



McDuffie County

Multi-Jurisdictional Hazard Mitigation Plan

2022-2026



McDuffie County, Georgia
Town of Dearing
City of Thomson
Multi-Jurisdictional
Hazard Mitigation Plan

Original Approval: 01/26/2005

Update Approval: 04/27/2012

2nd Update Approval: 10/04/2017

3rd Update Plan Approval: 00/00/2022

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INTRODUCTION TO THE PLANNING PROCESS

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

Table 1.1

Section	Updates
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 collection was performed
III. Description of how each section of the original plan was reviewed and analyzed and whether it was revised	All sections of the plan were analyzed and updated as needed.
IV. Organization of the plan	The plan is organized by GEMA local planning Local Hazard Plan (HMP).
V. Local Hazard, Risk, and Vulnerability (HRV) summary, local mitigation goals and objectives	Reviewed all information and revised all content as needed.
VI. Multi-Jurisdictional special considerations (HRV, goals, special needs)	Reviewed and updated information concerning multijurisdictional concerns.
VII. Adoption, implementation, monitoring and evaluation	This was evaluated. Additional text was added to clearly delineate the task of implementation and monitoring.
VIII. Community Data (demographics, census, commerce, history, etc.)	Updated demographic and added additional information by jurisdiction.

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

The McDuffie County 2021 Plan Update is a review and improvement of our Multi-Hazard Pre-Disaster Mitigation Plan Update approved on April 27, 2017. The plan fulfills the requirements of the Federal Disaster Mitigation Act of 2000 (DMA2K). The Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) administer the Act. 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 many community partners including elected officials along with city and county, fire, emergency management, and law enforcement personnel. The plan’s ultimate goal is to identify natural disasters that threaten our community and develop strategies to reduce or lessen the impact of these hazard events.

The 2021 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 2021 update covers all of McDuffie County to include the Town of Dearing and the City of Thomson. The plan will identify all natural disasters that threaten the lives and properties of our community. The scope of the update includes both short and long-term mitigation strategies, implementation policies and possible sources of project funding. It also identifies mitigation strategies implemented since the 2021 plan update.

The plan also contains the following information on:

- The vision of mitigation in our community;
- The profile of McDuffie 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;
- McDuffie 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 McDuffie 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 McDuffie County's current policies, goals and regulations that pertain to hazard mitigation;
- Documentation of the planning process;
- Update hazard events that occurred since 2017;
- Update critical facilities that have been added since 2017;
- To document current mitigation strategies that have been implemented since 2017; and
- Examine and update mitigation strategy goals, objectives and action steps.

The update is the product of the combined efforts of McDuffie County, Dearing and Thomson. 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 McDuffie County Emergency Management Agency took the lead role in the update. Under the agency's leadership, there has been an endorsement and a commitment by McDuffie County, Dearing and Thomson.

Continued mitigation planning is imperative to lessen the impacts of disasters in McDuffie County, Dearing and Thomson. 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 implementation of this plan 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 McDuffie County Board of Commissioners contracted with the Central Savannah River Area Regional Commission (RC) to assist in the update to the 2021 plan update. The RC has

assisted ten counties in the completion and update of their Pre-Disaster Mitigation Plans. The RC is currently assisting four counties with their second update. The RC was tasked to review the current plan and to identify new information that needs 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.

The McDuffie County EMA Director, Stephen Sewell assembled the Hazard Mitigation Planning Committee. Table 1.2 identifies the 2021 committee.

Table 1.2

Members	Agency	Jurisdiction
Stephen Sewell	Director	McDuffie Fire/EMA
Kevin R. Williamson	Thomson-McDuffie Fire/EMS	Thomson-McDuffie
Rhusha Mack	Dearing Fire Department	Town of Dearing
Kimberly Angel	GEMA	State of Georgia
Kathy Linebarger	Public Health	McDuffie County
David Crawley	County Manager, BOC	McDuffie County
Gail Newsome	Director, Animal Shelter	McDuffie County
Edward J Bess	Thomson Police Department	City of Thomson
John Thigpen	Thomson-McDuffie Fire/EMS	Thomson-McDuffie
Sammy Purvis	Thomson-McDuffie Fire/EMS	Thomson-McDuffie
Lucretia Ferguson	City Clerk	City of Thomson
Bryan Rogers	Thomson-McDuffie Fire/EMS	Thomson-McDuffie
Robert Cobb	Thomson-McDuffie Fire/EMS	Thomson-McDuffie
Reginald Jay Sharpton	Thomson-McDuffie Fire/EMS	Thomson-McDuffie
Chris Story	Road Department	McDuffie County
Robert Heath Rogers	Thomson-McDuffie Fire/EMS	Thomson-McDuffie
Randy L Rossi	Thomson-McDuffie Fire/EMS	Thomson-McDuffie
Chase Beggs	Planning/Zoning	McDuffie County
Paul Johnson	Coroner	McDuffie County
Linton M. Neal, Jr.	Thomson-McDuffie Fire/EMS	Thomson-McDuffie
Neal McLarnon	Thomson-McDuffie Fire/EMS	Thomson-McDuffie
Robert Spurlin	BOC, IT	McDuffie County
Don Hilson	Thomson Police Department	City of Thomson
Neal Tam	Board of Education	McDuffie County

The 2021 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:

- McDuffie County Board of Education was responsible for providing structural

replacement and content values for all schools as well as square footage and occupancy limits.

- Thomson Police Department provided staff support to the PDM planning effort and were responsible for providing structural replacement and content values for all critical facilities located in their respective cities as well as square footage and occupancy limits.
- McDuffie County Sheriff’s Office provided staff support to the PDM planning effort.
- McDuffie County Health Department identified vulnerable populations. They also provided replacement value estimates for their properties.
- All Fire Departments provided staff support to the PDM planning effort and assisted with identifying occupancy limits for some of the critical structures and replacement value estimates.
- City officials from McDuffie County, Dearing and Thomson provided information relative to their jurisdiction and provided replacement value estimates for their critical facilities.
- McDuffie County Chamber of Commerce assisted in identifying major businesses.
- McDuffie County Code Enforcement Officer provided information about county government buildings including their respective replacement and content values and square footages.
- McDuffie County Tax Assessor’s Office provided most of the aggregate values for the critical structures. The valuations were converted to full values since the values are calculated at 40%. This information, combined with demographic data, is located on GEMA Worksheet #3a in Appendix D for all jurisdictions.
- The RC’s Geographical Information System (GIS) Department produced several of the maps contained in the update. Maps are located in Appendix A.
- GEMA provided the HAZ-US report for McDuffie County and provided guidance for the plans completion as needed.

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), local and regional newspaper articles, as well as personal interviews. Table 1.3 provides a list of existing planning documents used during the update.

Table 1.3

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

Existing planning mechanisms	Reviewed? (Yes/No)	Method of use in Hazard Mitigation Plan
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	This plan was incorporated into the Wildfire section in Chapter 2.
Soil Survey for Columbia, McDuffie and Warren Counties	Yes	Physical Characteristics of the County
Flood Insurance Study	Yes	Review for historical Data and Information
Hazard Risk Analyses Supplement to the McDuffie County Joint Hazard Mitigation Plan Provided by The Polis Center	Yes	Assessing vulnerabilities; Mitigation strategies, risk assessment
CSRA Regional Plan 2035	Yes	Development trends; Future growth, regional concerns and data
Flood Mitigation Assistance Plan	No	The county does not have a Flood Mitigation Assistance Plan and is listed as a mitigation action in Chapter III

The committee held four meetings over a 17 month period to guide the development of the plan. We would normally hold more meetings but due to COVID-19, much of the work was done by phone or email. 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 earthquakes, 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 three meetings, one was advertised in *The McDuffie Progress*, the County’s legal organ. This is the most efficient means to disseminate information to residents and organizations located in the county. During the update process, there was no public participation at any of the three meetings, nor were there any comments from the public. 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, Lincoln, Richmond, Taliaferro, Warren, Washington, and Wilkes

including all municipalities located within the counties. Copies of correspondence, emails and advertisements are in Appendix E.

Table 1.4

Meeting Date	Purpose of Meeting
February 20, 2020	Advertisement ran in <i>The McDuffie Progress</i> for public meeting on March 3, 2020.
March 3, 2020	This first meeting was to solicit public input on the goals and objectives of the Plan Update.
April 14, 2021	To begin hazard collection and critical facilities adjustments and to ensure all data collected to date was correct for critical facilities and to reviewed mitigation strategies and action steps.
May 26, 2021	This meeting was held to add new mitigation strategies and ensure all information was correct before submission to GEMA and FEMA
TBD (will add date once approved by FEMA)	Advertisement ran in <i>The McDuffie Progress</i> for public review period and the final meeting.
TBD (will add date once approved by FEMA)	Held final meeting after FEMA Approved Pending Adoption (APA), The final 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 2021 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 McDuffie County, Dearing, and Thomson.

SECTION IV. ORGANIZATION OF THE PLAN

The estimated time to complete the plan update was approximately 24 months. Plan completion was 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 were 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 McDuffie 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 in order 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 2012 plan update. These goals and objectives are as follow:

- To actively involve and gain support from Dearing, Thomson and unincorporated McDuffie County for the reduction of disasters in our community.
- Prioritize identified mitigation projects.
- Seek and implement any grant funding for the reduction of disasters in McDuffie County, Dearing, and Thomson.
- Monitor, evaluate, and update the progress of the plan as needed.
- To form partnerships among local, state, and federal agencies to make McDuffie 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.
- To further enhance common mitigation projects and goals between McDuffie County, Dearing, and Thomson.

An HRV assessment was accomplished by compiling and reviewing historical data on the location of specific hazards, the value of existing structures/properties in hazard locations, and analyzing the risk to life, property and the environment that could potentially result from future hazard events. 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 necessary for preserving the safety and quality of life of its residents. In addition, these facilities fulfill important public safety, emergency response, and/or disaster recovery functions. All critical facilities were added to the Georgia Mitigation Information System (GMIS). Critical facilities for McDuffie County, Dearing and Thomson were 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 2021 committee identified five major hazards that have the potential to affect McDuffie County: flooding, drought, wildfire, severe weather (tornados, tropical storms, thunderstorms) and winter

storms. The update committee reviewed current hazard data and added hail to the already identified hazard. Appendix D provides an updated comprehensive hazard.

Profiling Hazard Events: The committee analyzed the causes and characteristics of each hazard, and its effect on McDuffie County in the past to determine what segment of the population and infrastructure has historically been vulnerable to each specific hazard. A discussion of each hazard's updated profile is in Chapter 2.

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. An updated Worksheet #3a is provided in Appendix D.

Estimating Losses: Using the best available data, tax digest data, parcel maps and GMIS reports and maps for critical facilities allowed the committee to estimate damages and financial losses that might occur in a geographic area. Describing vulnerability in terms of dollar losses provides the county with 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*).

Mitigation Goals and Objectives: After ensuring that all interested persons had been given ample opportunity to contribute to strategy development, mitigation action steps were next given priority status by committee members. To evaluate priorities, committee members used as a guide a planning tool prepared by FEMA known as STAPLEE (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) criteria. Each mitigation strategy step was evaluated using STAPLEE criteria as the guiding principle to identify those steps best for McDuffie 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.

SECTION VI. MULTI-JURISDICTIONAL SPECIAL CONSIDERATIONS

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

Dearing and Thomson were notified in June of 2019 of the requirement concerning the 2021 update to the 2012 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 municipal partners toward a common mitigation strategy that significantly reduces vulnerability of natural disasters. Most natural threats overlap jurisdictions and are all susceptible to their affects. McDuffie County, Dearing and Thomson share the same

passion and 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
McDuffie County	<i>(will add after FEMA Approves)</i>
Town of Dearing	<i>(will add after FEMA Approves)</i>
City of Thomson	<i>(will add after FEMA Approves)</i>

The plan was submitted to GEMA for review and then to FEMA for approval. McDuffie County, Dearing and Thomson 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 into policy and to enhance 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 of natural disasters.
- Create awareness to the public about the need for individual preparedness and about building safer, disaster resistant communities.
- Develop strategies for long-term community sustainability during community disasters.
- Develop governmental and business continuity plans that will continue essential private sector and governmental activities during disasters.

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

- Develop a strategic mitigation plan for McDuffie 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 McDuffie County community on a continual basis.
- Identify potential funding sources for mitigation projects.

The private sector is often an overlooked segment of the community during disasters. It is vital that this sector of a community 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.

Attorney, Clerk of Superior Court, Probate Judge, Coroner, Magistrate Judge, Sheriff, and Tax Commissioner.

The Town of Dearing, which operates a Mayor and Town Council-based system of government with three elected council members.

The City of Thomson, 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 City Manager, Clerk, Attorney, Finance Officer, Engineer, and Public Works Director.

Demographics: As of 2019, McDuffie County had a population of 21,455 persons. The two tables below provide a comparison of the jurisdictions and a historical prospective of the population trends within the county

Table 1.6

Category	McDuffie County	Dearing	Thomson
Population	21,455	624	6,593
Number of Households	8,153	230	2,581
Average Household Size	2.59	2.71	2.50
Race - White	54.0%	77.6%	40.6%
Race - Black	39.9%	18.1%	59.2%
Race - Hispanic	3.1%	1.1%	2.6%
Race - Other	6.1%	4.3%	0.2%
Median HH Income	\$43,468	\$46,136	\$29,367
Per Capita Income	\$21,265	\$18,698	\$17,714

Source: 2019 -US Census Bureau, QuickFacts

Table 1.7

Community	Population				Growth (%)		
	1990	2000	2010	2019	1990-2000	2000-2010	2010-2019
McDuffie County	20,118	21,231	21,875	21,455	5.53%	3.03%	-1.9%
Dearing	547	441	549	624	-19.38%	24.49%	13.7%
Thomson	6,862	6,828	6,778	6,593	-0.49%	-0.72%	-3.5%

Source: US Census Bureau

Economy: In the year 2019, the average weekly wage for employment sectors in McDuffie County was \$702, compared to the statewide average of \$1,075. The county’s per capita personal income was \$21,265. The unemployment rate as of February, 2021 was 5.7%.

In 2019, the total number of employees located in McDuffie County was 6,224. Of the total work force, 82% percent were employed in the private service followed by 18 percent in the government sector. In 2019, 18% percent of the people in McDuffie County were living below poverty level.

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 1.8 provides a list of jobs, number of establishments and jobs along with average weekly wages per job for 2019 in McDuffie County.

Table 1.8

Annual Industry Distribution of Jobs and Average Wage in 2019 (NAICS)	Establishments	Jobs	Weekly Average Wage Per Job
Total Covered Employment and Wages	444	6,224	702
Total Private Sector	405	5,089	705
Total Government	39	1,136	684
Agriculture, forestry, fishing, hunting	8	280	704
Mining	3	*	*
Construction	44	388	940
Manufacturing	28	1,162	924
Wholesale trade	14	41	820
Retail trade	78	922	558
Transportation, warehousing	8	134	1,005
Utilities	2	*	*
Information	5	66	1,543
Finance and Insurance	26	129	904
Real Estate, rental, leasing	8	17	784
Professional, technical services	29	139	731
Mgmt. of companies, enterprises	1	*	*
Administrative and support and waste management services	11	132	413
Educational services	1	*	*
Health care, social assistance	50	792	623
Arts, entertainment, recreation	4	34	359
Accommodation and food services	47	610	261
Other services, except public administration	27	99	601
Unclassified-Industry not assigned	11	12	543

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

Climate: According to the National Weather Service, Central Georgia where McDuffie County is located experiences all four seasons. McDuffie County, GA, gets 45 inches of rain per year. The US average is 38. Snowfall is less than 1 inches. The average US city gets 28 inches of snow per year. The number of days with any measurable precipitation is 99. On average, there are 218 sunny days per year. The July high is around 91 degrees. The January low is 33. Our comfort index, which is based on humidity during the hot months, is a 7.5 out of 10, where higher is more comfortable. The US average on the comfort index is 7.

Physical Features: The County encompasses an area of roughly 266 square miles or 170,373 acres. The topography of McDuffie County ranges from that of level in the low-lying flood plain areas to around 549 feet of elevation. The county contains 9,817 acres of forested wetlands, 190 acres of wetlands, and 5,944 acres of open water. In addition, McDuffie County has 29 rivers/streams and 28 reservoirs. According to the GFC, McDuffie County has 96,975 acres of forestland.

