

Lincoln County, Georgia
Multi-Hazard Pre-Disaster Mitigation Plan
Original Plan Approval: 05/27/2009
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CHAPTER I. INTRODUCTION TO THE PLANNING PROCESS

Table 1.1 provides a brief description of each section in this chapter and a summary of the changes made.

Table1.1

Chapter 1 Section	Updates to Section
I. Purpose and need of the plan, authority & statement of problem	Updated text of this section
II. Local methodology, brief description of plan update process, Participants in update process	Updated the participants, planning process and how data was collected
III. Description of how each section of the original plan was reviewed and analyzed and whether it was revised	All sections of the original plan were analyzed and revised.
IV. Organization of the plan	The plan is organized by GEMA local planning Local Hazard Mitigation Plan Update Template and includes a timeline.
V. Local Hazard, Risk, and Vulnerability (HRV) summary, local mitigation goals and objectives	Added new information to summary, new purpose for plan.
VI. Multi-Jurisdictional special considerations (HRV, goals, special needs)	Reviewed and updated information regarding multijurisdictional concerns
VII. Adoption, implementation, monitoring and evaluation	This was evaluated and remains the same. Additional text was added to clearly delineate the task of implementation and monitoring. Plan was adopted and submitted to GEMA and FEMA review.
VIII. Community Data (demographics, census, commerce, history, etc.)	Updated demographic and added additional information for each jurisdiction

SECTION I. PURPOSE AND NEED OF THE PLAN, AUTHORITY AND STATEMENT OF PROBLEM

The Lincoln County 2020 Plan Update is the review and improvement on our Multi-Hazard Pre-Disaster Mitigation Plan approved on May 27, 2009 and reapproved on July 7, 2015. The update is written to comply with Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act Title 44 CFR as amended by Section 102 of the Disaster Mitigation Act of 2000. The act gives state and local governments the framework to evaluate and mitigate all hazards as a condition of receiving federal disaster funds. The act provides federal assistance to state and local emergency management and other disaster response organizations in an effort to reduce damage from disasters. The plan has involved multiple community partners including elected officials, city and county personnel, fire, emergency management, law enforcement, and public works. The ultimate goal of this plan is to identify natural hazards and develop strategies to lessen the impact on our community.

The update covers all of Lincoln County to include the City of Lincolnton. The plan will identify all natural disasters that could threaten the lives and properties of our community. The scope of the update includes both short- and long-term mitigation strategies, implementation and possible sources of project funding. It also identifies mitigation strategies implemented since the 2015.

The plan also contains the following information on:

- The vision of mitigation in our community;
- The profile of Lincoln County, its geography, history, physical features and other community indicators;
- The planning process and the involvement of all municipal, state and federal governments, the public, industry and other community players;
- Lincoln County's past and predicted exposure to natural hazards and the potential risks that include the impacts on critical infrastructure with anticipated losses was documented;
- An overview of Lincoln County's capabilities to implement hazard mitigation goals and objectives, and policies that will effectively mitigate risks to our community;
- Procedures for maintaining an effective, long range hazard mitigation plan and strategy to implement;
- An assessment of Lincoln County's current policies, goals and regulations that pertain to hazard mitigation;
- Documentation of the planning process;
- Updated hazard events that occurred since 2015;
- Updated critical facilities added since 2015;
- Documented current mitigation strategies implemented since 2015; and
- Examined and updated mitigation strategy goals, objectives and action steps.

The update is the product of the combined efforts of Lincoln County, Crawfordville, and Sharon. Realizing that identifying the community's risks and working collectively toward the prevention of disasters in the community is in the county's best interest, the Lincoln County Emergency Management Agency (EMA) took the lead role in the update. Under the agency's leadership, there has been an endorsement and a commitment by Lincoln County as well as the City of Lincolnton.

Continued mitigation planning is imperative to lessen the impacts of disasters in Lincoln County and Lincolnton. This plan serves as an excellent method to organize and document current and ongoing mitigation strategies; however, the implementation of the plan and its components is vital to achieve a community that is resistant to the impact of a disaster. The objective is plan implementation which will result in a reduction of the loss of life and property, while allowing the county to prosper with minimal disruption of services to the community.

SECTION II. LOCAL METHODOLOGY, PLAN UPDATE PROCESS AND PARTICIPANTS

The Lincoln County Board of Commissioners (BOC) contracted with the Central Savannah River Area Regional Commission (RC) to assist in the plan update. The RC has assisted eleven counties in the completion and update of their Pre-Disaster Mitigation Plans. The RC is currently assisting six counties with their second update. The RC was tasked to review the current plan and identify new information to be incorporated into the update. The RC in conjunction with the EMA Director,

supervised the project, organized the data, set meeting dates, documented in-kind services, and worked with GEMA to complete the update. EMA Director Casey Broom was tasked with developing the Hazard Mitigation Planning Committee. Table 1.2 identifies the 2020 members.

Table 1.2

Name	Title	Jurisdiction
Casey Broom	Director	Lincoln County EMA
Jim Farrand	Code Enforcement Officer	Lincoln County Code Office
Jim Butler	Code Enforcement Officer	Lincoln County Code Office
Stephanie Eicher	Administrative Assistant	Lincolnton Planning & Zoning
Michael Newman	Superintendent	Lincoln County Road Department
Pam Parton	Director	Lincoln County Transit
Larry Goolsby	Council Member	Lincolnton City Council
Robert D. Seymour	Director	Lincoln County Public Works
Steve Justice	Superintendent	Lincoln County Public Works
		Lincoln County EMS
Sara Bell	Deputy	Lincoln County Sheriff's Office
Jim Wallen	Major	Lincoln County Sheriff's Office
Bill Kirby	Director	Lincoln County Recreation
Eugene Poss	Chief	Lincolnton Police Department
Michael A Wengrow	Fire Chief	Lincoln County Fire Department
Heather McManus	RN County Nurse Manager	Lincoln County Health Department
Brenda Goolsby	RN County Nurse Manager	Lincoln County Health Department
Shirley N. Dawkins	Branch Manager	Lincoln County Public Library
Roxanne Brown	County Clerk	Lincoln County
Traci Bussey	Finance Director	Lincoln County
Ashely Swain	Executive Director	Lincoln County Development Authority
Wade Johnson	Chairman	Lincoln County Commission
Kenny Adair	Chief Appraiser	Lincoln County Tax Assessor's Office
Brenda Danner	Tax Commissioner	Lincoln County Tax Commissioner
Mark Wiles	Chief Ranger	Georgia Forestry Commission
Marion Aycock	Transportation Director	Lincoln County Board of Education
Richard Brown	Commissioner	Lincoln County Board of Commissioners
Monroe Reid	Director	Lincoln County Senior Center
Sid Hatfield	Chief Deputy	Lincoln County Sheriff's Office

The committee was responsible for the organization, data collection and completion of the plan. It is the responsibility of the committee to include all pertinent departments within their respective governments and to request information needed for plan completion. The following agencies/departments/organizations provided specific information and support for the original plan and provided any new information for the update:

- Lincoln County School District was responsible for providing structural replacement and content values for all schools as well as square footage and occupancy limits.

- Lincolnton Police Department provided staff support to the planning effort and was responsible for providing structural replacement and content values for all critical facilities as well as square footage and daily occupancy.
- Lincoln County Sheriff's Office provided staff support to the planning effort.
- Lincoln County Health Department and Lincoln County DFCS, identified vulnerable populations. They also provided replacement and content value estimates for their properties.
- Lincoln County and Lincolnton's Volunteer Fire Departments provided staff support to the planning effort and assisted with identifying occupancy limits for some of the critical structures and replacement and content value estimates.
- Lincoln County Road Department provided information on past effects on roads during hazard events.
- Lincolnton city officials provided information relative to their jurisdiction and provided replacement and content value estimates for their critical facilities as well as square footage and daily occupancy.
- Georgia Forestry Commission provided data on wildfire events and assisted with the formulation of mitigation measures.
- Lincoln County EMS identified mitigation goals related to evacuation concerns as a result of natural disasters.
- Lincoln County Development Authority assisted in identifying major businesses.
- Lincoln County Board of Commissioners provided replacement and content value estimates for their critical facilities as well as square footage and daily occupancy.
- Lincoln County Tax Assessor's Office provided most of the aggregate values for the critical structures. The valuations had to be converted to full values since they are figured at 40 percent of actual value. This information, combined with demographic data, is compiled on GEMA Worksheet #3a in Appendix A for all jurisdictions.
- CSRA Regional Commission's Geographical Information System (GIS) Department produced several of the maps contained in the plan. Maps are located in Appendix A.

Several resources were consulted to facilitate the development of the update. Data was collected from numerous sources, including the National Climatic Data Center (NCDC), Spatial Hazard Events and Losses Database for the United States (SHELDUS™), National Weather Service, US Geological Survey (USGS), Southeast Regional Climate Center (SERCC), US Census Bureau, Georgia Department of Natural Resources (DNR), Georgia Forestry Commission (GFC), Georgia Tornado History Project Database, Georgia Department of Community Affairs (DCA), US Department of Agriculture (USDA), and local and regional newspaper articles, as well as personal interviews. Table 1.2 provides a list of existing planning documents used during the update.

Table 1.3

Record of Review		
Existing planning mechanisms	Reviewed? (Yes/No)	Method of use in Hazard Mitigation Plan
Lincoln County Joint Comprehensive Plan 2018-2022	Yes	Development trends, capability assessment, mitigation strategies
Local Emergency Operations Plan	Yes	Identifying hazards; Assessing vulnerabilities; Capability assessment

Record of Review		
Existing planning mechanisms	Reviewed? (Yes/No)	Method of use in Hazard Mitigation Plan
Lincoln County Joint Comprehensive Plan 2018-2022	Yes	Development trends, capability assessment, mitigation strategies
Georgia Emergency Operations Plan	Yes	Identifying hazards; Assessing vulnerabilities;
Flood Damage Protection Ordinance	Yes	Mitigation strategies, capability assessment
Building and Zoning Codes and Ordinances	Yes	Development trends; Future growth, capability assessment, mitigation strategies
Mutual Aid Agreements	Yes	Assessing vulnerabilities, Determine assets added to disaster relief and response.
State Hazard Mitigation Plan	Yes	Risk assessment, review of recommended strategies
Land Use Maps	Yes	Assessing vulnerabilities; Development trends; Future growth
Critical Facilities Maps	Yes	Locations
Community Wildfire Protection Plan	Yes	Mitigation strategies, risk assessment
Flood Insurance Study	Yes	Review for historical Data and Information
CSRA Regional Plan 2035	Yes	Development trends; Future growth, regional concerns and data

It should be noted that the county does not have a Flood Mitigation Assistance Plan. This has been listed as mitigation action in Chapter III.

The committee held five meetings over a 26-month period to guide the development of the plan. Individual jurisdictions and/or agencies were contacted, as information was needed. The committee was responsible for developing the mission statement, as well as the goals, objectives, and action steps identified in the plan. The committee researched previous hazard information in the areas of flooding, wildfires, tornados, winter storms, hurricanes, high winds, dam failure, lightning, hail, and drought. However, some hazards were eliminated due to their low level of risk. Committee members collected critical facilities information based on their area of expertise or jurisdiction. The RC was responsible for assessing vulnerability and estimating potential losses from the information collected. Potential losses include people, structures/properties, infrastructure, and other important community assets.

Table 1.4 provides the dates and synopsis of committee meetings. All meetings were open to the public and meeting notices posted at all governmental offices. Of the seven meetings, two were advertised in *The Lincoln Journal*, the County's legal organ. This is the most efficient means to disseminate information to residents and organizations located in the county. In order to meet the requirement to afford an opportunity for neighboring communities, local and regional agencies, businesses, academia and other private and non-profit interests to be involved in the planning process, invitations were extended by email. Invitations were extended to the following counties: Burke, Columbia, Glascock, Hancock, Jefferson, Jenkins, McDuffie, Richmond, Taliaferro, Washington, Warren, and Wilkes including all municipalities located within the counties. It is noted that no public comments or feedback was provided by the public. Copies of correspondence, emails and advertisements are in Appendix E.

Table 1.4

Ad/Meeting Date	Purpose of Meeting
November 1, 2018	Public meeting notice ran in <i>The Lincoln Journal</i> to advertise the kick-off meeting for November 13, 2018
November 13, 2018	To solicit public input on the goals and objectives of the update. by Breanna Rogers, GEMA Hazard Mitigation Planner, provided a presentation on the purpose and need of the plan along with changes to the process since the 2015.
September 19, 2019	This meeting was to ensure all data collected to date was correct with regards to critical facilities. Mitigation strategies were discussed and critical facility data was reviewed.
February 18, 2020	Mitigation strategies were reviewed for completion, continuing and new ones were added.
September 17, 2020	An advertisement was placed in <i>The Lincoln Journal</i> informing the citizens that a draft was available for review to ensure that the public had ample opportunity to review the first draft of the update and provide input. The notice also included information on the final meeting date before submission to GEMA for review.
September 24, 2020	This meeting was advertised in the legal organ and the meeting was to ensure that the public had ample opportunity to review the plan update before submission to GEMA for review.
TBA	Public Meeting Notice ran in <i>The Lincoln Journal</i> Advertising for public review and the date of final meeting
TBA	After GEMA submitted the plan to FEMA and FEMA Approved Pending Adoption, the public was invited to review the final plan prior to adoption. The meeting was held after the review period to ensure that the public was afforded the opportunity provide input.

SECTION III. ORIGINAL PLAN REVIEW AND REVISION

The Federal Disaster Mitigation Act of 2000 requires an update to the Pre-Disaster Mitigation Plan every five years. The EMA Director was responsible to meet this requirement. The committee, with the assistance of the RC, was involved in the planning process to ensure thorough data collection. All members of the committee were responsible for the evaluation of 2015 plan. During the review process, the committee noted mitigation accomplishments, updated and prioritized mitigation projects, added additional hazard information, developed new goals and objectives, solicited input from the public and made any needed or required revisions. The evaluation included analyzing any changes in the needs and/or capabilities of the county.

SECTION IV. ORGANIZATION OF THE PLAN

The estimated time to complete the plan update was approximately 24 months. Plan completion is identified by adoption of resolution by all jurisdictions. The update contains a Hazard, Risk, and Vulnerability (HRV) Assessment describing the natural hazards typically occurring within the

county, as well as a review of all mitigation goals, objectives, and related courses of action. In addition, plan implementation and maintenance are reviewed, which includes methods to provide opportunities for public involvement.

The hazards included in this plan are considered to have the highest probability of occurrence, vulnerability, potential loss/damages, and highest frequency of occurrence. The plan also identifies and prioritizes hazard mitigation opportunities in each vulnerable area based on the input from the committee members, relevant government agencies, local businesses, and county citizens.

SECTION V. LOCAL HAZARD RISK AND VULNERABILITY, SUMMARY LOCAL MITIGATION PLANNING GOALS OBJECTIVES

The committee, early in the update process, established a set of goals and objectives to ensure the effectiveness of this plan. These goals and objectives established the paradigm for the planning process and proved very successful by the many accomplishments of the 2015 plan. These goals and objectives are as follows:

- To actively involve and gain support from the City of Lincoln and Lincoln County for the reduction of disasters in our community;
- Prioritize identified mitigation projects;
- Seek and implement any grant funding for the reduction of disasters;
- Monitor, evaluate, and update the progress of the plan as needed;
- To form partnerships among local, state, and federal agencies to make Lincoln County more resistant to the effects of disasters;
- Strengthen our communities against the impacts of disasters through the development of new mitigation strategies and strict enforcement of current regulations that have proven effective;
- Reduce and where possible eliminate repetitive damage, loss of life and property from disasters;
- Bring greater awareness throughout the community about potential hazards and the need for community preparedness; and
- To further enhance common mitigation projects and goals between Lincoln County and the Lincoln.

An HRV assessment was accomplished by compiling and reviewing historical data on the location of specific hazards, the value of existing property in hazard locations, and analyzing the risk to life, property and the environment. The committee accomplished the HRV goals and objectives by completing the following steps:

Inventory of Critical Facilities: Critical facilities are crucial for providing essential services to preserve the safety and quality of life of all county residents. In addition, these facilities fulfill important public safety, emergency response, and/or disaster recovery functions. All critical facilities have been added to the Georgia Mitigation Information System (GMIS). Critical facilities for Lincoln County and Lincoln have been identified, updated, mapped, and illustrated in Appendix A.

Hazard Identification: Maps and historical data sources were studied and reviewed to identify the geographic extent, intensity, and probability of occurrence for various hazard events. The 2009 committee identified six major hazards that have the potential to affect Lincoln County: flooding, dam failure, drought, wildfire, earthquake, severe weather (tornados, tropical storms, thunderstorm winds, lightning and hail) and winter storms. An updated comprehensive hazard history for Lincoln County and Lincolnton is provided in Appendix A.

Profiling Hazard Events: The committee analyzed the causes and characteristics of each hazard, their past effect to determine which part of the county's population and infrastructure has historically been vulnerable to each specific hazard. An updated profile of each hazard is discussed in Chapter II.

Vulnerability Assessment: This step was accomplished by comparing each previously identified hazard with the inventory of affected critical facilities and population exposed to each hazard. Worksheet #3a was updated and is provided in Appendix A outlining this step of the HRV assessment.

Estimating Losses: Using the best available data, tax digest data, parcel maps, critical facilities maps and GMIS reports, allowed the committee to estimate damages and financial losses likely to be sustained in a geographic area. Describing vulnerability in terms of dollar losses provides a common framework in which to measure the effects of hazards on critical facilities. All information in this section has been updated (*Appendix A and Appendix D*).

It should be noted that an attempt was made to use FEMA's HAZUS-MH software to predicate losses. The RC has attempted to run the software from the new update. The RC is in communication with FEMA because the software is not working properly. The RC will run scenarios when the issues have been resolved. This has been added as a mitigation goal. Documentation of correspondence with FEMA about the software can be founded in Appendix E.

Mitigation Goals and Objectives: After ensuring that all interested persons had been given ample opportunity to contribute to strategy development, mitigation action steps were given priority status by committee members. To evaluate priorities, committee members used the STAPLEE (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) planning tool prepared by FEMA. Mitigation strategy steps were evaluated using the STAPLEE worksheet as the guiding principle to identify the most beneficial and effective action steps for Lincoln County. Steps were ranked as high priority, medium priority, or low priority. Past occurrences of disasters and historical trend data aided committee members in assigning priorities. A copy of the STAPLEE is located in Appendix D.

SECTION VI. MULTI-JURISDICTIONAL SPECIAL CONSIDERATIONS

Lincoln County and Lincolnton provided active participants in the planning process and have identified mitigation goals, objectives and action items specific to their jurisdiction. The governing bodies for Lincoln County and the City of Lincolnton have formally adopted the Multi-Hazard Pre-Disaster Mitigation Plan.

The City of Lincoln was notified in August 2018 of the requirement concerning the update plan. Representatives from all jurisdictions have worked collectively over the past months to gather data that included researching old records, newspaper articles, databases, historical data, past and present flood plain data, and technical information for the plan. Collected data was forwarded to the RC for review and plan development. The committee held subsequent meetings in an effort to ensure that all information was correct and that all agencies and organizations input was included.

The EMA Director led activities for mitigation planning countywide. The committee goals are to work in partnership with Lincoln toward a common mitigation strategy that significantly reduces vulnerability of natural disasters. Most natural threats overlap jurisdictions and are all susceptible to their affects. Lincoln County and Lincoln share the same desire for protecting and reducing risk through the mitigation projects. Specific risks and areas were identified through working relationships and data collection from all areas of the county and are identified in this plan.

SECTION VII. ADOPTION, IMPLEMENTATION AND MONITORING AND EVALUATION

Adoption Date

Table 1.5

Jurisdiction	Adoption Date
Lincoln County	Added after Approval
City of Lincoln	Added after Approval

The plan was submitted to GEMA for review and then to FEMA for approval. Lincoln County and Lincoln served as active participants in the planning process and have identified mitigation goals, objectives, and actions specific to their jurisdiction. Their respective governing bodies have formally adopted the updated plan. The plan is intended to be implemented to enhance and complement state and federal recommendations for the mitigation of natural hazards in the following ways:

- Substantially reduce the risk of life, injuries, and hardship from the destruction caused by natural hazards;
- Create public awareness for the need of individual preparedness and building safer, disaster resistant communities;
- Develop strategies for long-term community sustainability during community disasters; and
- Develop governmental and business continuity plans that will continue essential private sector and governmental activities during disasters.

FEMA publishes many guidance documents for mitigating natural disasters. The plan fully recognizes, adopts, incorporates, and endorses the following principals:

- Develop a strategic mitigation plan for Lincoln County;
- Enforce current building codes;

- Develop incentives to promote mitigation;
- Incorporate mitigation of natural hazards into land use plans;
- Promote awareness of mitigation opportunities throughout Lincoln County on a continual basis; and
- Identify potential funding sources for mitigation projects.

The private sector is often an overlooked segment of the community during disasters. It is vital this sector is included in mitigation efforts that are consistent with state and federal recommendations as such:

- Develop mitigation incentives with insurance agencies and lending institutions;
- Encourage the creation of a business continuity plan for the continuance of commerce during disasters; and
- Partner with businesses in effort to communicate with customers about the community hazards and possible solutions.

Also, individual citizens must be made aware of the hazards they face. Additionally, they must be educated on how to protect themselves from these hazards. They must be shown that mitigation in their community is an important part of reducing loss of life and property. Their support is critical to the success of any mitigation effort. The plan supports the following FEMA recommendations regarding individual citizens:

- Become educated on the hazards that your community and you may face;
- Become part of the process by supporting and encouraging mitigation programs that reduce vulnerability to disasters; and
- That individual responsibility for safeguarding you and your family prior to a disaster is essential.

