bowdon, Bremen, Carrollton, Mount Zion, Roopville, Temple, Villa Rica and Whitesburg, were included in this process and played a valuable part in this update. Further, the Emergency Management Volunteers, the Local Emergency Planning Committee, regional partners and the public provided the steering committee with valuable insights and have helped in the development of a better Multi-Jurisdictional Hazard Mitigation Plan.

Special thanks to Melissa Martin, EMA volunteer and a Public Administration student at the University of West Georgia, for her contributions to the plan.

Chapter VII. References

A. Publications and Documents

The Disaster Mitigation Act of 2000

FEMA, *Getting Started*, Guide 386-1

FEMA, *Understanding Your Risks*, Guide 386-2

FEMA, *Developing the Mitigation Plan*, Guide 386-3

FEMA, *Bring the Plan to Life*, Guide 386-4

FEMA, *Using Benefit-Cost Review in Mitigation Planning*, Guide 386-5

FEMA, *Integrating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning*, Guide 386-6

FEMA, *Integrating Manmade Hazards into Mitigation Planning*, Guide 386-7

FEMA, *Multi-Jurisdictional Mitigation Planning*, Guide 386-8

FEMA, *Using the Hazard Mitigation Plan to Prepare Successful*, Guide 386-9

GEMA, *Getting Started*, How to Guide

Carroll County Local Emergency Operations Plan

Carroll County Hazard Mitigation Plan 2004 and 2010

International Building Codes, 2012 Edition

B. Websites

www.fema.gov (FEMA)

www.ncdc.noaa.gov (National Climate Data Center)

www.gema.state.ga.us (GEMA)

www.carrollcountyga.com (Carroll County)

www.carrollton-ga.gov (City of Carrollton)

www.bowdon.net (City of Bowdon)

www.bremenga.gov (City of Bremen)

www.cityofmountzion.com (City of Mount Zion)

www.carroll-ga.org (Carroll County Chamber of Commerce)

www.templega.us (City of Temple)

www.villarica.org (City of Villa Rica)

C. Other Resources

American Red Cross

Carroll County

Carroll County Chamber of Commerce

Carroll County Sheriff's Office Emergency Management Agency

City of Bowdon

City of Bremen

City of Carrollton

City of Mount Zion

City of Temple

City of Roopville

City of Villa Rica

City of Whitesburg

WLBB 1330 Community Voice (12/28/2015)

Centers for Disease Control and Prevention

Federal Emergency Management Agency

National Climate Data Center

Georgia Emergency Management Agency

Georgia Forestry

Georgia Safe Dams Programs

Georgia Department of Labor

Georgia Department of Natural Resources

U.S. Census Bureau

U.S. Department of Energy

Hazard Mitigation Plan Appendix

Appendix A	Resolutions from Carroll County and Cities
Appendix B	Public Participation Strategy <ul style="list-style-type: none">• List of Meetings• Hazard Mitigation Plan Steering Committee Meeting Notes and Sign-In Sheets• Public Hearing Notes and Sign-In Sheets• Press Releases• Hazards Survey• Social Media
Appendix C	Critical Facilities List
Appendix D	County Economic Report <ul style="list-style-type: none">• 2014 Carroll Chamber of Commerce Community Profile• Area Profile Georgia Department of Labor• 2014 Long Range Transportation Plan
Appendix E	Local Weather Data from National Climate Data Center
Appendix F	Commodity Flow Study (2008)
Appendix G	Haz Mat Emergency Log
Appendix H	STAPLEE Worksheets
Appendix I	Regional Outreach