Portions of McDuffie County are located within the Carolina and Georgia Sand Hills Major Land Resource Area (MLRA), and the Southern Piedmont MLRA. The Carolina and Georgia Sand Hills MLRA actually forms a very narrow band between the Southern Piedmont MLRA and the Coastal Plain MLRA. As a result, the principal soil associations apparent in the central and southern portions of McDuffie County (*Lakeland-Vaucluse-Orangeburg* and *Vaucluse-Lakeland-Orangeburg*) exhibit characteristics that are more typical of the Coastal Plain MLRA. *Cecil-Madison-Pacolet* soils are found in the northern portions of the county and are more typical of the Southern Piedmont MLRA.

Lakeland-Vaucluse-Orangeburg and *Vaucluse-Lakeland-Orangeburg* soils are found on uplands of the Carolina and Georgia Sand Hills MLRA and Coastal Plain MLRA that include fairly broad and flat ridge tops to slopes ranging up to 25 percent. These soils exhibit a sandy composition mixed with loam and clay. They exhibit good permeability and drain well. Exposure of such soils on steeper slopes can create erosion problems if not properly contained.

Cecil-Madison-Pacolet soils are found on ridges and side slopes of the Piedmont uplands. This association consists of deep well-drained soils that are formed in felsic, igneous and metamorphic rocks. Surface layers consist principally of gravelly sandy loam. A map of the soil types, wetlands and flood plains are located in Appendix A.

A survey of McDuffie County soil associations was conducted and approved by the Soil Conservation Service in 1977 and can be found at the following URL: https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/georgia/columbia_mcduffie_warrenG_A1981/CMW.pdf. A map of the soil types, wetlands and flood plains are located in Appendix A.

Transportation

Vehicle Traffic: There are roughly 501 miles of roads in the County network. This mileage includes 90 miles of state highways, 357 miles of county roads, 53 miles of city streets (town of Dearing and city of Thomson). State highways 10, 17, 12, 43, 150, 223, and 47 are major transportation routes along with Interstate 20 and US highways 78, 278 and 221. Currently McDuffie County has no mass transit system.

Table 1.9

Mileage by Route and Road System Report 445 for 2018			
	Total Road Mileage	Lane Mileage	Vehicle Miles Traveled (VMT)
State Route	89.43	241	846,215
County Road	356.9	716	214,067
City Street	53.3	106	66,400
Total	499.6	1,063	1,126,682

Source: Georgia Department of Transportation, Office of Transportation Data, "445 Series Reports." 2019

Public Transportation: Public transportation is 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, administered by the county and the Georgia Department of Transportation (GDOT). Public buses are to assist the elderly, providing transportation to senior citizens centers for congregate meals and to deliver meals.

Rail Traffic: McDuffie County is bisected by CSX Transportation's Atlanta to Augusta mainline (the "Georgia Railroad"). The Federal Surface Transportation Board defines CSX as a Class 1 Railroad, meaning its average annual operating revenue meets or exceeds \$255.9 million. The rail line running through the county serves only freight operations and is defined as a "mainline" because it serves a large number of trains conveying a high volume of tonnage between major markets (terminals). The Augusta-Aiken MSA is a particular beneficiary of the railroad's mainline status because Augusta is home to a CSX Transflo bulk transfer terminal that allows for rail/truck transfers of freight. Currently McDuffie County is not served by passenger rail.

Air Service: McDuffie County is home to the Thomson-McDuffie County Regional Airport (HQU). This airport is categorized by Aviation Programs, Georgia Department of Transportation as a Level III airport and accommodates various aviation related activities including recreational flying, agricultural spraying, corporate/business jets, ultra-lights, experimental aircraft, and flight training. Commercial air service is available in Augusta's Bush Field, (33 miles east) and at Atlanta's Hartsfield International Airport (120 miles west).

Utilities

Electricity: Georgia Power, a subsidiary of the Southern Company, provides electricity to the county.

Natural gas: The City of Thomson Natural Gas Department supplies natural gas to the citizens of Thomson. The department also provides gas to certain areas of McDuffie County, Warren County, Glascock County and Jefferson County.

Water and Sewer: McDuffie County and the City of Thomson operate several joint departments, one of which is the Water and Sewer Utility. The town of Dearing joined with the city and the county in 2012 to form a joint water and sewer system. This department is responsible for supplying water and sewer service to residential, commercial and industrial customers throughout the city and county. Two filter plants treat raw surface water from Clarks Hill Lake and Usry Pond. The Water and Sewer Utility is permitted to withdraw and treat 3.1 million gallons per day (GPD) from Clarks Hill Lake and 1.5 million GPD from Usry Pond. Current average daily use is 2 million GPD. This leaves an additional 2.6 million GPD available for future use.

Solid Waste: The Department of Solid Waste Management provides the customers of McDuffie County with an environmentally responsible and cost-effective system for reduction and disposal of solid waste through quality service, education and public involvement. McDuffie County

operates a solid waste transfer station located off Mesena Road. All solid waste generated in McDuffie County is processed through this facility. The waste goes to the Waste Management owned R&B Landfill in Homer, Ga. McDuffie County operates a transfer station and inert landfill with some source separated recycling. A special residential waste drop-off site is maintained for a clean, quick disposal area for those wishing to haul their own trash and save a little cash.

Communications: McDuffie County’s landline phone service primary provider is AT & T. McDuffie County has many media outlets that consist of print, radio, and television. Local print media consists of *The McDuffie Progress* (which serves as the legal organ of the county), *The McDuffie Mirror*, and *The Augusta Chronicle*. McDuffie County is served by 19 FM radio stations. All metro Augusta television stations broadcast in McDuffie County. These are WRDW, WJBF, WAGT, and WFXG.

Fire and Emergency Services

Response: Enhanced 911 Service (E-911) is available 24-hours a day throughout the county and is operated and coordinated by the McDuffie County EMA. CodeRED® is a new County service by which County officials can notify County residents by telephone about emergencies or critical community alerts. The system is capable of sending messages only to people affected or in the case of a widespread emergency like a tornado, to the County’s entire population.

Fire, Rescue and Emergency Medical Service: On September 1, 2019 the Thomson Fire Department and the McDuffie County Fire and EMA merged. The Thomson-McDuffie Fire and EMS provides fire protection services to the City of Thomson and the unincorporated areas of the county in addition to providing Emergency Medical Service to City of Thomson, Town of Dearing, and Glascock County. This merger brings together 42 full-time and 27 part-time personnel trained as firefighters and paramedics or EMT’s. In addition, there are 15 volunteer fire fighters and first responders in the county. With the merged departments, there will be a chief, a deputy chief, a training officer, EMS billing office, Deputy EMA Director, and an administrative assistant. This merger also created three battalion chief, four captain, and eight lieutenant positions that will be spread between Thomson and the county. In addition, the substation in Dearing will have a captain and two lieutenants on station. Currently, the county has 3 staffed Fire/EMS station and 1 EMS station in Dearing. Daily staffing includes 4 ambulances and 3 fire pumpers staffed each day. The City of Thomson is a Class 2 and the County has a rating of 4/9. The merged department is in the process of having its ISO re-evaluated.

Law Enforcement: The McDuffie County Sheriff’s Office services the unincorporated areas of the county along with the town of Dearing. The office consists of 1 sheriff, 1 chief deputy, 2 criminal investigators, 1 deputy assigned to the courthouse and 14 uniformed patrol officers. The county substation is located in Dearing and is manned part-time. There is one county jail, which is located in Thomson. The city of Thomson operates its own police department and consists of an investigative unit, uniformed patrol unit (UPU) and K-9 unit. The department has 14 officers. The UPU has ten uniformed patrol officers. Two patrol officers are also certified firefighters.

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

The committee identified all natural hazards that could potentially affect McDuffie County, Dearing Thomson 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 McDuffie County. Task B then narrowed the list to only hazards most likely to impact the county by reviewing hazard websites to determine if McDuffie County is located in a high-risk area.

Initially, the committee found that droughts, earthquakes, hurricanes, extreme heat, severe winter storms, tornados, wildfire, dam failure and windstorms might affect McDuffie County. However, the committee later concluded that some of these hazards did not pose a significant threat. Because of the planning process, the committee determined that seven natural hazards pose a direct, measurable threat: flooding, drought, wildfire, tornados, tropical storms, severe thunderstorms (Severe thunderstorm wind, hail, and lightning), and winter storms. The committee profiled each of these hazards using FEMA worksheet #2 and #3a, which included obtaining a base map and recording hazard-event profile information. Of the seven hazards mentioned, the entire County is exposed to four: severe weather, winter storms, wildfire and drought while tornados and flooding are isolated to select areas. Each of these potential hazards is addressed with relevant supporting data.

Table 2.1

Section	Updates
I. Flood	Updated events, added critical facilities to GMIS, updated tax information. Recalculated hazard frequency data. Added information from Hazus-MH analyses
II. Drought	Updated events, added critical facilities to GMIS, updated tax information. Recalculated hazard frequency data.
III. Wildfire	Updated events, added critical facilities to GMIS, updated tax information. Recalculated hazard frequency data.
IV. Tornados	Removed from Severe Weather Category. Updated events, added critical facilities to GMIS, updated tax information. Recalculated hazard frequency data.
V. Tropical Storms	Removed from Severe Weather Category. Updated events, added critical facilities to GMIS, updated tax information. Recalculated hazard frequency data.
VI. Severe Weather	Updated events, added critical facilities to GMIS, updated tax information. Recalculated hazard frequency data. Added information from Hazus-MH analyses.
VII. Winter Storms	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.

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 and recharge areas are lost. This causes unnecessary flooding in previously dry areas and can damage buildings and other structures.

McDuffie County and Thomson 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. These ordinances are enforced by the Thomson-McDuffie Planning and Zoning Administrator. They will continue enforcing the adopted Flood Management Ordinances adopted in 2010 and regulating development in known flood hazard areas. According to the McDuffie County Flood Insurance Study and FEMA flood maps there are no known flood prone areas within the town limits. Dearing is now investigating the participation in the NFIP because of recent annexation of property that has the potential of flooding. Table 2.2 provides information about each jurisdictions participation level.

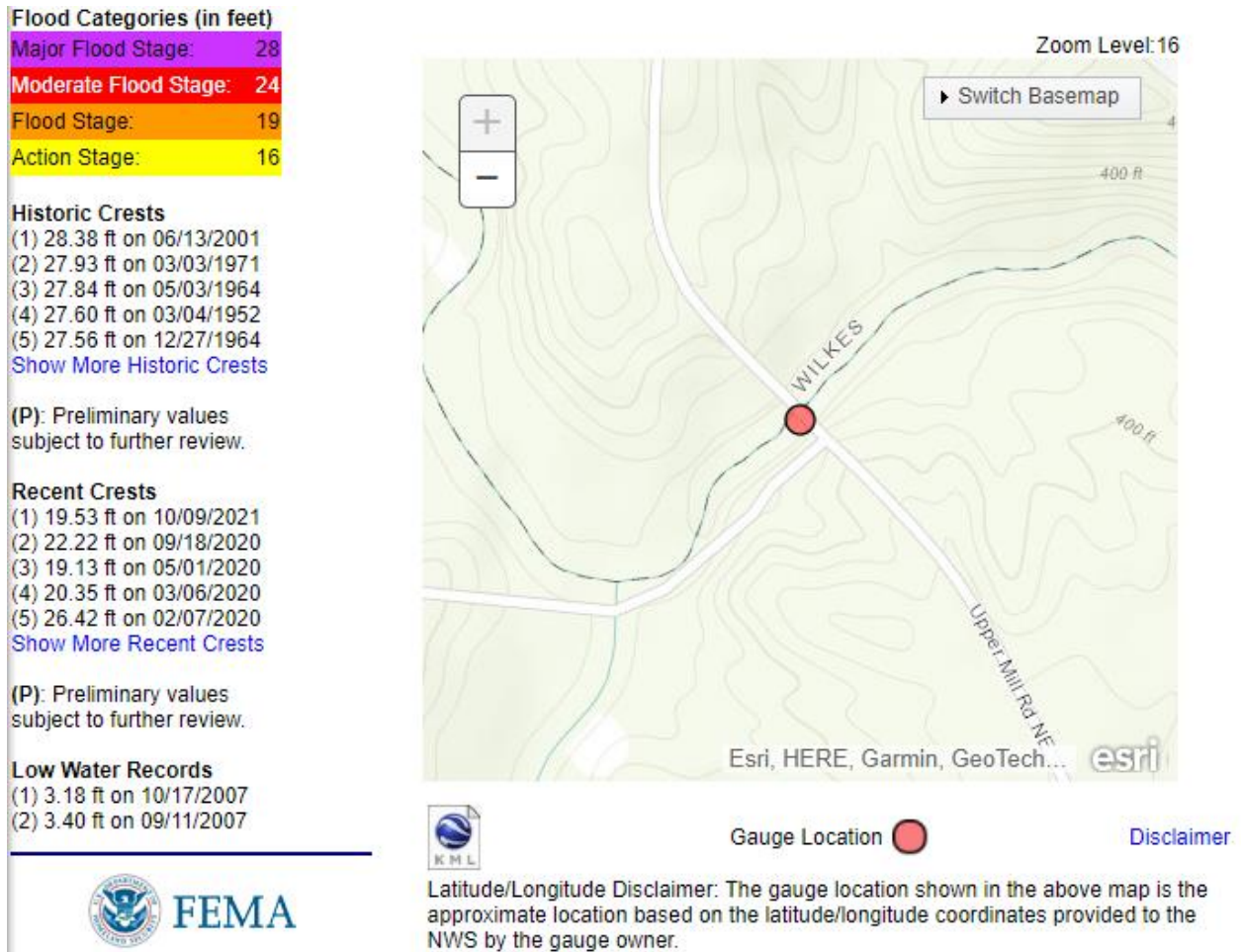
Table 2.2

Jurisdiction	Init FHBM Identified	Init. FIRM Identified	Curr. Eff. Map Date	Reg-Emer Date	Sanction Date
McDuffie County	03/29/1976	10/01/2004	09/29/2010	11/08/2004	NA
Dearing	N/A	N/A	N/A	N/A	N/A
Thomson	06/28/1974	09/29/2010	09/29/2010	10/05/2010	NA

Source: FEMA Community Status Book

B. Hazard Profile: Severe flooding within McDuffie County is a relatively infrequent event. The county has one lake, 29 rivers/streams and 28 reservoirs. Countywide, slopes range from level to 25 %. Floodplains are narrow except along the principal rivers that have a wide expanse of swamp bordering both sides of the channel. Elevations in the district range from 500 to 700 feet. There are no flood gages in McDuffie County. The closest gage is near Washington, GA (Wilkes County) and is extremely unlikely to produce flooding in McDuffie

County. Based on interviews with the McDuffie County Emergency Management Agency and committee members, most flash flooding events in the City of Thomson produce less than one foot of floodwater in poor drainage areas and along roadways with inadequate culverts. This water quickly recedes once the heavy rainfall stops. Exact locations and depths during past events were not recorded. Dearing has not reported any flooding issues and there is no recorded data for flood depths within the city limits.



The committee examined historical data from the NCEI USGS, SHELDUSTM, past newspaper articles and conducted interviews on the effects of past flooding events. In the last 70 years, seven flooding events with approximately \$30,000 in property and crop damages were reported. Table 2.3 provides historical information on the seven flooding events.

Table 2.3

Date	Fatality	Inj	PrD	CrD	Event Narrative
10/4/1995	0	0	0.00K	0.00K	Flood conditions were reported beginning at 1:00 a.m. and ending at 7:00 p.m., resulting in 18 hours of flash flooding.