Chapter IV. Plan Integration and Maintenance details the formal process to ensure this plan remains an active and relevant document. The maintenance process includes the annual monitoring and evaluating review, and producing a plan revision every five years. Additionally, Lincoln County will develop steps to ensure public participation throughout the maintenance process. Finally, this section describes how Lincoln County will incorporate the mitigation strategies identified in this plan into other relevant planning documents such as the Lincoln County Joint Comprehensive Plan, Short-Term Work program (STWP) and its Local Emergency Operations Plan (LEOP).

SECTION VIII. COMMUNITY DATA

Political Boundaries - Lincoln County



Lincoln County



GA DCA Region 7



Georgia

History: Lincoln County was created on February 20, 1796 and was named after Revolutionary War hero General Benjamin Lincoln, who was a distinguished American patriot, when it became the twenty-fourth county created in Georgia.

Lincoln County has the distinction of being the first county-wide listing in Georgia in the National Register of Historical Places. On September 21, 1993, over 160 historic buildings in Lincoln County were listed in the National Register through the Department of the Interior, National Park Services. The National Register is the federal government's official list of historic buildings, structures, sites, objects and districts worthy of preservation.

Government: Lincoln County is governed by a five member Board of Commissioners. The county is divided into four commission districts from which part time commissioners are elected to serve four-year terms. The terms are staggered, with district one and district two commissioners being elected in the same year as the governor and district three and district four commissioners and the chairman elected in the same year as the presidential election.

The chairman, who is the chief elected officer responsible for the daily operations of the county government, is elected county wide every four years. As the board's presiding officer, the chairman sets the agenda and is responsible for the orderly conduct of commission meetings.

The only municipality is the City of Lincoln, which operates a Mayor and City Council-based system of government with five elected council members. Other officials charged with presiding over activities within the City are the Clerk, Attorney, Finance Officer, Code Enforcement, Zoning, Waster Water Superintendent, Municipal Court Judge and Public Works Director.

Demographics: Presently, Lincoln County has a population of 7,996 persons. Table 1.6 provides a current comparison of both jurisdictions.

Table 1.6

Category	Lincoln County	Lincolnton
Population	7,799	1,823
Number of Households	3,424	665

Category	Lincoln County	Lincolnton
Average Household Size	2.3	2.5
Race - White	66.9%	48.4%
Race - Black	31.6%	50.8%
Race - Other	1.5%	.8%
Median HH Income	\$41,014	\$40,331

Source: US Census Bureau ACS 2018

Economy: In the 2020 the average weekly wage for employment sectors was \$602, compared to the statewide average of \$1,090. The county's 2018 annual per capita income is \$37,333 while Georgia's is \$29,523. In 2019, the total number of employees in Lincoln County was 3,417. Of the total work force, 66.5 percent were employed in the service providing sector and 33.4 percent in the government sector. In 2018, 14.3 percent of the people in Lincoln County were living below poverty level. Since 2019 the unemployment rate in Lincoln County, Georgia has ranged from 3.9 percent. The June unemployment rate is 6.0 percent.

The North American Industry Classification System (NAICS) is the standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. Table 1.7 provides a list of jobs, number of establishments and jobs along with average weekly wages per job for the 1st quarter of 2020.

Table 1.7

Lincoln County Industry Mix – 1 st Quarter 2020				
INDUSTRY	Average Number of Establishments	Average Monthly Employment	Average Monthly Percent	Average Weekly Wages
Goods-Producing	36	306	24.2	792
Agriculture, Forestry, Fishing & Hunting	12	97	7.7	861
Construction	19	176	13.9	797
Manufacturing	5	34	2.7	569
Beverage and Tobacco Product	1	*	*	*
Textile Mills	1	*	*	*
Fabricated Metal Product	1	*	*	*
Machinery	1	*	*	*
Transportation Equipment	1	*	*	*
Service-Providing	100	532	42.0	531
Utilities	1	*	*	*
Wholesale Trade	7	55	4.3	824
Retail Trade	20	149	11.8	474
Transportation and Warehousing	11	35	2.8	667
Information	0	0	0.0	0
Finance and Insurance	5	51	4.0	865
Real Estate and Rental and Leasing	6	21	1.7	692
Professional, Scientific & Technical Svc	7	23	1.8	541
Management of Companies and Enterprises	0	0	0.0	0
Admin., Support, Waste Mgmt, Remediation	6	17	1.3	482

Lincoln County Industry Mix – 1 st Quarter 2020				
Educational Services	0	*	*	*
Health Care and Social Assistance	9	20	1.6	616
Arts, Entertainment, and Recreation	4	17	1.3	456
Accommodation and Food Services	13	107	8.5	227
Other Services (except Public Admin.)	11	37	2.9	424
Unclassified - industry not assigned	5	4	0.3	598
Total - Private Sector	141	842	66.5	626
Total - Government	16	423	33.4	555
Federal Government	3	17	1.3	739
State Government	6	30	2.4	520
Local Government	7	376	29.7	550
ALL INDUSTRIES	157	1,266	100.0	602

Source: Georgia Department of Labor * Industry group does not meet criteria for disclosure

Climate: Lincoln County, GA, gets 46 inches of rain per year. The number of days with any measurable precipitation is 93. On average, there are 218 sunny days per year in Lincoln County, GA. The July high is around 91 degrees and the January low is 30.

Table 1.8

Climate	Lincoln, GA
Rainfall (in.)	45.9
Snowfall (in.)	1
Precipitation Days	93
Sunny Days	218
Avg. July High	91
Avg. Jan. Low	30.4
Comfort Index (higher=better)	30
UV Index	4.8
Elevation ft.	391

Source: <http://www.bestplaces.net/climate/county/georgia/lincoln>

Physical Features: Lincoln County encompasses an area of roughly 257 square miles (164,480 acres), of which 211.1 is land and 45.9 is water. Lincolnton is the county seat and is located about 50 miles north of Augusta. Lincoln County lies just north of the fall line and thus is located within the Piedmont geologic province. Significant aquifer recharge areas in this province are characterized by thick soils and low slopes.

Lincoln County is located in the Southern Piedmont. The soils are developed primarily from residuum of igneous and metamorphic rock. They mainly consist of slightly-to-severely eroded sandy loam and clay loam which range in color from dark gray to brown and red. Subsurface horizons are predominantly sandy clay loams to clays which are often of mottled red, yellow, and gray colors. Most of the soils are well-drained and all are acidic. The Cecil, Appling, Durham, Colfas, and Worsham drainage soil catena is the most prevalent soil of the area, comprising more than 50% of the upland soil. Davidson, Mecklenburg, and Iredell soils are the

most highly weathered and have the deepest solum of the soils in the Southern Piedmont. Wichham and Altavista soils are found on alluvial terraces.

Southern Piedmont is characterized by steep to gently rolling thin and well drained red soil with sandy loam surface layers over sandy clay to clay subsoils. This area has fair to good suitability for building foundations and fair to poor suitability for septic tanks. Soil map is in Appendix A.

Transportation

Vehicle Traffic: Lincolnton is serviced by US 378 from Washington, Georgia in the west and McCormick, South Carolina in the northeast, and by GA 47 from the major population centers of Augusta-Richmond and Columbia counties. In addition, GA 43, GA 79, and GA 220 provide access into Lincolnton from surrounding counties. While no Interstate highways pass through Lincoln County, access to I-20, 22 miles to the south of Lincolnton, is provided by GA 43 to US 78 to the Thomson Exit. Signs along I-20 have recently been added to the existing exit signs which indicate access to Lincolnton via this route. Transportation map is in Appendix A.

Table 1.9

Mileage by Route and Road System Report 445 for 2018			
	Total Road Mileage (2012)	Lane Mileage	Vehicle Miles Traveled (VMT)
State Route	75.504	154	121,796
County Road	281.020	562	111,356
City Street	17.503	35	6,923
Total	374.027	751	240,075

Source: Georgia Department of Transportation, Office of Transportation Data, "445 Series Reports."

Public Transportation: Public transportation is made available to County residents through the Section 18 Program and is not a widespread system found in urban areas. This federally funded program apportions transit assistance funds to rural areas and places having fewer than 50,000 residents. It is administered by the County and the Georgia Department of Transportation (GDOT). Public buses are also used to assist the elderly, providing transportation to senior citizens centers for congregate meals and to deliver meals.

Rail Traffic: There are no rail lines in Lincoln County

Port and Aviation Facilities: Lincoln County does not contain any port or aviation facilities. The nearest local airport is 20 miles away in McDuffie County while the nearest commercial air service is in Augusta, 45 miles away. Atlanta-Hartsfield International Airport, located in Atlanta approximately 130 miles from Lincolnton, provides major commercial airline service. The ports of Savannah (185 miles) and Charleston (230 miles) provide port facilities.

Utilities

Electricity: Rayle EMC and Georgia Power provide electrical service to Lincolnton/Lincoln County.

Natural gas: Natural Gas Services is not available in Lincoln County. Gas is provided by two propane companies: Reed Propane Gas and Wilhoit Gas.

Water: The water supply for Lincoln County is provided by groundwater which provides 0.30 million gallons per day. Lincoln County operates its own water distribution system and purchases treated water from the City of Lincolnton. In the county there are three water storage tanks a total storage capacity of 900,000 gallons. Groundwater is currently withdrawn from four different wells that pump 75-90 gallons of water per minute. Water is treated at the pump and then distributed. The average daily water consumption in Lincoln County is approximately 300,000 gpd, and 350,000 gpd is the maximum daily consumption. The County has small well systems in the Pointe Shores, Eagle Pointe, and Savannah Bay subdivisions. The systems are fed by a total of seven wells.

The City of Lincolnton withdraws water from Lake Thurmond at the James Allen Reed Water Treatment Plant to serve its 902 water customers and wholesales water to Lincoln County, which serves an additional 1300 customers. In 2004, the City completed a \$6 million USDA project to expand the water treatment plant to 2.0-mgd, construct a new 300,000-gallon elevated water tank, and replace water meters. A subsequent project funded by GEFA and completed in 2008 replaced over 15,000 linear feet of small diameter lines throughout the City with 6 inch and larger lines, providing improved pressures, reliability and improved fire protection throughout Lincolnton.

Sewer: The existing Lincoln County sanitary sewer system is located within the County Limits. In 2001, the County constructed its first sanitary sewer collection system into the Old Petersburg Road area in order to eliminate problems of exposed raw sewage from failing septic systems. In 2011, the County extended the sewer system into the Black Jack area in order to also eliminate problems of exposed raw sewage from failing septic systems. Wastewater from the County's collection system is pumped to the nearby City of Lincolnton Water Pollution Control Plant for treatment.

The City of Lincolnton operates a Water Pollution Control Plant off Petersburg Road. The facility is permitted to treat and discharge 1,040,000 gpd to Reedy Creek, a tributary of Clarks Hill Reservoir. The existing City of Lincolnton sewerage system is comprised of approximately 3.6 miles of gravity sewer, five pump stations and approximately 7.9 miles of forcemains.

Solid Waste: Lincoln County has mandatory curbside garbage pickup for every residential property in the County. The County has contracted with a private waste collection service for garbage service, and it is billed to each customer annually on their tax bill. Although the County does not own dumpster sites, they do have a County convenience center for collection and disposal of inert and recycled materials. The County does not have a land fill.

The City of Lincolnton has privatized their garbage collection service for household customers. They have carts instead of dumpsters for convenience in moving trash. There is one dumpster at the city barn where citizens or businesses can dispose of cardboard for recycling purposes only.

Communications

Lincoln County's cable services are provided by three companies: Comcast Communication, DirecTV, and Dish Network. AT&T and Comcast provide internet services in Lincoln County. Local print media consists of *The Lincolnton News* (which serves as the legal organ of the county) and *The Augusta Chronicle*. Lincoln County is served by 13 AM radio stations and 16 FM radio stations. Seven television stations in metro Augusta broadcast in Lincoln County. They are WJBF, WAGT, WRDW, WAAU, WBPI, WCES, and WFXG.

Emergency Services

Response: Enhanced 911 Service (E-911) is available 24-hours a day throughout the county and is operated by the Sheriff's Office.

EMA/EMS and Fire/Rescue: The Lincoln County Office of Emergency Services (LCOES) covers Emergency Management, Emergency Medical Service, and Fire/Rescue. The LCOES facility manages emergencies from calls of distress to disasters. The LCOES employs a staff of 6 Paramedics and 6 AEMT or EMT's. Eight of the full time staff are cross-trained for fire emergencies and many of the part time staff are as well. The LCOES has a volunteer division which handles Auto extrication and emergency medical response, among other needs, when all ambulances are occupied. The LCOES staffs two Ambulances 24/7; however, LCOES has three ambulances total which are rotated in and out of service as needed. LCOES also has one fire engine for which cross-trained personnel from an ambulance crew can operate the fire engine when needed. In addition, a 21' boat is kept for water related events or emergencies.

LCOES uses the CODERED program to send emergency notifications by phone, email, text and social media to keep citizens informed of emergencies such as evacuation notices, utility outages, water main breaks, fire or floods, chemical spills, or other emergency situation. Citizens must register for this service but it is a free method to protect life and offer safety for residents.

Lincoln County has four fire departments (six stations altogether) located in rural Lincoln County and the LCOES has a fire engine. All 70-75 firefighters in the Lincoln County rural fire departments are volunteer. The four rural fire stations are (north to south):

- Beulah VFD located at SR 79 and Gills Point Road with one fire engine, one tanker, and one brush truck;
- Midway VFD, located at 2578 Remsen Road with two engines, two knockers, and one brush truck;
- Loco VFD with two stations (located at 2650 SR 220 and 2248 Lovelace Road) with two engines, one tanker, one brush truck, and one service truck;
- Martin's Crossroads VFD with two stations (located at 3911 Double Branches Road and Bethany Church Road) with two engines, one brush truck and one service truck.

The Volunteer Fire Fighters are trained to the minimum level required by the State Fire Fighter's Standards and Training office.

The City of Lincolnton has one fire department located uptown on Peachtree Street. There are a total of 16 volunteer firefighters who are trained to state standards, however, two are trained to National Professional Qualifications (NPQ) FF2 and two are trained to NPQ FF1 certification.

Law Enforcement: There are two law enforcement agencies operated by the local jurisdictions, the Lincoln County Sheriff's Department and the Lincolnton Police Department. The Sheriff's Department operates the law enforcement department, jail, and the 911 communications with a total of 34 full time employees. Of that number, the law enforcement department has 11 sworn officers who are responsible for patrolling unincorporated Lincoln County. The other 23 employees fully staff the Lincoln County Jail and communications for 911 dispatch. The Lincoln County Jail can house a maximum capacity of 94 inmates (male, female, county, city, and federal). Staff is responsible for inmates' medical, clothing, food, transportation to and from the jail and to court. One unique feature of the Lincoln County Jail is that Lincoln County has a contract with the U.S. Marshall's office for the security and housing of Federal prisoners who are brought to the Jail.

The Lincolnton Police Department employs four sworn officers including the chief. In addition, there is one part-time sworn officer.

CHAPTER II. NATURAL HAZARD, RISK AND VULNERABILITY (HRV)

The committee identified all natural hazards that could potentially affect Lincoln County and Lincolnnton utilizing FEMA Worksheet #1 (Appendix D). Task A of Worksheet #1 instructed committee members to research newspapers and other historical records, existing community plans and reports, as well as internet websites to determine which hazards might occur in Lincoln County. Task B then narrowed the list to only hazards most likely to impact the county by reviewing hazard websites to determine if Lincoln County is located in a high-risk area.

Initially, the committee found that droughts, earthquakes, hail, lightning, hurricanes, extreme heat, severe winter storms, tropical storms, tornados, wildfire, dam failure and windstorms might affect Lincoln County. However, the committee later concluded that some of these hazards did not pose a significant threat. As a result of the planning process, the committee determined that six natural hazards pose a direct, measurable threat: flooding, dam failure, drought, wildfire, severe weather (to include tornados, tropical storms, thunderstorm winds, lightning and hail), and winter storms. The committee profiled each of these hazards using FEMA worksheet #2 and #3a, which included obtaining a base map and then recording hazard event profile information. Of the six hazards mentioned, the entire County is exposed to four: severe weather, winter storms, wildfire and drought. Flooding is isolated to select areas within the floodplain, while dam failure is isolated to areas downstream of the event. Table 2.1 list the potential hazards addressed in this plan with relevant supporting data.

Table 2.1

Chapter II. Section	Updates to Section
I. Natural Hazard Flood	Updated events, critical facilities to GMIS, tax information. Recalculated hazard frequency data. Added information from Hazus-MH analyses.
II. Dam Failure	Updated events, critical facilities to GMIS, tax information Recalculated hazard frequency data.
III. Natural Hazard Drought	Updated events, critical facilities to GMIS, tax information Recalculated hazard frequency data.
IV. Natural Hazard Wildfire	Updated events, critical facilities to GMIS, tax information Recalculated hazard frequency data. Added information from Hazus-MH analyses.
V. Natural Hazard Severe Weather	Updated events, critical facilities to GMIS, tax information Recalculated hazard frequency data. Added information from Hazus-MH analyses.
VI. Natural Hazard Winter Storms	Updated events, added critical facilities to GMIS, updated tax information. Recalculated hazard frequency data
VII. Natural Hazard Earthquake	Updated events, added critical facilities to GMIS, updated tax information. Recalculated hazard frequency data

SECTION I. FLOODING

- A. Hazard Identification:** Flood plains are relatively flat lands that border streams and rivers that are normally dry, but are covered with water during floods. The susceptibility of a stream to flooding is dependent upon several different variables. Among these are topography, ground saturation, rainfall intensity and duration, soil types, drainage, drainage patterns of streams, and vegetative cover. A large amount of rainfall over a short time period can result in flash flood conditions. A small amount of rain can also result in floods where the soil is saturated from a previous wet period or if rain is concentrated in an area of impermeable surfaces such as large parking lots, paved roadways, etc. Topography and ground cover are contributing factors for floods where water runoff is greater in areas with steep slopes and little or no vegetation. The severity of a flood is usually measured in terms of depth of flooding. Data is not normally available for the infrequent flood events in Lincoln and Lincolnton.

Flooding occurs when the volume of water exceeds the ability of a water body (stream, river, or lake) to contain it within its normal banks. Floodplains serve three major purposes: Natural water storage and conveyance, water quality maintenance, and groundwater recharge. These three purposes are greatly inhibited when floodplains are misused or abused through improper and unsuitable land development. For example, if floodplains are filled to construct a building, valuable water storage areas and recharge areas are lost. This causes unnecessary flooding in previously dry areas and can damage buildings and other structures.

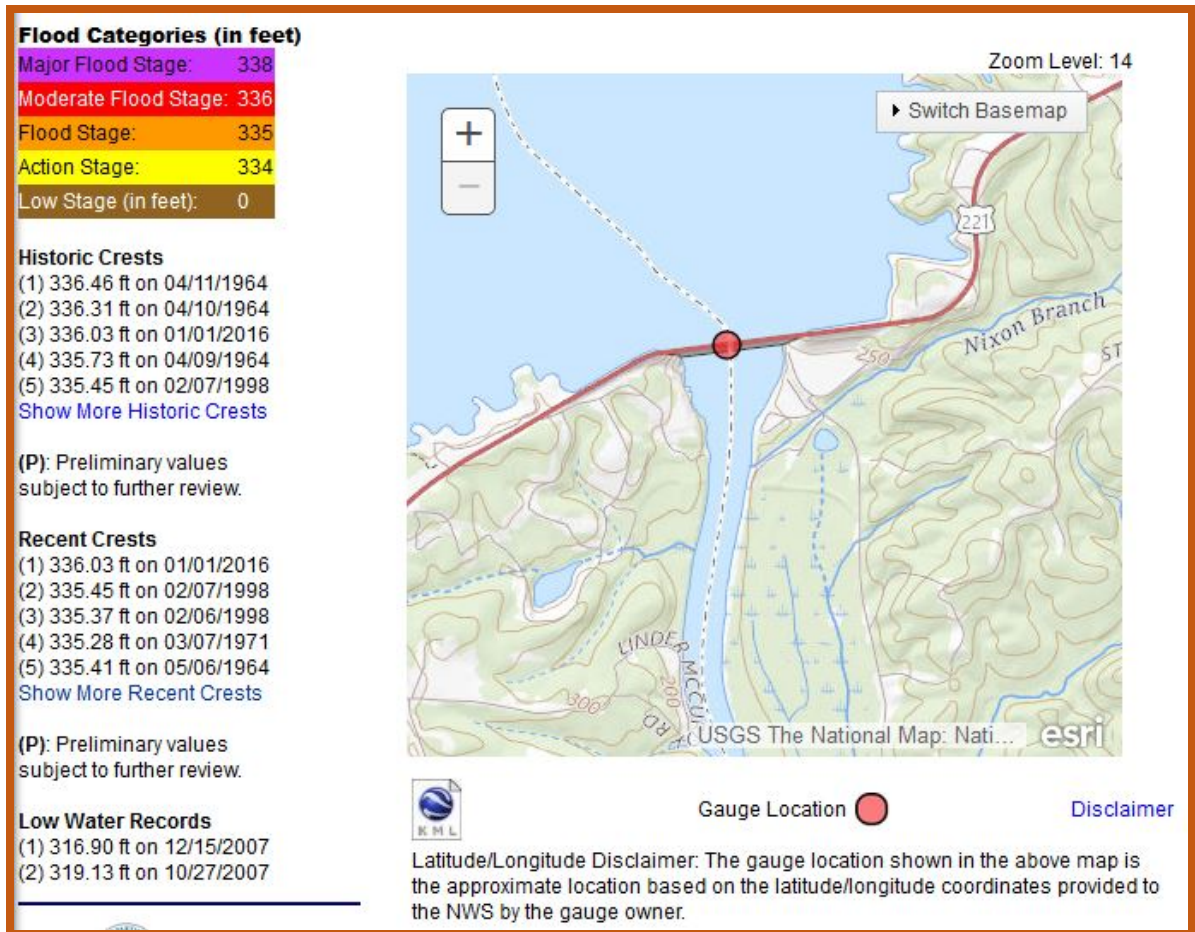
Lincoln County and the City of Lincolnton will continue to comply with NFIP requirements and intend to remain in compliance by enforcing flood plain ordinances that prohibit or severely limit development in floodplains. Table 2.2 provides information about each jurisdictions participation level. They will continue enforcing the adopted Flood Management Ordinances adopted in 2010 and regulating development in known flood hazard areas

Table 2.2

Community Name	Init FHBM Identified	Init. FIRM Identified	Curr. Eff. Map Date	Reg-Emer Date
Lincoln County	None	07/06/2010	07/06/2010(m)	07/06/2010
Lincolnton	None	07/06/2010	09/29/2010(m)	07/06/2010

Source: FEMA Community Status Book

- B. Hazard Profile:** Severe flooding within Lincoln County is a relatively infrequent event. The county has 27 rivers/streams and one reservoirs. Countywide, slopes range from nearly level in the low lying floodplain areas to around 20 percent along the side-slopes of some ridgelines. The low lying areas in the county adjacent to the major streams are subject to the periodic flooding that accompanies major storms. Elevations in the district range from 283 to 483 feet. The gauge at Lake Thurmond on the GA/SC border in Columbia County, directly adjacent to Lincoln County, provides data for Thurmond Lake. This provides the best available data. The gauge data is below, as well as a map of where the gauge is located.