Date	Fatality	Inj	PrD	CrD	Event Narrative
6/13/2001	0	0	0.00K	0.00K	A result of Tropical Storm Allison. Water moving over Folly Lake Bridge and on Stagecoach Road. GSP responded to 6 accidents with three injuries. Damage was reported at Thomson and Dearing Elementary and Pine St. School, Flood conditions lasted app. 4 hours.
9/10/2008	0	0	10K	0.00K	Secondary dirt roads washed out from flash flooding Heavy rains produced 3 to 5 inches over portions of northern McDuffie
1/24/2010	0	0	20k	0.00K	Flooding at apartment complex with up to a foot of water in several apartments. A squall line moved through, took down some trees and power lines.
12/29/2015	0	0		0.00K	Rutted roads and swollen creeks and ponds were the aftermath of 4.81 inches of rain that fell in Thomson-McDuffie County between Dec. 21 and Dec. 28.
12/30/2016	0	0	0.00K	0.00K	According to WTHO-FM, the Thomson area has received 7.11” from Dec. 21 through the morning of Dec. 31. Throughout the day on Dec. 30, the radio station measured 1.52 inches. Roads including First Avenue, Manassass Drive, A Street and Sill Street were affected by the flooding and standing water.
09/11/2017	0	0	0.00K	0.00K	The remnants of Hurricane Irma moved across the region, dropping 5.37 inches of rain at the Thomson McDuffie Airport.

Source: NCEI SHELDUS and The McDuffie Progress

Based on the personal knowledge of EMA staff and other committee members the average known flood depth is 2 to 2.5 feet during flash flood events within the unincorporated areas of McDuffie County. These levels of accumulated rainwater are usually seen in areas of poor drainage and along over inundated roadways during flash flood events that have been known to wash out roadways/ residential driveways with improperly maintained culverts. Data pinpointing the depth of floodwaters and exact locations of all washed out roads/ residential driveways is not available. 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. The GMIS flood hazard map assigns a flood zone rating of zero for unincorporated parts of the County, Dearing and Thomson where there are no identified or undesignated flood hazards. A hazard score of four has been assigned for known floodplain areas for unincorporated parts of the County and Thomson.

The magnitude of a major flood event could have approximately 20 percent of the county experiencing some damage from flooding. While data was collected looking at 70 years of data, frequency rate was calculated using a 20-year hazard cycle per guidance from GEMA.

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

- 30 percent for all of McDuffie County;
- 15 percent for the unincorporated areas of McDuffie County;
- 10 percent for Dearing; and

- 25 percent for Thomson ((See Appendix A and Appendix D).

C. Assets Exposed to Hazard and Estimates of Potential Loss: For determination of assets exposed to risk maps created from FEMA data and available parcel data were used. Based on FIRM, tax digests, and FEMA Worksheet #3a, it was determined that all or a portion of 1,002 structures/properties located in McDuffie were located in flood prone areas. These properties have a value of more than \$100 million and have an approximate population of 412.

- Unincorporated areas of McDuffie County: There are 967 properties located in flood prone areas in unincorporated areas of the county with a value of nearly \$83 million. These locations have a population of 387.
- Dearing: While FEMA floodplain maps and GMIS do not show any floodplains in Dearing, they have recently annexed three vacant properties that are now in the floodplain. These three properties have a value of \$770,744.
- Thomson: There are currently 32 properties located in flood prone areas in the city. These properties are valued at nearly \$1.2 million with a population of 25. (See Appendix A and Appendix D).

The GMIS flood hazard map has 15 critical facilities with a hazard score of three in McDuffie County. There are 17 critical facilities in Thomson and three in Dearing with a hazard score of one. Table 2.4 shows the hazard scores assigned by the GMIS to critical facilities with replacement values, content values and occupancy.

Table 2.4

Jurisdiction	Flood Hazard Score	# of Critical Facilities	Replacement Value \$	Content Value \$	Occupancy	
					Day	Night
McDuffie County	0	21	\$59,400,600	\$18,605,000	3,260	206
McDuffie County	1	10	\$38,550,000	\$8,485,000	2,254	300
McDuffie County	3	15	\$2,983,355	\$650,000	2	2
Dearing	0	1	\$350,000	\$500,000	0	0
Dearing	1	3	\$730,000	\$280,000	2	0
Thomson	0	9	\$4,672,600	\$2,135,000	31	16
Thomson	1	17	\$8,787,500	\$3,001,500	429	4
TOTAL		76	\$115,474,055	\$33,656,500	5,978	528

The GMIS has no repetitive flooding NFIP properties and one NFIP mitigated property. There are no estimate for future structures since future development will be limited in known floodplains. (See Appendix A and Appendix D).

FEMA Hazus-MH Version 2.2 SP1 was used to analyze a probabilistic risk assessment of a 1% annual chance riverine flood event (100-Year Flood) for McDuffie County. A copy of the complete report can be found in Appendix C. Land area covered by floodwaters of the base flood is identified as a Special Flood Hazard Area (SFHA). The McDuffie County flood risk assessment analyzed at risk structures in the SFHA. The results of the Riverine 1% Flood Scenario revealed that buildings in McDuffie 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. The Hazus analysis generated information to building loss, essential facility loss, food and shelter requirements and debris because of the Riverine 1% Flood Scenario. The results of this scenario are as follows:

- **Building Losses:** Residential buildings 48 residential buildings damaged at a loss of \$1.6 million.
- **Essential Facility Losses:** There are no essential facilities subject to damage.
- **Flood Shelter Requirements:** The scenario estimates 149 households are subject to displacement. Displaced households represent 446 individuals, of which 47 may require short-term publicly provided shelter.
- **Flood Debris:** Hazus-MH estimates that an approximate total of 3,306 tons of debris might be generated by the flood. The model breaks debris into three general categories:
 - Finishes (dry wall, insulation, etc.) - 1,327 tons generated;
 - Structural (wood, brick, etc.) – 737 tons generated; and
 - Foundations (concrete slab, concrete block, rebar, etc.) – 1,242 tons generated.

D. Land Use and Development Trends: The McDuffie County Joint Comprehensive Plan 2021-2025 indicated that McDuffie County has continued to see a slow population increase since 2000. While the City of Thomson has seen a slight decrease over the past 20 years, Dearing has seen rapid growth. In fact, the Dearing population has soared by 41.5% since 2000. Overall the county should continue to see slow, steady growth with the population reaching

With all new development, the enforcement of McDuffie County’s Land Development Code is essential. All areas within the county that are within or upon a floodplain shall remain unalterable open space and have no impervious surfaces, except where roads and bridges may intersect the floodplain, or where a Section 404 permit has been approved by the U.S. Army Corps of Engineers. In addition, when a major commercial or industrial use requires a large paved parking lot (more than 100 spaces or one acre in area), whichever is greater, the developer may be required to provide unpaved vegetated islands or reserved strips to be integrated within the proposed parking area not to exceed fifteen percent of the area covered by paved surfaces. The Land Use section of the McDuffie County/Thomson/Dearing Comprehensive Plan through 2029 indicates that all land use controls should be attentive to environmentally sensitive areas. Specifically the plan suggests that *Rules for Environmental Planning Criteria* should be considered to provide additional protection to sensitive flood and wetland areas. A copy of the comprehensive plan on land use can be found in Appendix B.

E. Multi-Jurisdictional Concerns: McDuffie County and Thomson will continue to comply with NFIP requirements and intend to remain in compliance by enforcing flood ordinances that prohibit or severely limit development in floodplains. Dearing does not currently participate in with NFIP because there were no known flood zones in the community. However, since the last plan update, the city annexed three properties that are located in a floodplain and are currently investigating participation in the NFIP.

During a large-scale event, many portions of McDuffie County would potentially be impacted by flooding. However, the area's most prone to flooding have historically been areas located within the 100-year floodplain. All of McDuffie County could be impacted and any mitigation activities should be undertaken on a countywide basis.

In addition, it is imperative that all emergency personnel can communicate with each other throughout the entire planning area. The County and its jurisdictions 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. The County, Dearing, and Thomson are aware of the need to develop communication capabilities that will serve their County.

F. Hazard Summary: Severe flooding within McDuffie County is a relatively infrequent event. The county has one lake, 29 rivers/streams and 28 reservoirs. There have been seven flooding recorded in the last 70 years. These flooding events were the result of heavy rains. The rainfall resulted in flash flooding, washed out several roads and downed trees and power lines.

The hazard frequency table calculates a 30 percent chance of an annual flooding event countywide. Hazard frequency tables can be found in Appendix D. Severe flooding, although relatively rare in occurrence, has the potential to inflict significant damage in McDuffie 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 tax data along with parcel and flood maps, all or a portion of 1,002 structures/properties, valued at approximately \$100 million with a population of 412 are located in known floodplains. The committee identified specific mitigation goals, objectives and action items related to flooding, which can be found in Chapter III, Section I.

SECTION II. DROUGHT

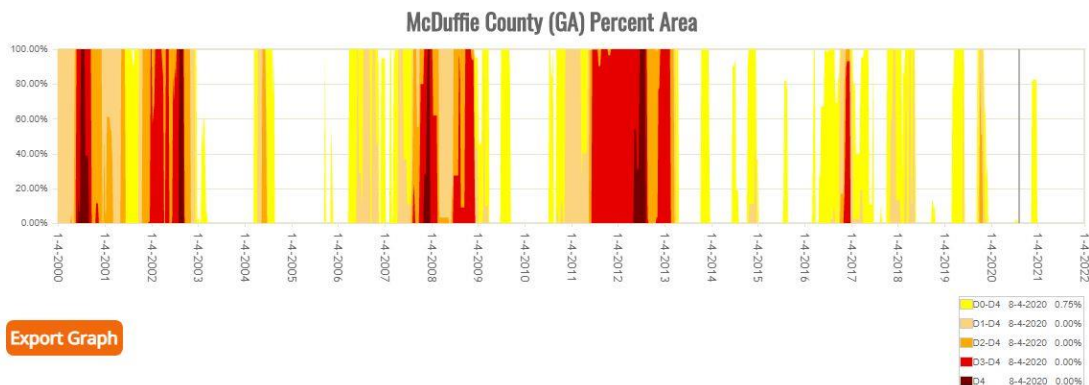
A. Hazard Identification: The committee reviewed historical data from the Palmer Drought Index, NCEI DNR, USDA and GFC in researching drought conditions. Drought conditions

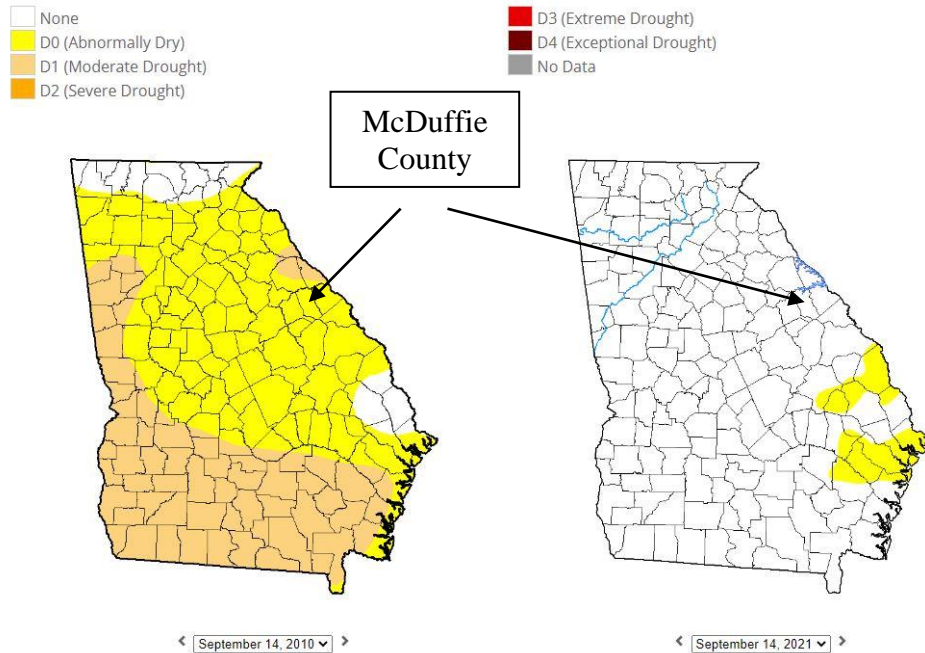
are identified by a prolonged period of moisture deficiency. Climatologists and hydrologists use five indicators of drought: rainfall, soil moisture, stream flows, lake levels and groundwater level. Drought conditions affect the cultivation of crops as well as water availability and water quality. Drought 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. McDuffie County’s consist of 266 square miles with 8.9 of these miles being water. The county is comprised of 170,373 acres with 37,989 (22.3 percent) acres dedicated to agricultural and 90,141 acres (54.2 percent) acres dedicated to forestry. According to the USDA 2017 Census of Agriculture, there are 9,618 head of livestock, including 6,831 cattle. 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 NCEI there have been no reported drought events in McDuffie County. 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 as normal, and drought is shown in terms of minus numbers; for example, minus two is moderate drought, minus three is severe drought, and minus four is extreme drought.

NCEI data for surrounding counties and a review of The Palmer Index reveals there have been 27 drought events since 1997. One of the longest running severe/extreme droughts in recent history began in January 2012 and ended in January 2013. More recently, the county experienced severe drought contentions in October 2019. The maps below show drought conditions for January from January 2020 until present.





Based on the weekly data from the US Drought Monitor from January 2000 to January 2021 the county has experienced the following drought conditions:

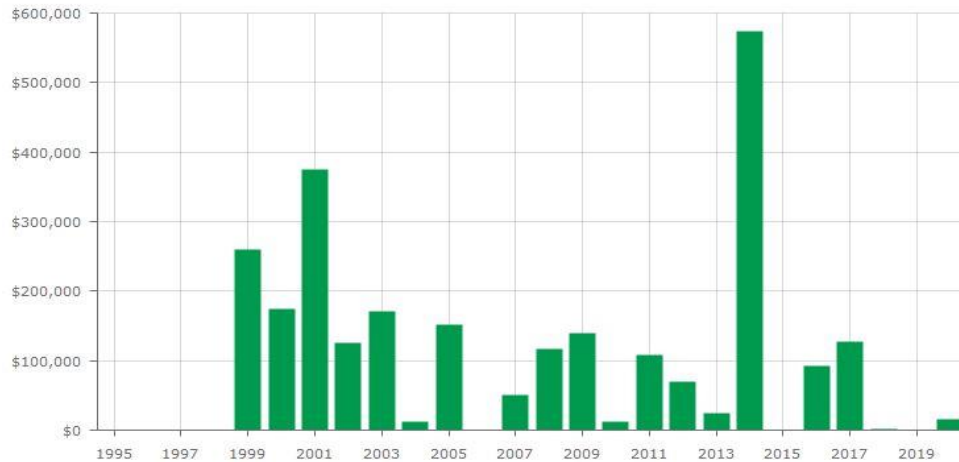
- 674 weeks where all or a portion of the county has experienced of D0 - Abnormally Dry;
- 470 weeks where all or a portion of the county has experienced of D1 - Moderate Drought;
- 287 weeks where all or a portion of the county has experienced levels of D2 - Severe Drought;
- 187 weeks where all or a portion of the county has experienced levels of D3 - Extreme Drought; and
- 41 weeks where all or a portion of the county has experienced levels of D4 - Exceptional Drought. (US Drought Monitor and Extent Tables can be found in Appendix A.)

During the drought of 2019, the county experienced a shot-term severe drought (-3.00) on the Palmer Index. The average based on historical data is a -3.00 on the Palmer Index.

Historical data is only for the county as a whole. A severe, prolonged drought would mainly affect the 76.5 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 incorporated cities, as water restrictions would be enforced. Based on a 20-year hazard cycle history there is a 120 percent chance of an annual drought event for the county as well as Dearing and Thomson (*See Appendix A and Appendix D.*)

According to the USDA Farm Subsidies Database, there has been a total of nearly \$2.6 million in disaster assistance from 1995-2020. The graph below depicts amounts and years of payments.

Subtotal, Disaster Payments in McDuffie County, Georgia totaled \$2.6 million from 1995-2020†.



https://farm.ewg.org/progdetail.php?fips=13189&progcode=total_dis

C. Assets Exposed to Hazard and Estimate of Potential Losses: Drought conditions typically pose little or no threat to structures; however, fires can occur because 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 because 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:

- Dearing has 17 agricultural/forestry structures/properties valued at approximately \$1,753,660 with an estimated population of 14.
- Thomson has eight agricultural/forestry structures/properties valued at approximately \$1,154,875 with an estimated population of six.
- Unincorporated McDuffie County has 2,947 agricultural/forestry structures/properties valued at approximately \$314 million with an estimated population of 260.

There are 2,972 agricultural/forestry properties in McDuffie County valued at approximately \$317 million with a population of 280 that are at the greatest risk due to a drought event (*See Appendix A, and Appendix D*).