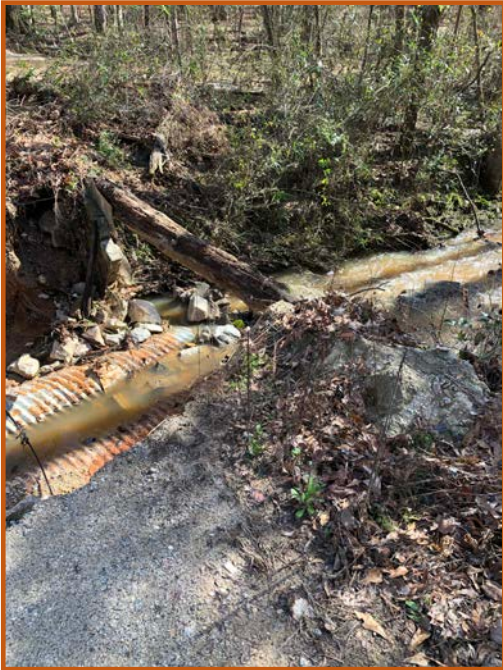


The committee examined historical data from the NCEI, USGS, SHELDUS™, past newspaper articles and conducted interviews on the effects of past flooding events. In the last 70 years seven flooding events were recorded and all occurred in the unincorporated areas of the County. These seven flood events resulted in flash flooding which washed out several roads and wooden bridges. Table 2.3 is a result of information gathered from interviews, newspaper articles, and the NCEI and SHELDUS™ databases.

Table 2.3

Date	Fatality	Inj	PrD	CrD	Event Narrative
8/17/1994	0	0	14,000	0.00	Persistent heavy rain resulted in gradual flooding. Some roads were flooded cut off by rising streams.
12/01/1996	0	0	0.00	0.00	Flood
06/03/2015	0	0	2,000	0.00	Flash Flood
06/03/2015	0	0	2,000	0.00	Flash Flood
06/30/2015	0	0	35,000	0.00	Flash Flood
02/06/2020	0	0	60,000	0.00	Flash Flood
07/06/2020				0.00	Flood

Source: The Lincoln Journal, EMA Director, NCEI and SHELDUS



Rain Event 2/06/2020



Rain Event 07/06/2020

While severe flooding within the county is a very infrequent event, there is a potential for flooding. Flash flooding is the most prominent flooding event as riverbanks overflow due to rainfall. There are no NFIP mitigated properties and no properties have encountered repetitive flooding. The GMIS flood hazard map assigns a flood zone rating of zero for the unincorporated parts of the County and Lincolnton where there are no identified or undesignated flood hazards. There are no Initial Flood Hazard Base Maps for Lincoln County

or the City of Lincoln. FEMA flood maps, updated in 2010, show flood zones along known water ways.

Based on a 20-year hazard cycle the chance of an annual flooding event occurring is:

- 25 percent for all of Lincoln County;
- 25 percent for unincorporated areas of Lincoln County; and
- Less than one percent for Lincoln (See Appendix A and Appendix D).

C. Assets Exposed to Hazard and Estimates of Potential Loss: For determination of assets exposed to risk this plan used maps created from FEMA and available parcel data. Based on FIRMs, tax digests, and FEMA Worksheet #3a, it was determined that all or a portion of 229 structures/properties valued at more than \$13.8 million and a population of 625 are located in known flood prone areas within the unincorporated areas of the County. There are no structure/properties in known flood prone areas in the City of Lincoln.

All 331 structures/properties have been identified by federal flood plain maps and/or parcel maps and not all structures/properties will experience damage from floods. Further studies, including professional surveys, would have to be conducted to determine exactly which structures are at consistent risk from flooding. The extent of each flood varies according to the amount of rainfall in a given area. If a complete loss of the 331 structures/properties located within flood zones would result in approximately \$13.8 million in damages assuming 100 percent loss, a 75 percent loss would represent approximately \$10.3 million, a 50 percent loss would represent approximately \$6.9 million, and a 25 percent loss would represent approximately \$ 3.4 million.

For determination of assets exposed to risk this plan provides information from the Hazard Risk Analyses performed by the Carl Vinson Institute of Government at the University of Georgia using the FEMA Hazus-MH risk assessment tool. This tool enables communities of all sizes to predict estimated losses from floods, hurricanes, earthquakes, and other related phenomena and to measure the impact of various mitigation practices that might help reduce those losses. The probabilistic risk assessment involves an analysis of a 1% annual chance riverine flood event (100-Year Flood) and a 1% annual chance coastal flood.

Buildings in Lincoln County are vulnerable to flooding from events equivalent to the 1% riverine flood. The economic and social impacts from a flood of this magnitude can be significant. All damage is to residential property in the unincorporated areas of the county. No properties within the city limit were effected. The analysis identified no essential critical facility subject to damage in the riverine 1% probability floodplain. Hazus-MH estimates 61 households might be displaced as a result of flooding. This number includes households evacuated within or very near to the inundated area. Displaced households represent 182 individuals, of which 10 may require short-term shelter. Table 2.4 provides a summary of the potential flood-related building damage by jurisdiction from a 1% flood.

Table 2.4

Occupancy	Total Buildings in the Jurisdiction	Total Buildings Damaged in the Jurisdiction	Total Building Exposure in the Jurisdiction	Total Losses to Buildings in the Jurisdiction	Loss Ratio of Exposed Buildings to Damaged Buildings in Jurisdiction
Unincorporated					
Residential	3,845	6	\$418,608,350	\$157,730	0.04%
County Total					
	3,845	6	\$418,608,350	\$157,730	

Hazus-MH estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories:

- Finishes (dry wall, insulation, etc.)
- Structural (wood, brick, etc.)
- Foundations (concrete slab, concrete block, rebar, etc.)

The analysis estimates that an approximate total of 2,067 tons of debris might be generated:

1) Finishes- 809 tons; 2) Structural – 484 tons; and 3) Foundations- 775 tons.

All critical facilities have a hazard score of zero based on GMIS. The GMIS has no repetitive flooding NFIP property and no NFIP mitigated properties or properties that have encountered repetitive flooding where there was loss. There are no estimate for future structures since future development will be limited in known floodplains. (*See Appendix A and Appendix D*).

D. Land Use and Development Trends: The Lincoln County Comprehensive Plan 2018-2022 presents future development scenarios for Lincoln County. The land use patterns have A Table 2.5, is an analysis of the existing land uses located within Lincoln County. The greatest percent of land is Agricultural with 40.32 percent as A-1 Agricultural is defined as rural farm or residences where intensive land development is unlikely to occur. A total of 7.96% is designated as A-2-Interior Agricultural designated for residences or rural farming where intensive land development is unlikely to occur in the next five to ten years. The County is heavily bordered by Clarks Hill Lake. A total of 15.85 percent of land is designated as A-3 Lakefront Agricultural. This zoning contains that rural farmland, nonfarming related residences, and agricultural pursuits in areas that will eventually develop as prime lakefront residential property. The boundaries of Lincoln County also include a freshwater coast that extends for 413 miles. Approximately 31.90 percent of the county jurisdiction is a part of Clarks Hill Lake. Any development that takes place in the flood-prone zone will increase the vulnerability to property and life. The County is aware of the need to regulate development in flood-prone zones.

Table 2.5

Unincorporated Lincoln County		
	Acres	Percent
Agricultural Districts		
A-1 Agricultural	65,138.91	40.32%
A-2 Interior Agriculture	12,864.81	7.96%
A-3 Lakefront Agricultural	25,601.88	15.85%
Residential Districts		
R-1 Low-Density Residential	3,558.71	2.20%
R-2 Medium-Density Residential	1,126.83	.70%
R-3 High-Density Residential	1,277.06	.79%
Commercial Districts		
C-1 Neighborhood Commercial	51.81	.03%
C-2 General Commercial	168.19	.10%
C-3 Heavy Commercial	5.54	0%
Industrial Districts		
M-1 Light Industrial	3.17	0%
M-2 General Industrial	220.34	.14%
Other Districts		
Water	51,530.99	31.90%
Total Acreage	161,548.25	100%

Source: Analysis by CSRA RC Staff

Lincolnton has a very different land use pattern. Table 2.6 of the existing land uses located within the City shows that 70.25 percent of land is designated as R-1 Single-family Residential and 7.94 percent is Multi-Family Residential. The City allows a small percentage of 1.56 percent for RMH Manufactured Home Residential. Collectively, the City has almost 80 percent residential zoning. Residential living is the highest priority for the City to address. D-1 Future Development has 11.25 percent of the city designated for future growth. These areas can be considered for more modern housing developments or for commercial ventures.

Table 2.6

City of Lincolnton Zoning		
	Acres	Percent
Residential Districts		
R-1 Single-Family Residential	1,476.75	70.25%
R-2 Multi-Family Residential	166.82	7.94%
RMH Manufactured Home Residential	32.70	1.56%
Nonresidential Districts		
D-1 Future Development	236.55	11.25%
P-1 Professional	7.91	.38%
C-1 General Commercial	132.25	6.29%
C-2 Highway-Oriented Commercial	43.31	2.06%
I-1 Industrial	5.44	.26%

Utility	.35	.02%
Total Acreage	2,102.08	100%

Source: Analysis by CSRA RC Staff/Tax Assessor

Lincoln County's growth and future development is fueled, predominantly, by the 413-mile coastal waterfront on Clarks Hill Lake that encompasses the eastern and southern county lines. This lakeshore border comprises Lincoln County's greatest attraction for recreational leisure and her economy is built around complementary services, business, and industry that include boat manufacturing, aquaponic use, recreational leisure, and a second home community.

The joint comprehensive plan states that water quantity and quality are identified as the most important natural resources issues Lincoln County. Development regulations for impaired watersheds, groundwater recharge areas with high susceptibility to pollution, water supply watersheds, and along Lake Thurmond need to be continually updated. Land use maps can found in Appendix B.

- E. Multi-Jurisdictional Concerns:** During a large-scale flood event, many portions of the County could potentially be impacted by flooding. However, the area's most prone to flooding have historically been those areas located within the 100-year floodplain. Since flooding has the potential to affect all of the County, any mitigation steps taken related to flooding should be undertaken on a countywide basis to include the city.
- F. Hazard Summary:** Severe flooding within Lincoln County is a relatively infrequent event. The county has 27 rivers/streams and one reservoirs. There has been seven flooding events recorded in the last 70 years. These events resulted in roads washing out. The hazard frequency table calculates a 25 percent chance of an annual flooding event. Hazard frequency tables can be found in Appendix D. Severe flooding, although relatively rare in occurrence, has the potential to inflict significant damage in Lincoln County. Mitigation of flood damage requires the community to know where flood prone areas are, what roads and bridges may be affected, and which facilities fall below anticipated flood levels. The committee recognized the potential for losses caused by flooding and identified it as a hazard requiring mitigation measures.

Based on Hazus-MH 3,485 residential properties have the potential to be effected by a flood event. Hazus-MH estimates 61 households displacing 182 individuals as a result of flooding. The committee identified specific mitigation goals, objectives and action items related to flooding, which can be found in Chapter III, Section I.

SECTION II. DAM FAILURE

- A. Hazard Identification:** Dam failures and incidents involve unintended release or surges of impounded water. They can destroy property and cause injury and death downstream. While they may involve the total collapse of a dam, that is not always the case. Damaged spillways, overtopping of a dam or other problems may result in a hazardous situation. Dam failures

may be caused by structural deficiencies in the dam itself. Dam failures may also come from other factors including, but not limited to, debris blocking spillways, flooding, earthquakes, improper operation and vandalism. Dam failures are potentially the worst flood events. When a dam fails, a large quantity of water is suddenly released downstream, destroying anything in its path and posing a threat to life and property.

Dams are classified into three categories:

- High Hazard – Dams where failure or disoperation will probably cause loss of human life.
- Significant Hazard – Dams where failure or disoperation will probably not result in loss of life, but can cause economic loss, environmental damage, and disruption of lifeline facilities or other concerns.
- Low Hazard – Dams where failure or disoperation will probably not result in loss of life and cause only low economic and/or environmental loss.

B. Hazard Profile: The 2018 National Inventory of Dams has four low-hazard dams in Lincoln County. All are located in the unincorporated areas of the County. *(It is noted that five dams are listed in the NID but Water Oak Lake Dam is located in Oconee County).* A complete table of the dams can be found in Appendix A. Based on interviews and best available data there have been no dam failure events within the last 70 years. Based on a 20-year hazard cycle the estimated annual probability of a future event is less than one percent. Since there is no history of dam failure or dam study, there isn't enough information to describe the extent of a dam failure at this time. *(See Appendix A and Appendix D).*

C. Assets Exposed to Hazard and Estimate of Potential Losses: The number of dams posing potential loss of life hazards to Lincoln County residents and the number of residents living downstream from these potentially hazardous dams is unknown at this time. Based on best available data, the residents of Lincoln County do not appear to be at risk due to dam failure. Data is not available at this time for the committee to determine what assets are exposed to risk due to dam failure in the unincorporated areas of Lincoln County.

The potential losses due to dam failure is unknown and cannot be estimated at this time. The GMIS report has 48 critical facilities with a replacement value at more than \$63.7 million. The County has population of 7,799 and 16,652 structures/properties valued at more than \$1 billion at risk of potential loss. *(See Appendix A and Appendix D)*

D. Land Use and Development Trends: The focus of Lincoln County's growth is on the natural resources; the lake area. The area adjacent to the Army Corps of Engineers property, is being developed into residential subdivisions. Agricultural and forestry land located in this area will eventually decrease, and residential uses will increase. This will decrease the loss to agriculture and forestry land due to drought. The increase in residential will put a greater strain on the water systems of the city and county. Land use tables are in Appendix B.

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

F. Hazard Summary: Dam failures and incidents involve unintended release or surges of impounded water. They can destroy property and cause injury and death downstream. While they may involve total collapse of a dam, that is not always the case. There have been no known dam failures events in the last 70 years. The committee recognized the potential for losses caused by dam failure and identified it as a hazard requiring mitigation measures. To summarize, there are approximately 16,652 structures/properties in the county totaling more than \$1 billion with a population of 7,799. The committee identified specific mitigation goals, objectives and action items related to dam failure, which can be found in Chapter III, Section III.

SECTION III. DROUGHT

A. Hazard Identification: The committee reviewed historical data from the Palmer Drought Index, NCEI, DNR, USDA and GFC in researching drought conditions. Drought conditions are identified by a prolonged period of moisture deficiency. Climatologists and hydrologists use five indicators of drought: rainfall, soil moisture, stream flows, lake levels and groundwater level. Drought conditions affect the cultivation of crops as well as water availability and water quality. Drought is also a key factor in wildfire development. Wildfire will be addressed in a separate HRV.

B. Hazard Profile: Drought is not spatially defined and has the potential to affect the entire planning area equally. Lincoln County encompasses an area of roughly 257 square miles, of which 211.1 is land and 45.9 is water. The county is comprised of 164,480 acres- 29,376 (17.9) acres are water, 18,292 (11.1 percent) is dedicated to agricultural and 82,009 acres (49.8 percent) is dedicated to forestry. According to the USDA 2017 Census of Agriculture there are 3,481 heads of livestock in the county.

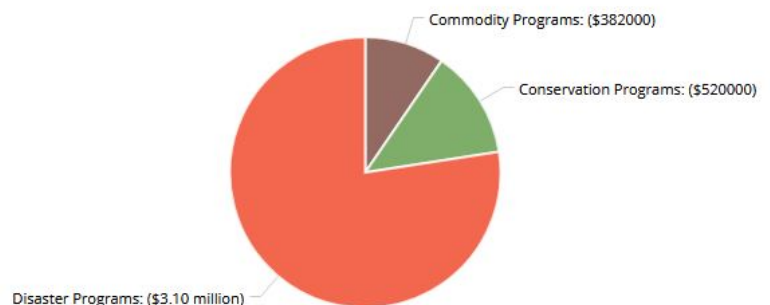
In the last 70 years, there have been 25 reported drought events, with four occurring since the last update. *Historical data is only for the county as a whole.* Agricultural losses due to drought are the primary losses. No critical facilities have sustained any damage or functional downtime due to dry weather conditions.

According to the EWG Farm Subsidies Database, from 1995-2019, Lincoln County received a total of \$4 million in farm subsidy payments of which \$3.1 million was for disaster assistance.

A severe, prolonged drought would mainly affect the 60.9 percent of

Lincoln County, Georgia Farm Subsidy Information

Farmers received \$4.00 million in subsidies 1995-2019



the county that makes up the timber and agriculture business. This could result in loss of crops, livestock and create the conditions for a major wildfire event. This would also have an impact on Lincolnton and Lincoln County's water systems as water restrictions would be enforced. Based on a 20-year hazard cycle history there is a 105 percent chance of an annual drought event for the county as a whole (*See Appendix A and Appendix D.*)

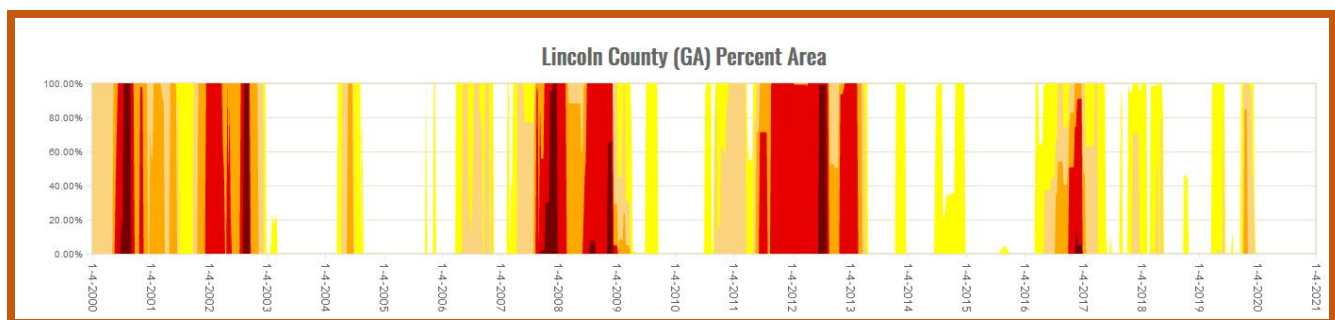
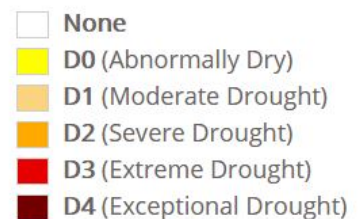
The Palmer Index is most effective in determining long-term drought, a matter of several months, and is not as good with short-term forecasts (a matter of weeks). The Palmer Index uses a zero abnormally dry, and drought is shown in terms of minus numbers; for example, minus two is severe drought, minus three is extreme drought, and minus four is exceptional drought.

NCEI data for surrounding counties and a review of The Palmer Index reveals there have been 31 drought events. One of the longest running droughts in recent history began in April 2011 and ended in January 2013. The County was in a moderate drought ran October 2019 to December 2019.

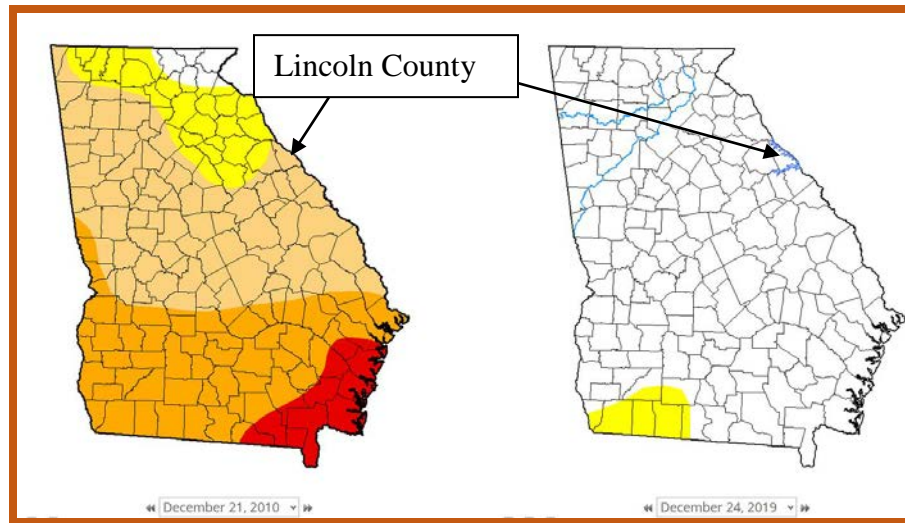
Data from <https://droughtmonitor.unl.edu/Data/DataDownload/ComprehensiveStatistics.aspx> reveals that from January 2000 to April 2020 the county experienced the following drought conditions:

- 174 weeks where all or a portion of the county experienced level D0 - Abnormally Dry;
- 139 weeks where all or a portion of the county experienced level D1 - Moderate Drought;
- 112 weeks where all or a portion of the county experienced level D2 - Severe Drought;
- 154 weeks where all or a portion of the county experienced level D3 - Extreme Drought; and
- 30 weeks where all or a portion of the county experienced level D4 - Exceptional Drought. (*US Drought Monitor Tables can be found in Appendix A*)

The drought monitor graph below demonstrates the drought extent from January 2000 to January 2020.



The maps below show drought conditions for December 2010 and 2019



Historical data is only for the county. A severe, prolonged drought would mainly affect the 60.9 percent of the county that makes up the timber and agriculture business. This could result in loss of crops, livestock and create the conditions for a major wildfire event. This would also have an impact on the Lincolnton's and the County's water system, as water restrictions would be enforced. Based on a 20-year hazard cycle history there is a 105 percent chance of an annual drought event for the county as well as the city (*See Appendix A and Appendix D.*)

C. Assets Exposed to Hazard and Estimate of Potential Losses: Drought conditions typically pose little or no threat to structures; however, fires can occur as a result of dry weather. The greatest threat to assets in the county is to forestry and agricultural properties and livestock. No damage to critical facilities is anticipated as a result of drought conditions. Crop damage cannot be accurately quantified due to several unknown variables: duration of the drought, temperatures during the drought, severity of the drought, different crops require different amounts of rainfall, and different growing seasons. Based on FEMA Worksheet #3a the potential loss in agricultural and forestry properties for each jurisdiction is:

- Lincolnton has 35 agricultural/forestry structures/properties valued at approximately \$3.2 million with an estimated population of 27.
- Unincorporated Lincoln County has 2,218 agricultural/forestry structures/properties valued at approximately \$205 million with an estimated population of 238.

There are a total of 2,253 agricultural/forestry properties in Lincoln County valued at approximately \$208 million with a population of 265 that are at the greatest risk due to a drought event (*See Appendix A and Appendix D.*)

D. Land Use and Development Trends: Lincoln County currently has no land use or development trends related to drought conditions. When drought conditions do occur the City follows the restrictions set forth by the Georgia DNR Drought Management Plan and the

Statewide Outdoor Water Use Schedule. These guidelines are enforced by both water departments.

The Georgia Water Stewardship Act went into effect statewide on June 2, 2010. It allows daily outdoor watering for purposes of planting, growing, managing, or maintaining ground cover, trees, shrubs, or other plants only between the hours of 4 p.m. and 10 a.m. by anyone whose water is supplied by a water system permitted by the Environmental Protection Division.

The following outdoor water uses also are allowed daily at any time of the day by anyone:

- Commercial Agriculture
- Alternative sources of water (grey water, rain water, condensate, etc.)
- Irrigation of food gardens
- Irrigation of newly installed or reseeded turf for the first 30 days
- Drip irrigation or soaker hoses
- Hand watering with a shut off nozzle
- Water from a private well
- Irrigation of plants for sale
- Irrigation of athletic fields, golf courses or public recreational turf
- Hydroseeding

Outdoor water use for any purposes other than watering of plants, such as power washing or washing cars, is still restricted to the current odd/even watering schedule.

- Odd-numbered addresses can water on Tuesdays, Thursdays and Sundays.
- Even-numbered and unnumbered addresses are allowed to water on Mondays, Wednesdays and Saturdays.

The focus of Lincoln County's growth is on the natural resources; the lake area. The area adjacent to the Army Corps of Engineers property, is being developed into residential subdivisions. Agricultural and forestry land located in this area will eventually decrease, and residential uses will increase. This will decrease the loss to agriculture and forestry land due to drought. The increase in residential will put a greater strain on the water systems of the city and county. Land use tables are in Appendix B.

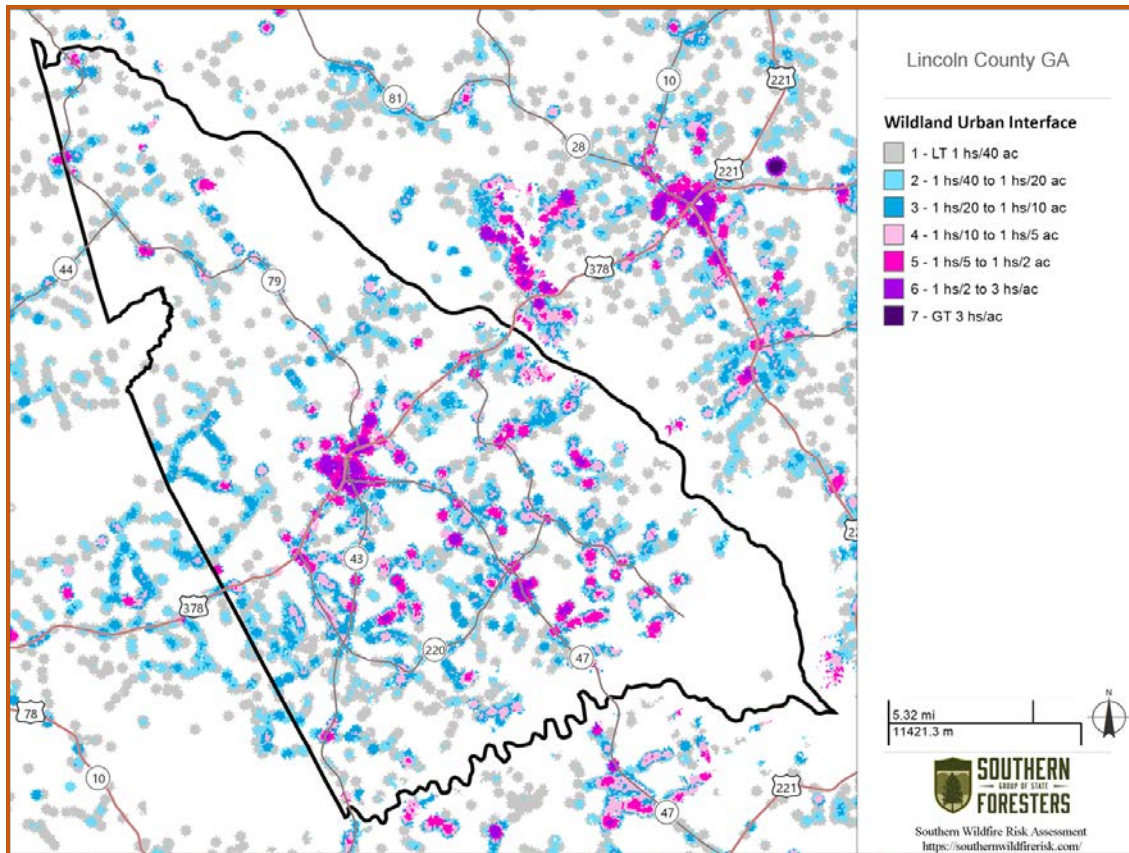
E. Multi-Jurisdictional Concerns: Agricultural losses associated with drought are more likely to occur in the rural, less concentrated areas of the county. Although Lincoln County is less likely to experience drought related losses, they should not be excluded from mitigation considerations. Drought creates a deficiency in water supply that affects water availability and water quality. Drought may increase the likelihood of wildfires and flooding. Water shortages can impede firefighting efforts at all levels. Drought creates a deficiency in water supply that affects water availability and water quality. Droughts can and have severely affected private wells, municipal and industrial water supplies, agriculture, stream water quality, recreation at major reservoirs hydropower generation, navigation, and forest resources.

- F. Hazard Summary:** Drought is not spatially defined and equally affects the entire planning area. Droughts do not have the immediate effects of other natural hazards, but sustained drought can cause severe economic stress to not only the agricultural interests in Lincoln County, but to the entire State of Georgia. The potential negative effects of sustained drought are numerous. *Historical data is available only for the county as a whole.* Based on a 20-year cycle hazard history there is a 105 percent chance of an annual drought event in Lincoln County. In addition to an increased threat of wildfires, drought can affect private wells, municipal and industrial water supplies, stream-water quality, water recreation facilities, hydropower generation, as well as agricultural and forest resources.

In summary, for Lincoln County as a whole, there are a total of 2,253 agricultural/forestry properties valued at approximately \$208 million and include 5,036 heads of livestock and an estimated population of 265 which have the greatest potential to be damaged by drought. There is a population of 7,799 and approximately 16,652 structures/properties in the county with a value just slightly less than \$1.2 billion which could be affected as a result of drought conditions. Drought mitigation goals and objectives are in Chapter III, Section III.

SECTION IV. WILDFIRE

- A. Hazard Identification:** A wildfire is any uncontrolled fire occurring on undeveloped land that needs fire suppression. The potential for wildfire is influenced by three factors: the presence of fuel, the area's topography and air mass. There are three different classes of wildland fires. A surface fire is the most common type and burns along the floor of a forest, moving slowly and killing or damaging trees. A ground fire is usually started by lightning and burns on or below the forest floor. Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees. Wildfires are usually signaled by dense smoke that fills the area for miles around. Wildfires by lightning have a very strong probability of occurring during drought conditions. Drought conditions make natural fuels (grass, brush, trees, dead vegetation) more fire-prone.
- B. Hazard Profile:** Lincoln County encompasses an area of roughly 257 square miles, of which 211.1 is land and 45.9 is water. The county is comprised of 164,480 acres- 29,376 (17.9) acres are water, 18,292 (11.1 percent) is dedicated to agricultural and 82,009 acres (49.8 percent) is dedicated to forestry. Given the right weather conditions and variables, wildfire, due to natural causes, creates a potential threat to the lives of residents and property in the planning area. The NCEI has never reported a significant wildfire event in Lincoln County. The committee reviewed historical data from the GFC, which is not found in the NCEI database, to research wildfire events. The GFC provides wildfire data on man-made and natural wildfire occurrences for the county as a whole and not for individual jurisdictions. According to Georgia Forestry data, from 1957 to 2018, there have been 1,245 fire events burning a total of 4,895 acres for an average extent of 3.9 acres. Based on a 20-year hazard cycle there is a 1,340 percent chance of an annual event. The drier the condition the more susceptible the county is to wildfire. The map below shows the Wildland Urban Interface (WUI) for Lincoln County and Lincolnton. The Fire Intensity Map with Scale and GMIS Wildfire Maps can be found in Appendix A.



C. Assets Exposed to Hazard and Estimate of Potential Losses: While wildfires are more likely to occur in the county outside of the incorporated areas where forestry and woodland are prevalent. The committee concluded that wildfires present a threat to all existing buildings, infrastructure and critical facilities since wildfires can spread throughout the county and into the urban areas. Wildfire does have the potential to spread into the incorporated areas and cause extensive damage to existing structures/properties. FEMA Worksheet #3a located in Appendix D shows the number and types of buildings found in Lincoln County, as well as the value of these structures/properties and their population. Table 2.7 shows assets by jurisdiction that could potentially be exposed to wildfire hazard.

Table 2.7

Jurisdiction	Number of Structure/Properties	Value \$	Population
Lincoln County (Unincorporated)	14,726	1,067,682,878	5,976
Lincolnton	1,926	128,441,752	1,823
TOTAL FOR COUNTY	16,652	1,196,124,630	7,799

Source: Georgia Department of Revenue Lincoln County

Table 2.8 reveals all critical facilities in the county by jurisdiction, number of facilities, hazard score, replacement value, and daily occupancy exposed to wildfire hazard. A complete breakdown of each jurisdiction by hazard can be found in Appendix A.

Table 2.8

Jurisdiction	Hazard Score	# of Critical Facilities	Replacement Value \$	Content Value \$	Occupancy	
					Day	Night
Lincoln County	4	2	730,850	0	12	0
Lincoln County	3	21	25,498,810	2,357,271	1,055	54
Lincoln County	2	5	805,000	1,200,000	0	0
Lincoln County	1	1	200,000	0	0	0
Lincoln County	0	3	24,464,734	1,066,205	300	0
Lincolnton	3	9	1,729,836	116,143	12	1
Lincolnton	1	1	4,127,094	105,936	4	1
Lincolnton	0	6	6,226,444	109,821	2	0
TOTAL		48	63,782,768	4,955,376	1,385	56

The GMIS has two critical facilities with a hazard score of four (high), 30 with a hazards score of three (moderate), five with a hazard score of two (low) and two with a hazard score of one (very low probability). The remaining nine critical facilities have a hazard score of zero. The 48 critical facilities with a wildfire hazard score greater than zero have an estimated potential loss of more than \$33 million. The loss for all critical facilities is \$63,782,768. According to FEMA Worksheet #3a there are 16,652 structures/properties with a population of 7,799 with a value of slightly less than \$1.2 billion worth of assets countywide. If a wildfire started, it is not likely that all of these structures/properties would be affected (*See Appendix A and Appendix D*).

- D. Land Use and Development Trends:** The focus of Lincoln County's growth is on the natural resources; the lake area. The area adjacent to the Army Corps of Engineers property, is being developed into residential subdivisions. Agricultural and forestry land located in this area will eventually decrease, and residential uses will increase. This will decrease the loss to agriculture and forestry land due to drought. The increase in residential will but a greater statin on the water systems of the city and county. Land use codes do provide for fire protection to any proposed major and minor developments connected to the public water supply system, and minimum fire flows shall be computed based on standards promulgated by the Lincolnton-Lincoln County Fire Department. For those proposed developments that will not have immediate access to the public water supply system, such standards and computations should be based on the National Fire Protection Association *Standards on Water Supply for Suburban and Rural Fire Fighting*. Land use tables are in Appendix B
- E. Multi-Jurisdictional Concerns:** Lincoln County is 60% timber, forest or agricultural land. Wildfire does have the potential to spread to urban areas thus affecting the entire county. As a result, any mitigation steps taken related to wildfire should be undertaken on a countywide basis and include the incorporated jurisdiction.
- F. Hazard Summary:** Lincoln County encompasses an area of roughly 257 square miles, of which 211.1 is land and 45.9 is water. The county is comprised of 164,480 acres- 29,376 (17.9) acres are water, 18,292 (11.1 percent) is dedicated to agricultural and 82,009 acres (49.8 percent) is dedicated to forestry. Given the right weather conditions and variables,

wildfire, due to natural causes, creates a potential threat to the lives of residents and property in the planning area. According to Georgia Forestry data, from 1957 to 2018, there have been 1,245 fire events burning a total of 4,895 acres for an average extent of 3.9 acres. Based on a 20-year hazard cycle there is a 1,340 percent chance of an annual event. The drier the condition the more susceptible the county is to wildfire.

The GMIS has two critical facilities with a hazard score of four (high), 30 with a hazards score of three (moderate), five with a hazard score of two (low) and two with a hazard score of one (very low probability). The remaining nine critical facilities have a hazard score of zero. The 48 critical facilities with a wildfire hazard score greater than zero have an estimated potential loss of more than \$33 million. The loss for all critical facilities is \$63,782,768. According to FEMA Worksheet #3a there are 16,652 structures/properties with a population of 7,799 with a value of slightly less than \$1.2 billion worth of assets countywide. Mitigation Goals and Objectives concerning wildfires are in Chapter III, Section III.

SECTION V. SEVERE WEATHER, INCLUDING TORNADOS, TROPICAL STORMS THUNDERSTORM WINDS, LIGHTNING, AND HAIL

- A. Hazard Identification:** The committee reviewed historical data from the county's own weather database, the NCEI, SHELDUSTM, newspapers and citizen interviews in researching the past effects of severe weather. The month of February marks the beginning of the severe weather season in the South, which can last until the month of August. Five types of severe weather were identified by the mitigation team: (1) tornados, (2) tropical storms, (3) thunderstorm winds, (4) lightning and (5) hail.

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm or the result of a hurricane and is produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. Tornados are among the most unpredictable and destructive of weather phenomena and can strike at any time of the year if the essential conditions are present. The damage from a tornado is a result of the high wind velocity and wind-blown debris. The positions of the subtropical and polar jet streams often are conducive to the formation of storms in the Gulf region. Table 2.9 shows the original Fujita Scale and the Enhanced Fujita Scale (in use since 2007) to rate the intensity of a tornado by examining the damage caused by the tornado after it has passed over a man-made structure.

Table 2.9

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

5	261-318	262-317	5	200-234	5	Over 200
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Source: NOAA

The second type of severe weather is tropical storms. Tropical Storms are an organized system of strong thunderstorms with a defined surface circulation and maximum sustained winds of 39–73 MPH (34–63 knots). In this area they generally occur as a result of a hurricane or tropical system that has come inland.

The third severe weather event, thunderstorm winds, can cause death and injury, power outages, property damage, and can disrupt telephone service, severely affect radio communications and surface/air transportation which may seriously impair the emergency management capabilities of the affected jurisdictions.

Thunderstorm winds arise from convection (with or without lightning), with speeds of at least 50 knots (58 mph), or winds of any speed producing a fatality, injury, or damage. Severe thunderstorms develop powerful updrafts and downdrafts. An updraft of warm, moist air helps to fuel a towering cumulonimbus cloud reaching tens of thousands of feet into the atmosphere. A downdraft of relatively cool, dense air develops as precipitation begins to fall through the cloud. Winds in the downdraft can reach in excess of 100 MPH. When the downdraft reaches the ground it spreads out forming a gust front: the strong wind that kicks up just before the storm hits. As the thunderstorm moves through the area, the full force of the downdraft in a severe thunderstorm can be felt as horizontal, straight-line winds with speeds well over 50 MPH. Straight-line winds are often responsible for most of the damage associated with a severe thunderstorm. Damaging straight-line winds occur over a range of scales. At one extreme, a severe single-cell thunderstorm may cause localized damage from a microburst, a severe downdraft extending not more than about two miles across. In contrast, a powerful thunderstorm complex that develops as a squall line can produce damaging winds that carve a path as much as 100 miles wide and 500 miles long.

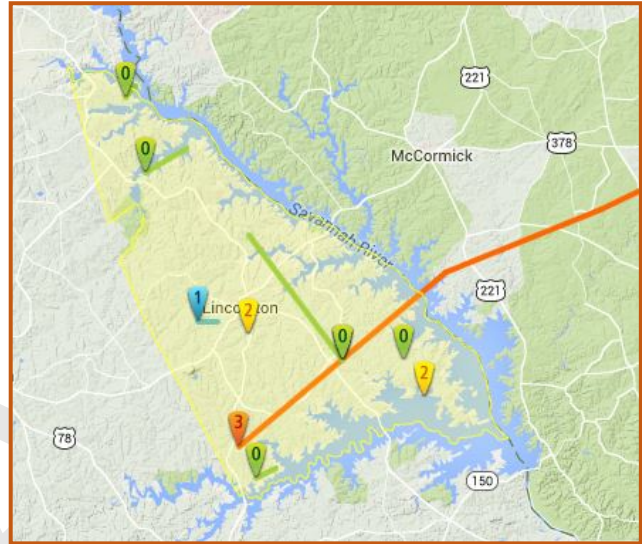
The fourth severe weather event is lightning. Lightning results from the buildup and discharge of electrical energy between positively and negatively charged areas. Rising and descending air within a thunderstorm separates these positive and negative charges. Water and ice particles also affect charge distribution. A cloud-to-ground lightning strike begins as an invisible channel of electrically charged air moving from the cloud toward the ground. When one channel nears an object on the ground, a powerful surge of electricity from the ground moves upward to the clouds and produces the visible lightning strike. Lightning often strikes outside of heavy rain and may occur as far as 10 miles away from any rainfall.

The fifth severe weather event is hail. Hailstones are created when strong rising currents of air called updrafts carry water droplets high into the upper reaches of thunderstorms where they freeze. These frozen water droplets fall back toward the earth in downdrafts. In their descent, these frozen droplets bump into and coalesce with unfrozen water droplets and are then carried back up high within the storm where they refreeze into larger frozen drops. This cycle may repeat itself several times until the frozen water droplets become so large and heavy that the updraft can no longer support their weight. Eventually, the frozen water droplets fall back to earth as hailstones.

Hail can also be a destructive aspect of severe thunderstorms. Hail causes more monetary loss than any other type of thunderstorm-spawned severe weather in the United States, annually producing about one billion dollars in crop damage. Storms that produce hailstones only the size of a dime can produce dents in the tops of vehicles, damage roofs, break windows and cause significant injury or even death.

- B. Hazard Profile:** Tornadoes, tropical storms, thunderstorm winds, lightning and hail can affect the entire county given the right conditions. Since the exact time and location of a severe weather event is not always predictable, all of Lincoln County is vulnerable to the threats of severe weather.

Based on historic data, there have been 10 reported tornadoes in the planning area. None have occurred since the last update. All occurred in the unincorporated areas of the county. The highest magnitude reported was an F3 with a path 5 miles long and 400 yards wide. Reported property and crop damages for all 10 events totaled \$812,000 with no injuries or fatalities reported. Tornadoes tend to strike in somewhat random fashion, making the task of calculating a recurrence interval extremely difficult.



Source: Georgia Tornado History Project <http://www.tornadohistoryproject.com/tornado/Georgia>

Using a 20-year hazard cycle, frequency tables calculates an annual chance for a tornado event at:

- 25 percent for Lincoln County as a whole;
- 25 percent for Unincorporated Lincoln County; and
- Less than one percent for Lincolnton.

Table 2.10 was produced from interviews, *The Lincoln Journal*, the Georgia Tornado History Project and the NCEI and SHELDUS™ databases. The table shows the event, severity and estimated cost of damages reported. (See Appendix A and Appendix D).