D. Land Use and Development Trends: McDuffie County currently has no land use or development trends related to drought conditions. When drought conditions do occur, all jurisdictions follow the restrictions set forth by the Georgia DNR Drought Management Plan and the Statewide Outdoor Water Use Schedule. 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, rainwater, 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.

Projected changes in land use based on the joint comprehensive plan, has minimal or no change. Limited growth or new development is expected in the County. The vulnerability in terms of future buildings, infrastructure and critical facilities located in the identified hazard areas is not known since there is no planned or approved future development. Thus, it is impossible to determine vulnerability in terms of future buildings, infrastructure and critical facilities. Current and future land-use tables, maps and projections 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 Dearing and Thomson are 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. 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 McDuffie 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 120 percent chance of an annual drought event in McDuffie 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 McDuffie County as a whole, there are 2,972 agricultural/forestry properties valued at approximately \$317 million and include 6,381 heads of cattle and an estimated population of 280 that have the greatest potential to be damaged by drought. There is a population of 21,455 and approximately 32,429 structures/properties in the county with a value of nearly \$1.9 billion, which could be affected if wildfires break out due to drought conditions. Drought mitigation goals and objectives are in Chapter III, Section III.

All water departments have adopted the Georgia Water Stewardship Act that 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 enforcement of these restrictions helps to ensure an ample water supply during drought times. All citizens are informed of water restrictions as they occur.

SECTION III. 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:** McDuffie County's consist of 266 square miles with 8.9 of these miles being water. The county is comprised of 170,373 acres with 37,989 (22.3 percent) dedicated to agricultural and 90,141 acres (54.2 percent) 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 McDuffie 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 manmade and natural wildfire occurrences for the county as a whole and not for individual jurisdictions. This plan will address only natural disasters. According to Georgia Forestry data, from 1957 to 2018, there have been 2,272 fire events burning a total of nearly 11,000 acres. Of these 2,272 fire events, 59 were a result of lightning that burned 608 acres. Based on best available data, all wildfire events occurred in the unincorporated areas of the county. No data is available for Dearing or Thomson.

Table 2.5

Jurisdiction	Number of Structure/Properties	Value \$	Population
McDuffie County (Unincorporated)	23,969	1,456,009,607.50	14,238
Dearing	854	32,340,392.50	624
Thomson	7,606	411,073,813	6,593
TOTAL FOR COUNTY	32,429	1,899,423,813	21,455

Source: McDuffie County Tax Assessor

Table 2.6 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 2.6

Jurisdiction	Wildfire Hazard Score	# of Critical Facilities	Replacement Value \$	Content Value \$	Occupancy	
					Day	Night
McDuffie County	0	7	\$885,355.00	0	2	2
McDuffie County	1	13	\$16,433,000.00	\$3,850,000.00	16	4
McDuffie County	2	6	\$4,950,600.00	\$1,900,000.00	175	16
McDuffie County	3	18	\$77,515,000	\$21,465,000	5321	486
McDuffie County	4	2	\$1,150,000	\$525,000	2	0
Dearing	3	3	\$930,000	\$530,000	2	0
Dearing	4	1	\$150,000	\$250,000	0	0
Thomson	0	3	\$1,000,000	\$330,000	12	0
Thomson	1	1	\$315,500	\$0.00	0	0
Thomson	2	1	\$522,600	\$85,000	2	2
Thomson	3	19	\$9,957,000	\$4,254,500	442	18
Thomson	4	2	\$1,665,000	\$467,000	4	0
TOTAL		76	\$115,474,055	\$33,656,500	5978	528

According to FEMA Worksheet #3a there are 32,429 structures/properties with a population of 21,455 with assets valued at slightly less than \$1.9 billion countywide. If a wildfire started, it is not likely that all of these structures/properties would be affected. (See Appendix A, Appendix D).

D. Land Use and Development Trends: McDuffie County currently has no land use or development trends related to wildfire conditions. 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 McDuffie County Fire Services. 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*.

E. Multi-Jurisdictional Concerns: Wildfire has the potential to affect the entire county. As a result, all mitigation steps taken related to wildfire should be undertaken by McDuffie County, Dearing and Thomson. According to the latest McDuffie County Wildfire Protection Plan, McDuffie County has a “moderate” risk for wildfires. The risk assessment instrument used to evaluate wildfire hazards to the county was the Hazard and Wildfire Risk Assessment Scoresheet. This instrument took accessibility, vegetation, topography, roofing assembly, building construction, and availability of fire protection resources, placement of gas and electric utilities, and additional rating factors. The following factors contributed to the wildfire hazard score for McDuffie County:

Cities of Thomson (Low Risk) and Dearing (Moderate Risk)

- Long, narrow roads
- Lack of defensible space in wildland interface areas
- Lack of defensible space in some areas
- High occurrence of wildfires in some areas
- Closeness of adjacent structures- the risk of fire spread from structure to structure

Unincorporated McDuffie County (High Risk)

- Distance from staffed fire stations
- Long, narrow driveways inaccessible to equipment
- Minimal defensible space around structures
- Homes with wooden siding and roofs with heavy accumulation of vegetative debris
- Above ground utilities
- Large, adjacent area of forest or wildlands
- Dead end roads with inadequate turn around

F. Hazard Summary: McDuffie County’s consist of 266 square miles with 8.9 of these miles being water. The county is comprised of 170,373 acres with 37,989 (22.3 percent) acres dedicated to agricultural and 90,141 (54.2 percent) acres dedicated to forestry. Given the right weather conditions and variables, wildfire due to natural causes creates a potential threat to the lives and property of residents in the planning area. According to Georgia Forestry data, from 1957 to 2018, there have been 2,272 fire events burning a total of 11,131 acres. Based on a 20-year hazard cycle there is a 3,695 percent chance of an annual wildfire due to a natural hazard event.

According to FEMA Worksheet #3a there are 32,429 structures/properties with a population of 21,455 with assets valued at lightly less than \$1.9 billion countywide. Mitigation Goals and Objectives concerning wildfires are in Chapter III, Section IV.

The County continues to follow GFC guidelines to service the construction of firebreaks around forests and structures, maintain fuel breaks along abandoned roadbeds and

recommend a defensible space (30-ft minimum setbacks) between buildings and strictly follow guidelines for control burns and permits.

SECTION IV. TORNADO

A. Hazard Identification: The committee reviewed historical data from the county’s own weather database, the NCEI MRCC, SHELDUS™, the Tornado Project, newspapers and citizen interviews in researching the past effects of tornadoes. The month of February marks the beginning of the severe weather season in the South, which can last until the month of August.

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. Tornadoes 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 2.7 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 manmade structure.

Table 2.7

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

Source: NOAA

B. Hazard Profile: Since the exact time and location of a tornado is not always predictable, all of McDuffie County is vulnerable. Based on historic data, there have been nine reported tornadoes in the planning area: nine in the unincorporated areas of the county with three of the nine traveling into the city limits of Thomson. There have been no reported tornadoes in Dearing.

One of the worst tornadoes recorded in Georgia history occurred on March 20, 1875. According to the Tornado Project, 25 people were killed and 65 injured by a tornado that started in Hancock County and moved across Warren, McDuffie, and Columbia counties. Since records from that time period are sparse, the amount of injuries, deaths and damage in McDuffie County is unknown. In more recent history, property and crop damages for the other eight events has totaled nearly \$130,000. There have been 3 reported deaths in the county since 1950.

Tornados tend to strike in somewhat random fashion, making the task of calculating a recurrence interval extremely difficult. Using a 20-year hazard cycle, frequency tables calculates an annual chance for a tornado event at:

- 25 percent for McDuffie County as a whole;
- 20 percent for Unincorporated McDuffie County; and
- 10 percent for Thomson
- No calculation is available for Dearing

Hazard frequency tables for individual jurisdictions are in Appendix D.

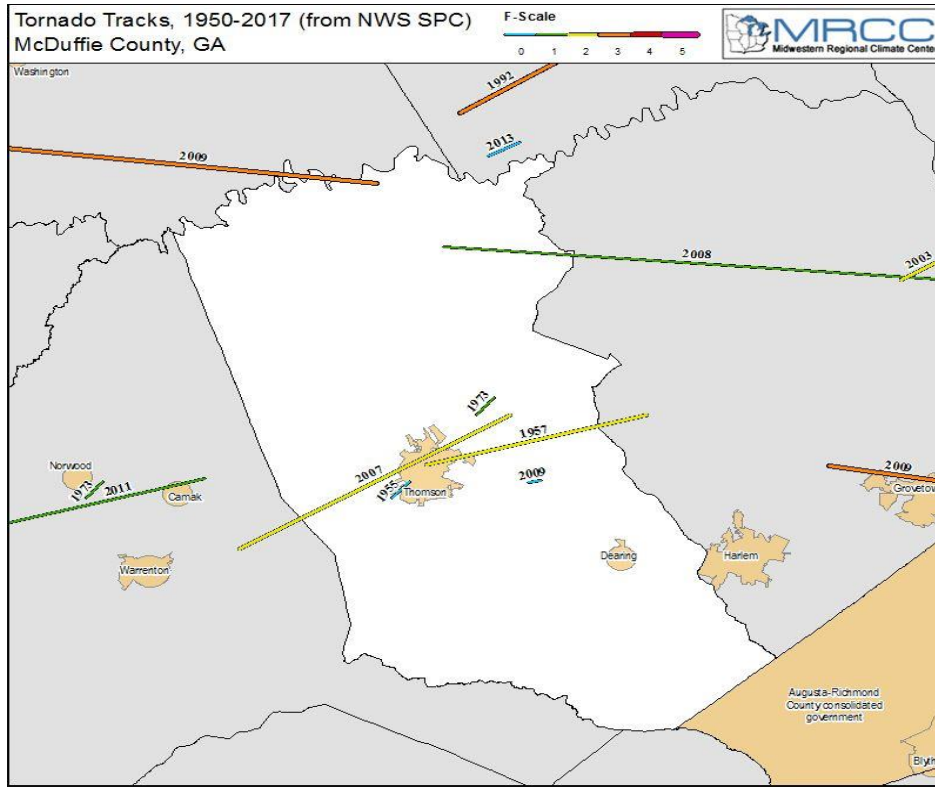
Table 2.8 shows the event, severity and estimated cost of damages reported. The map from the Midwest Regional Climate Center (MRCC) shows the paths taken by the tornadoes. (*See Appendix A and Appendix D*).

Table 2.8

Date	Location	Deaths	Inj	MAG	PD	CrD	Event Narrative
3/20/1875	McDuffie County	*	*	*	*	*	25 people were killed and 65 were injured in a tornado that formed Hancock County, moved across McDuffie County and dissipated in Columbia County.
5/24/1955	McDuffie County	3	0	F0	3K	0	None Reported
4/5/1957	McDuffie County/Thomson	0	0	F2	*	*	Tornado formed near Thomson and moved into Columbia County
2/2/1973	McDuffie County	0	0	F1	2.5K	0	None Reported
1/13/2005	Thomson	0	0	F0	0	0	F0 broke trees in half at intersection of I-20/ White Oak Rd.
3/1/2007	McDuffie/Thomson	0	0	F2	0K	0K	An EF2 started in Warren county moved through McDuffie county taking down numerous trees and power lines. It moved along HWY 278 then along HWY 150 to I-20. Several vehicles were totaled/ homes and a private school had moderate damage. Ground survey found a damage path of 9 miles but a real survey found the total length to be 15 miles
3/15/2008	McDuffie County	0	0	F0	0K	0K	Storm survey found an F0 started in McDuffie county

Date	Location	Deaths	Inj	MAG	PD	CrD	Event Narrative
							taking down many trees and continued into Columbia county.
2/18/2009	McDuffie County	0	0	F0	0K	50K	Storm survey found the tornado path coming out of Wilkes county into McDuffie county. Only trees were in the path of the tornado with many taken down south of the lakeshore.
4/10/2009	Boneville	0	0	F0	72K	0K	Trees down, some on vehicles, on Moose Club road. NWS damage survey also found minor damage to several homes.

Sources: Interviews, The McDuffie Progress, Georgia Tornado History Project, MRCC, NCEI and SHELDUSTM



C. Assets Exposed to Hazard and Estimate of Potential Losses: In evaluating assets exposed to tornadoes, the committee determined that all critical facilities, as well as all public, private and commercial property, are susceptible to tornadoes. The GMIS has 70 percent of the county with a wind hazard score of two, where wind speed is between 90 to 99 mph. The remaining 30 percent with a hazard score of one, where wind speed is less than 90 mph. Dearing and Thomson have a hazard score of two. Table 2.9 provides data from FEMA Worksheet #3a that estimates the potential loss for each jurisdiction.

Table 2.9

Jurisdiction	Number of Structure/Properties	Value \$	Population
McDuffie County (Unincorporated)	23,969	\$1,456,009,607.50	14,238
Dearing	854	\$32,340,392.50	624
Thomson	7,606	\$411,073,813	6,593
TOTAL FOR COUNTY	32,429	1,899,423,813	21,455

Source: McDuffie County Tax Assessor

Of the 76 critical facilities, 66 have a wind hazard score of two placing the critical facilities in Zone IV which has a wind speed of 90 to 99 mph and the remaining 10 have a hazard score of one. 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 2.10 shows the number of critical facilities by jurisdictions, hazard score, replacement value, content value, and daily occupancy.

Table 2.10

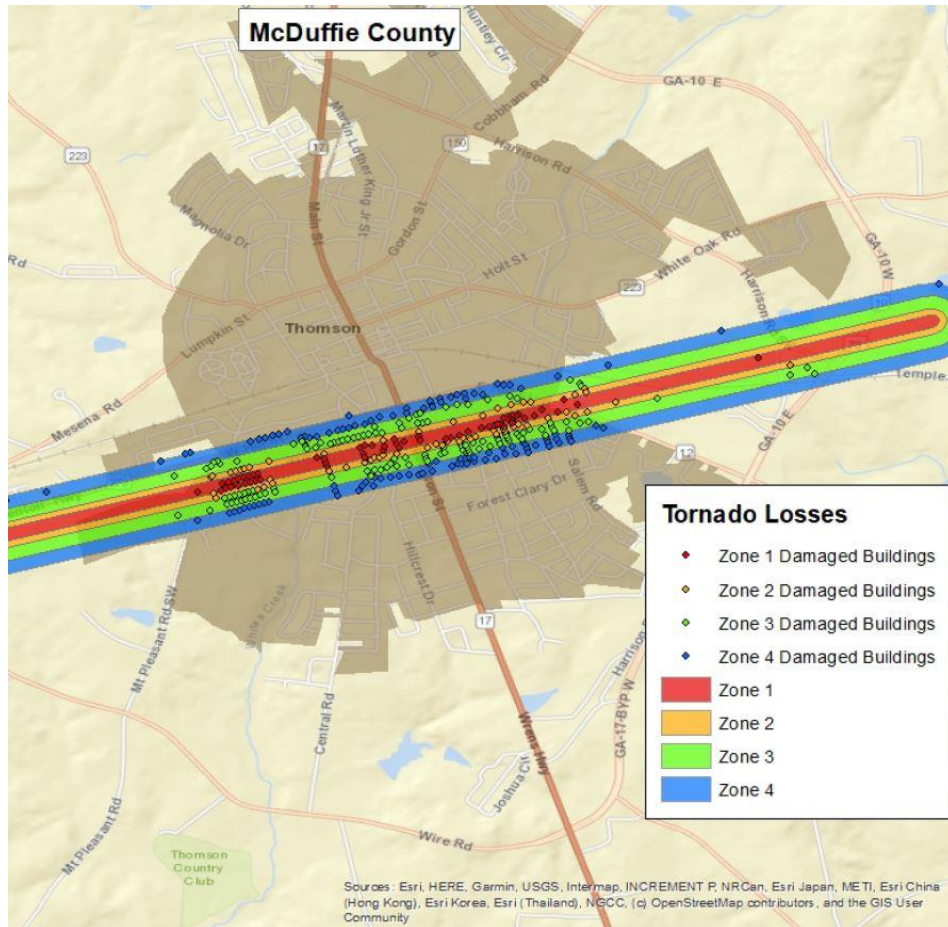
Jurisdiction	Wind Hazard Score	# of Critical Facilities	Replacement Value \$	Content Value \$	Occupancy	
					Day	Night
McDuffie County	1	9	\$10,825,400	\$2,850,000	10	0
McDuffie County	2	37	\$90,108,555	\$24,890,000	5506	508
Dearing	2	4	\$1,080,000	\$780,000	2	0
Thomson	1	1	\$522,600	\$85,000	2	2
Thomson	2	25	\$12,937,500	\$5,051,500	458	18
TOTAL		76	\$115,474,055	\$33,656,500	5978	528

A hypothetical tornado scenario was ran using an EF3 tornado was modeled to illustrate the potential impacts of tornadoes of this magnitude in the county. This particular model placed the tornado track through the City of Thomson. The analysis estimated that approximately 445 buildings could be damaged, with estimated building losses of \$33 million dollars. The building losses are an estimate of building replacement costs multiplied by the percentages of damage. Table 2.11 shows estimated building losses by occupancy type.

Table 2.11

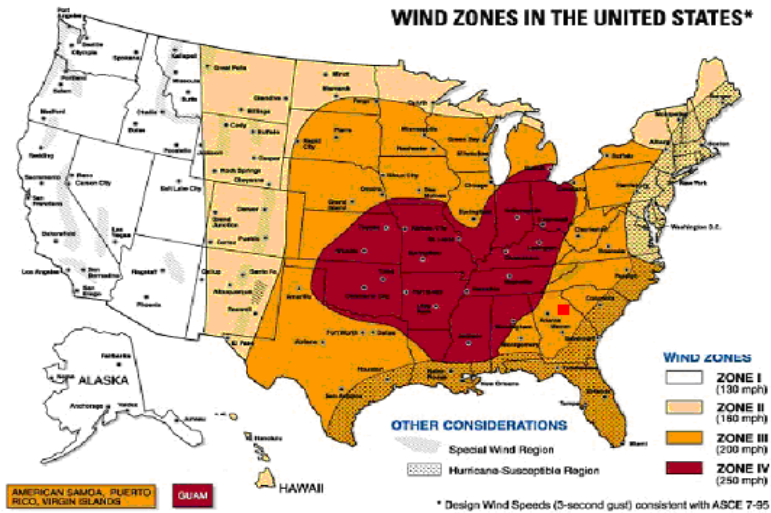
Occupancy Classification	Buildings Damaged	Building Losses
Residential	288	\$10,613,015
Commercial	104	\$2,379,287
Industrial	44	\$19,105,980
Education	7	\$271,038
Religious	2	\$485,083
Total	445	\$32,864,403

There were two essential facilities located in the tornado path – two schools: Thomson Elementary School and J.A. Maxwell Elementary School. According to the modeling, these two facilities would suffer major damage should such a tornado strike occur. According to the Georgia Department of Education, Thomson Elementary School’s enrollment was 327 students and A.J. Maxwell Elementary School’s enrollment was 457 students as of October 2020. Depending on the time of day, a tornado strike as depicted in this scenario could result in significant injury and loss of life. In addition, arrangements would have to be made for the continued education of the students in another location. A complete copy of the report can be found in Appendix C. See Hazard Risk Analysis Supplement to the McDuffie County Joint Hazard Mitigation Plan.



D. Land Use & Development Trends: McDuffie 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 tornadoes. Information on current and future land use projections can be found in Appendix B.

E. Multi-Jurisdictional Concerns – All of McDuffie 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

During a natural hazard, it is imperative that all emergency personal can communicate with each other throughout the entire planning area. The county and its jurisdictions 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 bounce signals.

The entire county has the potential to be affected by tornados As a result, any mitigation steps taken related for these weather events should be considered on a countywide basis to include Dearing and Thomson. A concern is the lack of available data for the county and the

city. A database needs to be created and maintained that provides information on all past and future severe weather events.

- F. Hazard Summary:** Since the previous plan, there has been limited new development and no increase in population that would affect the overall vulnerability of the community to this hazard. This has been no new adoption of development or building regulations to increase or decrease the overall vulnerability to severe weather events.

Tornados do not touch down frequently; however, the unpredictability and the potential for excessive damage caused by tornados makes it imperative that mitigation measures identified in this plan receive full consideration. Based on historical data, there have been nine reported tornados in the planning area. There have not been any reports of tornadoes since the last update. Since 1950, there has been approximately \$130,000 in property damage and crop damage as well as three deaths from tornadoes. Tornados tend to strike in somewhat random fashion, making the task of calculating a recurrence interval extremely difficult. There is a 25 percent annual chance of a tornado event at for McDuffie County as a whole.

To summarize, there are approximately 32,429 structures/properties in the county totaling nearly \$1.9 billion with a population of 21,455. A breakdown of information for individual jurisdictions can be found in Appendix A and Appendix D. Specific mitigation actions for tornados is identified in Chapter III, Section V.

SECTION V. TROPICAL STORMS

- A. Hazard Identification:** The committee reviewed historical data from NOAA, NCEI, SHELDUS™, newspapers, and citizen interviews in researching the past effects of Tropical Storms in McDuffie County. 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.

Tropical storms begin as tropical depressions over warm oceanic water, then develop into tropical cyclones. A tropical cyclone life span can last from a few hours to close to three weeks. Most tropical cyclones last approximately five to ten days. If the winds are under or up to 39 mph, it is a tropical depression. If winds speeds are between 39 to 73 mph, it is considered a tropical storm. Any storm with over 74 mph wind speed is called a hurricane. As a rule, hurricanes occur in the western Atlantic Ocean when warm, humid conditions are prevailing. Hurricanes are usually accompanied by excessive rain, thunder and lightning. When hurricanes make landfall, they typically slow down. Unfortunately, at that time, another danger often appears – tornados. A storm surge, which is an abnormal rise in water levels in a coastal area, usually occurs with tropical storms. McDuffie County is not likely to experience a hurricane or storm surges.

Table 2.12

Category	Wind Speed	Expected Damage
One	74-95 mph	No real damage to building structures; primarily damage to trees, shrubbery, unanchored manufactured homes
Two	96-110 mph	Some roofing material, door, window damage; considerable damage to vegetation, manufactured homes.
Three	111-130 mph	Some structural damage to small residences and utility buildings; manufactured homes destroyed.
Four	131-155 mph	Some complete roof structure failure on small residences; more extensive curtain wall failures.
Five	155 mph up	Complete roof failure on many residences and industrial buildings; some complete building failures with small utility buildings blown over or away.

B. Hazard Profile: Tropical storms generally affect the entire county and all of McDuffie County is vulnerable to the threats of tropical storms. Based on 70 years of historical data there have been 19 tropical storms reported in McDuffie County by NOAA, NCEI, HURDAT, the National Weather Service in Columbia, SC, and SHELDUS™. Two tropical storms have affected McDuffie since the last update. In 2017, the remnants of Hurricane Irma moved across Georgia and caused a wind gust to 47 mph and 5.37 inches of rain at the Thomson-McDuffie Airport. In 2018, the remnants of Hurricane Michael moved across the area dumping heavy rainfall and producing a wind gust to 41 mph at the Thomson-McDuffie Airport. Over 200 power outages were reported across the county with numerous trees being uprooted. There have been no reported injuries, deaths, or property damage in McDuffie from tropical systems.

Based on a 20-year hazard frequency cycle, there is a 75% chance of an annual tropical storm event for all jurisdictions (*See Appendix D*). Table 2.13 provides historical data on tropical storm events.

Table 2.13

Details	Date	PrD	CrD
Result of Hurricane Agnes	06/20/1972	0.0K	0.0K
Result of Tropical Storm Marco	10/12/1990	0.0K	0.0K
Result of Tropical Storm Jerry	08/26/1995	0.0K	0.0K
Result of Tropical Storm Helene	09/23/2000	0.0K	0.0K
Result of Tropical Storm Allison	06/12/2001	0.0K	0.0K
Result of Tropical Storm Hannah	09/14/2002	0.00K	0.00K
Result of Tropical Storm Bill	07/01/2003	0.00K	0.00K
Result of Hurricane Francis	09/06/2004	0.00K	0.00K
Result of Hurricane Ivan	09/16/2004	0.00K	0.00K
Result of Hurricane Jeanne	09/26/2004	0.00K	0.00K
Result of Tropical Storm Arlene	06/12/2005	0.00K	0.00K
Result of Hurricane Dennis	07/10/2005	0.00K	0.00K

Details	Date	PrD	CrD
Result of Hurricane Katrina	08/29/2005	0.00K	0.00K
Result of Tropical Storm Tammy	10/05/2005	0.00K	0.00K
Result of Tropical Storm Fay	08/21/2008	0.00K	0.00K
Result of Hurricane Ida	11/10/2009	0.00K	0.00K
Result of Tropical Storm Lee	09/04/2011	0.00K	0.00K
Result of Hurricane Irma	09/11/2017	0.00K	0.00K
Result of Hurricane Michael	10/10/2018	0.00K	0.00K

C. Assets Exposed to Hazard and Estimate of Potential Losses: In evaluating assets exposed to tropical storms, the committee determined that all critical facilities, as well as all public, private and commercial property, are susceptible to tropical storms. 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
McDuffie County (Unincorporated)	23,969	\$1,456,009,608	14,238
Dearing	854	\$32,340,393	624
Thomson	7,606	\$411,073,813	6,593
TOTAL FOR COUNTY	32,429	\$1,899,423,814	21,455

Of the 76 critical facilities, 66 have a wind hazard score of two placing the critical facilities in Zone IV which has a wind speed of 90 to 99 mph and the remaining 10 have a hazard score of one. 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 daily occupancy.

Table 2.15

Jurisdiction	Wind Hazard Score	# of Critical Facilities	Replacement Value \$	Content Value \$	Occupancy	
					Day	Night
McDuffie County	1	9	\$10,825,400	\$2,850,000	10	0
McDuffie County	2	37	\$90,108,555	\$24,890,000	5506	508
Dearing	2	4	\$1,080,000	\$780,000	2	0
Thomson	1	1	\$522,600	\$85,000	2	2
Thomson	2	25	\$12,937,500	\$5,051,500	458	18
TOTAL		76	\$115,474,055	\$33,656,500	5978	528

GMIS critical facility reports for wind can be found in Appendix A behind the Tornado documentation. FEMA Worksheet #3a is located in Appendix D.

- D. Land Use & Development Trends:** Since the previous plan was approved, there have not been any new developments, regulations, programs, or other changes in the community that would either increase or decrease the community's overall vulnerability to this hazard. Burke 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 tropical storms. Information on current land use and future land use projections can be found in Appendix B.
- E. Multi-Jurisdictional Concerns:** During a natural hazard, it is imperative that all emergency management personnel can communicate with each other throughout the entire planning area. The county and its jurisdictions have numerous dead spots throughout the area due to lack of adequate communication equipment. The county and its jurisdictions are dependent on the private sector for towers to use for signals. If these towers are damaged or removed, the county will be without adequate means to communicate. The county and its jurisdictions are aware of the need to develop communication capabilities that will serve the community.

McDuffie County will likely serve as a host community for coastal evacuees. Sweetwater Park and the First Baptist Church of Thomson are verified Red Cross hurricane evacuation shelters that are located in the county. In fact, during Hurricane Dorian in 2019, the Georgia Emergency Management Agency (GEMA) and the American Red Cross placed Sweetwater Park on standby as an evacuation center. The county and its jurisdictions must be prepared for hundreds of evacuees if a large scale coastal evacuation order is issued for Georgia or South Carolina. The local hospital should be prepared for medical emergency arising from evacuees and local pharmacies should be prepared for more customers filling prescriptions. Another concern is the lack of shelters that will take pets. The county should identify locations where pets can be housed and fed during the duration of the event.

- F. Hazard Summary:** The entire county has the potential to be affected by tropical storms. In the last 70 years there have been 19 tropical storms that have affected the county with heavy rainfall and strong wind. Although there has been no property or crop damage, roads have been flooded and downed trees have caused widespread power outages across the county. Based on a 20-year hazard frequency cycle, there is a 75% chance of an annual tropical storm event for all jurisdictions (See Appendix D).

To summarize, there are approximately 32,429 structures/properties in the county totaling nearly \$1.9 billion. Of the 76 critical facilities located in the county, 66 have a hazard score of two. If any of the critical facilities were to be damaged from a tropical storm, it would likely cause a serious disruption to society and the local economy.

SECTION VI. SEVERE THUNDERSTORMS (Wind, Hail, & Lightning))

- A. Hazard Identification:** The committee reviewed historical data from the NCEI, SHELDUS™, newspapers and citizen interviews in researching the past effects of severe weather events in McDuffie County. The month of February marks the beginning of the severe weather season in the South, which can last until the month of August. Three types of

severe weather were identified by the mitigation team: (1) thunderstorm winds, (2) hail, and (3) lightning.

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

Thunderstorm winds arise as a result 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 miles per hour. 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 miles per hour. 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 second 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.

The third type of severe weather events is lightning. Lightning is a giant spark of electricity in the atmosphere between clouds, the air, or the ground. In the early stages of development, air acts as an insulator between the positive and negative charges in the cloud and between the cloud and the ground. When the opposite charges build up enough, this insulating capacity of the air breaks down and there is a rapid discharge of electricity that we know as lightning. The flash of lightning temporarily equalizes the charged regions in the atmosphere until the opposite charges build up again.

Lightning can occur between opposite charges within the thunderstorm cloud (intra-cloud lightning) or between opposite charges in the cloud and on the ground (cloud-to-ground lightning).

Lightning is one of the oldest observed natural phenomena on earth. It can be seen in volcanic eruptions, extremely intense forest fires, surface nuclear detonations, heavy snowstorms, in large hurricanes, and obviously, thunderstorms.

B. Hazard Profile: Severe thunderstorm winds, hail, and lightning can affect the entire county given the right conditions and movement of the storms. While severe thunderstorms can occur at any time of the year, the majority occur during the spring and summer months. The peak month for damaging winds in the region is July while April is the peak month for large hailstorms. The most likely time of occurrence for severe weather events is during the mid-afternoon through early evening hours.

There have been 77 severe thunderstorm wind events recorded in the last 70 years with over \$3 million in property and crop damages reported with no reports of injuries or fatalities. Wind speeds of 50 to 75 knots have been reported with these events. Since the last update, there have been 13 severe thunderstorm events recorded. Using data from the NCEI and SHELDUS™ databases, the 20-year hazard cycle calculated an annual chance for severe thunderstorm wind at:

- 300% for McDuffie County
- 130% chance for unincorporated McDuffie County
- 115% chance for Dearing
- 130% chance for Thompson

Table 2.16 breaks down the thunderstorm events by jurisdiction. A complete table of thunderstorm wind events can be found in Appendix A.

Table 2.16

Location	# of Events	County-Wide Events*	Total # of events per jurisdiction
McDuffie County(Unincorporated)	12	21	33
Dearing	10	21	31
Thomson	34	21	55
TOTAL FOR COUNTY	46	21	77

The second severe weather type is hail. In the last 70 years, there have been 39 hail events reported to the NCEI and SHELDUS™ databases with slightly more than \$65,000 in property and crop damages. One of the worst hail storms in McDuffie County occurred on July 1, 2012. This storm produced 1.75” which covered the ground and injured 15 people who were outdoors. Using a 20-year hazard cycle, frequency tables calculates an annual chance for a hail event at:

- 15% for unincorporated McDuffie County;
- 20% in Dearing
- 95% in Thomson.

Overall, there is a 130% percent chance that an annual hail event in McDuffie County. A complete list of all hazards is in Appendix A and hazard frequency tables for individual jurisdictions are in Appendix A.

Table 2.17

Location	# of Events	County-Wide Events*	Total # of events per jurisdiction
McDuffie County(Unincorporated)	5	5	10
Dearing	5	5	10
Thomson	24	5	29
TOTAL FOR COUNTY	34	5	39

The third severe weather type of lightning. During the spring and summer months the county experiences numerous storms that can often produce lightning. The VAISALA National Lightning Detection Network has the average flash density per square mile between 6 and 12 from 2007-2016. According to the Georgia Forestry Commission, there have been 59 lightning strikes recorded in the past 63 years, resulting in wildfires that burned 2,272 acres. According to local media, lightning struck a home in Thomson as severe thunderstorms moved across the county. This event occurred on July 24, 2017 as strong thunderstorms moved across the county. The amount of damage to the homes is unknown.