Table 2.10

Date	Location	MAG	PrD	CrD	Event Narrative
11/22/1992		F3	50,000	0.00	A tornado had followed a path with a width 400 yards and almost 5 miles long.
05/07/1998		F1	350,000	0.00	A tornado destroyed two chicken sheds, tore a roof off a home, and turned a home 90 degrees and moved it off its foundation. Width 100 yards and a length of ½ mile.
05/07/1998		F2	300,000	0.00	A tornado hit the Pineywoods subdivision destroying 12 homes and causing major damage to

Date	Location	MAG	PrD	CrD	Event Narrative
					15 homes and minor damage to 8 homes. Width 200 yards and a length of 1 mile.
05/07/1998		F1	50,000	0.00	A tornado did major damage and minor damage to several homes and mobile homes. Width 100 yards and a length of 1 mile.
05/07/1998		F2	50,000	0.00	A tornado destroyed 7 homes and did major and minor damage to about a dozen others in the Indian Cove subdivision. Width 200 yards and a length of ½ mile.
11/11/2002	Goshen	F0	0.00	0.00	Reports that a F0 tornado damaged trees in the Chennault Width 50 yards and a length of 1 mile.
05/06/2003	New Hope	F0	0.00	0.00	A F0 tornado touched down in the New Hope portion of the County. No damage reported. Width 50 yards and a length of 3 mile.
01/13/2005	Double Branches	F0	0.00	0.00	A F0 tornado touched down in the Double Branches portion of the County. Width 30 yards and a length of 1/10 of a mile.
3/15/2008	Gill	EF0	0.00	0.00	A F0 touched down and took down many trees along its path. Witnesses saw the tornado cross the river into McCormick county SC. Width 100 yards and a length of 1.14 mile.
4/28/2013	Clay Hill	EF0	12,000	0.00	Trees down along and near Greaham Park Road. Width 40 yards and a length of 1.24 mile.

Only one tropical storms was reported by the NCEI for Lincoln County. There were two reported tropical storm events noted in SHELDUS™. These two events had property and crop damages of approximately \$1,563 with no injuries. Due to the lack of data the committee researched *The Lincoln Journal* and data from NCEI and SHELDUS™ for surrounding counties. The combination of all research shows there were 15 tropical storm events in the last 70 years. These storms produced winds from 35-45 mph with gust up to 55 mph. Damages as a result of the storms were due to power outages, downed trees and flash flooding. The tropical storms affected the entire planning area. Data for each jurisdiction is not available. Based on the hazard frequency table there is a 65 percent chance of an annual tropical storm event for the county as a whole (*See Appendix D*).

Table 2.11

Details	Type	Date	PrD	CrD
A result of Hurricane Cleo	Tropical Storm	8/30/1964	1136	113
A result of Hurricane Agnes	Tropical Storm	6/20/1972	0.0	314
Result of Tropical Storm Hannah	Tropical Storm	09/14/2002	0.0	0.0
Result of Tropical Depression Bill	Tropical Storm	07/01/2003	0.0	0.0
Result of Hurricane Francis	Tropical Storm	09/06/2004	0.0	0.0
Result of Hurricane Ivan	Tropical Storm	09/16/2004	0.0	0.0
Result of Hurricane Jeanne	Tropical Storm	09/26/2004	0.0	0.0
Result of Tropical Storm Arlene	Tropical Storm	06/12/2005	0.0	0.0

Details	Type	Date	PrD	CrD
Result of Hurricane Dennis	Hurricane/typhoon	07/10/2005	0.0	0.0
Result of Hurricane Katrina	Hurricane/typhoon	08/29/2005	0.0	0.0
Result of Tropical Storm Tammy	Tropical Storm	10/05/2005	0.0	0.0
Result of Tropical Storm Fay	Tropical Storm	08/21/2008	0.0	0.0
Result of Hurricane Ida	Tropical Storm	1/10/2009	0.0	0.0
Result of Tropical Storm Lee	Tropical Storm	09/04/2011	0.0	0.0
Result of Tropical Storm Michael	Tropical Storm	10/10/2018	0.0	0.0

Source: NCEI, The Lincoln Journal and SHELUDUS

Thunderstorms are much more prevalent and during the spring and summer months there are numerous storms that often carry strong winds. There have been 97 events recorded in the last 70 years with highest winds reported at 65 knots with more than \$317,912 in property and crop damages. Table 2.12 breaks down the thunderstorm events by jurisdiction. A complete table of thunderstorm wind events can be found in Appendix A.

Table 2.12

Location	# of Events	County-Wide Events*	Total # of events per jurisdiction
Lincoln County(Unincorporated)	37	27	64
Lincolnton	33	27	60
TOTAL FOR COUNTY	70	27	97

* It is assumed that all 27 county-wide events reported occurred in each jurisdiction. Source: NCEI and SHELUDUS

Using a 20-year hazard cycle, the frequency table calculates an annual chance for a thunderstorm event producing high winds is 230 percent for the unincorporated areas of the county and a 210 percent for Lincolnton. Lincoln County as a whole has an overall probability of 395 percent for a significant thunderstorm wind event. Hazard frequency tables for individual jurisdictions are in Appendix D.

The fourth weather event is lightning. During the spring and summer months the county experiences numerous storms that can often produce lightning. There have been 13 reported lightning events in the past 70 years with slightly more than \$62,768 in property and crop damages with one injury. There have been 38 lightning strikes recorded in the same time frame that resulted in wildfires. When these datasets are combined there has been 51 lightning strikes recorded. Lincoln County experiences 6-12 flashes per square mile per year. Specific information and maps can be found <https://www.vaisala.com/en>. (Note: Information on the Vaisala website is copyrighted and for display purposes only). Based on a 20-year hazard cycle there is a 90 percent chance of a lightning strike in Lincoln County, an 85 percent chance in the unincorporated areas of the county and a five percent chance in the City of Lincolnton.

The fifth weather event is hail. In the last 70 years there have been 51 hail events reported to date with slightly more than \$12,200 in property and crop damages with no injuries reported. These 51 events produced hailstones ranging .75 to 2.00 inches.

Table 2.13

Location	# of Events	County-Wide Events*	Total # of events per jurisdiction
Lincoln County(Unincorporated)	12	27	39
Lincolnton	12	27	39
TOTAL FOR COUNTY	24	27	51

* It is assumed that all 27 county-wide events reported occurred in each jurisdiction. Source: NCEI and SHELDOUS

Using a 20-year hazard cycle, the annual chance for a hail event is 65 percent for the unincorporated areas of the county as well as the City of Lincolnton. Overall, there is a 125 percent that a hail event will take place in Lincoln County. A complete list of all hazards is in Appendix A and hazard frequency tables for individual jurisdictions are in Appendix D.

- C. Assets Exposed to Hazard and Estimate of Potential Losses:** In evaluating assets exposed to the natural hazard, the committee determined that all critical facilities, as well as all public, private and commercial property, are susceptible to tornados, tropical storms, thunderstorm winds, lightning and hail events. Based on GMIS maps the entire county has a design wind speed of two, where wind speed is between 90 to 99 mph. Table 2.14 provides data from FEMA Worksheet #3a that estimates the potential loss for each jurisdiction.

Table 2.14

Jurisdiction	Number of Structure/Properties	Value	Population
Lincoln County (Unincorporated)	14,726	1,067,682,878	5,976
Lincolnton	1,926	128,441,752	1,823
TOTAL FOR COUNTY	16,652	1,196,124,630	7,799

Source: Georgia Department of Revenue Lincoln County

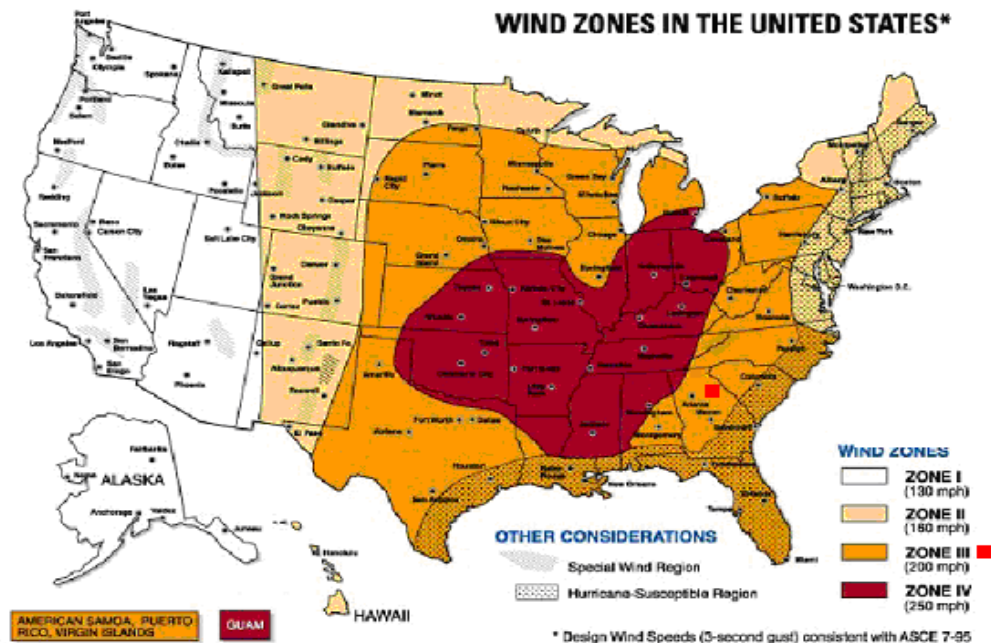
Of the 48 critical facilities, 28 have a wind hazard score of one placing the critical facilities with wind speeds of less than 90 and the remaining 20 have a hazard score of zero. GMIS critical facility reports for wind and FEMA Worksheet #3a are located in Appendix A for each individual jurisdiction and the county as a whole. Table 2.15 shows the number of critical facilities by jurisdictions, hazard score, replacement value, content value, and occupancy.

Table 2.15

Jurisdiction	Hazard Score	# of Critical Facilities	Replacement Value \$	Content Value \$	Occupancy	
					Day	Night
Lincoln County	1	16	16,630,608	1,016,053	721	54
Lincoln County	0	16	35,068,786	3,607,423	646	0
Lincolnton	1	12	9,333,374	331,900	18	2

Lincolnton	0	4	2,750,000	0	0	0
TOTAL		40	63,782,768	4,955,376	1,385	56

- D. Land Use & Development Trends:** Lincoln County is located in FEMA wind zone III, which is associated with 200-mph wind speeds. Currently, the county has no land use or development trends related to tornados, tropical storm, thunderstorm winds, lightning, or hail events. Information on land use can be found in Appendix B.
- E. Multi-Jurisdictional Concerns** – All of Lincoln County has the same design wind speed of 200 mph as determined by the American Society of Civil Engineers (ASCE) as evidenced by the map and table below.



Wind zones in the United States

		WIND ZONE			
		I	II	III	IV
NUMBER OF TORNADOES PER 1,000 SQUARE MILES	<1	LOW RISK	LOW RISK	LOW RISK	MODERATE RISK
	1 - 5	LOW RISK	MODERATE RISK	HIGH RISK	HIGH RISK
	6 - 10	LOW RISK	MODERATE RISK	HIGH RISK	HIGH RISK
	11 - 15	HIGH RISK	HIGH RISK	HIGH RISK	HIGH RISK
	>15	HIGH RISK	HIGH RISK	HIGH RISK	HIGH RISK

LOW RISK

Need for high-wind shelter is a matter of homeowner preference

MODERATE RISK

Shelter should be considered for protection from high winds

HIGH RISK

Shelter is preferred method of protection from high winds

★ Shelter is preferred method of protection from high winds if house is in hurricane-susceptible region

The entire county has the potential to be affected by tornados, tropical storms, thunderstorm winds, lightning and hail. As a result, any mitigation steps taken related for these five severe weather events should be considered on a county-wide basis to include Lincoln.

F. Hazard Summary: The entire county has the potential to be affected by severe weather.

Table 2.16 provides a summary of all severe weather events

Table 2.16

Weather Event	#	Fatalities	Injuries	Property/Crop Damage
Tornados	10	0	0	\$812,000
Tropical Storms	14	0	0	\$1,563
Thunderstorm Winds	97	0	1	\$317,912
Lightning	51	0	1	\$62,768
Hail	51	0	0	\$12,287

To summarize, there are approximately 16,199 structures/properties in the county totaling slightly more than \$1.2 billion with a population of 7,996. A breakdown of information for individual jurisdictions can be found in Appendix A and Appendix D. Specific mitigation actions for tornados, tropical storms, thunderstorm winds, lightning and hail events are identified in Chapter III, Section V.

SECTION VI. WINTER STORMS

A. Hazard Identification: Southeastern snow or ice storms often form when an area of low pressure moves eastward across the northern Gulf of Mexico. To produce a significant winter storm in the south, not only must temperatures be cold enough, but there must also be enough moisture in the atmosphere to produce adequate precipitation. A major winter storm can last for several days and be accompanied by high winds, ice and freezing rain, heavy snowfall, and cold temperatures. These conditions can make driving conditions very dangerous, as well as bring down trees and power lines.

B. Hazard Profile: Winter storms are not spatially defined and affect the entire planning equally. The committee researched historical data from the NCEI, SHELDUS™, and SERCC as well as information from past newspaper articles relating to winter storms. There have been 35 winter storm events recorded in the county over the last 70 years with an estimated property damage of \$216,418. There has been winter event since the last plan update.

The snow storm of 1973 covered Lincoln County with nine inches of snow. The most recent ice storm on February 11-13, 2014, produced 1/4 to 1/2 inch of ice and up to four inches of snow and sleet across Lincoln County taking down numerous trees and powerlines. Power outages were mainly confined to the lower half of the county. Approximately 300 homes were without power. The weight of the ice brought down trees, limbs and other vegetative debris which blocked roads and rights of way creating hazardous conditions.

The timber industry was severely affected by the storm. Lincoln was one of the seven counties hit by the storm that experienced light to moderate timber damage according to the GFC. Light to moderate damage is where only branches and limbs broken from the tree, with minor damage to the overall stand and trees bent less than 45 degrees. No salvage operation will be necessary and the stand should recover with no additional management requirements, though long term yields will likely be impacted.

Although winter storms are infrequent in the south, they have the potential to cause excessive damage to a community and disrupt the lives of residents. Based on the hazard frequency table, located in Appendix D, there is a 55 percent chance of an annual winter storm event for the entire county.

- C. Assets Exposed to Hazard and Estimate of Potential Losses:** In evaluating assets that may potentially be impacted by the effects of winter storms, the committee determined that all critical facilities, as well as all public, private and commercial property, are susceptible. Table 2.17 shows assets by jurisdiction at potential risk of damage from a winter storm event.

Table 2.17

Jurisdiction	Number of Structure/Properties	Value	Population
Lincoln County (Unincorporated)	14,726	1,067,682,878	5,976
Lincolnton	1,926	128,441,752	1,823
TOTAL FOR COUNTY	16,652	1,196,124,630	7,799

Source: Lincoln County Tax Assessor

The GMIS does not provide a report for winter storm damage but there is slightly less than \$1.2 billion worth of assets with potential loss to winter storm hazards countywide. Table 2.18 shows the number of critical facilities by jurisdiction, hazard score, replacement value and content value (*See Appendix A and Appendix D*).

Table 2.18

Jurisdiction	# of Critical Facilities	Replacement Value \$	Content Value \$	Occupancy	
				Day	Night
Lincoln County	32	51,699,394	4,623,476	1,367	54
Lincolnton	16	12,083,374	331,900	18	2
TOTAL	48	63,782,768	4,955,376	1,385	56

- D. Land Use & Development Trends:** The focus of Lincoln County's growth is on the natural resources; the lake area. The area adjacent to the Army Corps of Engineers property, is being developed into residential subdivisions. Agricultural and forestry land located in this area will eventually decrease, and residential uses will increase. This will decrease the loss to agriculture and forestry land due to drought. The increase in residential will put a greater strain on the water systems of the city and county. Land use tables are in Appendix B.

- E. Multi-Jurisdictional Concerns:** Lincoln County currently has no land use or development trends related to winter storms. All of the county can potentially be negatively impacted by winter storms. As a result, any mitigation steps taken related to winter storms should be undertaken on a countywide basis to include the City of Lincoln.
- F. Hazard Summary:** There have been 35 winter storm events recorded in the last 70 years with an estimated property damage of \$216,418. There is a 55 percent chance of an annual winter storm event. Winter storms can be more accurately predicted than most other natural hazards, making it possible to give advance warning to communities. The National Weather Service issues winter storm warnings and advisories as these storms make their way south. Given the infrequency of these types of storms, southern communities are still not properly equipped to sustain the damage and destruction caused by severe winter storms. To summarize, there are approximately 16,652 structures/properties in the county totaling slightly less than \$1.2 billion with a population of 7,799. The committee recognized the dangers posed by winter storms and identified specific mitigation actions in Chapter III, Section VI.

SECTION VII. EARTHQUAKE

- A. Hazard Identification** Earthquakes are one of nature's most damaging hazards. An earthquake is a sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of Earth's tectonic plates. The severity of these effects is dependent on the amount of energy released from the fault or epicenter. They usually occur without warning and after just a few seconds can cause massive damage and extensive casualties. Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure. If the earthquake occurs in a populated area, it may cause many deaths, injuries and extensive property damage.

Magnitude and intensity measure different characteristics of earthquakes. Magnitude measures the energy released at the source of the earthquake and is determined from measurements on seismographs. Intensity measures the strength of shaking produced by the earthquake at a certain location and is determined from effects on people, human structures, and the natural environment. Table 2.19 describes the Abbreviated Modified Mercalli Intensity Scale and Table 2.20 explains intensities that are typically observed at locations near the epicenter of an earthquake event.

Table 2.19

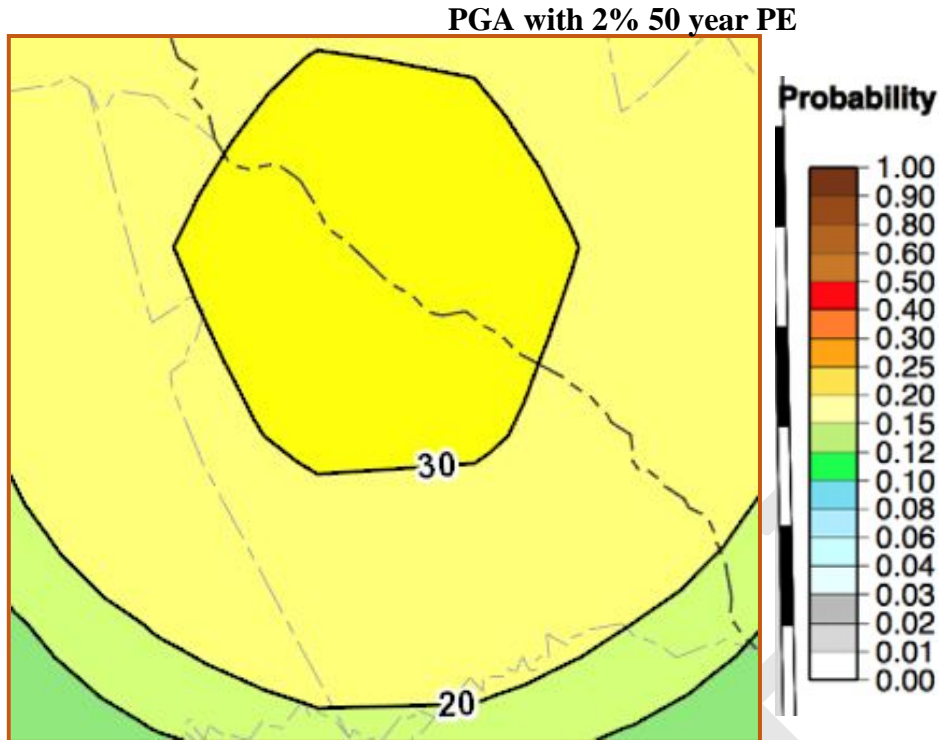
Magnitude	Maximum Modified Mercalli Intensity
1.0 - 3.0	I
3.0 - 3.9	II - III
4.0 - 4.9	IV - V
5.0 - 5.9	VI - VII
6.0 - 6.9	VII - IX
7.0 and higher	VIII or higher

Table 2.20

Abbreviated Description of the 12 levels of Modified Mercalli Intensity.		
Intensity	Shaking	Description/Damage
I.	Not felt	Not felt except by a very few under especially favorable conditions.
II.	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III.	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV.	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V.	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI.	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII.	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII.	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX.	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X.	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
XI.	Extreme	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII.	Extreme	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Within Lincoln County, and the southeast region in general, there is concern over the threat of earthquakes. This concern is due to the Woodstock Fault near Charleston, SC and the new Madrid Fault located near Mew Madrid, MO. Georgia and specifically, Lincoln County have felt earthquakes originating from both of these faults. The fact that earthquakes hit Lincoln County infrequently results in other problems, such as lack of equipment and supplies for urban search and rescue in the event that a major earthquake strikes the County.

Based on U.S. Geological Survey Two-percent probability of exceedance in 50 years map of peak ground acceleration is between 20 and 30 percent (see map below). As discussed above, such predictions are based on limited information, and cannot necessarily be relied upon for their precision. However, they do help demonstrate that the threat of earthquakes cannot be overlooked even in a relatively inactive geographic area such as Lincoln County.



- B. Hazard Profile** – The planning committee examined historical data from the NCEI, past newspaper articles, and conducted interviews during its research on the effects of past earthquake events. There have been 15 recorded earthquakes. While earthquake events are a rare occurrence, the USGS states that the probability of an earthquake of Magnitude 5.0 or more occurring within Lincoln County over the next 25 years is between 1% and 4% (see map above). *All data covers the county as a whole no data is available by jurisdiction.* GMIS has 100 percent of the county with a seismic hazard score of three.

SEISMIC HAZARD SCORES GMIS			
Score	Original Value	Description	The seismic hazard layer is based on the USGS Probabilistic Seismic Hazard Map, showing the percentage of gravity that the area has a 2 percent probability of exceedance in 50 years. The score classification reflects that used by the IRC Seismic Design Categories.
4	D1	50 - 83% gravity	
3	C	33 - 50% gravity	
2	B	17 - 33% gravity	
1	A	0 -17% gravity	

The earthquake in August 1974 was the strongest experienced by the county with a magnitude of 4.3. No damages or injuries were reported. The table below shows the date, time location and magnitude of previous events.

Date	Magnitude	Epicenter and Distance Felt	Estimated Losses
08/02/1974	4.3	33.87 N, 82.49W and felt up to 8 km away	NR
11/05/1974	3.7	33.73 N, 82.22 W and felt up to 24 km away	NR
12/03/1974	3.6	33.95 N, 82.50 W and felt up to 17 km away	NR
01/03/1992	3.2	33.95 N, 82.46 W and felt up to 17 km away	NR
09/02/2001	2.7	33.79 N, 82.35 W and felt up to 11 km away	NR
03/14/2007	2.1	33.78 N, 82.32 W and felt up to 15 km away	NR
07/19/2007	2.7	33.61 N, 82.35 W and felt up to 23 km away	NR
03/25/2015	2.5	33.759°N 82.388°W depth 15.8 km	NR
04/07/2013	2.5	33.860°N 82.456°W depth 6.1 km	NR
04/16/2013	2.2	33.876°N 82.457°W depth 6.1 km	NR
04/23/2013	1.9	33.871 N 82.463W 0.0 km	NR
04/26/2013	2.1	33.774°N 82.403°W depth 10.2 km	NR
04/26/2013	2.8	33.776°N 82.377°W depth 12.0 km	NR
04/26/2013	2.2	33.779°N 82.388°W depth 10.1 km	NR
04/27/2013	2.3	33.776°N 82.381°W depth 5.3 km	NR

Source: USGS, The Lincoln Journal, interviews, city-data.com

Based on a 20-year cycle hazard history there is a 50% chance of an annual earthquake event.

- C. Assets Exposed to Hazard and Estimate of Potential Losses** - All critical facilities, personal, and public property in Lincoln County are susceptible to damage caused by an earthquake. There are no damage records available in relation to earthquakes. Loss would be determined based on intensity and magnitude and would vary in each case. All critical facilities, personal, and public property in Lincoln County are susceptible to damage caused by an earthquake. The table below shows assets by jurisdiction that could be at potential risk of damage from an earthquake hazard event.

Jurisdiction	Number of Structure/Properties	Value	Population
Lincoln County (Unincorporated)	14,726	1,067,682,878	5,976
Lincolnton	1,926	128,441,752	1,823
TOTAL FOR COUNTY	16,652	1,196,124,630	7,799

Source: Lincoln County Tax Assessor

In summary, there is a population of 7,799 and 16,652 structures/properties totaling less than \$1.2 billion which could be potentially be at risk to an earthquake event. The table below shows the number of critical facilities potentially at risk by each jurisdiction along with content and replacement value (See Appendix A, Section V and Appendix D).

Jurisdiction	Hazard Score	# of Critical Facilities	Replacement Value \$	Content Value \$	Occupancy	
					Day	Night
Lincoln County	3	32	51,699,394	4,623,476	1,367	54
Lincolnton	3	12	9,333,374	331,900	18	2

Lincolnton	0	4	2,750,000	0	0	0
TOTAL		48	63,782,768	4,955,376	1,385	56

- D. Land Use and Development Trends** - The land use patterns have changed little since the last comprehensive plan update, but the focus of land use for the future is changing greatly. The focus of Lincoln County's growth is on the natural resources; the lake area. The area adjacent to the Army Corps of Engineers property is being developed into residential subdivisions. There has been no new adoption of development or building regulations to increase or decrease the overall vulnerability to hazard events. There are no specific land use and development trends in relation to earthquakes at this time.
- E. Multi-jurisdictional Concerns** - All of Lincoln County can potentially be negatively impacted by an earthquake. As a result, any mitigation steps taken related to earthquakes should be undertaken on a countywide basis to include all municipalities. A concern is the lack of available data for the county and all incorporated jurisdictions. A database needs to be created and maintained that provides information on past and future occurring earthquake events.
- F. Hazard Summary** - An earthquake is a sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of Earth's tectonic plates. The severity of these effects is dependent on the amount of energy released from the fault or epicenter. The effects of an earthquake can be felt far beyond the site of its occurrence. They usually occur without warning and after just a few seconds can cause massive damage and extensive casualties. Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure. If the earthquake occurs in a populated area, it may cause many deaths, injuries and extensive property damage. The committee recognized the potential for losses caused by an earthquake and identified it as a hazard requiring mitigation measures. Based on a 20-year cycle hazard history there is a 15% chance of an annual earthquake event. To summarize, there are approximately 16,199 structures in the county totaling less than \$1.2 billion with a population of 7,799. The planning committee identified specific mitigation goals, objectives and action items related to earthquakes, which can be found in Chapter III, Section VII.

CHAPTER III. MITIGATION STRATEGIES

Table 3.1 provides a brief description of each section in this chapter and a summary of the changes to the plan.

Table 3.1

Chapter III. Section	Updates to Section
I. Flooding	Completed action steps were removed. All text was reviewed and edited as needed. Goals, Objective, and Actions Steps were updated.
II. Dam Failure	Completed action steps were removed. All text was reviewed and edited as needed. Goals, Objective, and Actions Steps were updated.
III. Drought	Completed action steps were removed. All text was reviewed and edited as needed. Goals, Objective, and Actions Steps were updated.
IV. Wildfire	Completed action steps were removed. All text was reviewed and edited as needed. Goals, Objective, and Actions Steps were updated.
V. Severe Weather	Completed action steps were removed. All text was reviewed and edited as needed. Goals, Objective, and Actions Steps were updated.
VI. Winter	Completed action steps were removed. All text was reviewed and edited as needed. Goals, Objective, and Actions Steps were updated.
VII. Earthquake	Completed action steps were removed. All text was reviewed and edited as needed. Goals, Objective, and Actions Steps were updated.
VIII. All Hazards	All text was reviewed and edited as needed. Goals, Objective, and Actions Steps were updated.

SECTION I. INTRODUCTION TO MITIGATION STRATEGY

This chapter addresses the mitigation strategy requirements of 44 CFR Section 201.6 (c)(3): “A mitigation strategy provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section shall include:

- i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.
- ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction’s participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.
- iii) An action plan describing how the actions, identified in paragraph (c)(3)(ii) of this section, will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.
- iv) For multi-jurisdictional plans there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.”

A. Priority Changes from Previously Approved Plan

There have been no significant priority changes from the previous plan. The goal of Lincoln County and Lincolnton is to protect the safety, health and well-being of all county citizens, to protect public and private property, and to lessen the overall effects of a hazard event.

The Lincoln County Comprehensive Plan 2018-2022 presents future development scenarios for Lincoln County. The focus of Lincoln County's growth is on the natural resources; the lake area. The area adjacent to the Army Corps of Engineers property is being developed into residential subdivisions. Agricultural and forestry land located in this area will eventually decrease, and residential uses will increase. Commercial land will increase once residential subdivisions are established and the demand for local goods and services increases.

Lincolnton has a very different land use pattern. In Lincolnton, almost 80 percent of land use is residential and just over five percent commercial, highlighting more intense uses and a larger concentration of population and commerce. There has been no new adoption of development or building regulations to increase or decrease the overall vulnerability to hazard events.

B. Capability Assessment

The County and Lincolnton identified current capabilities for implementing hazard mitigation activities. The capability assessment identifies administrative, technical, legal and fiscal capabilities. This includes a summary of departments and their responsibilities associated with hazard mitigation as well as codes, ordinances, and plans already in place that contain mitigation activities or programmatic structure. The second part of the assessment examined the fiscal capabilities applicable to providing financial resources to implement identified mitigation action items. Lincoln County has an annual budget of around \$15.5 million and Lincolnton's 2020 budget is around \$1.3 million. It should be noted that mitigation action steps with high dollar amounts cannot be completed without grant funds and careful budget planning by both jurisdictions.

While all technical and administrative skills are not found in-house, the City and County have access to multiple staff through the RC and can contract out with private firms or any professional services needed. The three tables below identify administrative, technical, legal and fiscal capabilities of each jurisdiction.

Table 3. 2 Legal and Regulatory Capabilities (Y/N)

Regulatory Tools (ordinances, codes, plans)	Lincoln County	Lincolnton	Does State Prohibit
Building codes	Y	Y	N
Zoning ordinance	Y	Y	N
Subdivision ordinance or regulations	Y	Y	N
Special purpose ordinances (floodplain management, storm water management, soil erosion)	Y	Y	N

Regulatory Tools (ordinances, codes, plans)	Lincoln County	Lincolnton	Does State Prohibit
Growth management ordinances (also called “smart growth” or anti- sprawl programs)	Y	Y	N
Site plan review requirements	Y	Y	N
General or comprehensive plan	Y	Y	N
A capital improvements plan	N	N	N
An economic development plan	Y	Y	N
An emergency response plan	Y	Y	N
A post-disaster recovery plan	Y	Y	N
A post-disaster recovery ordinance	Y	Y	N
Real estate disclosure requirements	Y	Y	N

Table 3. 3 Fiscal Capabilities

Financial Resources	Lincoln County	Lincolnton	Accessible or Eligible to Use (Yes/No)
Community Development Block Grants (CDBG)	Y	Y	Y
Capital improvements project funding	Y	Y	Y
Authority to levy taxes for specific purposes	Y	Y	Y – Vote required
Fees for water, sewer, gas, or electric service	Y	Y	Y
Impact fees for homebuyers or developers for new developments/homes	N	N	N
Incur debt through general obligation bonds	Y	Y	Y
Incur debt through special tax and revenue bonds	Y	Y	Y – Vote required
Withhold spending in hazard-prone areas	N	N	N
Other Grants	Y	Y	N

Table 3.4 Administrative and Technical Capabilities

Staff/Personnel Resources	Lincoln County	Lincolnton	Dept./Agency and Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	Y	Y	Building Dept./ Code Enforcement/ Public Works CSRA RC/Contract as Needed
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Y	Building Dept./ Code Enforcement
Planners or Engineer(s) with an understanding of natural and/or manmade hazards	Y	Y	Public Works/CSRA RC Staff
Floodplain manager	N	N	
Surveyors	N	N	Contracted as needed
Staff with education or expertise to assess the community’s vulnerability to hazards	Y	Y	Public Safety/EMA
Personnel skilled in GIS and/or HAZUS	Y	Y	CSRA RC
Emergency manager	Y	Y	EMA
Grant writers	Y	Y	CSRA RC

C. Community Mitigation Goals

Collectively, the jurisdictions reviewed the hazard profiles and the loss estimates in Section II and used it as a basis for developing mitigation goals, objectives and action steps. Mitigation goals are preventive measures to lessen the effect of and losses due to hazard events and are typically long-range visions adapted toward jurisdictional policy. Mitigation objectives are strategies to attain identified goals. Goals and objectives are formulated by reviewing hazard historical data, existing local plans, policy documents, regulations, and public input. Each jurisdiction developed objectives and actions unique to specific vulnerabilities or concerns within its boundaries.

Mitigation actions were developed as the means to carrying out the objectives and attain goals. All action steps are compatible with the plans, policies, and regulations of each jurisdiction. The jurisdictions must also have the legal, administrative, fiscal, and technical capacities to perform each action.

The capabilities assessment above aided in forming realistic mitigation actions. This capabilities assessment can then incorporate results of the STAPLEE worksheet to identified obstacles that may hinder the completion actions. Each jurisdiction identified and prioritized actions steps along with an implementation schedule, funding source, and coordinating individual or agency.

Based on the capabilities assessment, the STAPLEE and six categories listed below in Section D, all jurisdictions identified the following goals:

- Goal 1: Protect the safety, health and well-being of all county citizens;
- Goal 2: Protect public infrastructure and private property;
- Goal 3: Educate the community about natural hazards;
- Goal 4: Manage development to minimize loss;
- Goal 5: Natural Resources Protection; and
- Goal 6: Structural modifications to reduce the impacts of hazard events.

D. Identification & Analysis of Range of Mitigation Actions

The framework used to guide jurisdictions in identifying mitigation measures was developed by FEMA and is captured by the following six categories:

- **Prevention:** Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities that reduce hazard losses. Examples include building and construction code revisions; zoning regulation changes; and computer hazard modeling.
- **Property Protection:** Actions that involve the modifications of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples include roadway elevations, improving wind and impact resistance, and flood proofing.

- **Public Education and Awareness:** Action to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Examples include programs that target repetitive loss properties and vulnerable populations.
- **Natural Resources Protection:** Actions that, in addition to minimizing hazard losses also preserve or restore the function of natural systems. Examples include projects to create open space, green space, and stream restoration.
- **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Examples include projects that control floodwater, reconstruction of dams, and construction of regional retention areas.
- **Emergency Services:** Actions that protect people and property during and immediately after a disaster event or hazard event. Examples include enhancements that provide advanced warning and redundant communications.

i. **Structural and Non-Structural**

Mitigation relates to concrete actions which are put into practice to reduce the risk of destruction and casualties. Mitigation is generally split into two main types of activities: Structural mitigation refers to any physical construction to reduce or avoid possible impacts of hazards, which include engineering measures and construction of hazard-resistant and protective structures and infrastructure. Non-structural mitigation refers to policies, awareness, knowledge development, public commitment, and methods and operating practices, including participatory mechanisms and the provision of information, which can reduce risk with related impacts. The committee has identified both structural and non-structural mitigation measures to ensure that the community adequately addresses all relevant dam failure issues. Structural and non-structural actions are identified in Table 3.6.

ii. **Existing Polices, Regulations, Ordinances, and Land Use**

Lincolnton has adopted the following Mandatory codes:

- Georgia State Minimum Standard Building Code (International Building Code with Georgia State Amendments).
- Georgia State Minimum Standard One- and Two-Family Dwelling Code (International Residential Code for One- and Two-Family Dwellings with Georgia State Amendments).
- Georgia State Minimum Standard Fire Code (International Fire Code with Georgia State Amendments).
- Georgia State Minimum Standard Plumbing Code (International Plumbing Code with Georgia State Amendments).
- Georgia State Minimum Standard Mechanical Code (International Mechanical Code with Georgia State Amendments).
- Georgia State Minimum Standard Gas Code (International Fuel Gas Code with Georgia State Amendments).
- Georgia State Minimum Standard Electrical Code (National Electrical Code with Georgia State Amendments).
- Georgia State Minimum Standard Energy Code (International Energy Conservation Code with Georgia State Supplements and Amendments).

- Life Safety Code (NFPA 101).

They have also adopted the Permissive codes:

- International Property Maintenance Code.
- International Existing Building Code.

The *Joint Lincolnton-Lincoln County Comprehensive Plan 2018-2022*, were both adopted by resolution by the Lincoln County Board of Commissioners and the Lincolnton City Council. The joint partial comprehensive plan update takes place every five years as a review of the full comprehensive plan. The planning process examines the current and future trends and assess the strengths and opportunities available to achieve their community vision. This document drives the decision making process for the County and the City of Lincolnton. The Comprehensive Plan also examines existing land use and projects future land use. Land Use Maps can be found in Appendix B.

iii. Community Values, Historic & Special Considerations

The National Register of Historic Places (NRHP) is the nation's list of historic buildings, structures, sites, objects and districts worthy of recognition and preservation. Currently, there are 10 NRHP-listed resources in Lincoln County.

There are numerous historic buildings in Lincoln County. It was the first county in Georgia to have a county-wide listing in the National Register of Historic Places. Over 170 historic buildings in Lincoln County are listed in the National Register.

- **Amity School**, Clay Hill Road, west of junction with SR 43, Lincolnton
- **Chennault House**, NE of Danburg at junction of SR44 and GA79, Danburg
- **Double Branches Historic District**, Double Branches Road, Lincolnton
- **Lamar Blanchard House**, N. Washington and Ward Streets, Lincolnton
- **Lincolnton Historic District**, roughly along Washington, Peachtree, Goshen and Elm Streets, Lincolnton
- **Lincoln County Courthouse**, Courthouse Square, Lincolnton
- **Lincolnton Presbyterian Church and Cemetery**, N. Washington St., Lincolnton
- **Matthews House**, N. Washington St., Lincolnton
- **Simmons-Cullars House**, Junction GA79 and CR 25, Lincolnton
- **Woodlawn Historic District**, Junction of Salem Church and Woodlawn-Amity Roads, Lincolnton



The following is an inventory of residential properties of great significance and value to the community.

- Pinson House, circa 1790, Stagecoach House, near Double Branches Baptist Church
- Blalock-Wright House, owner, the Mildred Estes Fortson Foundation
- Price House, Victorian, in Double Branches Historic District (NR listed)
- In Lincoln Historic District (NR listed):
- Sears-Roebeck House
- Nash-Sales-Lawson House
- Shell Door House, next to the Lincoln Center
- Groves-May House
- Rhodes House
- Albea House
- Holly Ho, Hollingshead-Hogan House
- Spratlin House
- Norman House (Rees Funeral Home)
- Dallas House
- Carvin-McGee-Arthur House
- Glaze-Rankin-Jordan House
- Ashmore House
- Burch House
- L.G. Greene House

The Chennault and Matthews Houses, NR listed, in the northern rural section of Lincoln County, are two remaining antebellum houses that are almost mirror images of each other.

The Simmons-Cullars House, built 1826, NR listed, and located on the Goshen Road, burned in the late 1990s. The owners chose to reconstruct the house. A significant number of 10 outbuildings are included in the nomination. The outbuildings mostly date to 1905 but reflect the variety of agricultural and self-sufficient living activities that took place on the farm headquartered at the main house.



The Blalock-Wright House, circa 1790, is one of the oldest houses in Lincoln County near the city limits. The house was built as a two room house and added onto about 1850. The UGA School of the Environment, Historic Preservation graduate class, prepared an historic structures report of the house and its tenant house.



The houses in the Lincolnton Historic District, NR listed, consist for the most part of one- and two-story, wood-framed houses constructed from circa 1848 through the 1940s. One of the most interesting high style residences is the Sears, Roebuck and Company, “Modern Home No. 124” built in 1911, that was mail ordered, pieces shipped by train and assembled from a kit.

The Double Branches Historic District, NR listed, is a rural linear community with 14 contributing buildings. The houses range from very simple dwellings to elaborate Folk Victorian style residences. The c. 1840 Freeman-Bussey House is a two-story Plantation Plain building with a raised basement and enclosed, full front porch. The Robert Jennings Price House is a 19th century, two-story house located at the south end of the district. The Bussey-May-Moss-Peeler-Tankersley House is a late-19th century gabled-ell cottage on land that was once part of a fairly large plantation. The house has 11 outbuildings. The John Marshall Price House is another prominent residential structure located at the north end of the district. Built in 1907, the structure features a Georgian floor plan with four rooms and a central hallway on each floor. There are three significant outbuildings on this property.

The Woodlawn Historic District, NR listed, is a rural crossroads community with 16 contributing buildings, located in the southwest section of Lincoln County. The area developed around the turn-of-the-century and contains residential buildings that are all wood-framed, one-and two-story structures representing a variety of house types such as the gabled-ell, saltbox, and Georgian cottage. A few wood-framed outbuildings remain and include well houses, barns, smokehouses, and garages.

Recreation

Lincoln County is fortunate to be located in the heart of the J. Strom Thurmond Reservoir area. The 70,000 acre reservoir has over 400 miles of shoreline in Lincoln County alone. Each year, thousands of visitors and Lincoln County residents alike enjoy boating, fishing, camping and other activities in and around the lake. Elijah Clark State Park is located in the County seven miles northeast of Lincolnton. Additionally, the Army Corps of Engineers operates seven parks at or near the lake and Lincoln County operates one park at the lake.

On the western shores of Clarks Hill Lake is the 447-acre Elijah Clark State Park. A renovated and furnished log cabin museum displays furniture, utensils and tools circa 1780. Weekend tours of the log cabin make this park an educational treat for visitors. Fishermen especially enjoy the park's location on Clarks Hill Lake, the largest man-made lake east of the Mississippi River. Guided fishing trips and boat rentals are available. This state park also features: camping (both tents and trailer sites), fully equipped cottages, picnic areas, beaches, beach pavilion, playgrounds, miniature golf course, and areas for hiking and bike riding.

Bussey Point is a 2,545 acre multiple use recreational area located in Lincoln County. Abundant wildlife, and over nine miles of trails through a natural forest setting make this an ideal location for the recreational enthusiast who enjoys hiking, biking,

horseback riding, picnicking and primitive camping. There is an observation tower to enjoy bird watching or the abundant wildlife that roam the area.

In addition to the state and regional parks listed above, Lincoln County operates the 20.1 acre Curry Colvin Recreation Complex. This facility contains 4 baseball fields, 1 softball field, 2 tennis courts, 1 basketball court, a swimming pool, and a soccer field with a walking track. All of the fields are lighted as well. Lincoln County has proposed the construction of a gymnasium at Colvin Recreation Center and the acquisition of 26 more acres of land. Lincoln County also boasts the Rocky Branch Golf Club, which is a challenging 18-hole par 72 golf course open to the public.

- iv. **Prioritization of Actions:** Mitigation actions given high priority are in two groups: life safety-related actions that can be accomplished relatively quickly and changes to protect critical facilities on which other emergency management systems are dependent, for example communications focal points. Actions likely to require extended time frames to accomplish received medium priority status.

The committee used the STAPLEE worksheet to select and prioritize the most appropriate mitigation alternatives and is in Appendix D. This methodology requires that seven categories be considered when reviewing potential actions. This process helped ensure that the most equitable and feasible actions would be undertaken based on each jurisdiction's capabilities. Table 3.5 provides information regarding the review and selection criteria for alternatives.