While data was collected looking at 63 years of data, hazard frequency rate was calculated using a 20-year hazard cycle per guidance from GEMA. Based on a 20-year hazard cycle, the annual chance for a lightning strike is 105%.

- C. Assets Exposed to Hazard and Estimate of Potential Losses:** In evaluating assets exposed to severe thunderstorm winds, hail, and lightning, the committee determined that all critical facilities, as well as all public, private and commercial property, are susceptible to tropical storms. Table 2.18 provides data from FEMA Worksheet #3a that estimates the potential loss for each jurisdiction.

Table 2.18

Jurisdiction	Number of Structure/Properties	Value \$	Population
McDuffie County (Unincorporated)	23,969	1,456,009,607.50	14,238
Dearing	854	32,340,392.50	624
Thomson	7,606	411,073,813	6,593
TOTAL FOR COUNTY	32,429	1,899,423,813	21,455

Of the 76 critical facilities, 66 have a wind hazard score of two placing the critical facilities in Zone IV which has a wind speed of 90 to 99 mph and the remaining 10 have a hazard score of one. 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 2.19 shows the number of critical facilities by jurisdictions, hazard score, replacement value, content value, and occupancy.

Table 2.19

Jurisdiction	Wind Hazard Score	# of Critical Facilities	Replacement Value \$	Content Value \$	Occupancy	
					Day	Night
McDuffie County	1	9	\$10,825,400	\$2,850,000	10	0
McDuffie County	2	37	\$90,108,555	\$24,890,000	5506	508
Dearing	2	4	\$1,080,000	\$780,000	2	0
Thomson	1	1	\$522,600	\$85,000	2	2
Thomson	2	25	\$12,937,500	\$5,051,500	458	18
TOTAL		76	\$115,474,055	\$33,656,500	5978	528

GMIS critical facility reports for wind can be found in Appendix A. FEMA Worksheet #3a is located in Appendix D.

- D. Land Use & Development Trends:** Since the previous plan was approved, there have not been any new developments, regulations, programs, or other changes in the community that would either increase or decrease the community's overall vulnerability to this hazard. McDuffie 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 thunderstorm winds, hail, or lightning events. Information on current land use and future land use projections can be found in Appendix B.

- E. Multi-Jurisdictional Concerns:** All of McDuffie 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.
- F. Hazard Summary:** Since the previous plan, there has been limited new development and no increase in population that would affect the overall vulnerability of the community to these hazards. This has been no new adoption of development or building regulations to increase or decrease the overall vulnerability to severe weather events.

Overall, severe weather in the form of thunderstorm winds and lightning, poses one of the greatest threats to McDuffie County in terms of property damage, injuries, and loss of life. Therefore, the committee recommends mitigation measures identified in this plan should be aggressively pursued.

To summarize, there are approximately 32,429 structures/properties in the county totaling \$1.9 billion. A breakdown of information for individual jurisdictions can be found in Appendix A and Appendix D. Specific mitigation actions for severe thunderstorm events are identified in Chapter III, Section V.

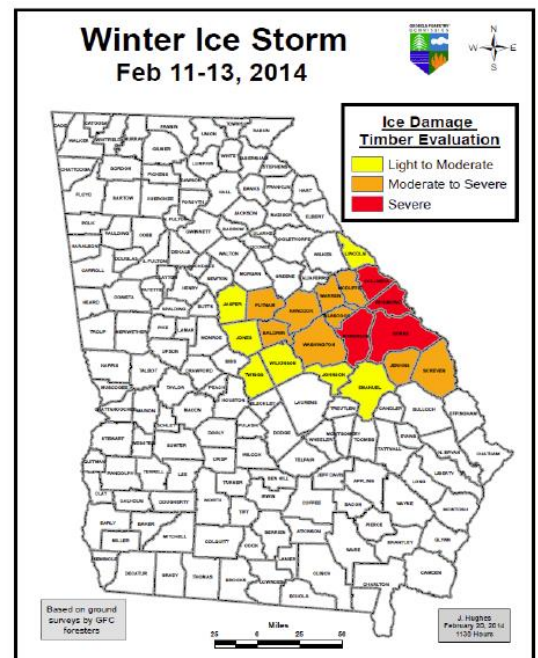
SECTION VII. WINTER STORMS

- 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 ice and freezing rain, high winds, heavy snowfall, and cold temperatures. These conditions can make driving 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 area equally. The committee researched historical data from the NCEI SHELDUS™, SERCC, as well as information from past newspaper articles relating to winter storms. There have been 28 winter storm events recorded in the county over the last 70 years with slightly more than \$360,000 in reported property damage.

The most recent ice storm on February 11-13, 2014, had freezing rain and sleet with accumulations of up to 1½ inches of ice and 2 inches of snow and sleet across the area.

The heavy sleet and snow overloaded branches that came down on top of power lines when the storm hit late Tuesday, Feb. 11. Electrical service for almost 85 percent of the county was interrupted. In McDuffie County, 6,195



customers were without power and some for up to five days.

The weight of the ice brought down trees, limbs and other vegetative debris that blocked roads and rights of way creating hazardous conditions. The timber industry was severely affected by the storm. McDuffie was one of the nine counties hit by the storm and had moderate to severe timber damage according to the GFC. The GFC examined the levels of damage within two types of pine that were most frequently damaged: the young pine stands and pine stands on which a first thinning had recently occurred. The moderate to severe damage has branches and limbs broken from the trees with damage to the overall stand, having more than 25 percent of branches damaged.

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 45 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 2.20 shows assets by jurisdiction that could be at potential risk of damage from a winter storm event.

Table 2.20

Jurisdiction	Number of Structure/Properties	Value	Population
McDuffie County (Unincorporated)	23,969	\$1,456,009,607.50	14,455
Dearing	854	\$32,340,392.50	624
Thomson	7,606	\$411,073,813	6,593
TOTAL FOR COUNTY	32,429	\$1,899,423,813	21,455

Source: McDuffie County Tax Assessor

The GMIS does not provide a report for winter storm damage. Countywide, there are assets valued at slightly less than \$1.9 billion at risk from a winter storm hazards. Table 2.21 shows the number of critical facilities by jurisdiction, replacement value, content value, and daily occupancy (See Appendix A, s, and Appendix D).

Table 2.21

Jurisdiction	# of Critical Facilities	Replacement Value \$	Content Value \$	Occupancy	
				Day	Night
McDuffie County	46	\$100,933,955	\$27,740,000	5,516	508
Dearing	4	\$1,080,000	\$780,000	2	0
Thomson	26	13,460,100	5,136,500	460	20
TOTAL	76	\$115,474,055	\$33,656,500	5,978	528

D. Land Use & Development Trends: McDuffie County currently has no land use or development trends related to winter storms. Projected changes in land use based on the joint comprehensive plan has minimal or no change to land use within the incorporated jurisdictions. The greatest change in land use and future development has a decrease in forestland that will be converted to residential. Since it is impossible to determine where future residents will move in the unincorporated areas of the county, vulnerability in terms of future buildings, infrastructure and critical facilities is not known at this time. It can be surmised that this will bring an increase in population and homes. Current and future land use tables and projections can be found in Appendix B.

E. Multi-Jurisdictional Concerns: 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 Dearing and Thomson.

Another major issue is countywide communications capabilities. During a natural hazard, it is imperative that all emergency personnel can communicate with each other throughout the entire planning area. The county and its jurisdictions 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 removed, the county will be without any adequate means to bounce signals. The County, Dearing and Thomson are aware of the need to develop communication capabilities that will serve the entire county.

F. Hazard Summary: Since the previous plan there has been limited new development and no increase in population that would affect the overall vulnerability of the community to this hazard. This has been no new adoption of development or building regulations to increase or decrease the overall vulnerability to winter storm events.

There have been 28 winter storm events recorded in the county over the last 70 years more than \$360,000 property damaged reported. There is a 45 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 32,429 structures/properties in the county valued at slightly more \$1.9 billion with a population of 21,455. The committee recognized the dangers posed by winter storms and identified specific mitigation actions in Chapter III, Section VI.

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 2012 update plan.

Table 3.1

Section	Updates
I. Flood	Completed action steps were removed. Action Steps that apply to all jurisdictions were combined. All text was reviewed and edited as needed. Goals, Objective, and Actions Steps were updated.
II. Drought	Completed action steps were removed. Action Steps that apply to all jurisdictions were combined. All text was reviewed and edited as needed. Goals, Objective, and Actions Steps were updated.
III. Wildfire	Completed action steps were removed. Action Steps that apply to all jurisdictions were combined. All text was reviewed and edited as needed. Goals, Objective, and Actions Steps were updated.
IV. Tornado	Moved from Severe Weather. Completed action steps were removed. Action Steps that apply to all jurisdictions were combined. All text was reviewed and edited as needed. Goals, Objective, and Actions Steps were updated.
V. Tropical Storms	Moved from Severe Weather. Completed action steps were removed. Action Steps that apply to all jurisdictions were combined. All text was reviewed and edited as needed. Goals, Objective, and Actions Steps were updated.
VI. Severe Weather	Completed action steps were removed. Action Steps that apply to all jurisdictions were combined. All text was reviewed and edited as needed. Goals, Objective, and Actions Steps were updated.
VII. All Hazards	Category added to take goals that apply to all Hazards to reduce redundancy.
VIII. All Hazards	Category added to take goals that apply to all Hazards to reduce redundancy.

SECTION I. INTRODUCTION TO MITIGATION STRATEGY

This chapter addresses the mitigation strategy requirements of 44 CFR Section 201.6 (c)(3): “A mitigation strategy that 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 McDuffie County, Dearing, and Thomson, is to protect the safety, health and well-being of all county citizens, and to protect public and private property and to lessen the overall effects of a hazard event.

There has been limited new development since the previous plan and no increase in population that would affect the overall vulnerability of the community from identified hazards. This has been no new adoption of development or building regulations to increase or decrease the overall vulnerability to hazard events.

B. Capability Assessment

McDuffie County, Dearing, and Thomson 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. McDuffie County has an annual budget of around \$55 million, Dearing’s 2018 budget was \$1.4 million and Thomson’s 2020 budget was nearly \$19 million. It should be noted that mitigation action steps with high dollar amounts cannot be completed without grant funds and careful budget planning by all jurisdictions.

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

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

Regulatory Tools (ordinances, codes, plans)	McDuffie County	Dearing	Thomson	Does State Prohibit
Building codes	Y	Y	Y	N
Zoning ordinance	Y	Y	Y	N
Subdivision ordinance or regulations	Y	Y	Y	N

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

Table 3.3 Fiscal Capability

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

Table 3.4 Administrative and Technical Capacity

Staff/Personnel Resources	McDuffie County	Dearing	Thomson	Dept./Agency and Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	Y	N	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	N	Y	Building Dept./ Code Enforcement
Planners or Engineer(s) with an understanding of natural and/or manmade hazards	Y	N	Y	Public Works/CSRA RC Staff
Floodplain manager	N	N	N	
Surveyors	N	N	N	Contracted as needed
Staff with education or expertise to assess the community's vulnerability to hazards	Y	Y	Y	Public Safety/EMA
Personnel skilled in GIS and/or HAZUS	Y	N	Y	CSRA RC
Emergency manager	Y	Y	Y	EMA
Grant writers	Y	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 above the county and 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 that 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. Structural and non-structural actions are identified in Table 3.7.

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

McDuffie County, Thomson and Dearing have 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.

Other types of ordinances that have been adopted are:

The *McDuffie County Joint Comprehensive Plan 2021-2025* was adopted by resolution by the McDuffie County Board of Commissioners, Dearing Town Council, and the Thomson City Council. 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 Dearing and Thomson. The Comprehensive Plan also examines existing land use and projects future land use. Existing and Future Land Use Maps can be found in Appendix B.

iii. **Community Values, Historic & Special Considerations**

Historical-Cultural: McDuffie County has five districts listed on the National Register of Historic Places, as well as several individual sites.

- The Boneville historic district was listed in 2000. Boneville is located at the junction of Boneville Rd and Georgia RR approximately 5 miles SE of Thomson.
- The Thomas Carr historic district was listed in 1975. Located North of Thomason near jct. of GA 150 and I-20.

- The Hayes Line historic district, listed in 2000, located at the junction of Twin Oaks Rd and GA 233.
- Thomson Commercial historic district, listed in 1989. Roughly bounded by Journal St., Greenway St., Railroad St., Hendricks St., and Church St.
- Bowdre-Rees-Knox House, listed in 1979. Located SW of Thomson on Old Wrightsboro Rd.
- The James L. Hardaway House, listed in 1993. Located at Old Mesena Rd. W of Thomson. It was built in the Greek Revival style by George Washington Hardaway in 1842. The house is a classic sand hills raised cottage with a four-over-four floor plan. The ground floor is constructed of weathered granite. The second floor is southern modified braced beam construction. The ground floor ceilings are 8 feet tall while the second story is 12 feet tall. All ceilings are wood except the room with faux marble walls that has a plaster ceiling. The second floor has extensive molding around all windows and doors. All architectural details except the rear addition are original. Of major interest are the pediments over the front façade windows and sidelights on the second story. The home has had only four owners since leaving the Hardaway family in 1896.
- Hickory Hill, also known as the Thomas E Watson House, listed in 1979. Located at 502 Hickory Hill Dr. Hickory Hill is located on a wooded 70-acre parcel of land, bounded on the north by Magnolia Drive, the east by North Lee Street, the south by Hickory Hill Drive, and the west by the Thomson city line. A large Classical Greek Revival dentillated and pedimented portico projects from its front, supported by four two-story Ionic columns.
- Hillman-Bowden House, listed in 2002. A Greek Revival architectural style. Located at 1348 Pyland Crossing Rd.
- McNeill House, listed in 1992. An international architectural style. Located at 220 Lee St.



- Old Rock House, listed in 1970. Located NW of Thomson on Old Rock House Rd. It was built in 1785 by Thomas Ansley. The house was purportedly the home to the ancestors of former president Jimmy Carter.
- Pine Tope Farm, listed in 1996. Located at the junction of US 78 and US 278.



- Sweetwater Inn, listed in 1985. Located off GA 17 on Old Milledgeville Rd. It was built in 1826. The structure functioned as a residence and an inn.
- Usry House, listed in 1974. Located at 211 Milledge St. The house is a beautifully preserved Neo Classic plantation house surrounded by gardens and a white wooden fence. A treasure located in the heart of town. Usry House built by William Usry about 1795 as the seat of his extensive cotton plantations. Usry House became the center of Antebellum social activity in this region. In its parlor the Goodrich Usry Railroad was conceived and Lafayette reputedly hosted. Architecturally it is along Neo classical lines and its suspended balcony is one of the largest in the south. The builder of Usry House was a great-grandson of Sir Robert Usry of England, founder of the family in America. Its owner is a seventh generation grandson of the builder.



Recreation: Most of the recreation needs of McDuffie County residents are served by Sweetwater Park. The 85 acre complex contains play lots, ball fields, and tennis and volleyball courts. Additionally the Army Corps of Engineers operates the Raysville Campground area with both primitive campsites and full RV hookups. The Raysville Campground is open from March 1 to October 31 and located within U.S. Army Corp managed property that encompasses a large portion of the county’s frontage on Clarks Hill Lake.

- iv. **Prioritization of Actions:** Those 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. Those actions likely to require extended time-frames to accomplish received medium priority status.

The committee consultant used the STAPLEE worksheet (Social, Technical, Administrative, Political, Legal, Economic, Environmental) to select and prioritize the most appropriate mitigation alternatives and is in Appendix D. This methodology

requires that seven categories outlined in the STAPLEE 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 3.6 provides information regarding the review and selection criteria for alternatives.

Table 3.6

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?
- Is it 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?
- Have all stakeholders been afforded an opportunity to participate in the planning process?
- Is there public support to implement and maintain the action?

LEGAL

- 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

- 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

- 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 McDuffie County together with Dearing and Thomson 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 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 due to flooding.
- Objective A5.** Limit future development in flood prone areas.
- Objective A6.** Reduce the threat of water contamination caused by flooding.

B. 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. As 54.2 percent of the county is made up of 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 B1.** Ensure that there is an adequate water supply during periods of drought.
- Objective B2.** Educate citizens on water conservation issues.