Table 3.5

STAPLEE REVIEW AND SELECTION CRITERIA FOR ALTERNATIVES	
•	Is the proposed action acceptable by the community?
•	Is the action compatible with current and future community values?
•	Are equity concerns involved that would result in unjust treatment of any segment of the population?
•	Will the proposed action cause social disruption?
TECHNICAL	
•	Will the proposed action achieve the stated objective and further mitigation goals?
•	Will the proposed action create more problems than it solves?
•	Does the proposed action resolve the problem completely or partially?
•	It is the most useful action in light of other community values?
ADMINISTRATIVE	
•	Does the community have the capability to implement proposed action?
•	Is there someone to lead or coordinate the proposed action?
•	Is there sufficient funding, staff and technical support to implement the proposed action step?
•	Are there ongoing administrative needs that are required?
POLITICAL	
•	Is the proposed action politically acceptable?
•	Have political leaders participated in the planning process?
•	Who are the stakeholders for this proposed action?

<ul style="list-style-type: none"> • Have all stakeholders been afforded an opportunity to participate in the planning process? • Is there public support to implement and maintain the action?
LEGAL
<ul style="list-style-type: none"> • Does the community have the authority to implement the proposed action? • Is there a clear legal basis for the proposed action? • Are there legal side effects (i.e. could the action be construed as a taking)? • Is the proposed action allowed in the general plan? • Will the community be liable for action or lack thereof? • Will the proposed action be challenged?
ECONOMIC
<ul style="list-style-type: none"> • What is the cost-benefit of the proposed action (do the benefits exceed the cost)? • Have initial, maintenance and administrative costs been taken into account? • Has funding been secured for the proposed action? If not have funding sources been identified? • Will the proposed action affect the fiscal capabilities and/ or budget of the jurisdiction? • Will the proposed action place a tax burden on the community? • Does the proposed action contribute to other community goals (capital improvements, economic development)?
ENVIRONMENTAL
<ul style="list-style-type: none"> • Will the proposed action have a positive or negative effect on the environment? • Does the proposed action require environmental regulatory approvals? • Does the proposed action meet local and state regulations? • Does the proposed action impact a threatened or endangered species?

E. Introduction to Action Plan

The next two sections of Chapter III., Section II. Natural Hazards and Section III. Mitigation Actions, comprise the strategies Lincoln County together with Lincolnton have identified to reduce the effects of natural hazards. Mitigation actions given high priority are in two groups: (1) life safety-related actions that can be accomplished relatively quickly and (2) changes to protect critical facilities on which other emergency management systems are dependent, for example communications focal points. Those actions likely to require extended time frames to accomplish received medium or low priority status.

SECTION II. NATURAL HAZARDS

A. Flooding Action Plan

The committee determined that due to the presence of flood plains in the county, efforts to reduce the level of exposure to flooding should be considered. In previous flooding instances, damage has been sustained primarily to roads, bridges and natural resources. Specific mitigation measures identified by the committee are designed to lessen the effects of such damage to new and existing structures in the future.

Objective A1. Improve the effectiveness of existing flood insurance programs.

Objective A2. Evaluate and improve the present drainage infrastructure.

Objective A3. Warn citizens when the potential for flooding exist.

Objective A4. Lessen the impact to existing buildings, critical facilities and infrastructure as a result of flooding.

Objective A5. Limit future development in flood prone areas.

Objective A6. Reduce the threat of water contamination caused by flooding.

B. Dam Failure Action Plan

Dam failure mainly affects areas that are downstream of the event. Further study of this type event is required to determine where property damage and loss of life has the greatest potential to occur. Critical facilities and vulnerable populations are located in all jurisdictions as well as the unincorporated areas of the County. As a result, any mitigation steps related to dam failure events should be undertaken on a countywide basis and specifically include all incorporated jurisdictions.

Objective B1. Identify at risk population and properties.

Objective B2. Develop proposal to regulate protective measures for dam breach zones

C. Drought Action Plan

As indicated in Chapter II, Section III, drought conditions can cause costly damage to crops. However, from a danger or hazard perspective, the greatest threat posed by drought conditions is from potential wildfires. Almost 50 percent of the county is made up of agriculture, forest and woodlands, the possibility for wildfires is distinct and poses a significant threat. In general, wildfires are the result of dry conditions combined with lightning or carelessness. The committee determined that mitigation goals were necessary to prevent crop damage, as well as damage to new and existing structures.

Objective C1. Ensure that there is an adequate water supply during periods of drought.

Objective C2. Educate citizens on water conservation issues.

D. Wildfire Action Plan

As indicated in Chapter II, Section IV, wildfires have the potential to cause costly damage in Lincoln County. From a danger or hazard perspective, the greatest threat posed by wildfire is the damage to forest, woodlands and agriculture property. The possibility for wildfires is distinct and poses a significant threat to the county. Forest fires are generally the result of dry conditions combined with lightning or carelessness. The committee determined that mitigation goals were necessary to prevent damage to undeveloped areas of the county as well as damage to new and existing structures caused by wildfires.

Objective D1. Ensure that adequate fire protection is available.

Objective D2. Reduce threat of wildfire occurrence.

Objective D3. Increase public awareness of wildfire dangers.

E. Severe Weather (Tornados, Tropical Storms, Thunderstorm Winds, Lightning, Hail)

As with many Georgia communities, if a tornado or tropical storm were to strike Lincoln County, significant damage to both property and agricultural crops could result. In addition, the potential for injuries and loss of life is substantial due to the unpredictability and violent nature of these storms. The committee recognizes the important role advance planning plays in the mitigation process. There is great benefit in identifying appropriate steps that can be taken to help minimize losses to new and existing structures in Lincoln County as a result of a severe weather event. As indicated in Chapter II, Section V, of all of the natural hazards profiled in this plan, tornados have the potential to inflict the greatest amount of damage

while thunderstorm winds are the most frequently occurring natural hazard in the county and have the greatest chance of affecting the county each year. The committee has identified several courses of action that both local officials and citizens can use in their mitigation efforts against the effects of tornados, tropical storms, thunderstorm winds, lightning and hail to both new and existing structures.

Objective E1. Minimize damage to property from severe weather events.

Objective E2. Minimize damage to public buildings and critical facilities to ensure continual operations of vital services.

Objective E3. Protect vulnerable populations from the effects of severe weather events.

Objective E4. Educate the public including citizens and business owners on disaster preparedness and safety.

F. Winter Storms Action Plan

Within Lincoln County, and the southeast region in general, there is great concern over the threat of winter storms. Although this area does not typically receive the amounts of snow and ice that other regions do, nor do they experience winter storms as frequently as other regions, Lincoln County and other southeastern communities must be prepared for the damage caused by winter storms. The fact that winter storms hit Lincoln County infrequently results in other problems, such as lack of equipment and supplies to combat treacherous winter storm conditions. In Lincoln County, the formation of ice on roads and bridges, tree limbs, and power lines is the cause of most damage. In Chapter II, Section VI additional winter storm hazards are addressed, as well as information related to potential losses for the county. The committee has determined that several steps could be undertaken to minimize the effects of winter storms to protect the health and safety of citizens, as well as damage to new and existing structures.

Objective F1. Educate the public on preparedness and safety issues for winter storm events.

Objective F2. Prevent property damage as a result of a winter storm event.

Objective F3. Minimize power outages during winter storms.

G. Earthquake Action Plan

As indicated in Chapter II, Section VII. Earthquake conditions have the potential to affect all of Lincoln County. Critical facilities and vulnerable populations are located in the County and the City. As a result, any mitigation steps related to an earthquake event should be undertaken on a countywide basis and specifically include all incorporated jurisdictions.

Objective G1. Minimize damage to property from earthquake events.

Objective G2. Minimize damage to public buildings and critical facilities to ensure continual operations of vital services.

Objective G3. Educate the public on preparedness and safety issues for earthquake events.

H. All Hazard Action Steps

The purpose of this section is to allow the committee to recommend mitigation measures within this plan that transcend individual hazards. Certain common mitigation measures are needed regardless of the specific hazard event. Rather than list these multiple times within

each different hazard category, the committee decided to list these “all-hazards” mitigation measures within a separate section of the plan. The goal with these mitigation measures is again to minimize the loss of life and property, and to prevent disruption of services to the public to the greatest extent possible.

- Objective H1.** Ensure communication capabilities exist between all Emergency Service Personnel and Agencies.
- Objective H2.** Ensure the ability to travel for county residents, organizations, and providers of essential services such as Law Enforcement Personnel, hospitals and utilities after a hazard event.
- Objective H3.** Protect critical facilities from the effects due to power outages as a result of all hazards to ensure a continuation of all vital services.
- Objective H4.** Provide adequate notification to citizens of Lincoln County pertaining to hazard event.
- Objective H5.** Guarantee all evacuation plans are up to date and adequate to meet the needs of the citizens of Lincoln County.
- Objective H6.** Guarantee that all Emergency Response Plans are up to date and adequate to meet the needs of citizens of Lincoln County.
- Objective H7.** Ensure all emergency shelters are ready to meet the needs of the population of Lincoln County and the City of Lincoln.
- Objective H8.** Provide the citizens of Lincoln County educational information on Emergency Preparedness.
- Objective H9.** Provide the citizens of Lincoln County with accurate and timely information pertaining to Emergency Preparedness.
- Objective H10.** Collect accurate and complete data pertaining to hazard events within Lincoln County and the City of Lincoln.

SECTION III. MITIGATION ACTIONS

Table 3.6

Action #	Mitigation Action and Description	Jurisdiction	Responsible Agency/ Dept.	Hazards Addressed	Objective Supported	Goal	Structural/ Non-Structural	Estimated Project Cost	Possible Funding Source(s)	Time frame	Status	Priority
1.	Have Flood Hazard Base Maps created.	Lincoln County/ Lincolnton	BOC, City Council	Flood	A1, A2	1, 2, 4, 5	Non-Structural	\$350,000	General Funds, FEMA	2020-2024	Unchanged If funding becomes available	Low
2.	Continue to assess stormwater runoff.	Lincoln County/ Lincolnton	Road Dept./ City/County Public Works Dept.	Flood	A5, C2	2, 6	Non-Structural	Staff time	General Funds	2020-2025	Ongoing Done as part of public works job	High
3.	Construct as needed, more storm water retention facilities, storm drain improvements and channel improvements to protect existing and new developments.	Lincoln County/ Lincolnton	Road Dept./ City/County Public Works Dept.	Flood/ Drought	A3	2, 6	Structural	1,000,000	General Funds	2020-2025	Ongoing As funding becomes available	High
4.	Clear run-off and water retention ditches.	Lincoln County/ Lincolnton	Road Dept./ City/County Public Works Dept.	Flood	A5	2, 1	Structural	Staff Time	General Fund	2020-2025	Ongoing Ditches are cleared by Road Dept. as part of their work load.	High
5.	Seek funding for communication towers and voice repeater systems.	Lincoln County/ Lincolnton	EMA/ Police/ Sheriff	All hazards	H1, H9	1	Structural	\$750,000	General Fund, FEMA, CICC, JAG, USDA, DOJ	2020-2025	Ongoing As funding becomes available	High
6.	Promote the preservation of areas in and around watercourses.	Lincoln County/ Lincolnton	BOC, City Councils, Code and Building Depts.	Flood	A6	1, 2, 4, 5	Non-Structural	Staff time	CDBG, USDA, EPA, DNR	2020-2025	Ongoing	Medium

2020 Multi-Hazard Pre-Disaster Mitigation Plan Update

Action #	Mitigation Action and Description	Jurisdiction	Responsible Agency/ Dept.	Hazards Addressed	Objective Supported	Goal	Structural/ Non-Structural	Estimated Project Cost	Possible Funding Source(s)	Time frame	Status	Priority
7.	Add greenspace to known flood prone areas.	Lincoln County/ Lincolnton	BOC, City Councils, Code and Building Depts.	Flood	A6	1, 2, 4, 5	Non-Structural	Staff time	CDBG, USDA, EPA, DNR	2020-2025	Ongoing	Medium
8.	Pave roads in county that are unpassable due to flooding: Areas of interest are Goshen Church Rd.; Green Street on Fire Tower Rd.; Walker Hawes Rd.; Crook Rd@ Old Crook Rd.; Smalley Rd.	Lincoln County/ Lincolnton	BOC, City Councils, Code and Building Depts.	Flood, Severe Weather	A4, E2, E3	1,2,6	Structural	\$1,500,000	General Funds T-SPLIST FEMA, DOT, CDBG	2020-2025	Ongoing As funding becomes available	Medium
9.	Evaluate existing water system upgrade as needed.	Lincoln County/ Lincolnton	City/County Public Works Dept.	Flood/ Drought/ Wildfire	A7, C1	1, 2, 6	Structural	Unknown	General Fund, CDBG, USDA, EPA, DNR	2020-2025	Ongoing As funding becomes available	High
10.	Investigate methods to reduce non-point source pollution.	Lincoln County/ Lincolnton	City/County Public Works Dept.	Flood	A1	1, 2, 5	Non-Structural	Unknown	USDA, EPA, DNR	202-2025	No projects have been identified	Low
11.	Enact a program to educate the residents about water conservation issues.	Lincoln County/ Lincolnton	BOC, City Councils, City/County Public Works Dept.	Drought	C1, C2	1, 3	Non-Structural	\$2,000,00	USDA, EPA, DNR, General Funds	2020-2022	Stalled due to staff time	High
12.	Increase public awareness of watering restrictions and bans.	Lincoln County/ Lincolnton	BOC, City Councils, City/County Public Works Dept.	Drought	C1, C2	1, 3	Non-Structural	Staff Time	General Funds	2020-2025	This is done during state declared droughts	High
13.	Develop a public awareness campaign to promote water-saving campaigns (i.e. low-flow water	Lincoln County/ Lincolnton	BOC, City Councils, City/County Public Works Dept.	Drought	C1, C2	1, 3	Non-Structural	Staff Time	General Funds	2020-2025	This is done as part of building permits and water	High

2020 Multi-Hazard Pre-Disaster Mitigation Plan Update

Action #	Mitigation Action and Description	Jurisdiction	Responsible Agency/ Dept.	Hazards Addressed	Objective Supported	Goal	Structural/ Non-Structural	Estimated Project Cost	Possible Funding Source(s)	Time frame	Status	Priority
	saving devices).										departments	
14.	Continue training of all firefighters to include wildland fire training.	Lincoln County/ Lincoln	EMA, Fire Depts.	Wildfire	D1	1, 2	Non-Structural	Unknown	General Funds, FEMA	2020-2025	Ongoing	High
15.	Seek funding for needed firefighting equipment.	Lincoln County/ Lincoln	EMA, Fire Depts.	Wildfire	D1	1, 2	Non-Structural	Unknown	General Funds, FEMA	1 year and Continual	Ongoing	High
16.	Inventory and replace or install more fire hydrants as needed.	Lincoln County/ Lincoln	EMA, Fire Depts., Public Works	Wildfire	D1	1, 2	Structural	Unknown	General Funds, FEMA	2020-2025	Ongoing As funding becomes available	High
17.	Seek funding for fire engines and tankers for local fire departments.	Lincoln County EMA/ Lincoln	EMA, Fire Depts.	Wildfire	D1	1, 2	Non-Structural	\$200,000	General Funds, FEMA	1 year and Continual	Ongoing	High
18.	Implement the Firewise Community Initiative where appropriate	Lincoln County/ Lincoln	Fire Depts. City Councils, BOC	Wildfire	D2, D3	1, 2, 3	Non-Structural	\$25,000.00	General Funds, GFC	2020-2025	Stalled as no communities have been identified to participate	Low
19.	Improve public awareness of wildfire techniques and awareness of wildfire dangers.	Lincoln County/ Lincoln	EMA, Fire Depts., GFC	Wildfire	D2, D3	1, 2, 3	Non-Structural	\$25,000.00	General Funds	2020-2025	Ongoing Info will be added to website and Facebook page as appropriate	High
20.	Inspect public buildings and critical facilities and retrofit to reinforce windows, doors, and roofs as needed.	Lincoln County/ Lincoln	EMA, Fire Depts. Public Works, Building and Code Depts.,	Severe Weather, Winter Storms	E1, E2, E3	1, 2, 6	Structural	Unknown	General Funds, FEMA	3 years	Ongoing	Medium
21.	Enforce building codes for all new buildings and critical facilities.	Lincoln County/ Lincoln	Building and Code Depts.,	Flood, Severe Weather, Winter Storm	A5, A6, E1, E2	1, 2, 6	Structural/ Non-Structural	Unknown	General Funds, FEMA	2020-2025	Ongoing Enforced when Building Permits are issued.	High

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Action #	Mitigation Action and Description	Jurisdiction	Responsible Agency/ Dept.	Hazards Addressed	Objective Supported	Goal	Structural/ Non-Structural	Estimated Project Cost	Possible Funding Source(s)	Time frame	Status	Priority
22.	Install lightning rods in high value critical facilities.	Lincoln County/ Lincolnton	EMA, Fire Depts. Public Works, Building and Code Depts.,	Severe Weather, Lightning	E1, E2, E3	1, 2, 6	Structural	100,000	General Funds, FEMA	2020-2025	Ongoing As funding becomes available	Medium
23.	Review current Emergency Response Plan and update as needed.	Lincoln County EMA	EMA, RC	All hazards	H6, H8	1, 2, 3	Non-Structural	Staff Time	General Funds	2020-2022	Ongoing	High
24.	Review current evacuation plans paying particular attention to vulnerable populations and update as needed.	Lincoln County EMA	EMA, RC	Flood, Wildfire, Dam Failure, Severe Weather, Winter Storm, Earthquake	H5, H8	1, 2, 3	Non-Structural	Staff Time	General Funds	2020-2025	Ongoing Updated as required	High
25.	Develop a public awareness program about the installation of lightning grounding systems on critical infrastructure, residential and business properties.	Lincoln County/ Lincolnton	EMA, RC	Severe Weather, Lightning	E4	1, 2, 3	Non-Structural	Staff Time	General Funds	2020-2025	Stalled due to lack of staff	Low
26.	Inventory all critical facilities and assess generator needs. Install generators where needed.	Lincoln County/ Lincolnton	BOC, City Councils, Fire Depts., EMA, Police, Sheriff, Public Works, Road Depts.	All hazards	H3	1, 2, 3, 6	Structural/ Non-Structural	Unknown	General Funds, FEMA	2020-2025	Ongoing As funding becomes available	High
27.	Seek funding for new ambulances.	Lincoln County/ Lincolnton	EMA, BOC, City Councils	All hazards	H2	1	Non-Structural	\$450,000	General Funds, FEMA	2 years	New	High

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Action #	Mitigation Action and Description	Jurisdiction	Responsible Agency/ Dept.	Hazards Addressed	Objective Supported	Goal	Structural/ Non-Structural	Estimated Project Cost	Possible Funding Source(s)	Time frame	Status	Priority
28.	Seek funding for EMT/Paramedic equipment.	Lincoln County/ Lincoln	EMA, BOC, City Councils	All hazards	H2	1	Non-Structural	\$450,000	General Funds, FEMA	2 years	New	High
29.	Seek funding to ensure all current and future emergency shelters have back-up generators.	Lincoln County/ Lincoln	BOC, City Councils, Fire Depts., EMA, Police, Sheriff	All hazards	H7	1, 2, 3, 6	Structural/ Non-Structural	Unknown	General Funds, FEMA	2020-2025	Ongoing As funding becomes available	High
30.	Educate the public on shelter locations and evacuation routes.	Lincoln County/ Lincoln	Fire Depts., EMA, Police, Sheriff	Flood, Wildfire, Dam Failure, Severe Weather, Winter Storm, Earthquake	H8, H9	3	Non-Structural	Staff Time	General Funds	2020-2025	Information is posted on Facebook and EMA website as needed	High
31.	Develop public education and awareness programs regarding severe weather events to include home safety measures, purchase of weather radio and personal safety measures before, during and after an event.	Lincoln County/ Lincoln	EMA, BOC, City Councils, RC	Flood, Wildfire, Dam Failure, Severe Weather, Winter Storm, Earthquake	H8, H9	3	Non-Structural	\$10,000	General Funds, FEMA	2020-2025	Ongoing Information is posted on Facebook and EMA website as needed	High
32.	Implement a winter storm education program to include winterization of home and/or business and what to do before, during and after.	Lincoln County/ Lincoln	EMA, BOC, City Councils, RC	Winter Storm	F1	3	Non-Structural	\$25,000	General Funds	2020-2025	Ongoing Information is posted on Facebook and EMA website as needed	High

2020 Multi-Hazard Pre-Disaster Mitigation Plan Update

Action #	Mitigation Action and Description	Jurisdiction	Responsible Agency/ Dept.	Hazards Addressed	Objective Supported	Goal	Structural/ Non-Structural	Estimated Project Cost	Possible Funding Source(s)	Time frame	Status	Priority
33.	Conduct a survey to determine structural capability of critical facilities to function after a seismic event. Retrofit as needed.	Lincoln County/ Lincolnton	Fire Dep'ts., EMA, Police, Sheriff, Building and Code Enforcement	Earthquake	G1, G3	2, 4, 6	Non-Structural	50,000	General Funds	2020-2025	Stalled due to funding	Low
34.	Distribute flyers and pamphlets to citizens and businesses on earthquake preparedness.	Lincoln County/ Lincolnton	EMA, BOC, City Councils, RC	Earthquake	G3	1, 3	Non-Structural	10,000	General Funds,	2 years	New	Medium
35.	Conduct earthquake scenarios to estimate potential loss of life and injuries, the types of potential damage, and existing vulnerabilities.	Lincoln County/ Lincolnton	Fire Dep'ts., EMA, Police, Sheriff	Earthquake	G1, G2	1, 2, 3, 4	Non-Structural	50,000	General Funds, GEMA	2020-2025	Ongoing. Will try to run in next Hazus	Low
36.	Create a data base to record hazard event information.	Lincoln County/ Lincolnton	EMA, BOC, City Councils, RC	All hazards	H10	1, 2, 3	Non-Structural	Staff Time	General Funds	2020-2025	Ongoing Stalled due to lack of staff	Medium
37.	Conduct dam breach analysis to identify assets and population at risk in the event of a failure.	Lincoln County/ Lincolnton	EMA, BOC, City Council, RC	Dam Failure	B1, B2	1, 2	Non-Structural	Unknown	General Funds, DNR	2020-2025	Stalled due to funding	Medium
38.	Draft ordinance prohibiting development in dam breach zone.	Lincoln County/ Lincolnton	BOC, City Council, RC	Dam Failure	B2	1, 2, 4	Non-Structural	Staff Time	General Funds	2021	In progress	Medium
39.	Inventory existing road equipment and purchase needed equipment to maintain roads before, during and	Lincoln County/ Lincolnton	BOC, City Council, Public Works, Road Depts.	Flood, Severe Weather, Winter Storm	H2	1, 2	Non-Structural	Unknown	General Funds, FEMA	2020-2025	Ongoing As funding becomes available	Medium

2020 Multi-Hazard Pre-Disaster Mitigation Plan Update

Action #	Mitigation Action and Description	Jurisdiction	Responsible Agency/ Dept.	Hazards Addressed	Objective Supported	Goal	Structural/ Non-Structural	Estimated Project Cost	Possible Funding Source(s)	Time frame	Status	Priority
	after a hazard event.											
40.	Develop coordinated management strategies for detcing, snow plowing, and clearing roads of fallen trees and debris	Lincoln County/ Lincolnton	BOC, City Council, EMA, Public Works, Road Depts.	Flood, Severe Weather, Winter Storm	H2	1, 2	Non-Structural	Staff Time	General Funds	2020-2025	Stalled due to staff time	Low
41.	Promote the construction of safe rooms in shelter areas and in public buildings.	Lincoln County/ Lincolnton	BOC, City Council, EMA, Fire Depts., Sheriff, Police	Flood, Wildfire, Damm Failure, Severe Weather, Winter Storm, earthquake	H3	1, 2, 6	Structural	Unknown	General Funds, FEMA	2020-2025	Ongoing as funding becomes available	Medium
42.	Update 911 equipment as needed.	Lincoln County/ Lincolnton	EMA	All hazards	H1, H3	1, 2, 6	Structural	Unknown	General Funds, FEMA	2020-2025	Ongoing as funding becomes available	High
43.	Promote and participate in the following American Red Cross Programs • Disaster Resistant Neighborhoods Program • Business and Industry Preparedness Seminar • Community Disaster Education Preparedness presentations.	Lincoln County/ Lincolnton	BOC, City Council, EMA, Fire Depts., Sheriff, Police	All hazards	H4, H8, H9	1, 2, 3	Non-Structural	Unknown	General Funds, FEMA	2020-2025	Ongoing	Low

2020 Multi-Hazard Pre-Disaster Mitigation Plan Update

Action #	Mitigation Action and Description	Jurisdiction	Responsible Agency/ Dept.	Hazards Addressed	Objective Supported	Goal	Structural/ Non-Structural	Estimated Project Cost	Possible Funding Source(s)	Time frame	Status	Priority
44.	Create an EMA website and Facebook Page with information pertaining to Emergency Preparedness.	Lincoln County	EMA	All hazards	H4, H5, H6, H7, H8, H9	1, 2, 3	Non-Structural	Staff Time	General Funds	2020-2025	New	High
45.	Implement GIS technology on fire and emergency management vehicles so data can be readily available in the field providing more accurate, timely assessments for future mitigation planning activities.	Lincoln County/ Lincolnton	BOC, City Council, EMA, Fire Depts., Sheriff, Police	Flood, Wildfire, Dam Failure, Severe Weather, Winter Storm	H9, H10	1, 2, 6	Non-Structural	50,000	General Funds, FEMA	1 year and Continual	New	High
46.	Provide NOAA weather radios to elderly and handicap populations (moved to all hazards).	Lincoln County/ Lincolnton	BOC, City Council, EMA,	Flood, Wildfire, Dam Failure, Severe Weather, Winter Storm	H4, H8, H9	1, 2, 3	Non-Structural	\$50,000	General Funds, FEMA	2 years	Ongoing	Medium
47.	Perform procurement to contract with debris removal firm to have contract in place before hazards to ensure firm can move in immediately.	Lincoln County/ Lincolnton	BOC, City Council, EMA,	Winter Storm, Severe Weather, Flood, Wildfire	A4, H2	1, 2	Non-Structural	Staff Time	General Funds	3 months	New	High

- A. **New Buildings and Infrastructure:** All objectives and action steps are applicable to new buildings and infrastructure.
- B. **Existing Buildings and Infrastructure:** All objectives and action steps are applicable to existing buildings and infrastructure except adopt building codes. Enforcing building codes on existing buildings is not always feasible. Buildings maybe retrofitted but cannot always be brought up to stricter regulations.
- C. **Special Multi-Jurisdictional Strategy and Considerations:** During a natural hazard, it is imperative that all emergency personal can communicate with each other throughout the entire planning area. The County and Lincolnnton have numerous dead spots throughout the area due to topography and lack of adequate communication equipment. The County and its emergency personnel are dependent on the private sector for towers to use for signals. If these towers are ever removed the County will be without any adequate means to transmit signals. Lincoln County and the City of Lincolnnton are aware of the need to develop communication capabilities that will serve their County.

Another concern is the lack of available data for the county and individual jurisdictions on hazard events. A database needs to be created and maintained that provides information on flooding events that occur. This database should include information such as location (road names, neighborhoods, GPS coordinates, etc.), damages reported, power outages, road closures, county and city personal that are dispatched to the area, etc.

CHAPTER IV. PLAN INTEGRATION AND MAINTENANCE

The table below provides a brief description of each section in this chapter and a summary of the changes that have been made.

Chapter 1 Section	Updates to Section
I. Implementation Action Plan	General text edits based on current conditions and schedules; elaborated on how HMP is incorporated into other plans.
II. Evaluation, Monitoring, Updating Note whether the original method and schedule worked	Text edits based on previous experiences and future public involvement.
III. Plan update and maintenance	Regulated update and maintenance schedule and public involvement

SECTION I. Implementation Action Plan

- A. Administrative Actions:** Lincoln County Emergency Management Agency was responsible for overseeing the original PDM planning process and the plan update. Facilitation of the planning process was conducted by the Central Savannah River Area Regional Commission. The Lincoln County Board of Commissioners has authorized the submission of this plan to both GEMA and FEMA for their respective approvals. The Lincoln County Board of Commissioners and the City Council of Lincolnton have formally adopted this plan after approval from GEMA and FEMA was obtained.
- B. Authority and Responsibility:** Upkeep and maintenance of the plan shall be the responsibility of the EMA Director, as determined during the planning process. It shall be the responsibility of the EMA Director to ensure that this plan is utilized as a guide for initiating the identified mitigation measures within the community. The Lincoln County Board of Commissioners and the Mayors of all incorporated jurisdictions will be responsible for assigning appropriate staff members to implement the action steps identified in this plan for their jurisdictions. The EMA Director, or his designee, shall be authorized to call the committee to review and update this plan periodically (at least annually) throughout the useful life of the plan, not to exceed five years.

During the plan update process, the EMA Director and committee members shall identify projects that have been successfully undertaken in initiating mitigation measures within the community. These projects shall be noted within the planning document to indicate their completion. Additionally, the committee called together by the EMA Director shall discuss and identify any additional mitigation projects that are necessary in the community.

- C. Prioritization:** The mitigation goals, objectives and related action items were initially compiled from the input of the committee, as well as from others in the community. The committee prioritized the mitigation actions based on what would be perceived as most beneficial to the community, and the action steps have been listed in this plan as the

committee prioritized them. Several criteria were established to assist committee members in the prioritization of these suggested mitigation actions. Criteria included perceived cost benefit or cost effectiveness, availability of potential funding sources, overall feasibility, measurable milestones, multiple objectives, and both public and political support for the proposed actions.

1. **Methodology for prioritization:** To assist with the prioritization of mitigation actions, the STAPLEE worksheet and criteria recommended by FEMA was used. STAPLEE is a tool used to assess the costs and benefits and overall feasibility of mitigation actions. STAPLEE stands for the following:
 - i. **Social:** Will the action be acceptable to the community? Could it have an unfair effect on a particular segment of the population?
 - ii. **Technical:** Is the action technically feasible? Are there secondary impacts? Does it offer a long-term solution?
 - iii. **Administrative:** Are there adequate staffing, funding and maintenance capabilities to implement the project?
 - iv. **Political:** Will there be adequate political and public support for the project?
 - v. **Legal:** Does your jurisdiction have the legal authority to implement the action?
 - vi. **Economic:** Is the action cost-beneficial? Is there funding available: Will the action contribute to the local economy?
 - vii. **Environmental:** Will there be negative environmental consequences from the action? Does it comply with environmental regulations? Is it consistent with community environmental goals?

The committee was asked to review the STAPLEE score sheet and list of mitigation actions. Each action item was discussed and a consensus reached by the group on the importance of each item. A score of high, medium or low was assigned to each to each item to help determine the priority level.

- **High:** Strategies that would have a direct, large impact on mitigation of hazards. A project that meets multiple plan goals and objectives, benefits exceed cost, has funding secured under existing programs or authorizations, or is grant-eligible, and can be completed in 1 to 5 years. It may also be a project that just requires staff time but has great benefit, i.e., adoption of flood plain ordinances.
- **Medium:** Strategies that meet at least one plan goal and objective, benefits exceed costs, funding has not been secured or requires substantial staff time and can be completed in 1 to 5 years.
- **Low:** Strategies that are important but requires substantial staff time, or addition of staff and resources that are not readily available to implement.

2. **Use of cost benefit refer to Worksheet #4:** Through the STAPLEE prioritization process, several projects emerged as being a greater priority than others. Some of the projects involved expending considerable amounts of funds to initiate the required actions. Other projects allowed the community to pursue completion of the project

using potential grant funding. Still others required no significant financial commitment by the community.

The determination of the cost benefit of a project was based upon the anticipated cost in relation to the perceived benefit of the action taken. A proposed action with a high price tag, but minimal benefit to the community, was considered to have a low cost benefit. Conversely, if minimal expenditures were required and the entire community would benefit, this received a favorable cost benefit rating. All proposed mitigation actions were evaluated to determine the favorability of the benefit in relation to the cost associated with completing the project. Determining the economic feasibility of mitigating hazards can provide decision makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects.

3. **Use of other calculations:** Estimation of potential damages and costs in the event of a natural hazard achieves two ends: (1) it enables the identification of critical economic targets for mitigation measures and (2) to enhance the ability to prioritize post-disaster response in aiding the community to recover.
4. **Use of other review structure:** All goals were discussed in detail to determine what was considered a priority for the EMA personnel.

D. Incorporation of Local PDM Plan into other plans/planning measures: The 2015 Hazard Mitigation Plan was reviewed to determine if any of the mitigation activities need to be added to the above-mentioned documents. The requirements of this Hazard Mitigation Plan were taken into consideration and incorporated into Comprehensive Plans, Five-Year Short-Term Work Program, Local Emergency Operations Plans, and all other such Plans as appropriate. The County along with Lincoln County worked jointly to produce these planning documents.

The STWP will be updated in 2023 and the Joint Comprehensive Plan is due for an update in 2028. The RC facilitates the planning process for both documents and updates both plans. The County takes the lead and all jurisdictions must participate to complete the comp plan and STWP. This Hazard Mitigation Plan will be reviewed by the County along with all six jurisdictions. The requirements of this Hazard Mitigation Plan will be taken into consideration and will be incorporated into Comprehensive Plans, Five-Year Short-Term Work Program, Local Emergency Operations Plans, and all other such Plans as appropriate.

This hazard plan will be reviewed and incorporated into the Joint Comprehensive plan and STWP update as needed. Goals and strategies will be incorporated in the land use section of the comprehensive plan update. Mitigation strategies will be listed in the STWP to ensure their eligibility for funding from the state if available. In addition, relevant sections will be included in the revision of the Local Emergency Operations Plan in 2021. This hazard plan update will also be reviewed in the next update of the LEOP.

Once this plan is approved, it will be used by the consultants and planning committees responsible for the update process for the Joint Comprehensive Plan, Short-Term Work Programs, and all other plans that could incorporate the requirements of this plan. To facilitate inclusion of this Plan, Lincoln County and Lincolnton will provide a copy of this Plan to the persons and/or committees responsible for writing and updating plans.

SECTION II. EVALUATION, MONITORING AND UPDATING

- A. Method:** The Plan is intended to be a ‘living’ document that informs stakeholders about hazard mitigation projects and plans undertaken by the county and their jurisdictions. In accordance with the requirements set forth in the Disaster Mitigation Act of 2000, Lincoln County is required to review the plan annually and revise the plan every five years. The revision process will be consistent with the FEMA planning requirements as stipulated in the 44 CFR 201.6.
- B. Criteria to be used to monitor and evaluate the plan annually or after any natural disaster event.**
- Each hazard will be reviewed. Any new information pertaining to new and/or previous events will be added to the plan.
 - Any new critical facilities will be added to the plan.
 - Critical facilities information will be updated as needed.
 - All mitigation goals, objectives and action steps will be reviewed for relevance and completion status. All mitigation goals, objectives and action steps that have been completed or are no longer relevant will be documented.
 - New mitigation activities will be added if necessary.
 - Public participation will be monitored and documented.
- C. Responsibility:** At the direction of the EMA Director, the committee shall be reconvened for the revision process which will include a schedule, timeline, and a list of the agencies or organizations participating in the plan revision. Lincoln County and all incorporated jurisdictions have designated the following participants of the committee to guide plan maintenance and update activities to ensure that the information in the plan is current. The update committee will also be responsible for disseminating information to stakeholders within their respective jurisdictions.

Jurisdiction	Hazard Mitigation Update Committee	Review
	Point-of-Contact	Schedule
Lincoln County	Emergency Management Director	Annually
Lincolnton	City Clerk	Annually

- D. Timeframe:** The committee has set the second Tuesday of every May for the annual review of the plan update and within two months after any natural disaster event. A public notice will be submitted to the legal organ of each jurisdiction and the notice will be published at all government and community buildings.

SECTION III. PLAN UPDATE AND MAINTENANCE

- A. Public involvement:** Lincoln County is committed to having active public participation during reviews and updates of the PDM Plan. Public participation will follow the guidelines set forth in 44 CFR 201.6. Future public involvement of the community will be more stringent. The original method was not as successful as anticipated in ensuring community involvement. With this in mind, two weeks before the annual December review meeting, a notice will be published in the legal organ of Lincoln County. Flyers will be placed at all government and community gathering places to ensure that citizens of the county are made aware of the annual review process. The new EMA website will also provide ongoing information about the plan and its implementation.
- B. Timeframe:** Pursuant to the requirements set forth in the Disaster Mitigation Act of 2000, the community is again required to update and evaluate the plan no more than five years after its adoption. At least one year prior to the end of the required five-year update period, the EMA Director will begin the planning process for a new update to this plan. This will consist of establishing a new planning committee that will be tasked with completing the update following the same process used for this update.

No later than the conclusion of the five-year period following approval of the plan update, the EMA Director shall submit a revised Hazard Mitigation Plan to GEMA for its approval. It is important to note that the plan update process, as established by the planning committee, is subject to change, depending upon subsequent regulations and/or requirements set forth by GEMA and FEMA.

CHAPTER V. Conclusion

SECTION I. Summary

Through the update process of this plan, Lincoln County has developed a more thorough hazard history, an inventory of critical facilities, and an updated contact list for emergency contacts at critical facilities. Natural hazards have been identified countywide and goals, objectives and mitigation actions have been compiled and prioritized. The committee has been able to work together effectively and efficiently to produce this document and establish a greater awareness of our risks and our mitigation strategies.

As a result of the update PDM planning process, Lincoln county officials have obtained more complete and accurate information and knowledge regarding the County's disaster history, the presence of natural hazards, and the likelihood of each of these hazards occurring within the County, and the potential impacts and challenges these hazards present to the community.

All meetings were open to the public and advertised in *The Lincoln Journal*, providing Lincoln County citizens with the opportunity to comment on and offer suggestions concerning disaster mitigation actions within the community.

The committee found that it is difficult to predict the geographic threat, and therefore the resulting impact of some natural disasters as compared to others. Tornados and related severe weather strike randomly, usually affecting a small, localized area. On the other hand, natural disasters such as winter ice storms and drought can blanket the entire county, affecting all businesses, public facilities, and residents.

Recognizing this challenge, the committee identified both general and specific measures to aid in the mitigation of several natural hazards most likely to impact Lincoln County. These measures include, but are not limited to, the protection of critical facilities and infrastructure, progressive governmental policies, and the proactive use of codes and regulations. It is worth noting that local government policies can often be the single most important and cost efficient component of PDM.

The mission of the Lincoln County Pre-Disaster Hazard Mitigation Planning Committee is to

“Make the citizens, businesses, communities and local governments of Lincoln County less vulnerable to the effects of natural hazards through the effective administration of hazard mitigation grant programs, hazard risk assessments, wise floodplain management and a coordinated approach to mitigation policy through state, regional and local planning activities.”

The committee feels that this plan, when implemented, will help to make all of Lincoln County a safer place to live and work for all of its citizens.

SECTION II – REFERENCES

Numerous sources were utilized to ensure the most complete planning document could be assembled. In an effort to ensure that all data sources consulted are cited, references are listed in the following format: 1) Publications, 2) Web Sites, 3) Other Sources.

Publications:

FEMA Pre-Disaster Mitigation *How-to Guides* #1, 2, 3, 7 (FEMA)
GEMA Supplements to FEMA Pre-Disaster Mitigation How-to Guides (GEMA)
The Lincoln Journal
The Augusta Chronicle
Summary of Floods in the United States During 1990 and 1991
<http://pubs.er.usgs.gov/publication/wsp2474>
FLOODS IN GEORGIA. FREQUENCY AND MAGNITUDE. By. R. W. Carter.
<http://pubs.usgs.gov/circ/1951/0100/report.pdf>
Georgia Archives University System of Georgia
<http://cdm.sos.state.ga.us:2011/cdm/search/searchterm/FLOOD/mode/all/order/subject/ad/desc>

Web Sites:

FEMA www.fema.gov
GEMA www.gema.state.ga.us
Georgia Department of Community Affairs <http://www.dca.state.ga.us/>
Georgia Forestry Commission <http://weather.gfc.state.ga.us>
National Climatic Data Center www.ncdc.noaa.gov
SHELDUS™ | Spatial Hazard Events and Losses Database for the United States
<http://webra.cas.sc.edu/hvri/products/sheldus.aspx>
National Inventory of Dams <http://crunch.tec.army.mil/nid/webpages/nid.cfm>
<http://www.placenames.com>
New Georgia Encyclopedia <http://www.georgiaencyclopedia.org/nge/Home.jsp>
Georgia Archives University System of Georgia
<http://cdm.sos.state.ga.us:2011/cdm/search/searchterm/FLOOD/mode/all/order/subject/ad/desc>
United States Census Bureau <http://www.census.gov/>
USDA, NASS, 2012 CENSUS OF AGRICULTURE
http://www.nass.usda.gov/Census_of_Agriculture/index.asp
<http://www.sercc.com/> The Southeast Regional Climate Center (SERCC)
<http://www.tornadohistoryproject.com/tornado/Georgia> Tornado History Project

Other Sources:

American Red Cross
CSRA Regional Commission
Georgia Department of Natural Resources
Georgia Forestry Commission
Lincoln County, Lincolnton
Lincoln County Board of Education
Lincoln County Hospital
Lincoln County Tax Assessor

APPENDICES

Appendix A – Hazard Identification, Risk Assessment and Vulnerability (HRV)

- I. Hazard A - Flood
 - a. Description
 - b. Data – GEMA Critical Facility Inventory Report
 - c. Maps
- II. Hazard B– Dam Failure
 - a. Description
 - b. Data– GEMA Critical Facility Inventory Report
 - c. Maps
- III. Hazard C - Drought
 - a. Description
 - b. Data– GEMA Critical Facility Inventory Report
 - c. Maps
- IV. Hazard D - Wildfire
 - a. Description
 - b. Data– GEMA Critical Facility Inventory Report
 - c. Maps
- V. Hazard E – Severe Weather, Including Tornadoes, Tropical Storms, and Thunder Storms
 - a. Description
 - b. Data– GEMA Critical Facility Inventory Report
 - c. Maps
- VI. Hazard F – Winter Storm
 - a. Description
 - b. Data– GEMA Critical Facility Inventory Report
 - c. Maps
- VII. Hazard G - Earthquake
 - a. Description
 - b. Data– GEMA Critical Facility Inventory Report
 - c. Maps
- VIII. All Hazards --
 - a. Description
 - b. Data– GEMA Critical Facility Inventory Report
 - c. Maps

Appendix B –Growth and Development Trends Community Information

- I. Local Comp Plan Executive Summary
- II. Statistics/tables from Local Comp Plan
- III. Community Information

Appendix C –Planning documents

- I. Executive Summary Local Emergency Operations
- II. Executive Summary GEMA State Emergency Operations
- III. Hazard Risk Analysis
- IV. Flood Insurance Study
- V. Community Wildfire Protection Plan
- VI. Timber Impact Assessment GFC
- VII. Executive Summary CSRA Regional Commission Regional Plan

Appendix D – Worksheets used in planning process

- I. Completed GEMA/local worksheets
- II. Blank GEMA/local worksheets
- III. Other misc. worksheets or planning process documents

Appendix E – Copies of Required Planning Documentation

- I. Public notice
- II. Meeting Agendas / Meeting Minutes
- III. Sign-in sheets
- IV. Local proclamations (copy of all resolution)
- V. GEMA/FEMA correspondence