C. Wildfire Action Plan

As indicated in Chapter II, Section III, wildfires have the potential to cause costly damage in McDuffie 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 C1. Ensure that adequate fire protection is available.

Objective C2. Reduce threat of wildfire occurrence.

Objective C3. Increase public awareness of wildfire dangers.

D. Tornado Action Plan

As with many Georgia communities, if a tornado were to strike McDuffie 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 McDuffie County because of the tornado threat. As indicated in Chapter II, Section IV, of all of the natural hazards profiled in this plan, tornados have the potential to inflict the greatest amount of damage. The committee has identified several courses of action that both local officials and citizens can use in their mitigation efforts.

Objective D1. Minimize damage to property from tornadoes.

Objective D2. Minimize damage to public buildings and critical facilities to ensure continual operations of vital services.

Objective D3. Protect vulnerable populations from the effects of severe weather events.

Objective D4. Educate the public including citizens and business owners on disaster preparedness and safety.

E. Tropical Storm Action Plan

If a tropical storm were to move near or over McDuffie County, significant damage to both property and agricultural crops could result. There is also the potential for injuries and loss of life. While most damage from hurricanes and tropical storms occur along coastal areas, damage from high wind, tornadoes, and flooding can occur well inland. Therefore, the committee would like to focus on goals and objectives that will increase public awareness of these storm in our community and mitigation strategies that will save lives through proper planning.

Objective E1. Minimize damage to property from tropical storm 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 tropical storms.

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

F. Severe Weather Action Plan

As with many Georgia communities, if a severe weather events were to strike McDuffie County, significant damage to both property and agricultural crops could result. In addition, the potential for injuries and loss of life exists due to the 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 McDuffie County because of a severe weather wind event. As indicated in Chapter II, Section IV, of all of the natural hazards profiled in this plan, severe weather events 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 severe thunderstorm winds.

Objective F1. Minimize damage to property from severe weather events.

Objective F2. Minimize damage to public buildings and critical facilities to ensure continual operations of vital services.

Objective F3. Protect vulnerable populations from the effects of severe weather events.

Objective F4. Educate the public including citizens and business owners on disaster preparedness and safety

G. Winter Storms Action Plan

Within McDuffie 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, McDuffie County and other southeastern communities must be prepared for the damage caused by winter storms. The fact that winter storms hit McDuffie County infrequently results in other problems, such as lack of equipment and supplies to combat treacherous winter storm conditions. In McDuffie County, the formation of ice on roads and bridges, tree limbs, and power lines is the cause of most damage. In Chapter II, Section V 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 G1. Minimize damage to property from severe weather events.

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

Objective G3. Protect vulnerable populations from the effects of severe weather events.

Objective G4. Educate the public including citizens and business owners on disaster preparedness and safety.

H. All Hazards Action Plan

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 because of a hazard event to ensure a continuation of all vital services.
- Objective H4.** Provide adequate notification to citizens of McDuffie 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 McDuffie County.
- Objective H6.** Guarantee that all Emergency Response Plans are up to date and adequate to meet the needs of citizens of McDuffie County.
- Objective H7.** Ensure all emergency shelters are ready to meet the needs of the population of McDuffie County, town of Dearing, and the city of Thomson.
- Objective H8.** Provide the citizens of McDuffie County educational information on Emergency Preparedness.
- Objective H9.** Provide the citizens of McDuffie County with accurate and timely information pertaining to Emergency Preparedness.
- Objective H10.** Collect accurate and complete data pertaining to hazard events within McDuffie County, Dearing and Thomson.

SECTION III. MITIGATION ACTIONS

Table 3.7

Action #	Mitigation Action and Description	Jurisdiction	Implement Agency	Hazards Addressed	Objective Supported	Goal	Structural/ Non-Structural	Estimated Project Cost	Possible Funding Source(s)	Time Frame	Status	Priority
1.	Dearing to investigate participation in the NFIP	Dearing	City Council	Flood	A1, A2	1, 2, 4, 5	Non-Structural	Staff Time	General Funds	3 years	New	High
2.	Continue to assess storm water runoff.	McDuffie/ Dearing/ Thomson	Public Works	Flood	A5, B2	2, 6	Non-Structural	Staff Time	General Funds	1 year and Continual	Ongoing	High
3.	Construct as needed, more storm water retention facilities, storm drain improvements and channel improvements to protect existing and new developments.	McDuffie/ Dearing/ Thomson	BOC/City Council/ Public Works	Flood/ Drought	A3	2, 6	Structural	1,000,000	General Funds	2 years and Continual	Ongoing	High
4.	Clear run-off and water retention ditches.	McDuffie/ Dearing/ Thomson	Public Works/Road Dept.	Flood	A2, A5	2, 1	Structural	Staff Time	General Funds	1 year and Continual	Ongoing	High
5.	Seek funding for communication towers and voice repeater systems.	McDuffie/ Dearing/ Thomson	EMA/Police/ Sheriff	All hazards	H1	1	Structural	\$750,000	General Fund, FEMA, CJCC, JAG, USDA, DOJ	2 years and Continual	Ongoing	High
6.	Promote the preservation of areas in and around watercourses.	McDuffie/ Thomson	BOC/City Councils	Flood	A6	1, 2, 4, 5	Non-Structural	Staff Time	CDBG, USDA, EPA, DNR	2 years	Ongoing	High
7.	Add greenspace to known flood prone areas.	McDuffie/ Dearing/ Thomson	BOC/City Councils	Flood	A6	1, 2, 4, 5	Non-Structural	Staff Time	CDBG, USDA, EPA, DNR	2 years	Ongoing	Medium
8.	Evaluate existing water system upgrade as needed	McDuffie/ Thomson	Public Works	Flood/ Drought/ Wildfire	A7, B1	1, 2, 6	Structural	\$1,000,000	General Fund, CDBG, USDA, EPA, DNR	1 year and Continual	Ongoing	High

Action #	Mitigation Action and Description	Jurisdiction	Implement Agency	Hazards Addressed	Objective Supported	Goal	Structural/ Non-Structural	Estimated Project Cost	Possible Funding Source(s)	Time Frame	Status	Priority
9.	Investigate methods to reduce non-point source pollution.	McDuffie/ Thomson	BOC/City Council	Flood	A1	1, 2, 5	Non-Structural	\$500,000	USDA, EPA, DNR	2 years	Ongoing	Medium
10.	Enact a program to educate the residents about water conservation issues	McDuffie/ Dearing/ Thomson	BOC/City Councils/ Water Dept.	Drought	B1, B2	1, 3	Non-Structural	\$2,000	USDA, EPA, DNR, General Funds	1 year and Continual	Ongoing	High
11.	Increase public awareness of watering restrictions and bans.	McDuffie/ Dearing/ Thomson	BOC/City Councils/ Water Dept.	Drought	B1, B2	1, 3	Non-Structural	Staff Time	General Funds	1 year and Continual	Ongoing	High
12.	Develop a public awareness campaign to promote water-saving campaigns (i.e. low-flow water saving devices)	McDuffie/ Dearing/ Thomson	BOC/City Councils/ Public Works	Drought	B1, B2	1, 3	Non-Structural	\$2,500	General Funds	1 year and Continual	Ongoing	High
13.	Continue training of all firefighters to include wildland fire training.	McDuffie /Dearing/ Thomson	EMA/Fire Depts.	Wildfire	C1	1, 2	Non-Structural	\$50,000	General Funds, FEMA	1 year and Continual	Ongoing	High
14.	Seek funding for needed firefighting equipment	McDuffie/ Dearing/ Thomson	EMA/Fire Depts.	Wildfire	C1	1, 2	Non-Structural	\$1,000,000	General Funds, FEMA	1 year and Continual	Ongoing	High
15.	Inventory and replace or install more fire hydrants as needed.	McDuffie/ Dearing/ Thomson	Public Works/ Fire Depts.	Wildfire	C1	1, 2	Structural	\$50,000	General Funds, FEMA	1 year and Continual	Ongoing	High
16.	Enforce defensible space (30-ft minimum setbacks) between buildings and flammable brush and forestland where possible.	McDuffie/ Dearing/ Thomson	BOC/City Councils/	Wildfire	C2, C3	1, 2, 3	Structural	\$50,000	General Funds, FEMA	1 year and Continual	Ongoing	Medium
17.	Continue following GFC service of construction and maintenance of firebreaks around forests and structures, along abandoned	McDuffie/ Dearing/ Thomson	BOC/City Councils/ Planning and Zoning	Wildfire	C2, C3	1, 2, 3	Non-Structural	\$75,000	General Fund	1 year and Continual	Ongoing	High

Action #	Mitigation Action and Description	Jurisdiction	Implement Agency	Hazards Addressed	Objective Supported	Goal	Structural/ Non-Structural	Estimated Project Cost	Possible Funding Source(s)	Time Frame	Status	Priority
	roadbeds.											
18.	Strictly follow GFC's guidelines for control burns and permits.	McDuffie/ Dearing/ Thomson	BOC/City Councils/ GFC	Wildfire	C2, C3	1, 2, 3	Non- Structural	Staff Time	General Funds,	1 year and Continual	Ongoing	High
19.	Investigate the feasibility of implementing the Firewise Community Initiative where appropriate	McDuffie/ Dearing/ Thomson	BOC/City Councils/	Wildfire	C2, C3	1, 2, 3	Non- Structural	\$25,000	General Funds, GFC	3 years	Ongoing	Medium
20.	Improve public awareness of wildfire techniques and awareness of wildfire dangers.	McDuffie/ Dearing/ Thomson	EMA/ Fire Depts.	Wildfire	C2, C3	1, 2, 3	Non- Structural	\$25,000	General Funds	2 years and Continual	Ongoing	High
21.	Equip all county and city recreation parks with adequate early severe weather warning and lightning detection devices.	McDuffie/ Dearing/ Thomson	BOC/City Councils/ Recreation Dept.	Tornado, Tropical Storms, Severe Weather	D3, E3, F3	1, 2, 6	Structural	\$100,000	General Funds, FEMA	2 years	New	High
22.	Inspects public buildings and critical facilities and retrofit to reinforce windows, doors, and roofs as needed	McDuffie/ Dearing/ Thomson	EMA/ Fire Code Enforcement and Building Inspection	Tornado, Tropical Storms, Severe Weather	D1, D2, E1, E2, F1, F2	1, 2, 6	Structural	\$150,000	General Funds, FEMA	3 years	Ongoing	Medium
23.	Enforce building codes for all new buildings and critical facilities.	McDuffie/ Dearing/ Thomson	Code Enforcement and Building Inspection	Tornado, Tropical Storms, Severe Thunderstorm Weather	D1, D2, D3, E1, E2, E3, F1, F2, F3	1, 2, 6	Structural/ Non- Structural	Staff Time	General Funds, FEMA	1 year and Continual	Ongoing	High
24.	Install lightning rods in high value critical facilities.	McDuffie/ Dearing/ Thomson	EMA/ Code Enforcement and Building Inspection	Severe Weather	F1, F2, F3	1, 2, 6	Structural	\$100,000	General Funds, FEMA	2 years	Ongoing	High

Action #	Mitigation Action and Description	Jurisdiction	Implement Agency	Hazards Addressed	Objective Supported	Goal	Structural/ Non-Structural	Estimated Project Cost	Possible Funding Source(s)	Time Frame	Status	Priority
25.	Install surge protectors on critical facilities' electronic equipment in essential county and city facilities.	McDuffie/ Dearing/ Thomson	EMA/ Code Enforcement and Building Inspection/ IT	Severe Weather, Lightning, Winter Storm	F1	1, 2, 6	Structural	\$10,000	General Funds	3 years	Ongoing	High
26.	Review current Emergency Response Plan and update when needed.	McDuffie County EMA	EMA	All hazards	H6, H8	1, 2, 3	Non-Structural	Staff Time	General Funds	2 years	Ongoing	High
27.	Review current evacuation plans paying particular attention to vulnerable populations and update as needed.	McDuffie County EMA	EMA/BOE	All Hazards	H1, H8	1, 2, 3	Non-Structural	Staff Time	General Funds	2 years	Ongoing	High
28.	Develop a public awareness program about the installation of lightning grounding systems on critical infrastructure, residential and business properties.	McDuffie/ Dearing/ Thomson	BOC/ City Councils/ EMA	Severe Weather	F4	1, 2, 3	Non-Structural	Staff Time	General Funds	2 years	Ongoing	High
29.	Inventory all critical facilities and assess generator needs. Install generators where needed.	McDuffie/ Dearing/ Thomson	EMA	All hazards	H3	1, 2, 3, 6	Structural/ Non-Structural	\$750,000	General Funds, FEMA	1 year and continual	Ongoing	High
30.	Seek funding to ensure all current and future emergency shelters have back-up generators.	McDuffie/ Dearing/ Thomson	EMA	All hazards	H7	1, 2, 3, 6	Structural/ Non-Structural	\$150,000	General Funds, FEMA	3 years	Ongoing	High
31.	Educate the public on shelter locations and evacuation routes	McDuffie/ Dearing/ Thomson	BOC/ City Councils/ EMA/BOE	All Hazards	H8, H9	3	Non-Structural	Staff Time	General Funds	1 year and continual	Ongoing	High

Action #	Mitigation Action and Description	Jurisdiction	Implement Agency	Hazards Addressed	Objective Supported	Goal	Structural/ Non-Structural	Estimated Project Cost	Possible Funding Source(s)	Time Frame	Status	Priority
32.	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.	McDuffie/ Dearing/ Thomson	BOC/ City Councils/ EMA	All Hazards	H8, H9	3	Non-Structural	\$10,000	General Funds, FEMA	2 year and continual	Ongoing	High
33.	Implement a winter storm education program to include winterization of home and/or business and what to do before, during and after.	McDuffie/ Dearing/ Thomson	BOC/ City Councils/ EMA	Winter Storm	G1	3	Non-Structural	\$25,000	General Funds	2 year and continual	Ongoing	High
34.	Review current codes to comply with and enforce the State building code with criteria for design snow load for buildings and structures.	McDuffie/ Dearing/ Thomson	BOC/ City Councils/ Planning and Zoning	Winter Storm	G2	1, 2, 3,	Non-Structural	Staff Time	General Funds	2 years	New	Medium
35.	Create a data base to record hazard event information.	McDuffie/ Dearing/ Thomson	EMA	All Hazards	H10	1, 2, 3,	Non-Structural	Staff Time	General Funds	2 years	Ongoing	Medium
36.	Inventory existing road equipment and purchase needed equipment to maintain roads before, during and after a hazard event.	McDuffie/ Dearing/ Thomson	BOC/ City Councils/ Road Dept.	All Hazards	H2	1, 2	Non-Structural	\$75,000	General Funds, FEMA	2 years	Ongoing	Medium
37.	Develop coordinated management strategies for deicing, snow plowing, and clearing roads of fallen trees and debris	McDuffie/ Dearing/ Thomson	BOC/ City Councils/ Road Dept./EMA	Flood, Severe Weather, Winter Storm	G2	1, 2	Non-Structural	\$15,000	General Funds	2 years	Ongoing	High

Action #	Mitigation Action and Description	Jurisdiction	Implement Agency	Hazards Addressed	Objective Supported	Goal	Structural/ Non-Structural	Estimated Project Cost	Possible Funding Source(s)	Time Frame	Status	Priority
38.	Promote the construction of safe rooms in shelter areas and in public buildings.	McDuffie/ Dearing/ Thomson	BOC/ City Councils/ EMA	Tornadoes, Tropical Storms, Severe Thunderstorms	D3,E3, F3	1, 2, 6	Structural	\$250,000	General Funds, FEMA	4 years	Ongoing	Medium
39.	Update 911 equipment as needed.	McDuffie/ Thomson	EMA/ Sheriff	All hazards	H1, H3	1, 2, 6	Structural	\$75,000	General Funds, FEMA	1 year and Continual	Ongoing	High
40.	Request that all new education facilities be designed to serve as public shelters for emergency purposes.	McDuffie/ Dearing/ Thomson	BOC/ City Councils/ BOE	All hazards	H7	1, 2, 6	Non-Structural	Staff Time	General Funds	1 year and Continual	Ongoing	High
41.	Promote and participate in the following American Red Cross Programs • Disaster Resistant Neighborhoods Program • Business and Industry Preparedness Seminar • Community Disaster Education Preparedness presentations.	McDuffie/ Dearing/ Thomson	BOC/ City Councils/	All hazards	H4, H8, H9	1, 2, 3	Non-Structural	Staff Time	General Funds, FEMA	2 years and Continual	Ongoing	Medium
42.	Work with local cable and radio providers to enhance and broadcast public education on Emergency Preparedness.	McDuffie/ Dearing/ Thomson	BOC/ City Councils/	All Hazards	H8, H9	1, 2, 3	Non-Structural	Staff Time	General Funds	1 year and Continual	Ongoing	High
43.	Implement GIS technology on fire and emergency management vehicles so data can be readily available in the field so more accurate, timely assessments for future mitigation	McDuffie/ Dearing/ Thomson	BOC/ City Councils/	All Hazards	H9, H10	1, 2, 6	Non-Structural	50,000	General Funds, FEMA	1 year and Continual	Ongoing	High

Action #	Mitigation Action and Description	Jurisdiction	Implement Agency	Hazards Addressed	Objective Supported	Goal	Structural/ Non-Structural	Estimated Project Cost	Possible Funding Source(s)	Time Frame	Status	Priority
	planning activities.											
44.	Seek funding to purchase ambulance	McDuffie/EMA/EMS	EMA/EMS	All Hazards	H4, H8, H9	1, 2	Non-Structural	\$500,000	General Funds, FEMA	2 years	Ongoing	High
45.	Pave Roads in county that are unpassable due to flooding	McDuffie County	BOC/ Road Dept.	Flood	A1, A2	1, 2, 4, 5	Structural	\$1,500,000	General Funds T-SPLOST FEMA, DOT	2 years	Ongoing	Medium
46.	Provide NOAA weather radios to elderly and handicap populations (moved to all hazards).	McDuffie/ Dearing/ Thomson	EMA	All Hazards	H4, H8, H9	1, 2,3	Non-Structural	\$50,000	General Funds, FEMA	2 years	Ongoing	Medium
47.	Review existing comprehensive, development and land use plans to address flood prone areas.	McDuffie/ Dearing/ Thomson	BOC/ City Councils/	Flood	A1, A2	1, 2, 4, 5	Non-Structural	Staff Time	General Funds	3 years	Ongoing	Medium

- 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 has 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.

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.

D. COMPLETED AND DELETED ACTION STEPS/ UNCHANGED AND/OR CONTINUAL ACTION STEPS

Action #	Mitigation Action and Description	Hazards	Status	Comments/Accomplishments
1.	Investigate greater participation Level in the CRS	Flood	Deleted	Cost prohibitive for County and Cities.
2.	Continue to assess storm water runoff.	Flood	Ongoing	This is done regularly as part of county and city public work staff.
3.	Construct as needed, more storm water retention facilities, storm drain improvements and channel improvements to protect existing and new developments.	Flood/ Drought	Ongoing	These projects are being analyzed and contingent of funding.
4.	Clear run-off and water retention ditches.	Flood	Ongoing	This is done on a regular basis by city and county public works staff.
5.	Seek funding for communication towers and voice repeater systems.	All hazards	Ongoing	As funding becomes available
6.	A Storm drainage project has been identified along A,B, C Watson and Pecan Avenues	Flood	Completed	This project has been completed at a cost of \$850,000
7.	Promote the preservation of areas in and around watercourses.	Flood	Ongoing	Development is regulated due to floodplain ordinances.
8.	Add greenspace to known flood prone areas.	Flood	Ongoing	No areas have been identified for greenspace at this time.

Action #	Mitigation Action and Description	Hazards	Status	Comments/Accomplishments
9.	Evaluate existing water system upgrade as needed	Flood/ Drought/ Wildfire	Ongoing	This is ongoing and contingent of funding. Thomson did a 200,000 upgrade to water in 2018.
10.	Investigate methods to reduce non-point source pollution.	Flood	Ongoing	No areas have been identified
11.	Enact a program to educate the residents about water conservation issues	Drought	Ongoing	Will include mailers in utility bills
12.	Increase public awareness of watering restrictions and bans.	Drought	Ongoing	GA EPD water restrictions are posted and advertised as required by law.
13.	Develop a public awareness campaign to promote water-saving campaigns (i.e. low-flow water saving devices)	Drought	Ongoing	Will include mailers in utility bills
14.	Continue training of all firefighters to include wildland fire training.	Wildfire	Ongoing	High
15.	Seek funding for needed firefighting equipment	Wildfire	Ongoing	The County purchased \$10,000 in turnout gear in June, 2021.
16.	Inventory and replace or install more fire hydrants as needed.	Wildfire	Ongoing	Thomson and McDuffie County repaired 10 fire hydrants for \$5,000.
17.	Seek funding fire engines, burhs trucks, equipment trucks and tankers for local fire departments.	Wildfire	Ongoing	Purchased a 2020 Freightliner E-One Pumper on July 27, 2017 for \$411,860.
18.	Enforce defensible space (30-ft minimum setbacks) between buildings and flammable brush and forestland where possible.	Wildfire	Ongoing	This is followed to the greatest extent possible
19.	Continue following GFC service of construction and maintenance of firebreaks around forests and structures, along abandoned roadbeds.	Wildfire	Ongoing	This is followed to the greatest extent possible
20.	Strictly follow GFC's guidelines for control burns and permits.	Wildfire	Ongoing	This is strictly followed
21.	Investigate the feasibility of Implementing the Firewise Community Initiative where appropriate	Wildfire	Ongoing	As neighborhoods are identified
22.	Improve public awareness of wildfire techniques and awareness of wildfire dangers.	Wildfire	Ongoing	
23.	Equip all county and city recreation parks with adequate early severe weather warning and lightning detection devices.	Severe Weather	Ongoing	As funding becomes available
24.	Inspects public buildings and critical facilities and retrofit to reinforce windows, doors, and roofs as needed	Severe Weather, Winter Storms	Ongoing	Buildings have been inspected reinforcement is contingent of funding
25.	Enforce building codes for all new buildings and critical facilities.	Flood, Severe Weather, Winter Storm	Ongoing	Building Codes are enforced. Building Codes and Ordinances were reviewed and update August 2019

Action #	Mitigation Action and Description	Hazards	Status	Comments/Accomplishments
26.	Install lightning rods in high value critical facilities.	Severe Weather, Lightning	Ongoing	As funding becomes available
27.	Install surge protectors on critical facilities' electronic equipment in essential county and city facilities.	Severe Weather, Lightning, Winter Storm	Ongoing	As funding becomes available
28.	Review current Emergency Response Plan and update when needed.	All hazards	Ongoing	The plan is routinely reviewed and updated as needed
29.	Review current evacuation plans paying particular attention to vulnerable populations and update as needed.	Flood, Wildfire, Severe Weather, Winter Storm	Ongoing	The county is working with the American Red Cross and GEMA concerning sheltering in the county.
30.	Provide boat owners with safety tie down procedures with boat registration.	Severe Weather, Winter Storm	Deleted	The committee determined this was no longer needed
31.	Develop a public awareness program about the installation of lightning grounding systems on critical infrastructure, residential and business properties.	Severe Weather, Lightning	Ongoing	
32.	Inventory all critical facilities and assess generator needs. Install generators where needed.	All hazards	Ongoing	A new generator was purchased in January, 2021 for the Adams Avenue Lift Station at a cost of \$16,000. Also fencing was added around the lift station at an additional cost of \$4,100. More than half of the critical facilities have been inventoried and that task continues. It was determined that Sweetwater Park must have a generator. Other locations will likely need generators and this will be contingent on funding.
33.	Seek funding to ensure all current and future emergency shelters have back-up generators.	All hazards	Ongoing	In County is in the process of applying for funding for a generator for the Sweetwater Park shelter.
34.	Educate the public on shelter locations and evacuation routes	Flood, Wildfire, Severe Weather, Winter Storm	Ongoing	The county is working with the American Red Cross and GEMA concerning sheltering in the county
35.	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.	Flood, Wildfire, Severe Weather, Winter Storm	Ongoing	The county is partnering with the American Red Cross to provide home safety information to residents.
36.	Implement a winter storm education program to include winterization of home and/or business and what to do before, during and after.	Winter Storm	Ongoing	

Action #	Mitigation Action and Description	Hazards	Status	Comments/Accomplishments
37.	Review current codes to comply with and enforce the State building code with criteria for design snow load for buildings and structures.	Winter Storm	Ongoing	Codes have been reviewed and are enforced.
38.	Create a data base to record hazard event information.	All hazards	Ongoing	The county will maintain a data base of all hazard events.
39.	Inventory existing road equipment and purchase needed equipment to maintain roads before, during and after a hazard event.	Flood, Severe Weather, Winter Storm	Ongoing	As funding becomes available
40.	Develop coordinated management strategies for deicing, snow plowing, and clearing roads of fallen trees and debris	Flood, Severe Weather, Winter Storm	Ongoing	The county has an agreement with a private company for clearing of roads after severe weather events.
41.	Promote the construction of safe rooms in shelter areas and in public buildings.	Flood, Wildfire, Severe Weather, Winter Storm	Ongoing	
42.	Update 911 equipment as needed.	All hazards	Ongoing	As funding becomes available
43.	Request that all new education facilities be designed to serve as public shelters for emergency purposes.	All hazards	Ongoing	The Red Cross is in the process of completing shelter surveys
44.	Promote and participate in the following American Red Cross Programs <ul style="list-style-type: none"> • Disaster Resistant Neighborhoods Program • Business and Industry Preparedness Seminar • Community Disaster Education Preparedness presentations 	All hazards	Ongoing	The county is partnering with the American Red Cross for Preparedness programs.
45.	Work with local cable and radio providers to enhance and broadcast public education on Emergency Preparedness.	All hazards	Ongoing	
46.	Implement GIS technology on fire and emergency management vehicles so data can be readily available in the field so more accurate, timely assessments for future mitigation planning activities.	Flood, Wildfire, Severe Weather, Winter Storm	Ongoing	When funding becomes available
47.	Seek funding to purchase ambulance	All Hazards	Ongoing	The county has purchased the following: -2017 Dodge 4500 (2) ambulances for \$324,000 on September 9, 2017 -2017 Dodge 4500 ambulance for \$162,000 on January 15,2018 -2018 Dodge ambulance for \$210,000 on November 11, 2019. This is an ongoing project that is contingent on funding.

Action #	Mitigation Action and Description	Hazards	Status	Comments/Accomplishments
48.	Pave Roads in county that are unpassable due to flooding	Flood, Severe Weather,	Ongoing	As funding becomes available
49.	Provide NOAA weather radios to elderly and handicap populations (moved to all hazards).	Flood, Wildfire, Severe Weather, Winter Storm	Ongoing	As funding becomes available
50.	Review existing comprehensive, development and land use plans to address flood prone areas.	Flood	Ongoing	This is done as part of the comprehensive plan updates
51.	Preform procurement to contract with debris removal firm to have contract in place before hazards to ensure firm can move in immediately.	Winter Storm, Severe Weather, Flood, Wildfire,	Completed	County has a contract in place

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.

Section	Updates
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: McDuffie 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 McDuffie County Board of Commissioners has authorized the submission of this plan to both GEMA and FEMA for their respective approvals. The McDuffie County Board of Commissioners, Town Council of Dearing, and the City Council of Thomson 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 McDuffie 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 with a list of mitigation actions and assign a High, Medium or Low score to each item to help determine the item's priority. Each action item was discussed and a consensus reached by the group on the importance of each item.

- **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 2017 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 Community Work Program (CWP), Local Emergency Operations Plans, and all other such Plans as appropriate. The County along with Dearing and Thomson worked jointly to produce these planning documents.

The Community Work Program and the Joint Comprehensive Plan were both updated in 2021 and will be updated again in 2025. 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 CWP. This Hazard Mitigation Plan will be reviewed by the County along with all two jurisdictions. The requirements of this Hazard Mitigation Plan will be taken into consideration and will be incorporated into Comprehensive Plans, Five-Year Community Work Plan, 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 the CWP 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 CWP to ensure their eligibility for funding from the state if available. In addition, relevant sections were

will be included in the revision of the Local Emergency Operations Plan. This hazard plan update will also be reviewed in the next update of the LEOP.

- E. 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 Lincoln County 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

The original method for evaluation of the plan was unsuccessful. While the plan was discussed at EMA meetings, little attention was given to the monitoring and evaluation of the plan. Changes have been made to ensure a more successful and meaningful use of this plan.

- 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, McDuffie 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.**
 - a. Each hazard will be reviewed. Any new information pertaining to new and/or previous events will be added to the plan.
 - b. Any new critical facilities will be added to the plan.
 - c. Critical facilities information will be updated as needed.
 - d. 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.
 - e. New mitigation activities will be added if necessary.
 - f. 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 that will include a schedule, timeline, and a list of the agencies or organizations participating in the plan revision. McDuffie 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
McDuffie County	Emergency Management Director	Annually
Dearing	Mayor	Annually
Thomson	City Administrator	Annually

D. Timeframe: The committee has set the second Tuesday of every December 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: McDuffie 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 McDuffie 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: At the direction of the EMA Director, the committee will convene in order to accomplish the revisions the second Tuesday of every December. The EMA Director will ensure the revised plan is presented to the McDuffie County Board of Commissioners for formal adoption. In addition, all holders of the County plan will be notified of affected changes. No later than the conclusion of the five-year period following initial approval of the update plan, the EMA Director shall submit the update PDM Plan to the Georgia Emergency Management Agency and the Federal Emergency Management Agency for their review and coordination.

CHAPTER V. Conclusion

SECTION I. Summary

Through the update process of this plan, McDuffie 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. Goals, objectives and mitigation actions have been compiled and prioritized that would reduce the risk of lives and property because of the identified hazards. 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, McDuffie 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 McDuffie Progress*, providing McDuffie 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 McDuffie 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 McDuffie County Pre-Disaster Hazard Mitigation Planning Committee is to *“Make the citizens, businesses, communities and local governments of McDuffie 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 McDuffie 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 McDuffie Progress
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>
 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
<https://mrcc.illinois.edu/gismaps/cntyorn.htm#> Midwest Regional Climate Center
<https://coast.noaa.gov/hurricanes/#map=4/32/-80> NOAA Historical Hurricane Tracks

Other Sources:

American Red Cross
 CSRA Regional Commission
 Georgia Department of Natural Resources
 Georgia Forestry Commission
 McDuffie County
 McDuffie County, Dearing
 McDuffie County, Thomson
 McDuffie County Board of Education
 University Hospital_ McDuffie
 McDuffie County Tax Assessor

APPENDICES

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

- I. Flood
 - a. Description
 - b. Historical Hazard Event Data
 - c. GEMA Critical Facility Inventory Report
 - d. Maps

- II. Drought
 - a. Description
 - b. Historical Hazard Event Data
 - c. Maps

- III. Wildfire
 - a. Description
 - b. Historical Hazard Event Data
 - c. GEMA Critical Facility Inventory Report
 - d. Maps

- IV. Tornadoes
 - a. Description
 - b. Historical Hazard Event Data
 - c. GEMA Critical Facility Inventory Report
 - d. Maps

- V. Hazard E – Tropical Storms
 - a. Description
 - b. Historical Hazard Event Data
 - c. GEMA Critical Facility Inventory Report

- VI. Severe Weather, Including Thunderstorm wind, Hail, and Lightning
 - a. Description
 - b. Historical Hazard Event Data
 - c. GEMA Critical Facility Inventory Report
 - d. Maps

- VII. Winter Storm
 - a. Description
 - b. Historical Hazard Event Data
 - c. GEMA Critical Facility Inventory Report
 - d. Maps

Appendix B – Growth and Development Trends / Community Information

- I. Local Comp Plan Executive Summary
- II. Statistics/tables/maps from Local Comp Plan
- III. Georgia Area Labor Profile: McDuffie County 2019

IV. 2017 Census of Agriculture: McDuffie County Profile

Appendix C –Planning documents

- I. Local Emergency Operations Basic Plan Executive Summary
- II. Executive Summary GEMA State Emergency Operations
- III. Hazard Risk Analysis Supplement 2020
- IV. Flood Insurance Study
- V. Community Wildfire Protection Plan: McDuffie County 2010
- VI. Southern Wildfire Risk Assessment Summary Report 2021
- VII. CSRA Regional Plan Executive Summary

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